

Determinants of Financial Performance in Coal Energy Companies: The Role of Audit Quality, Profitability, and Sales Growth

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Article Information		Abstract
Submission date	4 February 2026	Research aim : This study aims to examine and analyze the determinants of financial performance in coal energy companies listed on the Indonesia Stock Exchange (IDX). Specifically, it investigates the empirical effects of audit quality, profitability, and sales growth on financial performance, proxied by Gross Profit Margin (GPM). Design/Method/Approach : A quantitative research design using an associative and descriptive approach was implemented in this study. The population comprises energy sector companies listed on the IDX, with a purposive sampling technique applied to select the final sample of coal mining firms for the observation period. Secondary data were gathered from verified financial reports and annual reports. Data analysis was conducted using Multiple Linear Regression analysis, supplemented by classical assumption tests (normality, multicollinearity, heteroscedasticity, and autocorrelation tests) and statistical hypothesis testing (t-test, F-test, and coefficient of determination R^2) to ensure model robustness. Research Finding : Audit quality (proxied by Big Four vs. Non-Big Four auditors) exhibits a positive and significant effect on financial performance, indicating that superior external oversight enhances financial presentation credibility and operational discipline. Profitability shows a positive and statistically significant relationship with financial performance, demonstrating that a firm's internal capacity to generate returns directly strengthens its overall gross profit margins. Sales growth exerts a significant positive impact on financial performance, confirming that market expansion and increasing demand volumes efficiently translate into enhanced financial outcomes for coal energy firms. Simultaneously, audit quality, profitability, and sales growth significantly influence the financial performance of coal energy companies, explaining a substantial portion of the variance in Gross Profit Margin. Theoretical contribution/Originality : This study enriches the literature on agency theory and signaling theory within the extractive industry context by demonstrating how rigorous external auditing and robust operational metrics jointly signal corporate health and mitigate information asymmetry. The novelty of this research lies in its specific
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integration of both governance factors (audit quality) and core marketing-financial metrics (sales growth and profitability) as synchronous determinants of financial performance within the highly volatile and strictly regulated coal energy sector of an emerging market.

Practitioner/Policy implication : *For corporate managers in coal mining enterprises, the findings highlight the critical importance of maintaining robust sales trajectories and upgrading audit partnerships to high-tier firms to boost investor confidence and financial performance. This study provides empirical insights for capital market regulators (such as the OJK and IDX) to continually encourage stringent external audit compliance and transparent financial disclosures among high-externality energy sector firms.*

Research limitation : *This study primarily evaluates financial performance through Gross Profit Margin (GPM) using a limited set of independent variables (audit quality, profitability, and sales growth), potentially omitting other critical determinants such as commodity price volatility, leverage, or ESG risk factors. The empirical focus is strictly confined to publicly traded coal energy companies in Indonesia, which may constrain the direct generalizability of the findings to unlisted mining entities or alternative energy industries operating under different regulatory frameworks.*

Keywords : *Audit quality; profitability; sales growth; financial performance; coal energy companies..*

1. Introduction

The coal-based energy industry remains a strategic sector underpinning national economies, particularly in developing countries that rely on natural resources as primary drivers of economic growth. Within this sector, corporate financial performance serves as a crucial indicator for assessing resource management effectiveness, operational efficiency, and business sustainability. Grounded in agency and signaling theories, financial performance does not merely reflect internal conditions; it functions as a critical signal for investors to evaluate future corporate prospects. Consequently, internal factors such as audit quality, profitability, and sales growth emerge as pivotal determinants in explaining variations in financial performance [1][3][11].

Recent empirical research indicates that the relationship between audit quality and financial performance remains inconsistent [2]. Several studies suggest that high audit quality enhances transparency and financial reporting integrity, thereby positively impacting corporate performance [14]. Conversely, other findings argue that profitability—as an indicator of efficient earnings generation—and sales growth—reflecting business expansion—have demonstrated mixed results in influencing financial performance, particularly under volatile industrial conditions [11].

The urgency of this research is further heightened by the significant global pressures facing the coal industry [4], including commodity price volatility, energy transition policies, and increasing demands for robust corporate governance[6]. Such conditions necessitate that companies maintain stable and high-quality financial performance to remain competitive and attractive to investors. Furthermore, audit quality and profitability are inherently linked

to financial reporting quality and strategic decision-making [5]. Thus, identifying the determinants of financial performance is vital for supporting business sustainability in this sector.

