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Leverage, Managerial Efficiency, Firm Size, and Sales Growth as Determinants of Corporate Performance in IDX-Listed Manufacturing Firms (2020–2024)

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A B S T R A C T

This study examines the effects of leverage, managerial efficiency, firm size, and sales growth on the performance of manufacturing companies listed on the Indonesia Stock Exchange (IDX) during 2020–2024. Using quantitative methods with panel data from 161 firms (805 observations) and applying the Fixed Effect Model (FEM), the findings show that leverage has no significant impact on firm performance. Conversely, managerial efficiency, firm size, and sales growth each have a positive and significant effect. These results indicate that firms with efficient cost management, larger asset scale, and increasing sales tend to achieve higher profitability. Overall, operational capability and structural advantages play a more crucial role than debt financing in enhancing firm performance.

INTRODUCTION

In an increasingly competitive global environment, firms are required to maintain and enhance their performance in order to survive. Profitability commonly measured through return on assets is one of the key indicators of corporate performance. However, many firms have experienced declining profitability, signalling reduced efficiency and effectiveness in asset management. This pressure is reflected in the volatility of Indonesia's Manufacturing Purchasing Managers' Index (PMI) throughout 2025, where the PMI rose to above 54 points in March 2025, before falling sharply to below 47 points in April 2025. This instability aligns with weakening net profits among several major listed companies. For example, Harum Energy recorded revenue growth of 39.97%, but its net profit fell by 64.20% (Kontan, 2025).

Declining financial performance has also led to operational disruptions. Sri Rejeki Isman Tbk laid off more than 10,000 employees following bankruptcy (anggela, 2025). PT Sanken Indonesia closed its Cikarang plant, affecting 457 workers (nurdifa, 2025), while Yamaha Music shut down two factories and dismissed approximately 1,100 employees (Mubarok, 2025). These phenomena underscore urgency of examining determinants of firm performance.

Based on Ahmad et al. (2022), four variables are considered to influence corporate performance is leverage, managerial efficiency, firm size, and sales growth. First, leverage proxied by debt-to-equity ratio shows that most Indonesian manufacturing firms fall within the DER 0–1 category. Nevertheless, several sectors such as basic materials (35%) and non-primary consumer goods (36%), fall into the high-leverage category (DER > 1). Extreme cases include ARKA with DER 3.75 (2022) and PSDN with DER 17.03 (2022) (Kayo, 2024). Conversely, firms such as INAF recorded DER –235.22, indicating severe financial distress. Prior studies have reported mixed findings on leverage: positive effects (Dsouza et al., 2025), negative effects (Cheong & Hoang, 2021), and insignificant results (Alfiani & Hasanuh, 2024).

Second, managerial efficiency reflects the ability of firms to control costs and allocate resources optimally. As indicated by recent financial disclosures, PT Solusi Bangun Indonesia succeeded in reducing its cost of goods sold by 11.75%, which contributed to a 63% increase in profit during the first half of 2025. Similarly, PT ESSA recorded a 4% increase in EBITDA despite experiencing a 13% decline in revenue (Investing, 2025). Yet, prior empirical findings show inconsistencies across studies.

Third, firm size which theoretically enhances performance (Cheong & Hoang, 2021) exhibits contradictory behaviour in Indonesia. Table 1.4 shows that PT Semen Indonesia experienced declining net profit from Rp 510 billion to Rp 42 billion, even though total assets rose from Rp 8.20 trillion to Rp 8.37 trillion. Similar patterns appear in PT Astra Otoparts and PT Koka Indonesia. Prior research also reports inconsistent results.

Fourth, sales growth is assumed to strengthen performance through increased asset utilisation (Kasmir, 2019; Bolarinwa et al., 2021). Recent financial reports indicate that firms such as Indofarma experienced sales growth of –59.82% and recorded a net loss of –Rp 334.5 billion. Previous studies once again

show conflicting evidence, with positive, negative, and insignificant relationships reported across various contexts.

LITERATURE REVIEW

Trade-off Theory

The Trade-off Theory, originally advanced by Kraus and Litzenberger (1973), extends the foundational propositions of Modigliani and Miller by incorporating the roles of taxation and bankruptcy risk. This theory posits that the use of debt generates a tax shield because interest expenses reduce taxable income, thereby enhancing corporate profitability. Nevertheless, higher leverage also exposes firms to greater bankruptcy risk, agency costs, and financial distress, which may ultimately diminish performance.

