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The Effect of Environmental Disclosure and Return on Assets (ROA) on Firm Value with Audit Quality as a Moderating Variable in Basic Materials Sector Companies Listed on the IDX (2021–2025)

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ABSTRACT

Firm value reflects a company's ability to meet investor expectations through effective performance and transparent disclosure. However, the relationship between environmental disclosure and firm value remains inconclusive, particularly regarding the role of audit quality in strengthening this relationship. This study aimed to examine the effects of environmental disclosure and return on assets (ROA) on firm value, with audit quality as a moderating variable, among basic materials companies listed on the Indonesia Stock Exchange from 2021 to 2025. A quantitative descriptive-associative approach was employed using secondary data obtained from company annual reports and sustainability reports. The population comprised 113 companies, from which 18 companies were selected through purposive sampling, yielding 90 observations. Data were analyzed using partial least squares structural equation modeling with SmartPLS 4.0. The results showed that environmental disclosure had no significant effect on firm value ($t = 0.509$; $p = 0.611$), whereas ROA had a significant positive effect on firm value ($t = 3.192$; $p = 0.001$). Audit quality significantly moderated the relationships between environmental disclosure and firm value ($t = 2.058$; $p = 0.040$) and between ROA and firm value ($t = 2.540$; $p = 0.011$). These findings indicate that accounting profitability is an important determinant of firm value, while the value relevance of environmental disclosure may depend on audit quality. The study contributes to the literature by highlighting the moderating role of audit quality and provides practical insights for corporate managers and investors regarding financial performance, environmental transparency, and the credibility of corporate reporting.

1. Introduction

The basic materials sector plays a strategic role in economic development by supplying essential raw materials to manufacturing, construction, energy, and other industrial activities. Globally, companies in this sector operate in an environment characterized by commodity price fluctuations, changing market conditions, and increasing expectations regarding corporate environmental responsibility and financial transparency. In Indonesia, the sector contributes to industrial development, national productivity, price stability, and the investment climate. Its substantial economic potential has intensified competition, requiring companies to adopt effective and efficient strategies to maintain investor confidence and enhance firm value. Firm value reflects investors' assessments of a company's performance, future prospects, and ability to generate returns, which are commonly reflected in its stock price (Ridwan & Muid, 2025). Therefore, understanding the factors that influence firm value is important for corporate management and investment decision-making.

Despite its strategic importance, the Indonesian basic materials sector remains exposed to fluctuations in commodity prices, financial market conditions, and financing costs. These challenges can influence profitability and investor perceptions, ultimately affecting firm value. For example, PT Vale Indonesia Tbk experienced a 0.39% decline in its share price to Rp6,400 per share in June 2023, representing a year-to-date decrease of 9.51% amid weakening global nickel prices. Similarly, shares of PT Semen Indonesia (Persero) Tbk declined by 2.43% on October 21, 2024 (IDN Times, 2024). In

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addition, high interest rates set by the Federal Reserve in 2025 increased financing pressures and placed downward pressure on the profitability of companies in the basic materials sector. These developments illustrate the vulnerability of firm value to external economic conditions and highlight the importance of examining internal corporate factors that may influence investor assessments.

The fluctuations in the sector's average Price-to-Book Value (PBV) ratio further illustrate this issue. The average PBV ratio increased from 1.36 in 2021 to 1.49 in 2022, declined to 1.32 in 2023, and subsequently rose to 1.79 in 2024 and 2.40 in 2025. This pattern indicates that market valuations changed considerably throughout the observation period. Environmental disclosure and Return on Assets (ROA) are two factors that may help explain these variations. Environmental disclosure increased from 0.37 in 2021 to 0.61 in 2024 before declining to 0.58 in 2025. Meanwhile, ROA increased from 2.59% in 2021 to 2.84% in 2022, declined to 2.17% in 2023 and 1.81% in 2024, and subsequently rose to 3.63% in 2025. The decline in profitability in 2024 coincided with a 66.84% decrease in the net profit of PT Semen Indonesia (Persero) Tbk. These developments raise questions about whether environmental transparency and financial performance are consistently reflected in firm value.

Environmental disclosure may provide stakeholders with information about corporate environmental responsibility, potentially influencing their perceptions of a company's sustainability and long-term prospects. However, greater disclosure does not necessarily translate into higher market valuation if investors place greater emphasis on financial returns or question the credibility of reported information. In this context, ROA represents a measure of a company's ability to generate profits from its assets and provides investors with information about managerial effectiveness and financial performance. Audit quality may also be relevant because reliable independent auditing can strengthen confidence in corporate disclosures and financial information. Accordingly, audit quality is examined as a moderating variable that may influence the relationships between environmental disclosure, ROA, and firm value (Azmiyah & Subardjo, 2023; Caesaria & Suhartono, 2023). Nevertheless, the continued predominance of non-Big Four audit firms in the sector raises a relevant question regarding whether differences in audit quality affect how investors interpret environmental and financial information. The number of companies using non-Big Four audit firms was 90 in both 2021 and 2022, 88 in 2023, 90 in 2024, and 89 in 2025.