This study aims to analyze the impact of audit quality, profitability, and sales growth on the financial performance of coal energy companies[7]. A quantitative approach is employed to empirically test the relationships between variables and identify the dominant factors driving financial performance. This research contributes to the literature by providing contemporary empirical evidence within the coal energy sector, which remains relatively under-researched [8]. Additionally, the findings offer practical implications for management in optimizing internal factors to enhance performance and serve as a reference for future studies to develop more comprehensive and contextual analytical models

1.1. Statement of Problem

The coal energy sector plays a strategic role in supporting national economic stability and fulfilling industrial energy demands, particularly in emerging economies like Indonesia. However, this sector operates under high regulatory scrutiny, strict environmental mandates, and immense pressure from global energy transition initiatives [9]. In this volatile and highly sensitive business environment, maintaining a robust financial performance is critical for coal mining companies to sustain their operations, attract investment capital, and fund strategic long-term pivots [10]. Consequently, understanding the core driving mechanisms behind the financial performance of these high-externality firms remains an essential area of study.

A major challenge in corporate finance lies in mitigating information asymmetry and agency conflicts between management (agents) and shareholders (principals). According to Agency Theory, managers may have incentives to manipulate earnings or present biased financial representations to protect their positions or compensation. To counter this, external governance mechanisms—most notably high audit quality—are utilized to enhance the credibility of financial statements [12]. While superior audit quality is theoretically expected to reduce opportunistic behaviors and optimize operational discipline, its explicit empirical impact on the core profitability margins of coal companies listed on the Indonesia Stock Exchange (IDX) requires deeper, sector-specific validation [13].

Furthermore, a firm's financial success cannot be viewed through external governance lenses alone; it is heavily dictated by its intrinsic capacity to utilize assets and capture market demand. Under Signaling Theory, strong operational performance indicators signal high corporate health and market competitiveness to external stakeholders. Two fundamental drivers of this internal capability are profitability (which measures asset utilization efficiency) [16] and sales growth (which reflects market demand expansion). While conventional financial logic dictates that higher sales velocity and strong historical returns should automatically translate into enhanced gross profit margins, real-world dynamics within the highly capital-intensive coal sector—characterized by fluctuating commodity prices and high fixed overhead costs—can disrupt this relationship.

While numerous empirical studies have separately evaluated corporate governance or operational growth metrics, there remains a distinct research gap regarding how internal operational metrics (profitability and sales growth) and external governance factors (audit quality) simultaneously and interactively determine the financial performance—specifically measured through the Gross Profit Margin (GPM)—of Indonesian coal energy companies [17]. Existing literature often relies on broad, multi-sector samples that fail to account for

the unique operational complexities, capital structures, and structural vulnerabilities inherent to the coal mining sector. Therefore, a focused, rigorous empirical examination using modern financial parameters is urgently needed to provide clarity for investors, corporate executives, and regulatory bodies alike.

1.2. Research Objectives

Based on the background and problems identified above, the specific objectives of this research are:

1. **To examine and evaluate** the empirical effect of audit quality (proxied by Big Four versus Non-Big Four auditors) on the financial performance (Gross Profit Margin) of coal energy companies listed on the Indonesia Stock Exchange.
2. **To analyze and determine** the empirical impact of a firm's internal profitability on its financial performance (Gross Profit Margin) within the Indonesian coal mining sector.
3. **To investigate and verify** whether sales growth significantly drives or influences the financial performance (Gross Profit Margin) of publicly traded coal energy companies.
4. **To assess and analyze the simultaneous effect** of audit quality, profitability, and sales growth in explaining and predicting the total variance in financial performance across the observed coal energy companies.

2. Method

Research Design

A causal-associative, quantitative methodology is utilized in this paper to assess the impacts of sales growth, profitability, and audit quality on financial outcomes. Secondary data, consisting of annual financial reports, were gathered through the documentation method from the official website of the Indonesia Stock Exchange (IDX) for the 2022–2024 period.