In relation to firm performance, commonly measured through return on assets, the Trade-off Theory emphasises the need for an optimal balance between the benefits of tax savings and the potential costs associated with excessive debt. Optimal leverage enhances asset utilisation efficiency and improves return on assets, whereas over-leveraging burdens cash flows and depresses returns. Hence, theory establishes the principle that financial performance is contingent upon management's ability to determine an efficient capital structure that supports stability, efficiency, and long-term sustainability (Kraus & Litzenberger, 1973).

Agency Theory

Agency Theory, as articulated by Jensen and Meckling (1976), explains the contractual relationship between managers (agents) and shareholders (principals). Shareholder's delegate decision-making authority to managers with the expectation of efficient firm administration. However, due to divergent self-interests, conflicts commonly referred to as agency conflicts frequently arise.

Anthony and Govindarajan (2016) further highlight that such misaligned interests may generate opportunistic behaviour among managers, including inefficient resource use or decisions that deviate from shareholder objectives. In relation to firm performance, agency conflicts can lead to operational inefficiencies, asset misuse, and suboptimal strategic choices, ultimately weakening profitability and diminishing firm value

Firm Performance

According to Brigham and Houston (2019), financial performance reflects a firm's effectiveness in managing its resources to generate revenue, cover operating expenses, and produce profit. Bolton et al. (2024) state that firm performance encompasses both financial and non-financial outcomes, including profitability, market share, and organisational growth.

This study employs financial performance to capture the firm's overall condition. Brigham and Houston (2019) identify profitability ratios such as return on assets as key indicators of how effectively assets generate net income. Return on assets is thus used in this research as a performance proxy, measured as net income divided by total assets.

Leverage

Leverage refers to the proportion of debt relative to equity used to finance corporate assets and operations. This proportion indicates how firms manage funding sources to maximise profitability while controlling financial risk (Brigham & Houston, 2019).

This research employs the debt-to-equity ratio (DER) as a proxy for leverage. This ratio captures the extent to which firms utilise debt relative to equity (Brigham & Houston, 2019). Higher leverage implies greater financial risk, whereas maintaining an optimal level supports stable profitability (Ahmed et al., 2024). This research employs the debt-to-equity ratio as a proxy for leverage, which is measured by dividing total debt by total equity.

Managerial Efficiency

Managerial efficiency reflects the ability of management to control operating expenses while generating optimal revenue. This concept highlights effective cost management, resource utilisation, and minimal wastage to ensure that each unit of expenditure contributes meaningfully to revenue generation (Ahmad et al., 2022). Operating expenses differ from investment or non-operational expenditures as they are routine and directly associated with production and service delivery (Higgins, 2016). Linh (2025) identifies several drivers of managerial efficiency, including managerial capability, technology adoption, time management, organisational culture, and performance measurement systems. Managerial efficiency in this study is measured by dividing operating expenses by revenue.

Firm Size

Firm size reflects the scale of a company and represents its overall financial and operational capacity. Brigham and Houston (2019) describe firm size as measurable through total assets, total revenue, or total equity indicators that capture a firm's investment capacity and market presence. Kasmir (2019) adds that firm size may also be reflected in assets, capital, and employee numbers, with larger firms possessing greater operational scope, resources, and growth potential.

Fahmi (2012) argues that firm size influences investment strategies, risk management, and operational efficiency. Larger firms tend to better absorb risks, optimise resource use, and access external financing more readily. Ross et al. (2019) similarly highlights firm size as a determinant of capital structure, growth strategies, and competitive positioning, with larger firms typically enjoying stronger reputations and greater access to funding. In this study, firm size follows Brigham and Houston (2019) and is measured as the natural logarithm of total assets.

Sales Growth

Sales growth represents the increase in revenue from the sale of goods or services over a specific period (Kasmir, 2019). It serves as a key indicator for assessing sales performance, guiding business strategy, and supporting managerial decision-making. Firms with stagnant or declining sales risk losing market share and weakening their competitive position. For investors, sales growth reflects market demand, business prospects, and future growth potential.

Fahmi (2012) notes that sales growth indicates a firm's capacity to maintain its position within the industry through effective management and marketing strategies. Positive sales growth enhances investor confidence and facilitates access to financial resources for business expansion. Similarly, Brigham and Houston (2019) state that sales growth reflects the firm's capability to increase its sales volume over time, influencing profitability and firm value. In this research, sales growth is measured by dividing the difference between current-year sales and previous-year sales by previous-year sales.

