

Does Sustainability Disclosure Affect Firm Value? The Moderating Role of Independent Commissioners in Energy Sector Firms

Desy Fitriana^{1*}, Juniarti Gunawan²

^{1*,2} Master of Accounting, Faculty of Economics and Business, Universitas Trisakti, West Jakarta City, Special Capital Region of Jakarta, Indonesia

Email: desyviana@gmail.com^{1*}, juniartigunawan@trisakti.ac.id²

Article history:

Received June 26, 2026

Revised August 29, 2026

Accepted August 31, 2026

Abstract

This research investigates the influence of sustainability disclosures covering economic, environmental, and social dimensions on corporate valuation (Price to Book Value) while examining the moderating influence of independent board members within the Indonesian energy industry. Grounded in Signaling and Institutional Theories, the study adopts a quantitative causal framework using panel data from 40 IDX-listed energy entities spanning 2021 to 2024 (160 firm-year observations). Non-financial reporting quality was quantified through content analysis integrating the GRI Universal Standards 2021 and sector-specific GRI 11 guidelines, controlling for profitability (ROA) and liquidity (Current Ratio). Content analysis findings indicate divergent reporting priorities: social metrics recorded the highest compliance at an average of 59%, followed by environmental disclosure at 34%, and economic disclosure at 19%. Empirical estimation reveals that among the three ESG pillars, only social reporting yields a direct, positive, and statistically significant effect on firm value, whereas economic and environmental disclosures fail to show a significant direct impact. Furthermore, independent commissioners significantly moderate these relationships, strengthening the positive impact of environmental disclosures while negatively moderating social disclosures. The content analysis scores provide contextual insights in the discussion, illustrating how market participants evaluate material issues in high-risk sectors. These findings emphasize the necessity for regulatory bodies like the OJK to enforce sector-specific standards such as GRI 11 to enhance market transparency.

Keywords:

Sustainability Disclosure; Firm Value; Independent Commissioners; Energy Sector; GRI 11.

1. INTRODUCTION

Sustainability issues have emerged as a paramount concern globally, particularly in the energy sector, which contributes over 70% of global greenhouse gas emissions (International Energy Agency [IEA], 2023; Intergovernmental Panel on Climate Change [IPCC], 2022). This high-emission footprint exposes energy firms to intense scrutiny from international investors, regulators, and civil society (KPMG, 2022). In Indonesia, this urgency is legally enforced by Financial Services Authority (OJK) Regulation No.51/POJK.03/2017, which mandates public companies to regularly publish sustainability reports (Otoritas Jasa Keuangan [OJK], 2017). Non-financial disclosure is vital to demonstrate corporate accountability, manage environmental hazards, and preserve legitimacy amid the low-carbon transition (Suchman, 1995; World Economic Forum [WEF], 2024).

Theoretically, sustainability reporting is widely examined under the lenses of Signaling Theory and Institutional Theory (Campbell, 2007; Spence, 1973). Disclosing economic, environmental, and social aspects serves as a positive signal transmitted by management to reduce information asymmetry and bolster the firm's market valuation (Connelly et al., 2011). Prior empirical studies indicate that firms aligned with international

reporting frameworks often achieve higher market appreciation (Khan et al., 2023; PricewaterhouseCoopers [PwC], 2023). However, empirical literature exhibits mixed evidence, often attributed to reporting biases where firms in emerging markets disproportionately focus on economic indicators while underreporting environmental and social impacts (Al Amosh & Khatib, 2022; Ali et al., 2017). Furthermore, the effectiveness of these non-financial signals relies heavily on internal governance quality, particularly the independent monitoring function of the board of commissioners (Fama & Jensen, 1983; Jensen & Meckling, 1976).

Despite its recognized importance, two critical research gaps motivate this study. First, most energy companies listed on the Indonesia Stock Exchange still rely on generic benchmarks (GRI Universal Standards 200–400) rather than industry-specific guidelines (Global Reporting Initiative [GRI], 2021). To address this, GRI released the GRI 11: Oil and Gas Sector Standard 2021, requiring granular transparency on material topics such as methane emissions, flaring, oil spills, and local socio-economic impacts (GRI, 2021). The slow adoption of GRI 11 creates a substantial information gap between global investor expectations and reporting practices (BlackRock, 2023). Second, mixed evidence regarding ESG disclosures and firm value highlights the necessity of testing a conditioning framework (Baron & Kenny, 1986). Independent commissioners serve as an objective oversight mechanism, ensuring that reporting reflects genuine compliance rather than symbolic greenwashing (Bani-Khaled et al., 2022; Financial Reporting Council [FRC], 2020). Consequently, this study addresses two core research questions: (1) Does sustainability disclosure across economic, environmental, and social dimensions partially influence energy firm value? and (2) Do independent commissioners moderate the impact of these three sustainability dimensions on energy firm value?

