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The Effect of Profitability, Audit Quality, and Firm Size on Firm Value in Mining Companies Listed on the Indonesia Stock Exchange, 2020–2024

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Abstract

This study aims to analyze the effect of profitability, audit quality, and firm size on firm value in mining companies listed on the Indonesia Stock Exchange (IDX) during 2020–2024. Firm value reflects investors' perceptions of corporate performance and future prospects, making the identification of its determinants particularly relevant in the capital-intensive mining sector. This study employs a quantitative approach using secondary data obtained from annual financial statements and corporate reports. Purposive sampling was applied, resulting in 31 companies and 155 firm-year observations. The data were analyzed using panel data regression with Stata, and the Random Effect Model (REM) was selected based on the Chow, Lagrange Multiplier, and Hausman tests. The results indicate that profitability has a positive and statistically significant effect on firm value, suggesting that stronger asset-based earnings performance is associated with higher PBV. Audit quality has a positive but statistically insignificant effect, indicating that the use of Big Four auditors does not significantly differentiate firm value within the observed sample. Firm size has a negative and statistically significant effect on firm value, showing that greater asset-based scale is associated with lower PBV. Simultaneously, profitability, audit quality, and firm size significantly affect firm value, with an overall R^2 of 0.2125, indicating that the model explains 21.25% of the variation in firm value.

Keywords: Audit Quality, Firm Size, Firm Value, Mining Companies, Profitability.



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INTRODUCTION

The development of the global business environment has intensified competition among firms and increased the importance of maintaining financial performance, transparency, and market credibility as foundations of long-term corporate sustainability. In this environment, firm value has become a central indicator of corporate success because it reflects how investors assess a firm's current performance, future prospects, and capacity to generate economic benefits through the resources under its control. Firm value is closely associated with market valuation because changes in investors' expectations regarding profitability, risk, governance, and future cash flows can be incorporated into stock prices and other market-based measures. The relevance of these issues becomes particularly pronounced in emerging capital markets, where differences in transparency, governance mechanisms, and information efficiency can affect how financial information is translated into market valuation (Prasetyo, 2025). The Indonesian capital market illustrates this complexity because fluctuations in commodity prices, macroeconomic conditions, investor expectations, and firm-specific financial performance can simultaneously influence the valuation of listed companies. Within this setting, mining companies occupy a particularly important position because their operations are closely connected with natural-resource exploitation, commodity cycles, capital intensity, and environmental and social exposure, making their market valuation sensitive not only to financial outcomes but also to perceptions of corporate credibility and future sustainability (Prasasti & Zulvia, 2026).

The interaction between internal financial performance and market valuation can be observed in the development of profitability and firm value among mining companies listed on the Indonesia Stock Exchange (IDX) during 2020–2024. The period is particularly relevant because it encompasses substantial changes in business conditions and commodity-market dynamics, creating an empirical setting in which improvements in financial performance did not necessarily translate proportionally into

increases in market valuation. Recent evidence from Indonesian mining companies shows that profitability can remain an important determinant of firm value, although the magnitude and direction of the relationship may depend on the broader information environment surrounding the firm (Prasasti & Zulvia, 2026). Research on mining firms has also demonstrated that firm size can have a positive and significant relationship with market valuation, suggesting that investors may interpret organizational scale and resource capacity as relevant signals when assessing corporate prospects (Sonnya & Wardhani, 2025). At the same time, evidence from the mining sector indicates that higher profitability does not automatically guarantee higher market valuation when investors perceive weaknesses in strategic positioning, transparency, or the sustainability of corporate performance (Prasetyo, 2025). The pattern is also visible in the descriptive development of average ROA and PBV during the observation period, as presented in Table 1.

Table 1. Average ROA and PBV of Mining Companies, 2020–2024

Year	Average ROA (%)	Average PBV (x)
2020	2.41	1.08
2021	6.37	1.94
2022	14.82	2.76
2023	10.26	2.31
2024	9.14	2.48

Source: Processed from the financial statements of mining companies listed on the Indonesia Stock Exchange for 2020–2024 (Indonesia Stock Exchange/IDX).

Table 1 indicates that the movement of PBV does not completely follow the movement of ROA, providing an initial indication that market valuation cannot be explained solely by accounting profitability. ROA increased substantially from 2.41% in 2020 to 14.82% in 2022, while average PBV simultaneously increased from 1.08 times to 2.76 times, indicating a period in which stronger asset utilization coincided with higher market valuation. However, ROA subsequently declined to 10.26% in 2023 and 9.14% in 2024, whereas PBV declined to 2.31 times in 2023 before recovering to 2.48 times in 2024, showing that the market response was not mechanically proportional to changes in profitability. This pattern is consistent with the broader finding that firm value reflects a combination of financial and non-financial information rather than a single accounting indicator (Darmawan & Umaimah, 2025). Audit quality is also theoretically relevant because credible external assurance can reduce information asymmetry and strengthen the reliability of financial information used by investors in forming valuation judgments (Purmalita & Fauzan, 2024). Firm size may further shape this process because larger companies generally possess greater resources, broader financing access, and greater organizational visibility, although empirical findings indicate that the direction of its relationship with firm value can vary across industries and research settings (Dewi & Ekadjaja, 2020).

