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GOVERNANCE-BASED SUSTAINABILITY RISK INTEGRATION AND FIRM VALUE: DOES OWNERSHIP STRUCTURE MATTER?

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Abstract

Corporate sustainability has become an essential element of corporate governance, requiring firms to integrate environmental, social, and governance (ESG) considerations into strategic decision-making and enterprise risk management. Although prior studies have widely examined ESG disclosure and sustainability reporting, limited attention has been given to how sustainability-related risks are embedded within governance and risk management processes. Evidence regarding the moderating role of ownership structure in this relationship also remains inconclusive, particularly in emerging markets. This study investigates the effect of Governance-Based Sustainability Risk Integration (GBSRI) on firm value and examines whether ownership structure moderates this relationship. A quantitative explanatory approach was employed using balanced panel data comprising 75 firm-year observations from 15 Indonesian listed companies operating in high-risk industries during 2020–2024. The GBSRI Index integrates the COSO ERM Framework, GRI Standards, and IFRS S1 and S2 into a governance-oriented framework with seven dimensions and 30 indicators. Using MRA with pooled OLS, the study finds that GBSRI has no significant effect on firm value, and ownership structure does not moderate this relationship. Nevertheless, the GBSRI Index contributes to sustainability accounting by offering a comprehensive framework for assessing sustainability risk integration into corporate governance and enterprise risk management, particularly in high-risk industries.

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INTRODUCTION

Corporate sustainability has evolved from a voluntary corporate social responsibility initiative into a strategic component of corporate governance that supports organizational resilience, competitiveness, and long-term value creation. This shift reflects the growing integration of sustainability into corporate governance, strategic planning, and enterprise risk management as organizations respond to increasing concerns over climate change, resource scarcity, biodiversity loss, social inequality, and corporate accountability (Adams, 2017). The introduction of the International Financial Reporting Standards (IFRS) Sustainability Disclosure Standards (IFRS S1 and IFRS S2) further reinforces this transformation by requiring companies to disclose how sustainability-related risks and opportunities are governed, managed, and incorporated into business strategy. Likewise, the COSO Enterprise Risk Management Framework emphasizes integrating sustainability-related risks into enterprise-wide risk management to strengthen organizational resilience and support sustainable value creation.

In Indonesia, sustainability governance has gained greater attention following the implementation of POJK No. 51/POJK.03/2017 on Sustainable Finance and the Sustainable Finance Roadmap Phase II (2021–2025). These initiatives encourage listed companies to strengthen ESG practices and integrate sustainability considerations into governance and business strategy. According to the Indonesia Stock Exchange Fact Book (2024), 79 listed companies operate in the Energy, Materials, Industrials, and Utilities sectors, industries characterized by substantial environmental, operational, and regulatory risks. Although sustainability reporting has become increasingly common, disclosure alone does not necessarily indicate that sustainability-related risks have been effectively embedded in governance structures or enterprise risk management processes.

This distinction is important because many companies continue to prioritize compliance with reporting requirements rather than integrating sustainability into strategic decision-making. As a result, extensive sustainability disclosure may reflect reporting practices instead of an organization's capability to identify, assess, manage, and monitor sustainability-related risks. Consequently, disclosure-based measures alone may not adequately capture the maturity of sustainability governance, particularly in industries facing high environmental and operational uncertainty.

The relationship between sustainability governance and firm value can be explained through several complementary theoretical perspectives. Agency Theory argues that integrating sustainability-related risks into governance improves board oversight, reduces information asymmetry, and mitigates agency conflicts, thereby increasing investor confidence and firm value (Jensen & Meckling, 1976). Stakeholder Theory suggests that organizations create long-term value by addressing the expectations of multiple stakeholder groups, strengthening trust, accountability, and organizational resilience (Freeman, 1984). Institutional Theory further explains that firms adopt sustainability governance in response to regulatory pressures, industry norms, and stakeholder expectations, allowing them to enhance organizational legitimacy and investor confidence (Scott, 2014).