Research Framework

Based on the relationships among the variables, the research framework was developed and is presented in Figure 2.1.

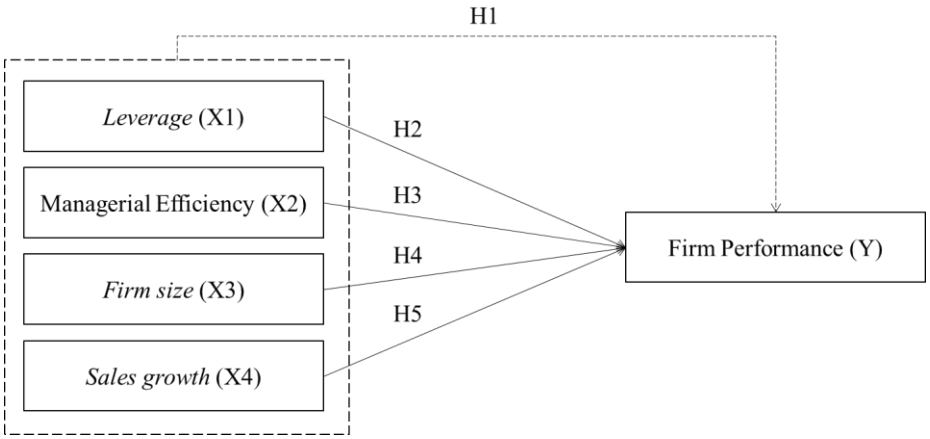

Figure 1. Research Framework

Based on the research framework, the hypotheses are formulated as follows:

H_1: Leverage, managerial efficiency, firm size, and sales growth jointly influence the performance of companies listed on the Indonesia Stock Exchange during 2020–2024.

H_2: Leverage has a negative and significant effect on the performance of companies listed on the Indonesia Stock Exchange during 2020–2024.

H_3: Managerial efficiency has a positive and significant effect on the performance of companies listed on the Indonesia Stock Exchange during 2020–2024.

H_4: Firm size has a positive and significant effect on the performance of companies listed on the Indonesia Stock Exchange during 2020–2024.

H_5: Sales growth has a positive and significant effect on the performance of companies listed on the Indonesia Stock Exchange during 2020–2024.

METHODOLOGY

This study aims to examine the influence of leverage, managerial efficiency, firm size, and sales growth on the performance of manufacturing companies listed on the Indonesia Stock Exchange (IDX) between 2020 and 2024. The research adopts an empirical quantitative approach, focusing on hypothesis testing to understand the relationships between independent variables and firm performance (Sekaran, 2021). The study uses panel data regression because the dataset combines both time series and cross-sectional

dimensions, which cannot be appropriately analysed using simple multiple linear regression. Panel data regression is conducted using EViews, which provides estimation models such as the Common Effect Model (CEM), Fixed Effect Model (FEM), and Random Effect Model (REM), as well as model selection tests including the Chow Test, Hausman Test, and Lagrange Multiplier Test. EViews also allows the application of robust standard errors to address potential violations of classical assumptions, thereby ensuring accurate and reliable estimates (Gujarati & Porter, 2015).

The study employs secondary data obtained from the financial statements (annual reports) of manufacturing companies listed on the IDX. These data provide information on leverage, managerial efficiency, firm size, and sales growth, which are the independent variables, while firm performance measured by return on assets serves as the dependent variable (Brigham & Houston, 2019; Ahmad et al., 2022; Kasmir, 2019). The research population consists of all manufacturing companies listed on the IDX during 2020–2024, totalling 228 firms (Kayo, 2024). The sample is selected using purposive sampling based on the following criteria: the companies must be manufacturing firms listed on the IDX during 2020–2024, and they must remain active throughout the study period (Sekaran, 2021). Following these criteria, 161 companies were included in the sample, resulting in 805 observations over five years.

The operationalisation of variables is based on established proxies. Firm performance (Y) is measured by ROA, representing the company's ability to utilise resources efficiently to generate profit (Brigham & Houston, 2019). Leverage (X1) is measured using the debt-to-equity ratio (DER), managerial efficiency (X2) is proxied by the ratio of operational costs to revenue (EM), firm size (X3) is represented by the natural logarithm of total assets (FS), and sales growth (X4) is calculated as the percentage change in sales compared to the previous year (Kasmir, 2019; David, 2016).