Profitability represents one of the most frequently examined determinants of firm value because it captures the firm's capacity to generate earnings from the resources committed to its operations. From an investor perspective, sustained profitability can function as information about managerial efficiency, resource utilization, and the potential capacity of the firm to generate future economic returns. Empirical evidence from food and beverage companies indicates a positive association between profitability and firm value, supporting the argument that stronger earnings performance can be incorporated into investors' valuation decisions (Hasanah, 2023). Evidence from manufacturing companies, however, does not establish a universally consistent relationship because profitability, liquidity, and firm size can produce different valuation effects depending on the characteristics of the firms and observation period (Dewi & Ekadjaja, 2020). More recent evidence from the mining sector provides an important qualification, as profitability measured through alternative indicators does not necessarily produce a positive market response when the market questions the sustainability or strategic significance of reported earnings (Prasetyo, 2025). This inconsistency suggests that the relationship between profitability and firm value requires sector-specific examination rather than being treated as a uniform financial-market relationship. For mining companies, where profitability can fluctuate considerably with commodity prices, production conditions, capital expenditure, and resource-related risks,

examining ROA over a multi-year period provides an opportunity to assess whether accounting-based performance is consistently reflected in market-based firm value.

Audit quality constitutes a second important mechanism because the credibility of financial reporting affects the extent to which investors can rely on disclosed accounting information when evaluating corporate prospects. Agency theory suggests that independent and competent auditing can reduce information asymmetry between managers and shareholders by providing external assurance over the reliability of financial statements, while signaling theory indicates that credible audit arrangements can communicate a firm's commitment to transparency and reporting discipline. Empirical research has reported a positive relationship between audit quality and firm value, indicating that the credibility of audited information may be incorporated into investors' valuation assessments (Rama & M. Y., 2019). Other evidence, however, has found that audit quality does not significantly affect firm value, indicating that the existence of external audit alone may not be sufficient to produce a measurable market premium (Hana & Paramitha, 2024). Research examining corporate governance and audit quality has also emphasized that audit-related mechanisms may influence corporate outcomes through broader governance and financial-reporting channels rather than operating as isolated determinants of market valuation (Meidona & Yanti, 2018). Recent research further places audit quality within a wider financial-reporting integrity framework, suggesting that firm size, profitability, leverage, and audit quality may interact in determining the reliability of corporate information (Luthfiah et al., 2026). These mixed findings make audit quality particularly relevant for mining companies because investors may place greater emphasis on the credibility of reported financial information when firms operate with substantial assets, complex transactions, and significant exposure to commodity and operational risks.

Firm size provides a third dimension through which corporate characteristics may influence market valuation because organizational scale can reflect the availability of assets, financing capacity, operating reach, and institutional visibility. Large firms may possess greater capacity to absorb market shocks and finance long-term investment, yet size can also generate complexity and agency problems that prevent organizational scale from automatically translating into higher firm value. Kammagi and Veny (2023) found that firm size does not necessarily have a significant effect on firm value, demonstrating that greater asset scale alone may not be sufficient to convince investors of stronger future prospects. In contrast, research on basic and chemical industry firms identified firm size as one of the factors associated with firm value, indicating that its market relevance can depend on sectoral characteristics and the economic environment (Rianti et al., 2021). Recent evidence from Indonesian mining companies provides further support for a positive relationship between firm size and firm value, although the finding was obtained using a different research model and a different observation period from the present study (Sonnya & Wardhani, 2025). The broader literature also indicates that corporate characteristics and governance mechanisms should be interpreted jointly because financial performance, reporting credibility, and organizational scale can provide investors with different types of information about corporate prospects (Putri & Utami, 2025). Consequently, the continuing variation in findings concerning profitability, audit quality, and firm size indicates that the determinants of firm value remain empirically unsettled, particularly when these three factors are examined simultaneously within the Indonesian mining sector.

The unresolved evidence establishes a substantive research gap because previous studies have frequently examined profitability, audit quality, or firm size in different sectors, measurement frameworks, observation periods, and combinations of explanatory variables, making their findings difficult to generalize directly to mining companies during the 2020–2024 period. Existing studies have also produced competing explanations regarding whether profitability is immediately capitalized into market value, whether audit quality generates sufficient informational benefits to affect investors' valuation decisions, and whether organizational scale represents a positive signal or merely reflects greater asset complexity. Recent mining-sector studies have expanded the discussion by incorporating sustainability reporting, corporate social responsibility, profitability, and firm size, yet these approaches do not directly resolve the combined influence of profitability, audit quality, and firm size on PBV across the 2020–2024 period (Daulay, 2026). The present study therefore occupies a position at the intersection of financial performance, information credibility, and corporate characteristics by examining whether profitability, audit quality, and firm size jointly explain variations in the market-based value of mining companies listed on the IDX. Using ROA as the profitability measure, audit