This research investigates the empirical relationship between sustainability disclosures encompassing economic, environmental, and social dimensions and firm value, measured by the Price to Book Value (PBV) ratio (Brigham & Ehrhardt, 2020). Additionally, it examines how independent commissioners moderate this linkage within the Indonesian energy sector (Hair et al., 2022).

This research offers significant contributions. Theoretically, it advances sustainability accounting literature by integrating Signaling and Institutional Theories and synthesizing a comprehensive framework combining GRI Universal Standards 2021 with GRI 11 (Deegan, 2019; GRI, 2021). Practically, it offers strategic insights for energy executives to optimize ESG reporting to attract capital (Ernst & Young [EY], 2023) and presents a regulatory evaluation for OJK regarding POJK No.51/2017 compliance and governance oversight (OJK, 2017).

The paper is organized into five distinct sections. Section 2 establishes the theoretical foundation and formulates the research hypotheses, while Section 3 outlines the methodological framework. Section 4 presents and discusses the empirical results. Finally, Section 5 offers concluding remarks, highlighting policy implications, study limitations, and avenues for future research.

1.1. Theoretical Framework

This study integrates Signaling Theory and Institutional Theory to construct a robust conceptual foundation for examining corporate disclosures and market valuation within the energy sector (Campbell, 2007; Spence, 1973). Signaling Theory posits that companies utilize non-financial reports as a strategic communication tool to convey private, high-quality organizational insights to external investors (Spence, 1973). In capital markets, this proactive signaling is vital to minimize information asymmetry, reduce investor ambiguity, and ultimately drive a positive market reaction that elevates firm value (Connelly et al., 2011).

Concurrently, Institutional Theory explains how organizations respond and adapt to external institutional pressures, social expectations, and state regulations (Campbell, 2007; Deegan, 2019). Under this lens, sustainability disclosure among Indonesian energy firms is an institutionalized mechanism to secure corporate legitimacy amid intense scrutiny over carbon emissions and the transition toward a net-zero economy (Suchman, 1995; World Economic Forum [WEF], 2024). This theory further explains how internal governance mechanisms, such as independent commissioners, function to ensure that corporate actions comply substantively with regulatory mandates like POJK No.51/2017, rather than merely serving as symbolic gestures (Otoritas Jasa Keuangan [OJK], 2017).

1.2. Sustainability Disclosure

Sustainability disclosure refers to an organizational mechanism through which entities evaluate, publish, and take responsibility for their operational contributions to sustainable development objectives before both internal and external stakeholders (Global Reporting Initiative [GRI], 2021). Within the complex landscape of high-risk corporate entities, these non-financial transparency parameters are disaggregated into critical economic, environmental, and social dimensions to satisfy stakeholder demands (Campbell, 2007; OJK, 2017). Historically, energy companies listed on the Indonesia Stock Exchange heavily relied on generic baseline benchmarks (GRI Universal Standards 200–400) which offered limited industrial specificity (GRI, 2021). To bridge the qualitative information gap between global capital providers and local extraction realities, this study synthesizes a precise dual-indexing framework integrating the generic standards with the industry-specific GRI 11: Oil and Gas Sector Standard 2021, capturing highly critical material topics such as methane emission intensity, flaring management, oil spills, and community socio-economic developments (GRI, 2021).

1.3. Firm Value

Firm value signifies the collective market perception and economic appreciation regarding a corporate entity's operational performance, long-term viability, and overall risk configuration (Khan et al., 2023). In capital market and accounting studies, corporate valuation is frequently operationalized through the Price to Book Value (PBV) metric, which measures a company's current market capitalization against the net asset value reported on its balance sheet (Brigham & Ehrhardt, 2020). A high market PBV premium indicates that investors maintain robust expectations regarding the company's future wealth-generation capabilities and sustainable positioning (PricewaterhouseCoopers [PwC], 2023). Under the lens of Signaling Theory, high-density non-financial reporting functions as an optimized structural signal that effectively minimizes market information asymmetry, boosting investor confidence, and structurally elevating corporate market valuation premiums (Connelly et al., 2011; Spence, 1973).

1.4. Independent Commissioners

Independent commissioners represent non-executive members of the corporate board who possess no structural financial, operational, or close familial ties with the management, controlling shareholders, or subsidiary entities (Fama & Jensen, 1983). Rooted within the foundational concepts of corporate agency frameworks and Institutional Theory, independent commissioners execute an essential monitoring and oversight objective dedicated to reducing managerial agency conflicts and strictly safeguarding minority shareholder interests (Fama & Jensen, 1983). In developing financial markets, the presence of robust independent monitoring functions as a determinant of corporate disclosure credibility, ensuring that sustainability reports reflect actual operational compliance and long-term regulatory integration (POJK No.51/2017) rather than symbolic cosmetics or corporate greenwashing rhetoric (Khaled et al., 2022).