Prior to regression analysis, descriptive statistics are conducted to provide an overview of the variables, including minimum, maximum, mean, and standard deviation values. These statistics help identify patterns, detect outliers, and understand basic distributional characteristics. Panel data regression is then applied to account for the combination of time series and cross-sectional data. The CEM assumes uniform behaviour across entities and time, the FEM incorporates entity-specific intercepts to capture individual heterogeneity, and the REM applies a generalised least squares approach to estimate error components efficiently. Model selection is performed using Lagrange Multiplier, Chow, and Hausman tests to identify the most appropriate estimation method (Gujarati & Porter, 2015).

Classical assumption tests are conducted to ensure the validity of regression results. While some assumptions, such as normality, multicollinearity, heteroskedasticity, and autocorrelation, are critical for OLS estimation (used in CEM and FEM), REM uses GLS, which mitigates certain violations (Kuncoro, 2013). Normality is assessed using the Jarque-Bera test to verify whether residuals are normally distributed. Multicollinearity is examined

using correlation matrices, with values below 0.8 indicating no severe multicollinearity (Gujarati & Porter, 2015). Heteroskedasticity is evaluated using the Glejser test and residual plots, while autocorrelation is considered less critical in panel data GLS estimation (Napitupulu et al., 2021).

The regression model for this study is expressed as:

$$Y = C(1) + C(2) * Lev + C(3) * EM + C(4) * FZ + C(5) * SG \quad \ldots\ldots\ldots\ldots\ldots (1)$$

where Y represents firm performance, C (1) is the intercept, and C (2–5) are the coefficients for leverage, managerial efficiency, firm size, and sales growth, respectively. The coefficient of determination (R^2) is used to assess the proportion of variation in firm performance explained by the independent variables, while F-tests and t-tests evaluate the joint and individual significance of the predictors (Sekaran, 2021).

RESEARCH RESULT

Descriptive Analysis

According to Sekaran (2021), descriptive analysis is a method of processing data aimed at presenting and summarising information in a manner that is easy to comprehend, without testing the relationships between variables. This type of analysis is solely intended to portray data as it is, reflecting findings obtained. Results of the descriptive analysis are presented in table 1.

Table 1. Descriptive Analysis

	Perform	**Leverage**	**EM**	**FZ**	**SG**
Mean	0.023	0.791	0.606	12.81	0.065
Median	0.031	0.702	0.119	13.85	0.029
Maximum	0.599	92.50	267.7	19.12	14.63
Minimum	-1.740	-235.2	-0.283	3.825	-0.975
Std. Dev.	0.136	9.381	9.772	3.586	0.657
Observations	805	805	805	805	805

Source: Data processed using E-Views (2025)

Based on Table 4.1, the descriptive analysis can be summarised as follows:

1. Company Performance

The minimum value of company performance was observed at -1.740 for PBRX in 2024. This negative performance aligns with the company's situation during the same period, as PBRX was undergoing a Suspension of Debt Payment Obligation (PKPU) due to declining sales (Mulyana, 2025). This situation disrupted operational activities, reduced demand, and weakened revenue, thereby affecting the company's ability to generate profit. Conversely, the maximum value of company performance was recorded at 0.559 for AISA in 2020. This value indicates effective asset management and profitability during that period, corroborated by FKS Food Sejahtera's financial report, which showed net profit increased to IDR 1.20 trillion, a 6% rise compared to the previous year.

This improvement was supported by reduced operating expenses, increased operational efficiency, and a significant decline in other expenses

by 76.73%, enhancing the company's cost structure and overall profitability (Andi, 2021). The mean value of 0.023, being lower than standard deviation of 0.137, indicates high heterogeneity in company performance across sample, reflecting significant fluctuations between periods and between companies.

2. Leverage

The minimum leverage value was -235.2, observed in INAF in 2022. Such a low leverage indicates an unhealthy capital structure, where the company's liabilities significantly exceeded its equity, creating uncertainty in sustaining operations (Vauzi, 2023). On the other hand, the maximum leverage value was 92.50 for PT Estika Tata Tiara Tbk (BEEF) in 2020, indicating high reliance on debt financing. The mean leverage of 0.791, substantially lower than the standard deviation of 9.381, reflects a wide distribution of leverage across the sample, highlighting heterogeneity in capital structure and financing policies among companies.