quality based on auditor reputation, firm size based on the natural logarithm of total assets, and PBV as the firm-value measure allows the analysis to connect accounting performance, external assurance, organizational scale, and investor valuation within one empirical framework. The study aims to analyze the partial and simultaneous effects of profitability, audit quality, and firm size on firm value in mining companies listed on the Indonesia Stock Exchange during 2020–2024. Theoretically, the study contributes to the application of agency and signaling perspectives by clarifying how performance information, external assurance, and organizational scale may function as distinct signals in an emerging-market setting, while methodologically it extends sector-specific evidence through a consistent multi-year examination of three internal determinants of firm value and provides empirical evidence that can inform subsequent research on accounting information, corporate governance, and market valuation.

RESEARCH METHODS

This study is an empirical quantitative study employing an associative research design to examine the effects of profitability, audit quality, and firm size on firm value in mining companies listed on the Indonesia Stock Exchange (IDX) during 2020–2024. The use of panel data combines cross-sectional observations across companies with time-series observations across five years, allowing differences among firms and changes over time to be incorporated into the empirical estimation (Gujarati et al., 2019). The population comprises all mining companies listed on the IDX during the observation period, while the sample is selected using purposive sampling based on the criteria that companies remained listed throughout 2020–2024, published complete annual financial statements and independent auditor reports, provided the data required to measure all research variables, and did not experience delisting during the observation period. Based on these criteria, 40 companies with 200 initial firm-year observations were identified, after which observations with negative or zero ROA and other observations that could not satisfy the required data transformation were excluded, resulting in a final sample of 31 companies and 155 firm-year observations. The study uses secondary data obtained through documentation of annual financial statements, independent auditor reports, and relevant corporate information published through the IDX and the respective companies' official websites, while firm value is measured using Price to Book Value (PBV) and profitability is measured using Return on Assets (ROA) (Brigham & Houston, 2019). Audit quality is operationalized according to the reputation of the Public Accounting Firm (KAP), distinguishing Big Four and Non-Big Four auditors, while firm size is measured using the natural logarithm of total assets, following established approaches for examining audit quality and firm value (Purmalita & Fauzan, 2024).

The measurement procedures are applied consistently to transform each construct into quantitative indicators suitable for panel-data estimation, with PBV representing firm value, ROA representing profitability, auditor reputation representing audit quality, and the natural logarithm of total assets representing firm size. The operational definitions and empirical regression specification are presented in Table 2.

Table 2. Operationalization of Variables and Regression Model

Variable/Component	Measurement/Formula
Firm Value (Y)	PBV = Stock Price / Book Value per Share
Book Value per Share	Total Equity / Number of Outstanding Shares
Profitability (X1)	ROA = Net Income After Tax / Total Assets
Audit Quality (X2)	2 = Big Four KAP; 1 = Non-Big Four KAP
Firm Size (X3)	Firm Size = Ln(Total Assets)
Panel Regression Model	$Y_{it} = \alpha + \beta_1 X1_{it} + \beta_2 X2_{it} + \beta_3 X3_{it} + \varepsilon_{it}$

Note: Y = Firm Value; α = constant; β_1 – β_3 = regression coefficients; ε = error term; i = company; t = year.

The empirical analysis is conducted using Stata through three alternative panel-data estimation models, namely the Common Effect Model (CEM), Fixed Effect Model (FEM), and Random Effect Model (REM), which accommodate the combined cross-sectional and temporal structure of the observations (Gujarati et al., 2019). Model selection is performed using the Chow test to determine the

choice between CEM and FEM, the Hausman test to distinguish between FEM and REM, and the Lagrange Multiplier test to assess the choice between CEM and REM. Partial hypothesis testing is conducted using the *t-test* or *z-test* to determine the statistical significance of each independent variable, while the Wald test is employed to examine the simultaneous significance of profitability, audit quality, and firm size. The coefficient of determination (R^2) is also examined to assess the extent to which the explanatory variables account for variation in firm value, with statistical significance evaluated at the 5% level or $p < 0.05$ (Gujarati et al., 2019). The use of PBV as the dependent-variable measure provides a market-based representation of firm valuation by relating the market price of equity to its book value (Brigham & Houston, 2019). Audit quality is operationalized through auditor reputation because the Big Four versus Non-Big Four classification provides an observable proxy that has been applied in prior Indonesian research examining the relationship between audit quality and firm value (Purmalita & Fauzan, 2024).

Hypotheses Development

H1: Profitability has a positive effect on firm value

Profitability reflects the firm's ability to generate earnings from the assets employed in its operational activities. Higher profitability indicates more efficient resource utilization and provides investors with information concerning the firm's capacity to generate future economic benefits. Under signaling theory, stronger profitability can constitute a positive signal regarding managerial performance and future corporate prospects, thereby increasing investors' valuation of the firm. In the mining sector, however, this relationship remains an empirical question because profitability can fluctuate substantially with commodity prices and operational conditions.