Previous empirical studies have produced inconsistent findings concerning the relationship between environmental disclosure and firm value. Rafael and Lastanti (2025) reported a positive effect, whereas Antonetta and Simon (2026) identified a negative effect. In contrast, Luthfiana et al. (2025) found no significant effect. These divergent results suggest that the relevance of environmental disclosure to firm value may vary across research settings and warrants further examination in the Indonesian basic materials sector. Similar inconsistencies are evident in research on financial performance. Rahmawati and Witono (2025) found that ROA had a significant positive effect on firm value, while Alamsyah and Zaretta (2025) reported a negative effect. Sari et al. (2025), meanwhile, found no significant relationship. These differences indicate that the role of profitability in determining market valuation is not uniformly established across previous studies.

Research on the moderating role of audit quality has also yielded mixed findings. Ramadhani et al. (2025) and Caesaria and Suhartono (2023) reported that audit quality strengthened the relationship under examination, whereas Margareta (2025) found a contrary result. Taken together, these inconsistencies reveal an empirical research gap concerning the effects of environmental disclosure and ROA on firm value and the extent to which audit quality changes these relationships. In particular, further evidence is needed to clarify whether environmental disclosure and profitability have different implications for firm value when audit quality is considered within the same analytical framework.

Based on this research gap, the present study examines the effects of environmental disclosure and ROA on firm value, with audit quality serving as a moderating variable, among basic materials companies listed on the Indonesia Stock Exchange from 2021 to 2025. Specifically, the study aims to determine whether environmental disclosure and ROA significantly influence firm value and whether audit quality moderates each relationship.

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Theoretically, this study contributes to the corporate valuation literature by examining environmental transparency, financial performance, and audit quality within an integrated research model. It also provides sector-specific evidence that may help clarify the inconsistent findings reported in previous studies. Practically, the findings may inform corporate managers in developing disclosure and financial performance strategies, assist investors in evaluating corporate information, and highlight the relevance of audit quality in strengthening confidence in corporate reporting. The novelty of this study lies in its simultaneous examination of environmental disclosure and ROA, together with the moderating role of audit quality, in Indonesian basic materials companies over the 2021–2025 period.

2. Literature Review

2.1. Conceptual and Theoretical Foundations

2.1.1. Firm Value

Firm value represents the present value of future cash flows, influenced by risk, management decisions regarding investment and financing, and macroeconomic factors. It also reflects investor perceptions of the company's success and performance, as manifested in its stock price (Risman, 2021).

Firm value reflects investor perceptions of a company's success and performance, as evidenced by its stock price in the capital market. Consequently, superior company performance and higher investor confidence lead to a higher firm value (Risman, 2021).

2.1.2. Environmental Disclosure

Environmental disclosure refers to the transparency of information regarding a company's interactions with and operational impacts on the environment, covering areas such as emissions, energy, water, biodiversity, waste, and compliance with environmental regulations. Based on GRI indicators, environmental disclosure encompasses various aspects, including energy consumption (GRI 302), water (GRI 303), biodiversity (GRI 304), emissions (GRI 305), waste (GRI 306), non-compliance with environmental regulations (GRI 307), and supplier environmental assessment (GRI 308). A company's level of environmental disclosure can be calculated based on the established set of disclosure indicators (Fitriani & Efendi, 2024).

2.1.3. Profitability and Return on Assets (ROA)

Profitability is a ratio used to measure a company's ability to generate profit and to assess management's effectiveness in running the business (Kasmir, 2019; Fitriani, 2024). It reflects the ultimate outcome of managing liquidity, assets, and debt, while playing a role in creating shareholder value and ensuring the company's continuity (Caesaria & Suhartono, 2023; Sari et al., 2025).

Profitability can be measured through several ratios, namely Profit Margin on Sales, Return on Equity (ROE), earnings per share, and Return on Assets (ROA). ROA measures a company's ability to generate profit from its total assets. In this study, ROA was selected because it provides an indication of the company's effectiveness in managing its assets to generate net profit (Kasmir, 2019).

2.1.4. Audit Quality

Audit quality refers to the degree of success achieved by an independent auditor in systematically detecting and reporting violations or misstatements in financial statements, thereby ensuring the credibility of the financial statements as a basis for stakeholder decision-making (Margareta, 2025; Caesaria & Suhartono, 2023; Nasution, 2025; Masruroh & Airawaty, 2025). Audit quality is influenced by the auditor's competence, independence, and objectivity (Nasution, 2025).

In this study, audit quality is proxied by the size of the Public Accounting Firm (KAP)—specifically, Big Four versus Non-Big Four firms. Measurement is conducted using a dummy variable, assigned a value of 1 for companies utilizing Big Four firms and a value of 0 for those utilizing Non-Big Four firms (Margareta, 2025).

2.2. Review of Empirical Studies

Previous studies present mixed findings regarding the relationships among environmental disclosure, ROA, audit quality, and firm value. Antonetta and Simon (2026) found that environmental disclosure has a significant negative effect on firm value, whereas Rafael and Lastanti (2025) found a positive effect, and Luthfiana et al. (2025) found no substantial effect. Regarding ROA, Sari et al. (2025) found no significant effect, Rahmawati and Witono (2025) found a significant

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positive effect, and Alamsyah and Zaretta (2025) found a significant negative effect.

Research by Ramadhani et al. (2025) indicates that audit quality strengthens the relationship between ESG disclosure and firm value, whereas Margareta (2025) found that audit quality does not moderate this relationship. Rohmawati and Tjahjono (2024) and Caesaria and Suhartono (2023) found that audit quality strengthens the impact of profitability on firm value.