Population and Sample

The study's target population comprises IDX-listed coal energy enterprises. To select the sample, a purposive sampling approach was implemented, requiring firms to maintain continuous listing on the IDX from 2022 to 2024, publish comprehensive audited financial reports annually, and provide all necessary variable data. Consequently, 16 companies met these benchmarks, establishing a final dataset of 48 observations ($n=48$).

Operationalization of Variables

The dependent variable in this study is financial performance, proxied by the Gross Profit Margin (GPM). The independent variables are defined as follows:

1. **Audit Quality:** Audit quality is captured via a dichotomous variable, scored 1 for entities engaged with Big Four auditors and 0 for those audited by non-Big Four practices.
2. **Profitability:** Proxied by the Return on Assets (ROA).
3. **Sales Growth:** Measured by the ratio of the change in sales in the current period relative to the previous period.

To ensure data stability and minimize scale bias, the GPM data were transformed into natural logarithms (Ln).

Data Analysis Techniques

Data evaluation was conducted via multiple linear regression, preceded by rigorous classical assumption diagnostics including normality, multicollinearity, heteroscedasticity, and autocorrelation tests to ensure estimation robustness [9]. Satisfying these econometric criteria permitted the subsequent execution of hypothesis testing through t-statistics, F-statistics, and the coefficient of determination.

Tabel 1. The operational definitions of the variables are detailed as follows:

No.	Research Variable	Definition	Measure
1.	Financial Performance (GPM)	An evaluation of corporate liabilities, equity, expenses, assets, profitability, and revenue	$GPM = \frac{Revenue - Cost\ of\ Good\ Sold}{Revenue} \times 100$
2.	Audit Quality	The collection of empirical evidence and financial information	Big 4 = 1 Non Big 4 = 0
3.	Profitability : Return on Rasio (ROA)	The ratio of pre-tax income to average total assets.	$ROA = \frac{Net\ Income}{Total\ Asset} \times 100$
4.	Sales Growth	The company's ability to maintain business continuity, foster growth, and sustain a competitive advantage	$Sales\ Growth = \frac{Sales_t - Sales_{t-1}}{Sales_{t-1}} \times 100\%$

3. Results and Discussion

Descriptive Statistical Analysis

Based on the sample selection procedure, this study initially observed 16 coal energy companies, resulting in 64 preliminary observations. Following the elimination of **outliers** to maintain **normality** and ensure the quality of the model estimation, the final sample analyzed consists of 42 observations. The descriptive statistical summary for all variables is presented in the table below:

Table 2 Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Audit Quality	42	,00	1,00	,8095	,39744
ROA	42	,01	1,45	,4173	,36288
Sales Growth	42	-1,00	2,92	,2407	,74189
Financial Performance	42	9,84	35,71	19,3507	7,34666
Valid N (listwise)	42				

Source: Processed secondary data using SPSS v.26 (2026)

The **Audit Quality (FINE)** variable exhibits a mean value of 0.8095, indicating that the majority of the sampled companies (approximately 81%) utilize the services of Big Four public accounting firms. The standard deviation, which remains lower than the mean, reflects data homogeneity, suggesting a uniform level of confidence among coal sector issuers in high-reputation auditors.

Regarding **Profitability (ROA)**, the mean of 0.4173—with a wide range spanning from 0.01 to 1.45—reflects a disparity in asset utilization efficiency across firms. In contrast, **Sales Growth (SG)** demonstrates substantial volatility, as evidenced by a standard deviation (0.7418) that far exceeds its mean (0.2407). This phenomenon indicates revenue instability within the coal sector, which remains highly susceptible to global commodity price fluctuations and market demand dynamics.

Finally, the **Financial Performance (GPM)** variable shows a mean value of 19.35 with a standard deviation of 7.34. Despite the gap between the minimum (9.84) and maximum (35.71) values, the distribution of GPM data is considered moderate and representative in illustrating the sampled firms' ability to generate gross profit from their operational activities. Collectively, these data characteristics suggest that external industrial factors significantly influence the firms' financial structures, necessitating a more profound regression analysis in the hypothesis testing phase.

Normality Test

The normality of the financial performance data was assessed using the **Kolmogorov-Smirnov test**. Based on the statistical output from SPSS 26.0, the test was conducted to ensure that the residuals of the regression model follow a normal distribution, which is a fundamental requirement for unbiased parameter estimation.