H2: Audit quality has a positive effect on firm value

High audit quality can increase the credibility of financial statements and reduce information asymmetry between management and investors. From the perspective of agency theory, an independent and credible external audit constitutes an external monitoring mechanism that can constrain opportunistic reporting and strengthen accountability. From the perspective of signaling theory, the appointment of a reputable auditor can provide a signal that the company is committed to reliable and transparent financial reporting. Investors may consequently place greater confidence in financial information that has been subjected to a credible external assurance process.

H3: Firm size has a positive effect on firm value

Firm size represents the scale of corporate resources and is commonly reflected through total assets. Larger firms generally have greater resource capacity, broader access to financing, and greater visibility among investors, which may strengthen perceptions of operational stability and future growth capacity. From a signaling perspective, substantial organizational scale can communicate the firm's established position and resource strength to external stakeholders. Nevertheless, the empirical relationship remains open to examination because larger firms may also face greater organizational complexity and agency costs.

H4: Profitability, audit quality, and firm size simultaneously affect firm value

Firm value is unlikely to be determined by a single dimension of corporate performance because investors evaluate accounting outcomes, information credibility, and organizational characteristics collectively. Profitability provides information about the firm's ability to generate returns, audit quality concerns the credibility of the information used in investment decisions, and firm size reflects the scale of resources and organizational capacity. Examining these variables simultaneously allows the study to determine whether their combined explanatory power provides a more comprehensive understanding of variation in firm value than examining each determinant independently.

RESULTS AND DISCUSSION

Sample Selection and Panel Regression Model Selection

The population of this study consists of mining companies listed on the Indonesia Stock Exchange (IDX) during the 2020–2024 observation period, producing an initial dataset of 200 firm-year observations from 40 companies. The sample selection process is necessary to ensure that the panel

estimation is based on observations with sufficient information for measuring firm value, profitability, audit quality, and firm size consistently across the observation period. The initial observations were screened according to the availability and usability of the required financial information, particularly the profitability measure used in the empirical model. Observations involving negative profitability and observations for which the required logarithmic transformation generated undefined values were excluded from the estimation sample. The detailed reduction of observations is presented in Table 3, which records the transition from the initial 200 observations to the final analytical sample.

Table 3. Sample Exclusion Criteria

No.	Criteria	Number of Data
1	Initial sample size	200
2	Profitability (ROA) is negative because the company experienced a loss, so it cannot be transformed into logarithmic form	30
3	Profitability (ROA) is undefined/error Ln(0)	15
4	Final sample size	155

Source: Processed Stata output, 2026

Table 3 shows that 45 observations were excluded from the initial 200 observations, leaving 155 firm-year observations derived from 31 mining companies over the five-year observation period. The resulting dataset provides a balanced structure in which each sampled company contributes five annual observations for the 2020–2024 period. This structure is relevant for panel-data analysis because it permits the estimation to incorporate both variation among firms and changes within firms over time. The exclusion of observations associated with negative or undefined profitability also prevents invalid logarithmic transformations from entering the empirical estimation, although such screening reduces the representation of firms experiencing adverse financial conditions. The final sample therefore represents companies satisfying the specified data requirements rather than the entire population of mining companies initially identified. From an empirical perspective, the reduced sample must be interpreted as the analytical population generated by the stated selection criteria rather than as a complete representation of every listed mining company during the period.

The next analytical stage concerns the selection of the panel regression specification most appropriate for the characteristics of the 155 observations. Three alternative specifications were considered, namely the Common Effect Model (CEM), Fixed Effect Model (FEM), and Random Effect Model (REM). These models differ in how they treat unobserved firm-specific characteristics and their potential relationship with the explanatory variables. The LM, Hausman, and Chow tests were consequently used to determine whether the pooled, fixed-effect, or random-effect structure provided the more appropriate estimation framework. The results of these specification tests are summarized in Table 4.

Table 4. Summary of Regression Model Selection

Testing	Result	Decision
Lagrange Multiplier (LM) Test	$\text{chibar2}(01) = 80.29$; Prob > $\text{chibar2} = 0.0000$	REM is preferred to CEM
Hausman Test	$\text{chi2}(3) = 2.92$; Prob > $\text{chi2} = 0.4047$	REM is preferred to FEM
Chow Test	$F(30,121) = 6.73$; Prob > $F = 0.0000$	FEM is preferred to CEM

Source: Processed Stata output, 2026

As shown in Table 4, the Breusch–Pagan Lagrange Multiplier test produces a chibar^2 value of 80.29 with a probability of 0.0000, indicating that the random-effects specification provides a statistically preferable structure to the common-effects specification. The result implies that the panel observations contain firm-level heterogeneity that should not be treated as irrelevant pooled variation. The Hausman test subsequently produces a chi^2 value of 2.92 with a probability of 0.4047, so the null hypothesis of no systematic difference between the fixed-effects and random-effects estimators is not

rejected. This result supports the use of REM relative to FEM because the estimated differences between the two estimators are not statistically systematic within the model. The Chow test independently indicates that FEM is preferable to CEM, as reflected by an F-statistic of 6.73 and a probability of 0.0000. The apparent preference of FEM over CEM does not determine the final specification because the Hausman test is required to distinguish between FEM and REM after evidence indicates that pooled estimation is inadequate.