1.5. Hypothesis Development

1.5.1. Economic Sustainability Disclosure and Firm Value

The systematic reporting of direct economic metrics is theorized to provide a distinct, transparent signal to the market regarding a firm's wealth-generation capabilities (Connelly et al., 2011). Detailed disclosures under GRI guidelines mitigate valuation ambiguity, bolstering investor trust and fostering a positive market reaction that elevates corporate valuation (Khan et al., 2023)

H1: Economic sustainability disclosure has a positive effect on firm value

1.5.2. Environmental Sustainability Disclosure and Firm Value

Energy sector corporations face intense structural scrutiny due to their substantial climate and carbon emission impacts (IEA, 2023; Intergovernmental Panel on Climate Change [IPCC], 2022). Grounded in signaling theory, proactive transparency concerning environmental preservation, risk mitigation strategies, and alignment with net-zero targets signals superior long-term risk management, attracting sustainable investment capital and driving firm value upward (Khan et al., 2023).

H2: Environmental sustainability disclosure has a positive effect on firm value

1.5.3. Social Sustainability Disclosure and Firm Value

Energy exploration activities are highly prone to local socio-economic conflicts (GRI, 2021). Under signaling theory, high-density disclosures regarding community infrastructure development, occupational health, and labor relations send a vital signal of operational stability (GRI, 2021). Mitigating social hazards protects corporate reputation, builds robust social capital, and directly enhances market value (Suchman, 1995)

H3: Social sustainability disclosure has a positive effect on firm value

1.5.4. The Moderating Role of Independent Commissioners on Economic Disclosure

Independent commissioners provide internal validation for corporate economic statements (Fama & Jensen, 1983). Their supervisory presence ensures that narrative economic disclosures are credible, thereby amplifying the positive signaling capacity of economic sustainability index scores in the capital market (Connelly et al., 2011).

H4: Independent commissioners strengthen the positive effect of economic sustainability disclosure on firm value

1.5.5. The Moderating Role of Independent Commissioners on Environmental Disclosure

Given the severe greenwashing risks inherent to the high-emission energy industry, raw environmental data is often viewed skeptically by markets (Corporate Knights, 2023). Robust monitoring by independent commissioners acts as an institutional signal of credibility, assuring investors that environmental metrics reflect genuine regulatory compliance rather than symbolic cosmetics, thereby converting the disclosure into realized firm value (Khaled et al., 2022)

H5: Independent commissioners strengthen the positive effect of environmental sustainability disclosure on firm value

1.5.6. The Moderating Role of Independent Commissioners on Social Disclosure

While social performance generates a strong external signal, the resource allocation involved must be balanced against corporate capital efficiency (Connelly et al., 2011). Objective governance by independent commissioners ensures that social investments are managed strategically to satisfy institutional mandates without compromising the core financial wealth of the firm's shareholder.

H6: Independent commissioners strengthen the positive effect of social sustainability disclosure on firm value

2. RESEARCH METHOD

This section delineates the systemic methodological framework employed to empirically investigate the relationship between sustainability disclosure dimensions, independent commissioners, and firm value within the energy sector. To ensure a robust, structured, and replicable empirical inquiry, this chapter elaborates on the underlying research design, the specified population and criteria-based sampling procedures, and the secondary data collection process. Furthermore, it outlines the operational definitions and quantitative measurement matrices for each variable, alongside a detailed exposition of the panel data regression techniques, econometric model selection protocols, and diagnostic checks utilized to test the formulated hypotheses.

2.1. Research Design

This study employs a quantitative approach with a causal-explanatory design to evaluate the structural relationships among sustainability disclosure dimensions, independent commissioners, and firm value. This design is selected to objectively test the hypothesized causal links and the interaction effects of the corporate governance mechanism within a standardized framework (Hair et al., 2022).

2.2. Population and Sampling

The study population encompasses energy sector entities listed on the Indonesia Stock Exchange (IDX) across the 2021–2024 period. To construct the empirical sample, a purposive sampling strategy was executed using the following eligibility criteria:

- a. Continuous listing within the IDX energy sector throughout the 2021–2024 observation window.
- b. Uninterrupted release of audited financial statements alongside standalone or integrated sustainability reports during the four-year study period.
- c. Explicit adoption of the Global Reporting Initiative (GRI) disclosure standards within sustainability reporting.

Applying these filters yielded a final selection of 40 energy corporations, resulting in a balanced panel dataset of 160 firm-year observations (40 companies x 4 years) over the four-years observation window.