2.3. Identification of the Research Gap

The research gap arises from the inconsistencies in previous empirical findings concerning environmental disclosure, ROA, audit quality, and firm value. First, previous studies have reported positive, negative, and insignificant relationships between environmental disclosure and firm value (Antonetta & Simon, 2026; Rafael & Lastanti, 2025; Luthfiana et al., 2025). Second, the findings regarding ROA have also varied, ranging from positive and significant to negative and insignificant effects (Alamsyah & Zaretta, 2025; Rahmawati & Witono, 2025; Sari et al., 2025). These inconsistencies indicate that further evidence is needed to clarify the relationships between corporate environmental transparency, profitability, and market valuation.

Third, the moderating role of audit quality remains insufficiently established because previous research has reported both strengthening and insignificant moderating effects (Margareta, 2025; Ramadhani et al., 2025). Although existing studies have examined aspects of environmental disclosure, profitability, and audit quality, their findings do not provide a consistent basis for determining whether audit quality strengthens the relationship between each independent variable and firm value.

Furthermore, the present study focuses specifically on basic materials companies listed on the Indonesia Stock Exchange during 2021–2025. This sector-specific and period-specific focus provides an opportunity to examine the relationships among environmental disclosure, ROA, and firm value under a common analytical framework. The study addresses the identified gap by simultaneously testing the direct effects of environmental disclosure and ROA on firm value and the moderating effects of audit quality on both relationships. Its contribution lies in providing additional empirical evidence from the Indonesian basic materials sector rather than assuming that findings from other research settings apply uniformly to this context.

2.4. Development of the Conceptual Framework

The conceptual framework integrates environmental disclosure and ROA as independent variables, firm value as the dependent variable, and audit quality as the moderating variable. Environmental disclosure represents the extent of corporate transparency concerning environmental activities and impacts, while ROA measures the effectiveness of asset utilization in generating earnings. Firm value reflects market assessments of corporate performance and future prospects. Audit quality, measured using the distinction between Big Four and non-Big Four audit firms, is included to examine whether the credibility of reported information changes the relationships between the independent variables and firm value.

The first relationship proposes that environmental disclosure influences firm value because environmental transparency may shape investor perceptions of corporate responsibility and long-term prospects. The second relationship proposes that ROA influences firm value because profitability provides information about managerial effectiveness and the company's ability to generate earnings from its assets. The third and fourth relationships incorporate audit quality as a moderator. High-quality auditing may strengthen the credibility of environmental and financial information, potentially influencing the extent to which investors incorporate such information into their assessments of firm value.

Accordingly, the conceptual framework comprises four hypothesized relationships: (1) the effect of environmental disclosure on firm value; (2) the effect of ROA on firm value; (3) the moderating effect of audit quality on the relationship between environmental disclosure and firm value; and (4) the moderating effect of audit quality on the relationship between ROA and firm value.

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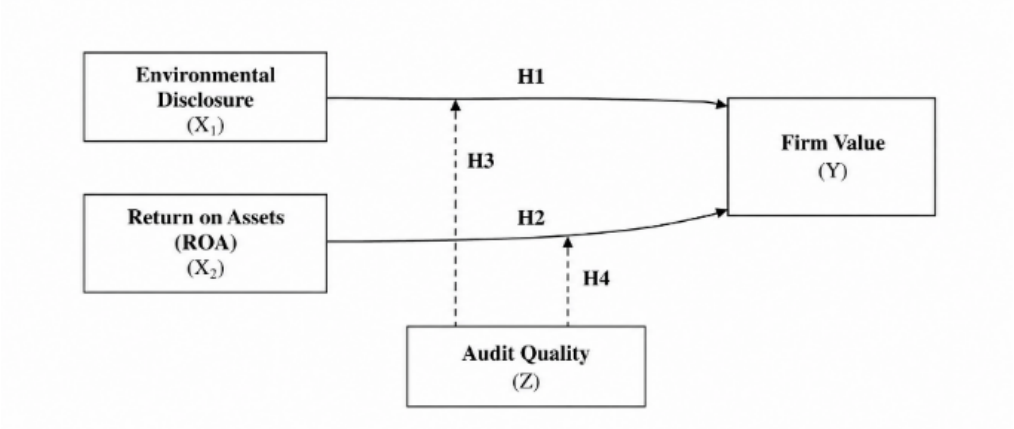


Fig. 1. Conceptual Framework of the Study

2.5. Hypotheses or Research Propositions

2.5.1. The Effect of Environmental Disclosure on Firm Value

Extensive and adequate environmental disclosure can boost investor confidence by demonstrating corporate transparency and responsibility in managing environmental impacts. Conversely, low levels of disclosure send a negative signal to stakeholders. Thus, environmental disclosure is hypothesized to influence firm value. Research by Rafael and Lastanti (2025) supports the existence of a positive effect of environmental disclosure on firm value.

H1: Environmental disclosure is hypothesized to influence firm value.

2.5.2. The Effect of Return on Assets (ROA) on Firm Value

ROA represents the rate of return or profitability generated through the utilization of a company's total assets (Delfiana & Manurung, 2025). A high and stable ROA serves as a positive signal to the market, indicating the company's ability to manage assets efficiently to generate profit. Such conditions can increase investor interest and firm value. Research by Delfiana and Manurung (2025) and Ridwan and Muid (2025) supports the finding that ROA has a positive effect on firm value.