The combined interpretation of the specification tests leads to the selection of the Random Effect Model as the final estimation model. The LM test establishes that firm-specific random variation should be incorporated rather than ignored, while the Hausman test provides no statistical evidence requiring that this heterogeneity be treated as systematically correlated with the explanatory variables. This specification is consistent with the panel structure in which mining companies may differ in characteristics that are not directly captured by profitability, audit quality, or firm size. The use of REM also enables the estimation to exploit both within-firm and between-firm variation in the sample, which is relevant when firm value is shaped by financial characteristics that differ across companies and over time. In econometric terms, the selected specification is estimated using the generalized least squares framework associated with random-effects panel estimation (Gujarati et al., 2019). The selected REM specification is subsequently used to estimate the partial and simultaneous relationships between profitability, audit quality, firm size, and firm value.

Random Effect Model Estimation and Hypothesis Testing

The Random Effect Model (REM) selected through the panel-data specification tests was subsequently employed to estimate the relationship between profitability, audit quality, firm size, and firm value. The estimation uses 155 firm-year observations from 31 mining companies observed during 2020–2024, allowing the regression to capture variation across companies while retaining the temporal structure of the dataset. The estimated coefficients provide information regarding the direction and magnitude of the association between each explanatory variable and Price to Book Value (PBV), while the z-statistics and p-values determine whether the estimated relationships are statistically distinguishable from zero. The regression results are presented in Table 5, which also provides the standard errors and significance levels for each parameter. Panel estimation is particularly relevant in this setting because firm valuation may reflect both observable financial characteristics and unobserved differences across companies (Gujarati et al., 2019). The resulting coefficients provide the empirical basis for evaluating the individual hypotheses concerning profitability, audit quality, and firm size.

Table 5. Panel Data Regression Results (Random Effect Model)

Variable	Coefficient	Std. Error	z	P-Value
Constant	8.0852	2.0435	3.96	0.000
Audit Quality	0.3955	0.3233	1.22	0.221
Profitability (ROA)	0.3500	0.0793	4.41	0.000
Firm Size	-0.2310	0.0686	-3.37	0.001

Source: Processed Stata output, 2026 (Number of obs = 155; Number of groups = 31)

As reported in Table 5, the estimated regression equation is

$$PBV = 8.0852 + 0.3955KA + 0.3500PRT - 0.2310UP + \varepsilon$$

The positive coefficient of audit quality indicates that companies audited by Big Four Public Accounting Firms tend to have higher PBV than those classified as Non-Big Four, although the corresponding *p*-value of 0.221 indicates that this association is not statistically significant at the 5% level. Profitability records a coefficient of 0.3500 with a *z*-value of 4.41 and a *p*-value of 0.000, indicating a positive and statistically significant relationship with firm value. Firm size, in contrast, has a coefficient of −0.2310 with a *z*-value of −3.37 and a *p*-value of 0.001, indicating a statistically significant negative relationship with PBV. The constant of 8.0852 is statistically significant, although its substantive interpretation should be treated cautiously because a condition in which all explanatory variables equal zero does not represent a realistic configuration for listed mining companies. The

contrasting signs across the explanatory variables indicate that accounting profitability, auditor reputation, and asset scale do not contribute to market valuation through an identical mechanism.

The magnitude and direction of the estimated coefficients provide an important distinction between statistical significance and economic interpretation. A one-unit increase in profitability is associated with an estimated 0.3500-unit increase in PBV, holding audit quality and firm size constant, indicating that changes in asset-generating profitability are reflected positively in market-based valuation. This result is consistent with the financial interpretation of profitability as an indicator of management effectiveness in utilizing corporate resources to generate earnings (Kasmir, 2019). The audit-quality coefficient of 0.3955 has a positive direction, but its statistical insignificance means that the observed difference between Big Four and Non-Big Four auditors cannot be interpreted as a systematic determinant of firm value within this sample. The negative firm-size coefficient indicates that an increase in the natural logarithm of total assets is associated with a 0.2310 decrease in PBV, suggesting that asset expansion does not automatically translate into higher market valuation among the sampled mining companies. Such a finding is relevant to the valuation perspective because market participants evaluate not merely the amount of assets held but also the expected capacity of those assets to generate future economic benefits (Brigham & Houston, 2019).

The coefficient of determination further clarifies the explanatory capacity of the selected model. The three R^2 measures reported by the REM estimation are shown in Table 6, allowing the explanatory contribution of the independent variables to be assessed from within-firm, between-firm, and overall perspectives. The distinction is important because panel estimation separates variation occurring over time within the same company from variation observed across different companies. The overall R^2 provides the broadest indication of how much variation in PBV is associated with the explanatory variables included in the model.