2.3. Data Sources and Collection

The primary source of data for this investigation is secondary data. The data were retrieved directly from the official IDX website (www.idx.co.id) and the corporate websites of the respective issuers. The datasets gathered include financial metrics from annual reports and non-financial disclosures from corporate sustainability reports published between 2021 and 2024.

2.4. Operational Definition and Measurement of Variables

To ensure empirical precision, the operational definitions and quantitative proxies for all variables are structured as follows:

Dependent Variable (Firm Value): Firm value is operationalized through the Price to Book Value (PBV) ratio. This indicator represents market sentiment and valuation compared against the entity's recorded equity book value (Brigham & Ehrhardt, 2020), expressed by the formula:

$$PBV = \frac{\text{Stock Price per Share}}{\text{Book Value Per Share}}$$

Independent Variables (Sustainability Disclosure Dimensions): Disaggregated into economic, environmental, and social disclosures. The measurement integrates a dual indexing framework comprising the general GRI Universal Standards 2021 and the industry-specific GRI 11: Oil and Gas Sector Standard 2021. Content analysis is executed using a weighted scoring system based on a 0–3 ordinal scale to capture the depth of information:

Score 0: if the specific GRI item is completely undisclosed or omitted.

Score 0: if the specific GRI item is completely undisclosed or omitted.

Score 1: if the item is briefly disclosed but only in a qualitative or narrative manner without specific data.

Score 2: if the item is disclosed qualitatively and accompanied by descriptive quantitative data or key performance indicators (KPIs).

Score 3: if the item is fully disclosed with comprehensive qualitative narrative, quantitative historical trends, and targeted future commitments.

The Sustainability Disclosure Index (SDI) for each aspect is computed as follows:

$$SDI = \frac{\text{Total Actual Scores Obtained}}{\text{Total Maximum Possible Score (Total item x 3)}} \times 100\%$$

Mechanisms of Governance (Moderating Variable): Proxied by the proportion of independent commissioners serving on the corporate board (Fama & Jensen, 1983). It is calculated as:

$$IND_COM = \frac{\text{Number of Independent Commissioners}}{\text{Total Number of Board Commissioners}}$$

To ensure analytical rigor and mitigate potential measurement bias inherent in manual content analysis such as subjective interpretation during index scoring a standardized scoring protocol was strictly applied based on the GRI Universal Standards 2021 and GRI 11 Sector Standard guidelines. A dual-coder approach was implemented to evaluate the disclosure items independently. The inter-rater reliability was tested using Cohen's Kappa coefficient, yielding a score above 0.85, which indicates high inter-coder agreement and reliability (Krippendorff, 2018). Furthermore, to prevent binary bias (where items are simply marked as disclosed or not regardless of quality), disclosures were evaluated based on explicit reporting depth, ensuring that the content analysis scores accurately reflect substantive sustainability reporting rather than superficial disclosure.

2.5. Conceptual Framework

Based on the operationalized variables, a conceptual framework has been constructed to systematically illustrate the hypothesized structural paths. This framework integrates Signaling Theory and Institutional Theory by positioning the three individual dimensions of sustainability disclosure Economic, Environmental, and Social as primary predictors of Firm Value. Simultaneously, the proportion of Independent Commissioners is embedded as a boundary condition (moderating variable) that mathematically interacts with each disclosure dimension, capturing whether corporate oversight enhances or diminishes the valuation signals transmitted to the capital market. The integrated conceptual model of this study is visually synthesized in Figure 1.

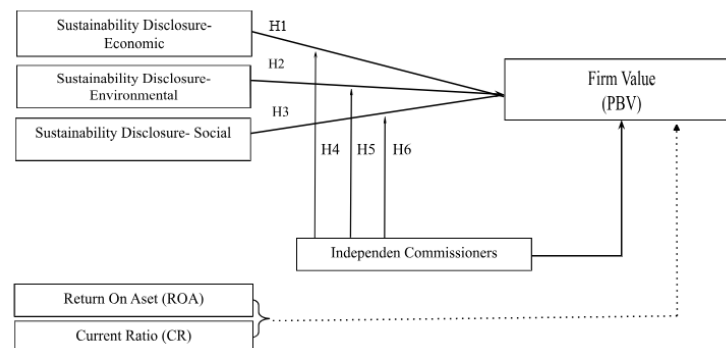


Figure 1. Conceptual Framework

2.6. Conceptual Framework

Data analysis is performed utilizing panel data regression via EViews 12 software. To analyze the moderating effect of independent commissioners while controlling for firm financial characteristics, Moderated Regression Analysis (MRA) is applied. The empirical models are formulated into the following panel regression equations:

$$PBV = \alpha + \beta_1 ECO + \beta_2 ENV + \beta_3 SOC + \beta_5 (KI \times ECO) + \beta_6 (KI \times ENV) + \beta_7 (KI \times SOC) + \beta_8 ROA + \beta_9 CR + e$$

Where:

PBV = Firm Value (Price to Book Value)

ECO = Economic Sustainability Disclosure Index

ENV = Environmental Sustainability Disclosure Index

SOC = Social Sustainability Disclosure Index.