H2: Return on Assets (ROA) is hypothesized to influence firm value.

2.5.3. Audit Quality Moderates the Effect of Environmental Disclosure on Firm Value

Extensive environmental disclosure accompanied by high-quality audits from Big Four accounting firms can provide assurance regarding the validity of environmental information, thereby triggering a positive market response. Conversely, environmental disclosure without high-quality audits may give rise to investor skepticism. Thus, audit quality is hypothesized to moderate the effect of environmental disclosure on firm value. This is supported by the research of Ramadhani et al. (2025) and Gunawan et al. (2025).

H3: Audit quality is hypothesized to moderate the effect of environmental disclosure on firm value.

2.5.4. Audit Quality Moderates the Effect of ROA on Firm Value

High profitability accompanied by audits from Big Four accounting firms provides assurance that corporate earnings are credible, thereby boosting investor confidence and firm value. Conversely, high profitability without high-quality audits may raise doubts regarding the reliability of earnings information. Therefore, audit quality is hypothesized to strengthen the effect of ROA on firm value. Research by Caesaria and Suhartono (2023) and Rohmawati and Tjahjono (2024) supports this relationship.

H4: Audit quality is hypothesized to moderate the effect of Return on Assets (ROA) on firm value.

3. Research Methods

3.1. Research Design

This study employed a quantitative approach with a descriptive-associative design to examine the effects of environmental disclosure and return on assets (ROA) on firm value, with audit quality as a moderating variable. A quantitative approach was appropriate because the research hypotheses were tested using numerical data and statistical analysis. The study examined company-level data over five consecutive years, from 2021 to 2025.

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3.2. Research Context and Setting

The research focused on companies in the basic materials sector listed on the Indonesia Stock Exchange (IDX). The observation period covered 2021–2025, while the research was conducted from April to July 2026. This sector was selected because its companies operate in industries where environmental impacts, profitability, and the credibility of corporate reporting are relevant to firm valuation. The study used publicly available corporate discosures to investigate the relationships among the research variables.

3.3. Population and Sample

The study population comprised 113 basic materials companies listed on the IDX during the 2021–2025 observation period. Purposive sampling was applied based on the following criteria: (1) the company had been listed on the IDX before 2021; (2) it published annual reports and sustainability reports throughout the observation period; (3) it disclosed environmental information based on Global Reporting Initiative (GRI) indicators for 2021–2025; and (4) it recorded positive profits consecutively throughout the observation period.

Based on these criteria, 18 companies were selected. With five annual observations for each company, the final dataset comprised 90 company-year observations (18 companies × 5 years).

3.4. Data Sources and Data Collection

This study used secondary data obtained from company financial statements, annual reports, and sustainability reports for 2021–2025. The reports were collected from the official IDX website (www.idx.co.id). Data collection involved literature review, documentation analysis, and internet-based research. The relevant financial and non-financial information was extracted from corporate reports to measure firm value, environmental disclosure, ROA, and audit quality.

3.5. Measurement of Variables and Research Instruments

The study examined four variables: firm value as the dependent variable, environmental disclosure and ROA as independent variables, and audit quality as the moderating variable. Each variable was operationalized using indicators appropriate to its conceptual definition.

Table 1. Measurement of Research Variables

Variable	Measurement/Indicator	Scale
Firm Value (Y)	*Price to Book Value* (PBV)	Ratio
Environmental Disclosure (X1)	Environmental disclosure indicators based on GRI	Ratio
ROA (X2)	The company's ability to generate profit using all its assets.	Ratio
Audit Quality (Z)	Big Four = 1; Non-Big Four = 0	Nominal

Source: Adapted from Rohaeni et al. (2018), Ifada (2022), Fitriani and Efendi (2024), Kasmir (2019), Nasution (2025), and Margareta (2025).

Firm value was measured using the PBV ratio, which represents the relationship between a company's market value and its book value (Risman, 2021). Environmental disclosure was measured using indicators based on the GRI framework to assess the extent of environmental information reported by each company (Ifada, 2022; Fitriani & Efendi, 2024). ROA was used to measure the company's effectiveness in generating profit from its total assets (Kasmir, 2019).

Audit quality was measured using the size of the Public Accounting Firm (Kantor Akuntan Publik or KAP). Companies audited by Big Four firms were assigned a value of 1, whereas those audited by non-Big Four firms were assigned a value of 0 (Margareta, 2025). This binary measure was used as a proxy for audit quality in the moderation analysis.

3.6. Data Analysis Techniques

Data were analyzed using partial least squares structural equation modeling (PLS-SEM) with SmartPLS 4.0. The analysis included descriptive statistics, model assessment, and hypothesis testing. The initial assessment examined the variance inflation factor (VIF) to identify potential multicollinearity. A VIF value below 5 was used as the acceptance threshold. Because the model employed single-item constructs, the outer-model assessment focused on collinearity rather than multi-item measurement reliability. The inner model was

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evaluated using the coefficient of determination (R^2) to assess the model's explanatory power.

Hypotheses were tested using bootstrapping to obtain path coefficients, t-statistics, and p-values. A two-tailed significance test was conducted at the 5% significance level, with a critical t-value of 1.96. A hypothesized relationship was considered statistically significant when the t-statistic exceeded 1.96 and the p-value was below 0.05. The moderation hypotheses were evaluated by examining the statistical significance of the interaction effects involving audit quality.