3. Managerial Efficiency

Managerial efficiency reached a minimum of -0.283 for ARGO in 2021, reflecting suboptimal allocation of operational costs and inefficient output generation. This corresponds with the company's struggle during pandemic, focusing on cost efficiency and operational optimisation (Suryanto, 2021). Conversely, TIRT recorded a maximum managerial efficiency of 267.7 in 2023, demonstrating effective financial output relative to managerial expenses. Mean value of 0.606, significantly lower than standard deviation of 9.773, indicates extreme variability in managerial efficiency, suggesting that companies adopt highly divergent operational management practices.

4. Firm Size

The smallest firm size was observed in SULI in 2024, at 3.825, reflecting a relatively small company with limited assets, production capacity, and expansion potential. This aligns with the company's financial strategy, including private placement and debt-to-equity conversion to address capital and liquidity pressures (Suryahadi, 2024). The largest firm size was recorded by INDF in 2024 at 19.12, indicating a company with substantial assets, operational capacity, and financial foundation, consistent with Indofood's position as a major consumer goods player (Hannany & Rosdiana, 2025; Tonce, 2025). The mean firm size of 1.282, lower than the standard deviation of 3.586, shows considerable heterogeneity in company size across sample.

5. Sales Growth

The minimum sales growth of -0.975 was observed for TIRT in 2023, indicating a sharp decline in sales, consistent with the company ceasing production and recording a net loss of IDR 20.05 billion, alongside a capital deficiency of IDR 621.94 billion (Tiara, 2025). In contrast, BEEF reported a maximum sales growth of 14.63 in 2023, reflecting significant revenue growth due to operational recovery and distribution expansion, supported by investor funding from Asia Agri International Ltd (Muchtar, 2023; Sahamdaily, 2024). The mean sales growth of 0.066, lower than the standard

deviation of 0.657, highlights considerable variation in sales performance, demonstrating that growth rates vary considerably between companies.

Panel Data Regression Analysis

Following the descriptive analysis, the subsequent step in this study is to examine the relationships between variables using panel data regression. Three estimation techniques are employed in panel data regression, namely the Common Effect Model, Fixed Effect Model, and Random Effect Model.

1. Techniques for Panel Data Regression Analysis

a. Common Effect Model (CEM)

The Common Effect Model represents the simplest approach in panel data estimation, as it combines time series and cross-sectional data. The estimation results are presented in Table 2.

Table 2. Common Effect Model (CEM)

Dependent Variable: PERFORM				
Method: Panel Least Squares				
Sample: 2020 - 2024				
Total panel (balanced) observations: 805				
Variable	**Coefficient**	**Std. Error**	**t-Statistic**	**Prob.**
C	-0.066238	0.017344	-3.819.155	0.0001
LEVERAGE	0.000812	0.000498	1.629.277	0.1036
EM	-0.000869	0.000478	-1.817.419	0.0695
FZ	0.006828	0.001303	5.239.359	0.0000
SG	0.030305	0.007120	4.256.381	0.0000

Source: Data processed using E-Views (2025)

b. Fixed Effect Model (FEM)

The Fixed Effect Model (FEM) is employed to estimate panel data in cases where the error term or disturbance variables may be correlated across time and between individual entities. The estimation results for the Fixed Effect Model are presented in Table 3.

Table 3. Fixed Effect Model (FEM)

Dependent Variable: PERFORM				
Method: Panel Least Squares (Cross-section fixed)				
Sample: 2020 - 2024				
Total panel (balanced) observations: 805				
Variable	**Coefficient**	**Std. Error**	**t-Statistic**	**Prob.**
C	-1.077.114	0.225580	-4.774.86	0.0000
LEVERAGE	-0.000261	0.000414	-0.63078	0.5284
EM	0.001877	0.000426	4.409.91	0.0000
FZ	0.085603	0.017600	4.863.79	0.0000
SG	0.035031	0.006165	5.682.12	0.0000

Source: Data processed using E-Views (2025)

c. Random Effect Model (REM)

The Random Effect Model (REM) is a panel data estimation method that assumes individual differences between companies are random and uncorrelated with the independent variables. The estimation results for the Random Effect Model are presented in Table 4.