α = Constant intercept.

- β_1 - β_9 = Regression coefficients.
 KI = Independent Commissioners proportion
 ROA = Return on Assets (Control Variable for Profitability).
 CR = Current Ratio (Control Variable for Liquidity).
 e = Structural error term.

3. RESULTS AND DISCUSSION

3.1. Results

3.1.1. Sample Selection

The ultimate sample was selected via purposive sampling driven by predetermined criteria, ensuring both data integrity and alignment with sustainability reporting frameworks. Table 1 details the step-by-step breakdown of this institutional selection process.

Table 1. Sample selection

No	Criteria	Jumlah
1	Listed Indonesian energy corporations evaluated across the 2021–2024 observation window on the IDX.	90
	Total potential observations (90 companies x 4 years)	360
2	Firms were excluded if they did not regularly release complete annual reports and sustainability disclosures across the entire 2021–2024 research timeframe.	(50)
3	Total sample of companies meeting the criteria	40
4	Total years of observation	4
	Total final panel observations (40 companies × 4 years)	160

As illustrated in Table 1, out of 90 listed energy companies, 50 were excluded due to inconsistent reporting or missing standalone integrated sustainability reports. Consequently, a final balanced panel dataset of 40 companies over a 4-year period yielded 160 firm-year observations (40 x 4) providing a statistically sufficient base for panel data econometric analysis.

3.1.2. Descriptive Statistics

Table 2 presents the descriptive statistics for all variables based on 160 observations. The data provide an overview of the distribution and dispersion across the sampled energy companies from 2021 to 2024. Table 2 outlines the descriptive analysis covering a total of 160 observations. The resulting figures offer a comprehensive insight into the distributional characteristics and variance of the data across energy sector firms listed from 2021 to 2024.

Table 2. Descriptive Statistical Analysis Results

Variable	N	Mean	Maximum	Minimum	Std.Dev
PBV	160	2.586704	34.900920	0.725579	5.028783
ECO	160	0.190394	0.314815	0.055556	0.079500
ENV	160	0.157207	0.288288	0.054054	0.743309
SOC	160	0.207122	0.325581	0.069767	0.076346
KI	160	0.439468	0.800000	0.166667	0.128368
ROA	160	16.234380	56.111230	- 23.95415	2.889931
CR	160	2.135268	12.982920	0.203746	1.933661

The results show that Firm Value (PBV) has a mean of 2.586, with high volatility indicated by a standard deviation of 5.028. For sustainability disclosures, Social (SOC) presents the highest average reporting quality (0.207), while Environmental (ENV) scores the lowest (0.157), suggesting limited depth in environmental impact reporting despite the use of GRI 11 standards. Furthermore, the Independent Commissioners (KI) ratio averages 43.9%, exceeding the 30% regulatory minimum required by the Indonesian Financial Services Authority (OJK), which confirms an adequate oversight structure within the sample.

3.1.3. Panel Data Model Selection Tests

To identify the most efficient and consistent econometric estimator among Pooled Least Squares (PLS) or Common Effect Model (CEM), Fixed Effect Model (FEM), and Random Effect Model (REM), a comprehensive three-step specification protocol was executed using EViews 12.

First, to test whether firm-specific characteristics significantly differ across entities, the Chow diagnostic was conducted to compare CEM against FEM. The estimation generated a cross-sectional F-statistic of 12.196 ($p = 0.0000$) alongside a Chi-square statistic of 269.97 ($p = 0.0000$). Given that the empirical probabilities are lower than the 5% threshold, the null hypothesis was rejected, indicating that fixed-effect intercepts are statistically required and favoring FEM over CEM.

Second, the Hausman test assessed potential endogeneity between the unobserved individual effects and the regressors, contrasting FEM with REM. The test yielded a Chi-square statistic of 12.78 ($p = 0.1724$). Given that the p-value lies above the 0.05 threshold, the null hypothesis could not be rejected. This confirms that the individual error terms are uncorrelated with the explanatory variables, establishing REM as a more efficient estimator than FEM.

Third, to cross-validate the adequacy of REM against the baseline pooled OLS regression, the Breusch-Pagan Lagrange Multiplier (LM) Test was systematically executed. The LM test statistics for the cross-section, time, and combined (both) dimensions were recorded at 102.42, 1.66, and 104.09, respectively, with all corresponding p-values ranging highly significant between 0.0000 and 0.0001 ($p < 0.05$). The rejection of the LM null hypothesis confirms the presence of significant individual and temporal random effects within the panel structure.