Table 6. Coefficient of Determination (R^2)

Description	Value
R-squared (within)	0.1680
R-squared (between)	0.2538
R-squared (overall)	0.2125

Source: Processed Stata output, 2026

Table 6 shows an overall R^2 of 0.2125, meaning that profitability, audit quality, and firm size jointly account for approximately 21.25% of the variation in firm value represented by PBV, while the remaining 78.75% is associated with factors outside the estimated specification. The within R^2 of 0.1680 indicates that the model explains 16.80% of the variation occurring within companies over the observation period, whereas the between R^2 of 0.2538 indicates a higher explanatory contribution for differences across companies. The difference between these measures suggests that cross-company characteristics contribute somewhat more to the observed variation in PBV than changes occurring within individual companies over time. This pattern is plausible in a mining-sector setting because firm valuation can also be affected by capital structure, institutional ownership, dividend policy, liquidity, growth opportunities, commodity-price movements, environmental performance, and macroeconomic conditions. Recent evidence on Indonesian mining companies indicates that firm value is associated with broader financial and non-financial factors, including financial performance and corporate social responsibility (Daulay, 2026). Evidence from mining companies also indicates that profitability can function as an important mechanism connecting corporate social responsibility with firm value (Prasasti & Zulvia, 2026). The R^2 result consequently indicates that the estimated model captures a meaningful but limited portion of market valuation dynamics rather than providing a comprehensive explanation of PBV.

The partial hypothesis tests are derived from the coefficients and p -values reported in Table 5, with statistical significance assessed at the 5% level. Profitability produces a positive coefficient of 0.3500 and a p -value of 0.000, indicating that H1, which proposes a positive effect of profitability on firm value, is supported. This finding is consistent with empirical evidence that identifies profitability as a relevant determinant of firm value in Indonesian listed companies (Kammagi & Veny, 2023). Audit quality produces a positive coefficient of 0.3955 but a p -value of 0.221, meaning that H2 is not

supported because the estimated effect does not reach statistical significance. Firm size produces a negative coefficient of -0.2310 with a p -value of 0.001 , indicating a statistically significant effect but in a direction opposite to the positive relationship proposed in H3. The distinction is important because statistical significance alone does not establish support for a directional hypothesis, since the estimated coefficient must also correspond to the direction proposed by the hypothesis.

The simultaneous significance of the explanatory variables is evaluated using the Wald test because REM is the selected panel specification. The test produces a Wald $\chi^2(3)$ value of 32.97 with a probability of 0.0000 , indicating that profitability, audit quality, and firm size are jointly significant in explaining firm value at the 5% significance level. The result means that the null hypothesis that the three slope coefficients are jointly equal to zero is rejected, even though audit quality does not exhibit a statistically significant partial relationship with PBV. This distinction demonstrates that an insignificant individual coefficient does not necessarily imply that a variable is irrelevant within a multivariable model, because joint significance evaluates the explanatory contribution of the predictors as a group. The finding is consistent with the view that firm value can reflect a combination of financial, governance, and reporting characteristics rather than a single accounting indicator (Darmawan & Umamah, 2025). Prior evidence on audit quality and firm value remains heterogeneous, with some studies identifying significant relationships while others report insignificant effects (Hana & Paramitha, 2024). The empirical results consequently support H1 and H4, do not support H2, and indicate that H3 is statistically significant with a direction opposite to the initially hypothesized relationship.

Discussion of Empirical Findings

The empirical results indicate that profitability has a positive and statistically significant effect on firm value, as reflected by a coefficient of 0.3500 and a p -value of 0.000 . The finding indicates that greater ability to generate earnings from assets is associated with higher PBV among mining companies during 2020–2024. From the perspective of Signaling Theory, profitability provides investors with information about managerial effectiveness and the firm's capacity to generate future economic benefits, making it a relevant signal in the valuation process. A stronger ROA can reduce uncertainty regarding operating performance because investors receive observable evidence that corporate assets are being utilized to produce earnings. This interpretation is consistent with the financial management perspective that profitability constitutes an important basis for assessing corporate performance and market valuation (Brigham & Houston, 2019). Empirical evidence from Indonesian companies also documents a positive relationship between profitability and firm value, although the strength of the relationship may differ across sectors and research settings (Hasanah, 2023). The finding is particularly relevant for mining companies because profitability can reflect the effectiveness with which substantial asset bases, production capacity, and operating resources are converted into financial returns.