Table 4. Random Effect Model (REM)

Dependent Variable: PERFORM				
Method: Panel EGLS (Cross-section random effects)				
Sample: 2020 - 2024				
Total panel (balanced) observations: 805				
Variable	**Coefficient**	**Std. Error**	**t-Statistic**	**Prob.**
C	-0.075598	0.025521	########	0.0031
LEVERAGE	4.20E-05	0.000400	0.104880	0.9165
EM	0.000912	0.000403	2.263.875	0.0238
FZ	0.007487	0.001917	3.905.247	0.0001
SG	0.037026	0.005838	6.342.724	0.0000

Source: Data processed using E-Views (2025)

2. Best Model in Panel Data Regression Analysis

In panel data regression analysis, selecting the most appropriate model is essential to determine the optimal approach among CEM, FEM, and REM. The selection of the best model is carried out using several statistical tests, namely: the Chow test to compare CEM and FEM, the Lagrange Multiplier (LM) test to evaluate the suitability of REM compared to CEM, and the Hausman test to compare FEM with REM.

Table 5. Best Model in Panel Data Regression Analysis

Test	Statistic	Prob	Interpretation
Chow Test	F = 5.195.384 Chi-square = 670.087.875	0.0000	FEM is more appropriate than CEM
Hausman Test	Chi-Sq = 77.157.266 Chi-Sq. d.f. = 4	0.0000	FEM is more appropriate than REM
LM Test	Breusch-Pagan = 2.557.397	0.0000	REM is more appropriate than CEM

Source: Data processed using E-Views (2025)

Based on the statistical tests conducted, the Fixed Effect Model (FEM) is considered the most appropriate for this study, as it effectively accounts for firm-specific heterogeneity and provides the most reliable estimates for the panel data.

3. Classical assumption

Classical assumption tests are statistical requirements in regression analysis to ensure accurate estimations. As the Fixed Effect Model (FEM) was selected, this study only conducted multicollinearity (Table 8) and heteroskedasticity tests (Table 9).

Tabel 6. multicollinearity test

	EM	LEVERAGE	FZ	SG
EM	1	-0.0109	-0.0061	-0.0267
LEVERAGE	-0.0109	1	-0.0072	0.0463
FZ	-0.0061	-0.0072	1	0.0417
SG	-0.0267	0.0463	0.0417	1

Source: Data processed using E-Views (2025)

Based on the correlation analysis among the independent variables, all correlation coefficients ranged from -0.0267 to 0.0463, well below the critical threshold of 0.8. This indicates that there is no evidence of multicollinearity among managerial efficiency, leverage, firm size (FZ), and sales growth (SG), and therefore, all variables are appropriate for inclusion in the panel data regression analysis. In addition, the heteroskedasticity assumption was assessed using a residual scatter plot (Figure 9).

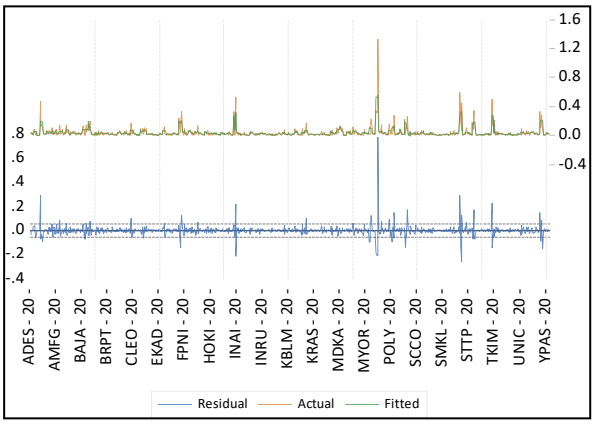

Figure 2. Residual scatter plot

Based on Figure 2, the residual plot shows that all values remain within the bounds of +500 and -500, indicating that the residual variance is constant. This confirming that the model passes the heteroskedasticity test.

4. Panel Data Regression Model

Based on the model selection process in the panel data regression analysis, the most appropriate model for this study is the Fixed Effect Model (FEM). The detailed estimation results are presented in table 7.