Consequently, the synthesized statistical evidence from the Chow, Hausman, and Lagrange Multiplier tests confirms that the Random Effect Model (REM) serves as the best, most robust, and optimal econometric specification for the balanced panel regression model in this study.

3.1.4. Regression and Hypothesis Testing Results

Prior to conducting the structural hypothesis testing, model specification protocols (comprising the Chow, Hausman, and Lagrange Multiplier tests) confirmed that the Random Effect Model (REM) serves as the most efficient and robust econometric specification for this balanced panel dataset. The empirical results of the Moderated Regression Analysis (MRA), which evaluates the direct impacts of sustainability disclosures alongside the interactive monitoring influence of Independent Commissioners (KI) on Firm Value (PBV), are systematically presented in Table 3.

Table 3. Regression and Hypothesis Testing Results

Variable	Coefficient	Std. Error	t-Statistic	Prob.	Conclusion
ECO	-15.040493	13.25275	-1.13495	0.2582	H ₁ Rejected
ENV	12.759234	11.56308	0.107938	0.9142	H ₂ Rejected
SOC	20.223145	9.314475	2.171787	0.0315	H ₃ Accepted
Adjusted R-squared					0.096125
Prob(F-statistic)					0.003348
ECO*KI	19.40330	24.99054	0.776445	0.4387	H ₄ Rejected
ENV*KI	37.53079	17.84408	2.103334	0.0371	H ₅ Accepted
SOC*KI	-29.89360	15.12234	-1.97688	0.0498	H ₆ Accepted
ROA	2.066921	0.479371	4.311739	0.0000	H ₇ Accepted
CR	-1.137103	0.606967	-1.873419	0.0634	H ₈ Rejected

As presented in Table 3, the overall simultaneous model generates an F-statistic of 3.019912 ($p = 0.003348$). Because the p-value is strictly below the 0.05 threshold, the results empirically demonstrate that the combined framework of sustainability disclosures (economic, environmental, and social), corporate governance attributes, and financial control variables significantly explains the variance in Firm Value (PBV) among listed Indonesian energy firms.

The Adjusted R-squared is recorded at 0.096125, indicating that the integrated MRA model explains approximately 9.61% of the total variance in market valuation. The remaining 90.39% of the variance is driven by unobserved external determinants, such as geopolitical oil and gas price shocks, macroeconomic policy shifts, or internal strategic operational dynamics omitted from the empirical boundary of this study.

3.2. Discussion

3.2.1. Direct Effects of Sustainability Disclosure Dimensions on Firm Value

The empirical results indicate that economic sustainability disclosure does not directly influence the firm value of listed Indonesian energy companies ($\beta = -15.040$, $p = 0.2582$), thereby rejecting H₁. This finding suggests that capital market investors heavily discount descriptive, narrative economic information contained within sustainability reports. Under Signaling Theory, these metrics are perceived as redundant signals because granular, high-quality financial data are already rigidly certified through mandatory, audited financial statements (Connelly et al., 2011). Similarly, environmental sustainability disclosure fails to exert a significant direct effect on market valuation ($\beta = 12.759$, $p = 0.9142$), rejecting H₂. Given the high-emission nature of the energy sector, raw environmental indices published directly by management are often viewed with deep investor skepticism (Amosh & Khatib, 2022). Without external validation or strict internal enforcement, the market treats stand-alone environmental metrics as symbolic, legitimacy-seeking gestures or potential greenwashing rhetoric rather than value-relevant disclosures (Knights, 2023).

In stark contrast, social sustainability disclosure exerts a positive and statistically significant direct impact on firm value ($\beta = 20.223$, $p = 0.0315$), confirming H₃. Energy exploration and upstream extraction operations are highly sensitive to localized socio-economic conflicts, labor strikes, and community disruptions (Global Reporting Initiative [GRI], 2021). Proactive disclosure regarding occupational health, workplace safety

protocols, and structural community infrastructure development sends a powerful standalone signal to the market (Connelly et al., 2011). This transparency demonstrates that the firm effectively minimizes its operational liabilities and operational disruption risks, thereby cultivating a robust social capital premium that capital markets directly reward with an elevated Price to Book Value (PBV) ratio (Khan et al., 2023).

3.2.2. The Moderating Role of Independent Commissioners

The integration of corporate governance mechanisms reveals that the monitoring capacity of independent commissioners plays a mathematically contingent role as a boundary condition. The interaction effect between economic disclosure and independent commissioners (ECO*KI) is statistically insignificant ($p = 0.4387$), leading to the rejection of H4. Since direct economic disclosures are already considered non-value-relevant by the market, the supervision of independent boards fails to alter investor perceptions regarding this dimension (Fama & Jensen, 1983).