Table 3 Kolmogorov Smirnov Normality Test

One-Sample Kolmogorov-Smirnov Test		
		Unstandardized Residual
N		42
Normal Parameters ^{a,b}	Mean	.0065000
	Std. Deviation	80420756.30171569
Most Extreme Differences	Absolute	.214
	Positive	.214
	Negative	-.155
Test Statistic		.214
Asymp. Sig. (2-tailed)		.060 ^c
a. Test distribution is Normal.		
b. Calculated from data.		
c. Lilliefors Significance Correction.		

Source: Processed secondary data using SPSS v.26 (2026)

Based on the **Kolmogorov-Smirnov** normality test results, a significance value of **0.060** was obtained. Since this value exceeds the significance threshold ($\alpha=0,05$), it is concluded that the data are normally distributed. Consequently, the normality assumption in this regression model is satisfied, confirming that the model is valid for further hypothesis testing.

Multicollinearity Test

The results of the multicollinearity test are presented in the following table:

Table 4 Multicollinearity Test

Coefficients ^a						
Model	Unstandardized Coefficients		Standardized Coefficients	t	Collinearity Statistics	
	B	Std. Error	Beta		Tolerance	VIF
1 (Constant)	14,768	2,548		5,795		
ROA	5,855	2,789	,289	2,099	,994	1,006
SG	1,316	1,364	,133	,965	,994	1,006
FINE	8,287	2,542	,448	3,260	,997	1,003

Source: Processed secondary data using SPSS v.26 (2026)

The multicollinearity test results demonstrate that the regression model is free from correlation issues among the independent variables. This is confirmed by the Tolerance values for all variables, which remain above 0.10, and the Variance Inflation Factor (VIF) values, which are consistently below the threshold of 10. Since these criteria are satisfied, it is concluded that no strong linear relationship exists between the independent variables. Consequently, the model provides stable and reliable parameter estimations, remaining unaffected by multicollinearity bias.

Autocorrelation Test

The statistical diagnostics regarding the presence or absence of autocorrelation within the model are detailed in the table below;

Table 5 Autocorrelation Test

Model Summary ^b					
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.532a	0,283	0,227	6,461606	1,891

a. Predictors: (Constant), FINE, ROA, SG

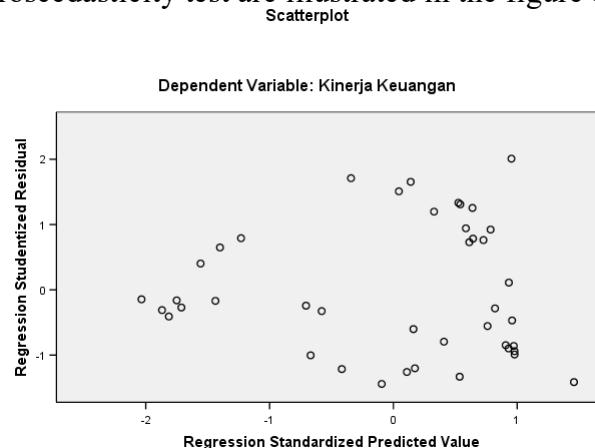
b. Dependent Variable: GPM

Source: Processed secondary data using SPSS v.26 (2026)

The autocorrelation test yielded a Durbin-Watson (DW) value of 1.891. This value was compared against the critical values at a 5% significance level ($\alpha = 0,05$) with a sample size of 42 observations ($n=42$) and three independent variables ($k=3$). ased on the testing criteria, the DW value falls within the acceptable range of -2 to +2, indicating the absence of autocorrelation issues in the regression model. Consequently, it is concluded that the model satisfies the assumption of residual independence, rendering it valid for further analysis.

Heteroscedasticity Test

The results of the heteroscedasticity test are illustrated in the figure below:



Picture 1. Heteroscedasticity Test

Source: Processed secondary data using SPSS v.26 (2026)

The residual plots exhibit a completely random distribution across the scatterplot, showing no distinctive geometric shapes or trends above or below the Y-axis zero threshold. Such a pattern demonstrates homoscedastic residual variance, confirming that the regression model is free from heteroscedasticity constraints. Consequently, the assumption of constant variance is validated, justifying the utilization of this model for further empirical analysis.