3.7. Validity, Reliability, and Trustworthiness

The research used secondary data from publicly available financial statements, annual reports, and sustainability reports. Variable measurement followed the operational definitions and indicators specified in Table 1. Because the model employed single-item constructs, internal consistency measures such as Cronbach's alpha and composite reliability were not applicable in the same manner as for multi-item scales. Collinearity was assessed using VIF, with a threshold below 5. The use of standardized measurement definitions and documented corporate disclosures supported consistency in data extraction and analysis.

3.8. Ethical Considerations

This study relied on secondary data obtained from publicly available corporate reports and did not involve direct interaction with human participants. The analysis was conducted using reported company information for academic research purposes. The sources of the data were identified, and the measurement procedures were described to support transparency and academic integrity.

3.9. Research Procedure

The research was conducted in several stages. First, the population of basic materials companies listed on the IDX was identified. Second, purposive sampling criteria were applied to select eligible companies. Third, financial statements, annual reports, and sustainability reports for 2021–2025 were collected and examined to extract the information required to measure the research variables. Fourth, the data were organized into a dataset comprising 90 company-year observations. Fifth, descriptive statistics and model assessments were conducted using SmartPLS 4.0. Finally, bootstrapping was used to test the direct relationships and moderation effects according to the specified significance criteria.

3.10. Methodological Limitations

This study has several methodological limitations. First, the sample was restricted to 18 basic materials companies that met the purposive sampling criteria, limiting the generalizability of the findings to other sectors and companies that did not meet the selection requirements. Second, the observation period covered only five years, from 2021 to 2025. Third, audit quality was operationalized using a binary classification of Big Four and non-Big Four firms, which may not capture all dimensions of audit quality. Finally, the analysis relied on secondary corporate disclosures, and the findings may therefore be influenced by differences in reporting practices and the availability of environmental information across companies.

4. Results and Discussion

4.1. Research Results

4.1.1. Sample Description and Descriptive Statistics

This study analyzes the influence of environmental disclosure and Return on Assets (ROA) on firm value, with audit quality serving as a moderating variable, for companies in the Basic Materials sector listed on the Indonesia Stock Exchange (IDX) during the 2021–2025 period. The study utilizes a dataset comprising 90 observations. The analysis was conducted using the Partial Least Squares-Structural Equation Modeling (PLS-SEM) method with the aid of SmartPLS 4.0 software.

Descriptive statistics indicate that environmental disclosure has a minimum value of 0.125, a maximum of 0.969, a mean of 0.585, and a standard deviation of 0.220. ROA shows a minimum value of 0.001, a maximum of 0.313, a mean of 0.056, and a standard deviation of 0.054. Firm value exhibits a minimum value of 0.187, a maximum of 6.713, a mean of 1.440, and a standard deviation of 1.157, while audit quality shows a minimum value of 0.000, a maximum of 1.000, a mean of 0.567, and a standard deviation of 0.496.

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Table 2. Descriptive Statistics

Variabel	Mean	Minimum	Maximum	Std.Dev
Environmental Disclosure	0.585	0.125	0.969	0.220
ROA	0.056	0.001	0.313	0.054
Company Value	1.440	0.187	6.713	1.157
Audit Quality	0.567	0.000	1.000	0.496

Source: Data processed using SmartPLS 4.0, 2026.

In the outer model evaluation, all constructs were modeled as single-item constructs; consequently, the loading factor for each indicator was 1.000. Collinearity testing revealed VIF values of 1.000 for all variables—well below the threshold of 5—indicating that the model is free from multicollinearity issues.

The inner model evaluation yielded an R-square value of 0.475 and an adjusted R-square of 0.444. This indicates that environmental disclosure, ROA, and audit quality (along with their interactions) explain 47.5% of the variation in firm value, while the remaining 52.5% is explained by variables outside the model. The f-square values were 0.003 for H1, 0.146 for H2, 0.045 for H3, and 0.154 for H4. A Q^2 value of 0.350 indicates predictive relevance, while an SRMR value of 0.000 indicates model fit.

4.1.2. Data Quality and Preliminary Analysis

The outer model evaluation indicated that all constructs were specified as single-item constructs. Consequently, the loading factor for each indicator was 1.000. Collinearity assessment showed VIF values of 1.000 for all variables, below the threshold of 5. These results indicated that no multicollinearity concerns were identified under the applied assessment criterion.

The inner model produced an R-square value of 0.475 and an adjusted R-square value of 0.444. The R-square result indicated that the model explained 47.5% of the variation in firm value, while the remaining 52.5% was attributable to factors outside the model. The f-square values were 0.003 for H1, 0.146 for H2, 0.045 for H3, and 0.154 for H4. The reported Q^2 value was 0.350, indicating predictive relevance, while the standardized root mean square residual (SRMR) value was 0.000.

4.1.3. Main Analytical Results

The research's structural model employs a formative PLS-SEM approach using SmartPLS 4.0. Figure 1 (Structural Equation Model-1) illustrates the direct relationships of environmental disclosure and ROA with firm value, whereas Figure 2 (Structural Equation Model-2) presents the model after incorporating audit quality as a moderating variable.