Table 7. Fixed Effect Model (FEM)

Dependent Variable: PERFORM				
Method: Panel Least Squares (Cross-section fixed)				
Sample: 2020 - 2024				
Total panel (balanced) observations: 805				
Variable	**Coefficient**	**Std. Error**	**t-Statistic**	**Prob.**
C	-1.077.114	0.225580	-4.774.86	0.0000
LEVERAGE	-0.000261	0.000414	-0.63078	0.5284
EM	0.001877	0.000426	4.409.91	0.0000
FZ	0.085603	0.017600	4.863.79	0.0000
SG	0.035031	0.006165	5.682.12	0.0000
R-squared	0.592818	Mean dependent var		0.02338

Adj R-squared	0.488478	S.D. dependent var	0.13650
S.E. regression	0.097628	Akaike info criterion	-1.634.74
F-statistic	5.681.582	Durbin-Watson stat	1.758.216
Prob(F-statistic)	0.000000		

Source: Data processed using E-Views (2025)

Based on the Fixed Effect Model estimation presented in Table 7, the model captures the relationship between the independent variables and the dependent variable while accounting for the firm-specific characteristics that remain constant over the study period. The regression model used in this study can be expressed as follows:

Perform=−1.077−0.0002×LEV+0.002×EM+0.085×FZ+0.035×SG …… (2)

Based on the Fixed Effect Model estimation, the constant value of –1.077 represents the baseline level of company performance when all independent variables (LEV, EM, FZ, and SG) are zero, indicating suboptimal performance in the absence of these internal factors. The coefficient for leverage (LEV) of –0.0002 suggests that higher leverage slightly reduces performance, while managerial efficiency (EM) has a positive effect of 0.002, firm size (FZ) contributes positively with 0.085, and sales growth (SG) also improves performance with a coefficient of 0.035, all holding other variables constant. The model's Adjusted R-squared of 0.4885 indicates that approximately 48.85% of the variation in company performance can be explained by these variables, with the remaining 51.15% influenced by other factors. Moreover, the F-test results show a probability value of 0.000000, far below the 0.05 significance level, confirming that the regression model is statistically significant overall and that LEV, EM, FZ, and SG jointly exert a significant effect on company performance.

DISCUSSION

Based on result, the simultaneous testing results indicate that leverage, managerial efficiency, firm size, and sales growth jointly have a significant effect on firm performance. Therefore, H_1 is accepted, suggesting that corporate performance is determined by the combined interaction of financial structure, managerial capability, organisational scale, and growth dynamics rather than by isolated financial indicators.

leverage was found to have no significant effect on firm performance, leading to the rejection of the associated hypothesis. Accordingly, H_2 is rejected. This indicates that the level of leverage in the sampled companies does not meaningfully influence performance changes. Theoretically, the non-significant impact of leverage may occur when additional debt fails to contribute to increased profitability or operational efficiency. In certain cases, high levels of debt do not necessarily generate additional revenue, particularly if the financed assets are unproductive or underutilised. Industry heterogeneity, differences in asset structure, and variations in financing strategies further contribute to the inconsistent effects of leverage on performance. Descriptive data illustrate this pattern: PT Estika Tata Tiara Tbk (BEEF) maintained stable performance despite very high leverage in 2020, while PT Alkindo Naratama Tbk (ALDO) exhibited fluctuating ROA amid a significant increase in leverage between 2020 and 2024.

These observations indicate that high leverage does not automatically affect performance when firms can manage their obligations effectively or when operational factors unrelated to financing structures influence results. This finding is consistent with Olaoye & Adesina (2022) and Alfiani & Hasanuh (2024), but contrasts with research reporting both positive and negative significant effects of leverage on performance (Dsouza et al., 2025; Endri et al., 2021; Masditok et al., 2024; Ahmed et al., 2024; Cheong & Hoang, 2021; Hussain et al., 2024; Lee, 2023; Paramita & Alinsari, 2022; Sdiq & Abdullah, 2022).

In contrast, managerial efficiency demonstrated a positive and significant effect on firm performance, thereby supporting the corresponding hypothesis. Therefore, H_3 is accepted. This implies that firms that manage operating and administrative costs more efficiently tend to achieve higher performance. Theoretically, efficient management optimises resource utilisation, generating greater financial output relative to expenses and directly enhancing profitability. Data from ARGO illustrate this relationship: in 2021, minimal managerial efficiency coincided with low ROA, reflecting the firm's struggle to control operational costs amid pandemic-related challenges, whereas improvements in efficiency from 2021 to 2024 corresponded with performance recovery. This aligns with the findings of Sdiq & Abdullah (2022), Erisa & Sundari (2025), Hadi et al. (2023), and Lee (2023), although some studies report that excessive focus on efficiency may reduce net profit if associated costs rise or may have an insignificant impact when efficiency is balanced with pricing strategies and productivity enhancements (Abdulkareem et al., 2021; Jannah et al., 2021; Fitriani, 2022; Paramita & Alinsari, 2022).