Despite growing interest in sustainability governance, previous empirical findings remain inconclusive, particularly in emerging markets. Most studies assess sustainability performance using ESG scores, ESG disclosure indices, or sustainability reporting, which primarily evaluate disclosure quality or external ratings. Although these measures provide useful information, they offer limited insight into whether sustainability-related risks are systematically integrated into governance structures and enterprise risk management.

Likewise, existing governance indices mainly emphasize board oversight while paying less attention to sustainability risk identification, assessment, response, monitoring, and disclosure alignment within a single framework.

Table 1. Comparison of Sustainability Measurement Frameworks in Previous Studies

Measurement Framework	Primary Focus	Main Dimensions	Limitation	Contribution of the Present Study
ESG Score	Overall ESG performance	Environmental, Social, Governance ratings	Primarily measures disclosure or external ratings; does not explicitly assess sustainability risk integration	
ESG Disclosure Index	Sustainability reporting quality	ESG disclosure indicators	Focuses on reporting completeness rather than governance implementation	
Sustainability Governance Index	Governance practices related to sustainability	Board oversight, governance mechanisms	Limited integration with enterprise risk management and sustainability risk assessment	
Governance-Based Sustainability Risk Integration (GBSRI) ***(This Study)***	Governance integration of sustainability-related risks	Governance, risk identification, risk assessment, risk response, strategic integration, monitoring, disclosure alignment	Integrates governance, enterprise risk management, and sustainability reporting into a unified measurement framework	Provides a governance-oriented assessment of sustainability risk integration by combining COSO ERM, GRI Universal Standards, and IFRS S1–S2.

The comparison highlights a clear methodological gap. Existing frameworks focus either on disclosure quality or governance mechanisms, whereas none comprehensively evaluates how sustainability-related risks are incorporated into governance and enterprise risk management. To address this limitation, this study develops the Governance-Based Sustainability Risk Integration (GBSRI) Index, which integrates the COSO Enterprise Risk Management Framework (2017), the GRI Universal Standards (2021), and the IFRS Sustainability Disclosure Standards (IFRS S1 and IFRS S2). The proposed index consists of seven governance dimensions and 30 disclosure indicators covering governance commitment, sustainability risk identification, risk assessment, risk response, strategic integration, monitoring and evaluation, and disclosure alignment. By combining governance, enterprise risk management, and sustainability reporting into a single

measurement framework, the GBSRI Index provides a more comprehensive assessment of sustainability governance than conventional ESG disclosure measures.

Based on this framework, the present study investigates whether Governance-Based Sustainability Risk Integration influences firm value and whether ownership structure moderates this relationship among Indonesian listed companies operating in high-risk industries during 2020–2024. In addition to examining these relationships, the study contributes to the sustainability accounting literature by introducing a governance-oriented measurement framework that integrates sustainability governance, enterprise risk management, and ownership structure within a unified empirical model. The findings are expected to enrich the literature on sustainability governance in emerging economies while providing practical insights for regulators and corporate managers seeking to strengthen governance-based sustainability risk management.

METHOD

Research Design

This study employed a quantitative explanatory design using balanced panel data to examine the relationships between Governance-Based Sustainability Risk Integration (GBSRI), ownership structure, and firm value. The analysis covered Indonesian listed companies operating in high-risk industries during 2020–2024, a period marked by the implementation of Indonesia's sustainable finance agenda and the introduction of the IFRS Sustainability Disclosure Standards (IFRS S1 and IFRS S2). Secondary data were collected from annual reports, sustainability reports, corporate governance reports, audited financial statements, and Indonesia Stock Exchange (IDX) publications, ensuring transparent and replicable measurement.

Research Setting and Data Sources

The study focuses on companies listed in the Energy, Materials, Industrials, and Utilities sectors because these industries face substantial environmental, operational, and regulatory risks. They have also experienced increasing pressure to strengthen sustainability governance following the implementation of Indonesia's Sustainable Finance Roadmap Phase II (2021–2025).

Data were obtained from publicly available corporate documents, including annual reports, sustainability reports, governance reports, audited financial statements, and IDX publications. Using multiple documentary sources improves the completeness of governance and sustainability information while reducing potential measurement bias.