The positive relationship between profitability and firm value also suggests that investors in the mining sector respond more strongly to realized financial performance than merely to the existence of productive assets. A company with a relatively large asset base may not obtain a higher market valuation when its assets generate insufficient returns, whereas an improvement in ROA can strengthen expectations regarding future cash-generating capacity. This mechanism is compatible with the argument that accounting profitability can influence investor perceptions because earnings provide information about the economic consequences of managerial decisions and resource utilization (Kasmir, 2019). The result is also consistent with evidence from mining-sector research showing that profitability is relevant to explaining firm value when examined alongside other corporate characteristics (Prasetyo, 2025). Similar evidence has been reported in research examining financial performance and firm value in Indonesian mining companies, where financial conditions constitute an important component of the valuation process (Daulay, 2026). The significant coefficient therefore indicates that profitability is not merely an internal performance indicator but also has an observable association with the market-based valuation of sampled firms. At the same time, the coefficient should not be interpreted as evidence that profitability alone determines PBV, given the model's overall R^2 of 0.2125 and the presence of other valuation determinants outside the specification.

Audit quality produces a positive coefficient of 0.3955 , but its p -value of 0.221 indicates that the relationship is not statistically significant at the 5% level. The positive direction suggests that companies audited by Big Four firms tend to exhibit higher PBV than companies audited by Non-Big Four firms after controlling for profitability and firm size, yet the estimated difference is insufficient to

establish a systematic relationship in the observed sample. From an Agency Theory perspective, external auditing can serve as a monitoring mechanism that reduces information asymmetry between managers and shareholders, but the monitoring benefit may not necessarily be translated directly into higher market valuation. Auditor reputation may improve the credibility of financial reporting, while investors can simultaneously place greater weight on operating performance, commodity-market conditions, and expected future returns when valuing mining companies. Prior research has similarly found that audit quality does not always exert a significant effect on firm value, indicating that auditor reputation may have a more indirect role in the valuation process (Hana & Paramitha, 2024). The result also differs from studies reporting a significant association between audit quality and firm value, demonstrating that the valuation relevance of auditor reputation can depend on the institutional and sectoral characteristics of the sample (Purmalita & Fauzan, 2024).

The absence of a significant audit-quality effect does not imply that auditing lacks an economic function within mining companies. Rather, the finding suggests that the distinction between Big Four and Non-Big Four auditors, as operationalized in this study, does not provide sufficient incremental information for explaining differences in PBV after profitability and firm size are incorporated into the model. This interpretation is relevant because audit quality is closely connected to the reliability and integrity of financial information, while market valuation may depend on whether that information changes investors' expectations about future performance. Evidence concerning corporate governance and audit quality indicates that auditor characteristics can contribute to financial reporting credibility and corporate monitoring without necessarily producing a direct valuation effect (Meidona & Yanti, 2018). Recent research also places audit quality within a broader reporting-quality framework, in which auditor characteristics interact with profitability, leverage, and firm characteristics in determining the integrity of financial statements (Luthfiah et al., 2026). Similar findings regarding audit quality and firm value have been reported in research examining corporate governance, audit quality, and leverage, suggesting that audit quality may operate alongside rather than independently from other corporate mechanisms (Putri & Utami, 2025). The positive but insignificant coefficient in the present study therefore indicates a directional association without sufficient statistical evidence to establish audit quality as an independent determinant of firm value.

Firm size exhibits a statistically significant negative coefficient of -0.2310 with a p -value of 0.001 , indicating that greater asset-based size is associated with lower PBV among the sampled mining companies. This finding contrasts with the initial hypothesis that larger companies would receive higher market valuations because of their greater resources, financing capacity, and organizational scale. One possible interpretation is that asset size in the mining industry does not necessarily represent productive efficiency because a substantial portion of corporate assets may consist of fixed assets, mining infrastructure, heavy equipment, or resource-related assets requiring considerable capital expenditure. The valuation relevance of firm size therefore depends not only on the magnitude of assets but also on the capacity of those assets to generate returns and support future growth. This result differs from studies that identify a positive relationship between firm size and firm value, indicating that the effect of size is sensitive to industry characteristics and the financial conditions of individual firms (Dewi & Ekadjaja, 2020). Research involving financial performance, firm size, and audit quality likewise demonstrates that firm characteristics need to be interpreted together with other determinants of market valuation rather than treated as inherently value-enhancing attributes (Rianti et al., 2021). The negative coefficient consequently provides evidence that scale can carry different valuation implications when asset expansion is not accompanied by proportional improvements in profitability or growth expectations.

The negative relationship between firm size and firm value can also be interpreted through the expectations embedded in market-based valuation. Large mining companies may possess substantial assets because of accumulated investment and long-term operational commitments, but investors may discount these assets when they are associated with high maintenance requirements, slower growth prospects, or exposure to sector-specific risks. In this context, firm size measured through the logarithm of total assets captures organizational scale but does not directly measure asset productivity, market competitiveness, or the quality of future investment opportunities. The finding is consistent with evidence that firm size does not necessarily have a significant positive effect on firm value when considered alongside profitability, capital structure, and growth variables (Kammagi & Veny, 2023). It also contrasts with the conventional expectation that larger firms should receive stronger market recognition, illustrating that the relationship between size and valuation is not uniform across empirical

settings. Recent evidence from Indonesian mining companies further indicates that firm size can interact with profitability and sustainability-related disclosures in shaping market valuation rather than functioning as an isolated determinant (Sonnya & Wardhani, 2026). The result highlights the importance of distinguishing between the quantity of corporate resources and the market's assessment of how effectively those resources can generate future economic value. Such distinction is particularly important in capital-intensive industries where expansion can increase asset scale without producing an equivalent increase in shareholder value.