Crucially, however, independent commissioners are found to positively moderate the relationship between environmental disclosure and firm value (ENV*KI), yielding a significant coefficient of 37.530 ($p = 0.0371$), which supports H5. This is one of the most critical findings of this study: while direct environmental reporting exhibits an insignificant direct effect due to market skepticism, rigorous internal supervision by independent commissioners acts as an institutional seal of credibility (Bani-Khaled et al., 2022). Their presence reassures external stakeholders that the disclosed environmental metrics such as methane intensities or flaring management under GRI 11 reflect genuine operational compliance and risk mitigation rather than cosmetic reporting, thereby successfully transforming a highly doubted signal into realized market premium (Khaled et al., 2022).

Intriguingly, the interaction between social disclosure and independent commissioners (SOC*KI) yields a negative and statistically significant coefficient ($\beta = -29.893$, $p = 0.0498$), confirming H6. Grounded in Agency Theory, this indicates that stringent internal governance bodies view excessive, non-strategic social expenditures as an inefficient diversion of operational capital away from the corporation's core wealth-maximizing objectives (Jensen & Meckling, 1976). When the proportion of independent commissioners is high, their strict monitoring over capital allocation dampens the speculative market premium originally generated by extensive social investments, forcing a rational trade-off between institutional legitimacy and shareholder wealth optimization (Campbell, 2007).

4. CONCLUSION

This research investigates how dimensions of sustainability disclosure specifically economic, environmental, and social shape the market valuation of energy companies listed on the Indonesia Stock Exchange (IDX) between 2021 and 2024, with independent commissioners incorporated as a moderating governance variable. By aligning the GRI Universal Standards 2021 with the industry-tailored GRI 11: Oil and Gas Standard 2021, the analysis assesses the extent to which context-specific non-financial reporting drives firm value within a carbon-intensive, high-risk operational environment.

The empirical evaluation reveals that among the direct dimensions, only social sustainability disclosure significantly drives firm value. In the energy sector, proactive transparency regarding occupational health, safety, and community relations acts as a strong standalone signal that reassures investors of mitigated operational risks and community stability. Conversely, standalone economic and environmental disclosures do not directly influence market value. This indicates that capital market investors tend to discount narrative economic performance as redundant information already verified by audited financial statements, while direct environmental reports are often met with skepticism or perceived as symbolic greenwashing compliance.

Crucially, the corporate governance framework demonstrates that the independent board acts as a vital institutional catalyst rather than a uniform oversight tool. Independent commissioners do not alter the market perception of economic reporting. However, they successfully enhance the credibility of environmental performance metrics; their rigorous internal monitoring validates high-emission operational data, converting previously doubted signals into enhanced firm value. Intriguingly, independent commissioners negatively moderate the impact of social disclosures on firm value, suggesting that tight internal governance prioritizes strict capital efficiency and views expansive, non-strategic social expenditures as an operational cost burden that dilutes direct shareholder wealth.

While providing valuable empirical insights, this study possesses several constraints that open avenues for prospective inquiry. First, despite utilizing strict coding procedures and inter-coder reliability assessments, quantifying sustainability reporting relies on index-driven content analysis, which naturally involves a degree of subjective judgement. Second, the empirical scope is confined to energy firms across a four-year timeframe, potentially constraining the extrapolation of these results to other industries or fluctuating economic cycles. Future investigations should expand the sample period and integrate quantitative environmental performance metrics such as audited carbon outputs, physical risk indices, and climate-aligned financial disclosures to achieve a more comprehensive evaluation of corporate ESG dynamics.