Multiple Linear Regression Analysis

Based on the calculations performed using **SPSS 26.0 for Windows**, the regression results are as follows:

Table 6 Multiple Linear Regression Analysis
Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	14,768	2,548		5,795	.000
	ROA	5,855	2,789	,289	2,099	.042
	SG	1,316	1,364	,133	,965	.341
	FINE	8,287	2,542	,448	3,260	.002

a. Dependent Variable: GPM

Source: Processed secondary data using SPSS v.26 (2026)

To quantify the impact of audit quality, profitability, and sales growth on financial performance, the estimated econometric function is specified as follows:

$$Y = 14,768 + 8,287(FINE) + 5,855(ROA) + 1,316(SG) + e$$

Model Interpretation:

1. Constant (α): The positive constant value indicates that if audit quality, profitability, and sales growth are assumed to be zero or held constant, coal energy companies maintain a baseline financial performance (GPM) of 14.768%
2. Audit Quality (x_1): The positive constant value indicates that if audit quality, profitability, and sales growth are assumed to be zero or held constant, coal energy companies maintain a baseline financial performance (GPM) of 14.768%
3. Profitability (x_2): The positive profitability coefficient demonstrates that a firm's effectiveness in managing assets to generate net income is directly proportional to its gross profit margin achievement. Higher asset management efficiency (ROA) strengthens the firm's fundamental financial performance.
4. Sales Growth (x_3): The sales growth variable shows the smallest positive contribution within the model. While expansion in sales volume can improve financial performance, its influence is less pronounced than audit integrity and asset efficiency. This is likely due to high operational costs in the coal sector, which may diminish the realized sales margins..

Overall, The regression model demonstrates that all independent variables maintain a positive relationship with financial performance (GPM). The constant value of 14.768 represents the baseline level of financial performance for coal energy firms when audit quality, profitability, and sales growth are at their base levels.

The uniformly positive coefficients confirm a pro-cyclical relationship between governance factors, operational performance, and the firm's profit margins. This implies that any improvement in audit quality, asset utilization efficiency (ROA), or sales volume expansion provides an incremental contribution toward strengthening financial performance, proportionate to the magnitude of each variable's coefficient within the estimation model.

Coefficient of Determination (R^2) Test

The results of the coefficient of determination test are presented in the following table:

Table 7 Results of Coefficient of Determination Test

Model Summary ^b					
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	
1	.532	.283	.227	6,46106	
a. Predictors: (Constant), FINE, ROA, SG					
b. Dependent Variable: GPM					

Source: Processed secondary data using SPSS v.26 (2026)

The empirical metrics disclosed in Table 6 reveal an Adjusted R² value of 0.283, demonstrating that the combined explanatory power of audit quality (FINE), profitability (ROA), and sales growth (SG) accounts for 28.3% of the statistical variance in the financial performance (GPM) of the coal energy firms. Conversely, the substantial residual variance of 71.7% points to the presence of critical exogenous drivers beyond this study's empirical boundary. In the context of the mining industry, these likely encompass global commodity price volatility, stringent carbon regulation frameworks, and idiosyncratic operational cost efficiencies.

Furthermore, the Standard Error of the Estimate (SEE) is recorded at 6.46106. Given the relatively low SEE value, the regression model is considered to possess adequate predictive accuracy for the dependent variable. The minimal SEE value suggests that the deviation between actual data and the estimated model is low, thereby rendering the model valid for drawing scientific conclusions

Simultaneous Significance Test (F-Test)

The results of the simultaneous significance test demonstrate the following:

Table 8. F-Test Results

ANOVA ^a						
Model						
		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	626,590	3	208,863	5,003	.005 ^b
	Residual	1586,319	38	41,745		
	Total	2212,909	41			

a. Dependent Variable: GPM

b. Predictors: (Constant), FINE, ROA, SG

Source: Processed secondary data using SPSS v.26 (2026)

Based on the testing results presented above, a significance value of **0.005** was obtained. Given that this value is well below the threshold of 0.05 (), the simultaneous hypothesis is accepted. This proves that audit quality (FINE), profitability (ROA), and sales growth (SG) collectively exert a significant influence on the financial performance (GPM) of coal energy sector companies.