The simultaneous Wald test produces a χ^2 value of 32.97 with a p -value of 0.0000, indicating that profitability, audit quality, and firm size jointly have a statistically significant relationship with firm value. This result demonstrates that the valuation of mining companies cannot be adequately understood from a single financial or governance characteristic because the explanatory variables operate within a broader corporate information environment. The finding is compatible with Signaling Theory because profitability, auditor reputation, and organizational scale can provide different forms of information that investors incorporate into their assessment of corporate prospects. It also corresponds with Agency Theory because audit quality represents a monitoring mechanism that operates within the relationship between shareholders and corporate managers. Research on corporate governance and earnings management further indicates that governance-related mechanisms and financial reporting practices can be relevant to firm value when considered within an integrated corporate framework (Darmawan & Umaimah, 2025). The relatively modest overall R^2 of 0.2125, however, indicates that a substantial proportion of variation in PBV remains attributable to factors outside the model, including capital structure, growth, ownership structure, liquidity, environmental performance, and market conditions. Research on mining companies has likewise shown that corporate social responsibility and profitability constitute relevant dimensions in understanding firm value, reinforcing the importance of considering financial and non-financial determinants simultaneously (Prasasti & Zulvia, 2026).

Taken together, the findings establish a differentiated pattern in which profitability is positively associated with firm value, audit quality has a positive but statistically insignificant coefficient, and firm size has a statistically significant negative coefficient. The pattern suggests that investors may attach greater valuation relevance to the firm's ability to generate returns than to auditor classification or the absolute scale of its asset base. The result also indicates that the positive theoretical expectations attached to audit quality and firm size cannot be assumed to apply uniformly to mining companies during the 2020–2024 period. Evidence from broader research on asset growth, capital structure, tax compliance, and audit quality supports the view that firm value reflects multiple interconnected corporate characteristics rather than a single accounting measure (Sinaga et al., 2026). The finding concerning profitability is further supported by evidence linking profitability and corporate governance mechanisms to firm valuation, while the mixed results for audit quality underscore the contextual nature of reporting and monitoring effects (Rama & M. Y., 2019). From a market perspective, the results imply that improvements in asset utilization and earnings generation may carry greater observable valuation relevance than increases in organizational scale without corresponding improvements in economic returns. The empirical pattern provides a basis for interpreting firm value as an outcome of financial performance, information credibility, and resource scale whose effects depend on how these characteristics are evaluated within the specific conditions of the mining sector.

CONCLUSION

The empirical analysis of mining companies listed on the Indonesia Stock Exchange during 2020–2024 demonstrates that profitability, audit quality, and firm size exhibit different relationships with firm value. Profitability has a positive and statistically significant effect on firm value, indicating that companies with stronger ability to generate earnings from their assets tend to have higher PBV. Audit quality has a positive coefficient but does not have a statistically significant effect, indicating that the use of Big Four auditors does not constitute a sufficiently strong determinant of firm value within the observed sample. Firm size has a negative and statistically significant effect on firm value, showing that greater asset-based scale is associated with lower PBV and does not support the initially proposed positive relationship. The simultaneous Wald test confirms that profitability, audit quality, and firm size jointly have a significant effect on firm value, with a Wald $\chi^2(3)$ of 32.97 and a probability value of 0.0000. The overall R^2 of 0.2125 indicates that the three independent variables explain 21.25% of the variation in firm value, while the remaining 78.75% is associated with other factors outside the

estimated model. These findings suggest that corporate value in the mining sector is shaped by a combination of financial performance, reporting-related characteristics, and organizational scale, with profitability showing the clearest individual statistical association in the model.

The findings provide several practical considerations for companies, investors, and future researchers concerned with firm valuation in the mining sector. Mining companies should strengthen profitability through cost efficiency, productivity improvement, and more effective asset utilization because stronger profitability is significantly associated with higher firm value. Investors may consider profitability together with growth prospects, industry conditions, and other relevant corporate characteristics rather than relying solely on firm size or auditor classification when assessing mining companies. The negative relationship between firm size and firm value also indicates that expansion of the asset base should be accompanied by improvements in asset productivity and economic returns to support market valuation. Future research can incorporate additional determinants of firm value, including institutional ownership, leverage, dividend policy, corporate growth, liquidity, capital structure, and corporate social responsibility. Extending the research to other industrial sectors and longer observation periods could provide broader evidence regarding whether the relationships identified in mining companies remain consistent across different economic and industry environments. Future studies may also employ alternative audit-quality measures, such as audit tenure, audit fees, and auditor specialization, to capture dimensions of audit quality that cannot be represented fully by the Big Four classification. Such extensions would provide a more comprehensive understanding of the financial, governance, and market factors that contribute to differences in firm value.

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