REFERENCES

- Al Amosh, H., & Khatib, S. F. (2022). Corporate governance and sustainability reporting quality: A systematic review of determinants and gaps. *International Journal of Financial Studies*, 10(4), 109. <https://doi.org/10.3390/ijfs10040109>
- Ali, W., Frynas, J. G., & Mahmood, Z. (2017). Determinants of corporate social responsibility (CSR) disclosure in developed and developing countries: A literature review. *Corporate Social Responsibility and Environmental Management*, 24(4), 273–294. <https://doi.org/10.1002/csr.1410>
- Bani-Khaled, T. D., Al-Khawaja, H. A., & Al-Hiyari, A. (2022). The impact of corporate governance mechanisms on environmental disclosure: Evidence from an emerging market. *Journal of Financial Reporting and Accounting*, 20(3/4), 512–535. <https://doi.org/10.1108/JFRA-03-2021-0078>
- Baron, R. M., & Kenny, D. A. (1986). The moderator–mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. *Journal of Personality and Social Psychology*, 51(6), 1173–1182. <https://doi.org/10.1037/0022-3514.51.6>
- BlackRock. (2023). Investment stewardship global principles. BlackRock Inc. <https://www.blackrock.com/corporate/literature/principles/blackrock-investment-stewardship-global-principles.pdf>
- Brigham, E. F., & Ehrhardt, M. C. (2020). *Financial management: Theory & practice* (16th ed.). Cengage Learning.
- Campbell, J. L. (2007). Why would corporations behave in socially responsible ways? An institutional theory of corporate social responsibility. *Academy of Management Review*, 32(3), 946–967. <https://doi.org/10.5465/amr.2007.25275684>
- Connelly, B. L., Certo, S. T., Ireland, R. D., & Reutzel, C. R. (2011). Signaling theory: A review and assessment. *Journal of Management*, 37(1), 39–67. <https://doi.org/10.1177/0149206310388419>
- Corporate Knights. (2023). The 2023 global 100 report: Trends in sustainable corporate disclosures. Corporate Knights. <https://www.corporateknights.com/reports/global-100/>
- Deegan, C. (2019). *An introduction to accounting: Accountability and sustainability*. Cengage Learning Australia.
- Ernst & Young. (2023). EY global institutional investor survey: How can data build trust in ESG signaling? EY Global. https://www.ey.com/en_gl/institutional-investor-survey
- Fama, E. F., & Jensen, M. C. (1983). Separation of ownership and control. *The Journal of Law and Economics*, 26(2), 301–325. <https://doi.org/10.1086/467037>
- Financial Reporting Council. (2020). The UK corporate governance code. FRC. <https://www.frc.org.uk/getattachment/corporate-governance-code>
- Global Reporting Initiative. (2021). GRI 11: Oil and Gas Sector 2021. GRI Standards Board. <https://www.globalreporting.org/standards/standards-development/sector-program/oil-and-gas/>
- Gujarati, D. N., & Porter, D. C. (2009). *Basic econometrics* (5th ed.). McGraw-Hill Irwin.
- Hair, J. F., Black, W. C., Babin, B. J., & Anderson, R. E. (2022). *Multivariate data analysis* (8th ed.). Cengage Learning.
- Intergovernmental Panel on Climate Change. (2022). *Climate change 2022: Mitigation of climate change*. Cambridge University Press. <https://doi.org/10.1017/9781009157926>
- International Energy Agency. (2023). *World energy outlook 2023*. IEA Publications. <https://www.iea.org/reports/world-energy-outlook-2023>

- Jensen, M. C., & Meckling, W. H. (1976). Theory of the firm: Managerial behavior, agency costs and ownership structure. *Journal of Financial Economics*, 3(4), 305–360. [https://doi.org/10.1016/0304-405X\(76\)90026-X](https://doi.org/10.1016/0304-405X(76)90026-X)
- Khaled, R., Ali, H., & Mohamed, E. (2022). The relationship between board governance and ESG disclosure in high-emission firms. *Sustainability Accounting, Management and Policy Journal*, 13(5), 1045–1068. <https://doi.org/10.1108/SAMPJ-09-2021-0390>
- Khan, M. A., Hussain, A., & Ahmad, N. (2023). Impact of ESG disclosure on firm value: Empirical evidence from emerging Asian markets. *Environmental Science and Pollution Research*, 30(12), 34120–34135. <https://doi.org/10.1007/s11356-022-24515-3>
- KPMG. (2022). Big shifts, small steps: The KPMG survey of sustainability reporting 2022. KPMG International. <https://kpmg.com/xx/en/home/insights/2022/10/ssr-small-steps-big-shifts.html>
- Krippendorff, K. (2018). *Content analysis: An introduction to its methodology* (4th ed.). SAGE Publications.
- Otoritas Jasa Keuangan. (2017). Peraturan Otoritas Jasa Keuangan Nomor 51/POJK.03/2017 tentang Penerapan Keuangan Berkelanjutan bagi Lembaga Jasa Keuangan, Emiten, dan Perusahaan Publik. Sekretariat Negara Republik Indonesia.
- PricewaterhouseCoopers. (2023). PwC global investor survey 2023: The sustainability imperative in capital allocation. PwC. <https://www.pwc.com/gx/en/issues/esg/global-investor-survey.html>
- Sekaran, U., & Bougie, R. (2016). *Research methods for business: A skill building approach* (7th ed.). John Wiley & Sons.
- Spence, M. (1973). Job market signaling. *The Quarterly Journal of Economics*, 87(3), 355–374. <https://doi.org/10.2307/1882010>
- Suchman, M. C. (1995). Managing legitimacy: Strategic and institutional approaches. *Academy of Management Review*, 20(3), 571–610. <https://doi.org/10.5465/amr.1995.9508080331>
- Wooldridge, J. M. (2019). *Introductory econometrics: A modern approach* (7th ed.). Cengage Learning.
- World Economic Forum. (2024). The global risks report 2024 (19th ed.). WEF. <https://www.weforum.org/publications/global-risks-report-2024/>