This finding confirms that financial performance is not the result of a single variable, but rather a strategic integration of oversight mechanisms and operational effectiveness. From an **Agency Theory** perspective, the synergy between high audit quality and stable profitability functions as an effective control mechanism to mitigate information asymmetry

between agents and principals. High-quality auditors ensure transparency, while high profitability validates that management has utilized resources efficiently.

Furthermore, within the framework of **Signaling Theory**, this simultaneous influence provides a strong positive signal to the market. The combination of financial report credibility (audit), asset efficiency (ROA), and successful market expansion (SG) creates a positive perception of the firm's fundamentals. This indicates that companies focus not only on the bottom line (profit) but also on process integrity and future business sustainability. Therefore, the model is both statistically and theoretically valid in explaining the dynamics of financial performance in the energy industry.

Partial Significance Test (t-Test)

The results of the partial significance test are presented in the following table:

Table 9. t-Test Results

Coefficients ^a					
Model		Unstandardized Coefficients		Standardized Coefficients	Sig.
		B	Std. Error	Beta	
1	(Constant)	14,768	2,548		.000
	ROA	5,855	2,789	,289	.042
	SG	1,316	1,364	,133	.341
	FINE	8,287	2,542	,448	.002

a. Dependent Variable: GPM

Source: Processed secondary data using SPSS v.26 (2026)

Based on the results presented in the table above, the partial influence of each variable is interpreted as follows:

a. The Influence of Audit Quality (FINE) on GPM

The audit quality variable shows a t-statistic of 3.260, which is greater than the t-table (1.669), with a significance value of 0.002 (< 0.05). This result proves that audit quality has a positive and significant influence on financial performance (GPM). This finding confirms Agency Theory, where the involvement of high-reputation auditors (Big Four) acts as an effective monitoring mechanism to reduce information asymmetry. Furthermore, based on Signaling Theory, employing high-quality auditors sends a signal of credibility to the market, which in turn lowers the cost of capital and enhances operational efficiency, as reflected in the gross profit margin.

b. The Influence of Profitability (ROA) on GPM

The profitability variable demonstrates a t-statistic of 2.099 with a significance of 0.042 (< 0.05), indicating that ROA has a positive and significant influence on GPM. This suggests that a company's efficiency in managing assets is directly proportional to its gross profit margin achievement. Theoretically, managerial capability in optimizing internal resources allows the firm to minimize asset acquisition costs and improve operational productivity, which directly strengthens the profit margin structure.

c. The Influence of Sales Growth (SG) on GPM

In contrast to the previous two variables, sales growth shows a t-statistic of 0.965 with a significance of 0.341 (> 0.05). This result indicates that sales growth has no significant influence on GPM. This finding suggests that sales volume expansion in coal companies does not necessarily improve gross profit efficiency. The lack of significance is

likely due to the fact that increased sales are often accompanied by surges in the cost of goods sold (COGS) and volatile operational expenses. Moreover, the nature of the energy sector, which is highly dependent on global commodity prices, means that revenue growth is often driven by external factors rather than reflecting direct internal managerial efficiency

4. Conclusion

Based on the results of the analysis and discussion, this study draws the following primary conclusions:

1. Audit Quality contributes positively and significantly to financial performance. This finding confirms that engaging reputable auditors (Big Four accounting firms) enhances the credibility of financial reporting and stakeholder trust. Ultimately, this mitigates information asymmetry and strengthens the firm's gross profit margin position.
2. Profitability (ROA) exerts a positive and significant influence on financial performance. Managerial efficiency in optimizing asset utilization is proven to be a determinant factor in achieving gross profit. Higher effectiveness in asset management leads to a greater ability for the company to maintain stable financial performance.
3. Sales Growth does not significantly influence financial performance. Sales volume expansion within the coal energy sector does not automatically improve gross profit efficiency. This indicates that without rigorous production cost control and mitigation of global commodity price volatility, increased revenue does not necessarily strengthen financial fundamentals.
4. Simultaneously, audit quality, profitability, and sales growth exert a significant influence on financial performance. Collectively, these variables provide adequate explanatory power for the variance in corporate performance, demonstrating that governance and operational efficiency are inseparable components in achieving financial targets.

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