In the first model, environmental disclosure has a coefficient of -0.221, indicating a negative relationship with firm value, while ROA has a coefficient of 0.514, indicating a positive relationship. Upon introducing the moderating variable in the second model, the coefficient for environmental disclosure shifts to -0.069, and that for ROA becomes 0.335. The interaction between audit quality and environmental disclosure yields a coefficient of -0.325, while the interaction between audit quality and ROA yields a coefficient of 0.623. All variables utilize single-item constructs; consequently, each indicator has a loading factor of 1.000.

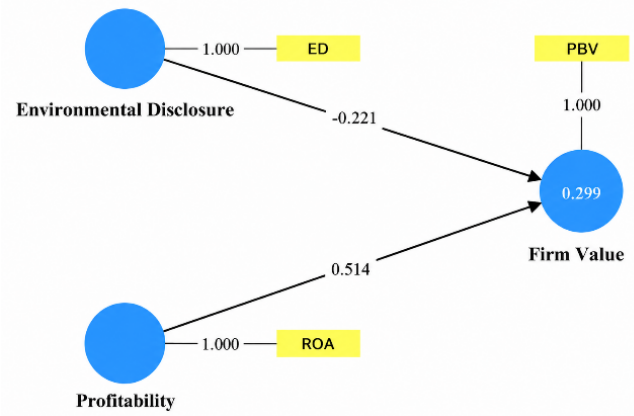


Fig. 2. Structural Equation Model-1

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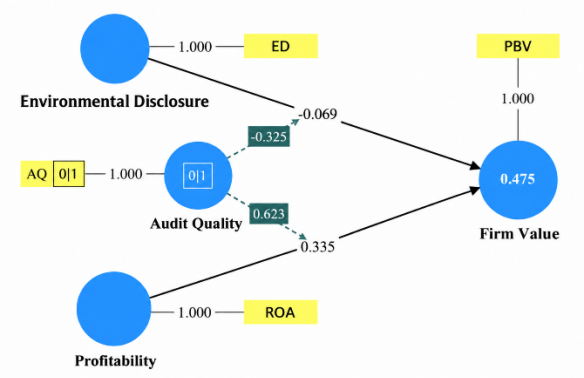


Fig. 3. Structural Equation Model-2

4.1.4. Hypothesis Testing Results

Hypothesis Hypothesis testing was conducted using bootstrapping in SmartPLS 4.0 with a significance level of 5%. The test results are presented below.

Table 3. Hypothesis Testing Results

Hypothesis	Relationship Between Variables	Original Sample (O)	t-Statistic	P-Values	Note
H1	ED → Company Value	-0,069	0,509	0,611	Rejected
H2	ROA → Company Value	0,335	3,192	0,001	Accepted
H3	AQ x ED → Company Value	-0,325	2,058	0,040	Accepted
H4	AQ x ROA → Company Value	0,623	2,540	0,011	Accepted

Source: Data processed using SmartPLS 4.0, 2026

The bootstrapping results show that Environmental Disclosure has a coefficient of -0.069, a t-statistic of 0.509,

and a p-value of 0.611. Since the t-statistic is less than 1.96 and the p-value is greater than 0.05, Environmental Disclosure does not have a significant effect on Firm Value; thus, H1 is rejected. ROA has a coefficient of 0.335, a t-statistic of 3.192, and a p-value of 0.001. Since the t-statistic is greater than 1.96 and the p-value is less than 0.05, ROA has a positive and significant effect on Firm Value; thus, H2 is accepted.

Audit Quality moderates the effect of Environmental Disclosure on Firm Value, with a coefficient of -0.325, a t-statistic of 2.058, and a p-value of 0.040. Consequently, H3 is accepted. Audit Quality also moderates the effect of ROA on Firm Value, with a coefficient of 0.623, a t-statistic of 2.540, and a p-value of 0.011; thus, H4 is accepted.

4.1.5. Visual Presentation of Results

The descriptive statistics in Table 2 summarize the characteristics of the research variables, while Table 3 presents the hypothesis testing results. Figure 1 illustrates the direct structural relationships, and Figure 2 presents the model incorporating audit quality as a moderator. Together, these tables and figures provide an overview of the descriptive characteristics, explanatory capacity, and estimated relationships in the research model.

4.2. Research Discussion

4.2.1. Interpretation of Key Findings

a. The effect of environmental disclosure on firm value

Environmental disclosure did not have a statistically significant effect on firm value. The estimated coefficient was −0.069, with a t-statistic of 0.509 and a p-value of 0.611. Therefore, H1 was rejected. Although the estimated coefficient was negative, its statistical insignificance means that the study did not establish a reliable direct relationship between environmental disclosure and firm value in the sampled companies.

One possible explanation is that environmental reporting in the basic materials sector is closely associated with the nature of companies' operational activities and environmental responsibilities. Consequently, differences in the extent of disclosure may not independently determine investor valuation. Investors may also consider financial performance, expected returns, and the credibility of disclosed information when

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evaluating companies. However, the present results do not directly establish investors' motivations; further research involving investor-level evidence would be needed to verify this explanation.

b. The effect of ROA on firm value

ROA had a positive and statistically significant effect on firm value, with a coefficient of 0.335, a t-statistic of 3.192, and a p-value of 0.001. H2 was therefore accepted. This finding indicates that greater profitability relative to total assets was associated with higher firm value in the estimated model.