Firm size was also found to exert a positive and significant influence on performance, suggesting that larger firms are better positioned to enhance their operational outcomes. Accordingly, H_4 is accepted. Theoretically, larger firms benefit from greater resource availability, easier access to capital, more diversified risk management, and wider operational capacity, which facilitate efficiency, economies of scale, and asset optimisation (Cheong & Hoang, 2021; Lee, 2023; Bolarinwa et al., 2021). Descriptive data highlight differences between large and small firms: MLBI, a relatively small firm, experienced limited performance improvements due to constrained asset capacity, whereas IMPC, a larger firm, showed increasing ROA aligned with its growing firm size, demonstrating the effective utilisation of assets to enhance profitability. These findings reinforce the FEM statistical results and correspond with prior research (Cheong & Hoang, 2021; Lee, 2023; Bolarinwa et al., 2021), while contrasting with studies indicating that larger firm size may negatively impact performance due to complex bureaucracy or higher operational costs (Ahmed et al., 2024; Dsouza et al., 2025).

Finally, sales growth exhibited a positive and significant effect on firm performance, confirming the related hypothesis. As a result, H_5 is accepted. Higher sales growth improves revenue and asset utilisation, thereby increasing profitability (Bolarinwa et al., 2021; David, 2016). For example, BEEF recorded 14.63% sales growth in 2023, which coincided with higher ROA, while TIRT experienced negative sales growth, resulting in declining performance and

liquidity constraints (Muchtar, 2023; Sahamdaily, 2024; Tiara, 2025). These patterns confirm that firms with strong sales growth can leverage assets and operational efficiency to improve outcomes, whereas those with low sales growth face operational limitations. This finding is consistent with Bolarinwa et al. (2021) and David (2016), but differs from research suggesting that rapid sales growth may lead to cost pressures, overstocking, or liquidity problems, or that growth may not impact performance when not accompanied by efficient asset utilisation or net profit improvements (Ahmed et al., 2024; Dsouza et al., 2025; Estiasih et al., 2024).

CONCLUSIONS AND RECOMMENDATIONS

Based on the data analysis, it can be concluded that leverage does not have a significant effect on the performance of companies listed on the Indonesia Stock Exchange during the period 2020 to 2024. In contrast, managerial efficiency, firm size, and sales growth were found to have a positive and significant impact on corporate performance within the same period. This indicates that efficient management of operational costs, a larger firm size, and consistent sales growth are key factors in enhancing profitability and overall corporate performance.

In light of these findings, several recommendations can be made from both theoretical and practical perspectives. From a theoretical standpoint, future research is advised to include additional variables that may influence corporate performance, such as corporate governance, innovation, macroeconomic conditions, or marketing strategies, to provide a more comprehensive analysis. Furthermore, employing a wider range of performance indicators, such as return on equity, profit margin, or Tobin's Q, could offer a more complete understanding of corporate performance.

From a practical perspective, companies are encouraged to focus on improving managerial efficiency and operational cost management, as well as fostering sales growth through market expansion, product innovation, and distribution optimisation to enhance profitability. Smaller firms should optimise the management of their assets and capacity to effectively leverage economies of scale, while highly leveraged companies need to exercise caution to avoid financial or liquidity risks that could compromise performance stability. Therefore, a combination of managerial strategy, asset management, and sales growth is crucial for the sustainable improvement of corporate performance.

ADVANCED RESEARCH

This study has several limitations that suggest directions for future research. It focused solely on companies listed on the Indonesia Stock Exchange between 2020 and 2024 and examined only four variables—leverage, managerial efficiency, firm size, and sales growth using return on assets as the sole performance indicator. Other factors, such as corporate governance, innovation, macroeconomic conditions, or qualitative aspects like managerial decisions and organisational culture, were not considered. Future research could expand the sample to different markets, include additional performance

measures, adopt mixed-method approaches, and extend the study period to provide a more comprehensive understanding of corporate performance determinants.

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