Profitability provides information about management's ability to utilize corporate assets to generate earnings. For investors, this information can be relevant when evaluating operational efficiency and a company's capacity to produce financial returns. The result suggests that profitability was a more consistent direct correlate of firm value than environmental disclosure within the sample and observation period examined.

c. The moderating effect of audit quality on environmental disclosure and firm value

Audit quality significantly moderated the relationship between environmental disclosure and firm value. The interaction coefficient was −0.325, with a t-statistic of 2.058 and a p-value of 0.040. Accordingly, H3 was accepted.

The negative interaction coefficient indicates that the estimated relationship between environmental disclosure and firm value varied with the audit-quality measure in a negative direction. This result does not establish that audit quality necessarily strengthens the positive valuation effect of environmental disclosure. Instead, it suggests that the relationship depends on the interaction between disclosure and the audit-quality proxy. The direction and magnitude of the conditional effect should therefore be interpreted using the relevant interaction plot or conditional-effect estimates.

One possible interpretation is that the credibility associated with external auditing changes how environmental disclosures are reflected in firm valuation. Nevertheless, the negative coefficient requires careful consideration, as the results alone do not demonstrate whether investors became more skeptical of environmental reporting or whether other factors explain the interaction.

d. The moderating effect of audit quality on ROA and firm value

Audit quality significantly moderated the relationship between ROA and firm value. The interaction coefficient was 0.623, with a t-statistic of 2.540 and a p-value of 0.011. H4 was therefore accepted.

The positive interaction coefficient indicates that the estimated relationship between ROA and firm value became more positive as the value of the audit-quality indicator increased, subject to the model's specification. This result is consistent with the possibility that credible financial reporting enhances the relevance of profitability information to market valuation. However, because audit quality was measured using a Big Four versus non-Big Four classification, the result should be interpreted as an interaction involving this proxy rather than a comprehensive assessment of all dimensions of audit quality.

4.2.2. Comparison with Previous Studies

The finding that environmental disclosure did not significantly affect firm value differs from the positive relationship reported by Rafael and Lastanti (2025) and the negative relationship reported by Antonetta and Simon (2026). However, it is consistent with the insignificant effect identified by Luthfiana et al. (2025). This comparison reinforces the conclusion that the valuation implications of environmental disclosure are not uniform across research settings. Differences in sector characteristics, disclosure practices, and investor assessments may help explain the variation, although these factors were not independently tested in the present study.

The positive and significant effect of ROA on firm value is consistent with the findings of Rahmawati and Witono (2025). However, it differs from the negative effect reported by Alamsyah and Zaretta (2025) and the insignificant effect identified by Sari et al. (2025). The current findings provide additional evidence that profitability can be relevant to market valuation, particularly within the basic materials sector during the observation period.

The moderating effect of audit quality on the relationship between environmental disclosure and firm value is consistent with the evidence reported by Ramadhani et al. (2025) and Gunawan et al. (2025). It differs from Margareta (2025), who found that

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audit quality did not moderate the relationship. Nevertheless, the negative interaction coefficient in the present study indicates that the moderation is not necessarily positive. This distinction is important when comparing the direction of the estimated effect across studies.

The significant moderating effect of audit quality on the relationship between ROA and firm value is consistent with the findings of Caesaria and Suhartono (2023) and Rohmawati and Tjahjono (2024). The positive interaction coefficient supports the interpretation that the relationship between profitability and firm value varies with the audit-quality proxy. These comparisons position the findings within existing empirical research while highlighting the importance of considering both statistical significance and coefficient direction.

4.2.3. Theoretical Contributions

This study contributes to the literature on corporate valuation by examining environmental disclosure, profitability, and audit quality within a single empirical framework. The insignificant direct effect of environmental disclosure indicates that greater environmental transparency does not automatically correspond to higher firm value in the sampled companies. This finding qualifies the assumption that environmental information necessarily generates a favorable market response.

The positive and significant effect of ROA highlights the relevance of financial performance to firm valuation. Furthermore, the significant interaction effects indicate that the relationships between the independent variables and firm value vary according to the audit-quality measure. In particular, the negative environmental disclosure interaction and positive ROA interaction suggest that moderation should not be treated as uniformly beneficial across different types of corporate information.

Together, these findings extend the empirical understanding of firm value by distinguishing the direct effects of environmental disclosure and profitability from their conditional relationships with audit quality. The study provides sector-specific evidence from Indonesian basic materials companies during 2021–2025, contributing to the broader discussion of financial performance, environmental transparency, and reporting credibility.

4.2.4. Practical and Policy Implications

For corporate managers, the positive association between ROA and firm value underscores the importance of efficient asset utilization and sustainable profitability. Managers should monitor operational performance while maintaining transparent and accurate financial reporting. Profitability improvements should be supported by sound management practices rather than short-term actions that could undermine long-term corporate performance.

The insignificant direct effect of environmental disclosure does not imply that environmental reporting is unnecessary. Instead, companies should improve the completeness, consistency, and clarity of environmental information so that stakeholders can assess corporate environmental performance more effectively. Environmental reporting should be supported by reliable underlying data and integrated into corporate accountability practices.

The moderation findings also highlight the relevance of external auditing. Companies should consider the quality and independence of their auditors when seeking to strengthen confidence in corporate disclosures and financial statements. However, the negative interaction between audit quality and environmental disclosure means that companies should not assume that engaging a Big Four auditor will automatically increase the valuation benefits of environmental reporting. The credibility, relevance, and substance of the reported information remain important considerations.

For investors, the results support evaluating profitability alongside the credibility of financial information and the quality of environmental reporting. For regulators and other relevant stakeholders, the findings reinforce the importance of clear disclosure requirements and reliable reporting practices in capital markets.

4.2.5. Integration with the Research Gap

The study addressed the research gap arising from inconsistent findings regarding environmental disclosure, ROA, and audit quality. First, the insignificant direct effect of environmental disclosure provides additional evidence that the relationship between environmental reporting and firm value is context-dependent rather than universally positive. Second, the positive and

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significant effect of ROA supports the relevance of profitability to market valuation in the Indonesian basic materials sector. Third, both interaction terms were statistically significant, indicating that audit quality moderated the relationships examined in the study. However, the directions of the interaction coefficients differed: the environmental disclosure interaction was negative, whereas the ROA interaction was positive. This distinction provides a more nuanced understanding of the moderating role of audit quality and helps explain why previous studies may have reported different outcomes.

By examining both direct relationships and moderation effects within the same model, the study provides sector-specific evidence for the 2021–2025 period and responds to the need for a more integrated examination of environmental transparency, profitability, and audit quality.

4.2.6. Acknowledgement of Study Limitations

This study was limited to basic materials companies listed on the IDX during 2021–2025. The use of purposive sampling resulted in a sample of 18 companies, meaning that the findings may not be generalizable to other sectors or companies that did not satisfy the selection criteria. In addition, audit quality was measured using a binary classification of Big Four and non-Big Four firms, which may not capture all dimensions of audit quality.

The study also relied on secondary corporate disclosures, which may differ in completeness and reporting practices across companies. The findings should therefore be interpreted within the context of the sample, observation period, measurement choices, and specified statistical model. In particular, the negative environmental disclosure interaction warrants further examination before drawing broader conclusions about how audit quality influences investor responses to environmental information.

5. Conclusion

5.1. Summary of Key Findings

This study examined the effects of environmental disclosure and ROA on firm value, with audit quality as a moderating variable, among basic materials companies listed on the IDX during 2021–2025. The findings indicate that environmental disclosure did not have a statistically significant direct effect on firm value, whereas ROA had a positive and statistically significant effect. Audit quality significantly moderated both relationships, with a negative interaction coefficient for environmental disclosure and a positive interaction coefficient for ROA.

These results demonstrate that the relationship between corporate information and firm value varies according to the type of information and the audit-quality measure. Profitability was positively associated with firm value, while environmental disclosure did not exhibit a significant direct relationship within the sample. The significant interaction effects further indicate that audit quality is relevant to understanding these relationships, although the direction of moderation differs between environmental disclosure and profitability.

5.2. Theoretical Contributions

The study contributes to the corporate valuation literature by examining environmental disclosure, ROA, and audit quality within an integrated framework. The findings qualify the assumption that environmental disclosure necessarily increases firm value and provide evidence of a positive relationship between profitability and market valuation in the Indonesian basic materials sector.

The study also contributes by distinguishing the direction of audit-quality moderation across the two relationships. The negative interaction involving environmental disclosure and the positive interaction involving ROA demonstrate that the moderating role of audit quality may vary depending on the information being evaluated. These findings provide additional empirical evidence relevant to the research gap concerning the inconsistent relationships among environmental disclosure, profitability, audit quality, and firm value.

5.3. Practical and Policy Implications

Companies in the basic materials sector should prioritize efficient asset management and sustainable profitability while maintaining reliable corporate reporting. Although environmental disclosure did not have a significant direct effect on firm value, companies should continue to improve the quality, completeness, and transparency of environmental information to support stakeholder accountability and informed decision-making.

The significant moderating effects highlight

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the importance of credible external auditing. Companies should select auditors based on appropriate standards of competence, independence, and reporting quality rather than assuming that audit-firm size alone guarantees favorable market outcomes. Investors should consider financial performance, environmental information, and audit quality together when assessing companies. Relevant market stakeholders may also use these findings to support improvements in corporate reporting transparency and accountability.

5.4. Limitations of the Study

The findings are subject to limitations arising from the sample and research context. The study covered 18 basic materials companies listed on the IDX over the 2021–2025 period, and the purposive sampling method limits generalization to companies outside the selected sample. The use of a Big Four versus non-Big Four classification also represents a simplified proxy for audit quality. Furthermore, the reliance on secondary corporate reports means that differences in disclosure practices and information availability may influence the measurements.

These limitations should be considered when interpreting the findings, particularly the moderating effect of audit quality on environmental disclosure. The results describe the relationships estimated within the specified model and do not establish that the same relationships will apply across all sectors or periods.

5.5. Directions for Future Research

Future research could extend the observation period and include companies from other sectors to assess whether the findings remain consistent across different economic and regulatory contexts. Researchers could also examine additional moderating variables beyond audit quality to determine whether other corporate or institutional characteristics influence the relationships between environmental disclosure, profitability, and firm value.

Further studies could employ alternative measures of audit quality to capture dimensions beyond the size of the audit firm. In addition, examining the quality and substance of environmental disclosures rather than their extent alone may provide a more detailed understanding of their relevance to firm valuation. These approaches could help clarify the conditions under which environmental transparency and financial performance are reflected in investor assessments and market value. The findings of the present study may also serve as a reference for academic development and further research in financial accounting and capital markets at Bina Bangsa University.

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