Population and Sampling Technique

The population comprised all 963 companies listed on the Indonesia Stock Exchange. Purposive sampling was applied because constructing the GBSRI Index required comprehensive governance, sustainability, financial, and market disclosures that were not consistently available across all firms.

Sample companies were required to:

1. remain listed during 2020–2024;
2. operate in the Energy, Materials, Industrials, or Utilities sectors;
3. publish annual reports throughout the observation period;
4. provide sustainability reports or equivalent ESG disclosures;
5. disclose sufficient governance information for constructing the GBSRI Index; and
6. report complete financial and market data.

Applying these criteria resulted in 15 companies, generating a balanced panel of 75 firm-year observations.

Table 2. Sample Selection Procedure

Sample Selection Process	Number of Companies
Companies listed on the Indonesia Stock Exchange	963
Less: Companies outside high-risk industries	(884)
Companies operating in high-risk industries	79
Less: Companies with incomplete sustainability disclosure, governance information, or financial data	(64)
Final sample	**15**
Observation period	Five Years
Firm-year observations	**75**

Source: Processed by the authors based on Indonesia Stock Exchange (2024) and company annual reports.

Although the final sample is relatively small, it reflects the strict disclosure requirements needed to construct the GBSRI Index rather than limitations in the sampling process. Because the index relies on detailed content analysis of governance and sustainability disclosures, data completeness and measurement consistency were prioritized over sample size (Hair et al., 2019; Krippendorff, 2019).

Governance-Based Sustainability Risk Integration (GBSRI) Index

This study develops the Governance-Based Sustainability Risk Integration (GBSRI) Index to assess how sustainability-related risks are embedded within corporate governance and enterprise risk management. Unlike conventional ESG measures that primarily assess disclosure quality or external ratings, the GBSRI Index evaluates the integration of sustainability risks into governance structures, strategic decision-making, risk management, monitoring, and disclosure.

The framework combines three internationally recognized standards: the COSO Enterprise Risk Management Framework (2017), the GRI Universal Standards (2021), and the IFRS Sustainability Disclosure Standards (IFRS S1 and IFRS S2). It was also informed by Desender's (2007) governance-oriented ERM framework, which emphasizes integrating risk management into corporate governance.

The final index consists of seven dimensions and 30 disclosure indicators covering governance commitment, sustainability risk identification, sustainability risk assessment, sustainability risk response, strategic integration, monitoring and evaluation, and disclosure alignment.

The dimensions of the Governance-Based Sustainability Risk Integration (GBSRI) Index are presented in Table 3.

Table 3. Dimensions of the Governance-Based Sustainability Risk Integration (GBSRI) Index

Dimension	Description	Number of Indicators	Main Reference
Governance Commitment	Board oversight, sustainability governance structure, governance responsibilities	5	COSO (2017); IFRS S1
Sustainability Risk Identification	Identification of environmental, social, and governance risks	5	COSO (2017); GRI 3

Sustainability Risk Assessment	Risk assessment procedures, materiality assessment, prioritization	4	COSO (2017); IFRS S1
Sustainability Risk Response	Risk mitigation strategies and sustainability action plans	5	COSO (2017); IFRS S2
Strategic Integration	Integration of sustainability into corporate strategy and decision making	4	IFRS S1; OECD (2023)
Monitoring and Evaluation	Sustainability performance monitoring and internal evaluation	4	COSO (2017); GRI Universal Standards
Disclosure Alignment	Consistency between governance implementation and sustainability disclosures	3	GRI (2021); IFRS S1
Total		**30**	

Source: Developed by the authors based on COSO (2017), GRI Standards (2021), and IFRS Sustainability Disclosure Standards (2023).

Development and Content Validation of the GBSRI Index

The GBSRI Index was developed through four stages. First, governance and sustainability disclosure items were identified from the COSO ERM Framework, GRI Universal Standards, and IFRS Sustainability Disclosure Standards. Second, overlapping items were consolidated to eliminate redundancy while preserving conceptual coverage. Third, the remaining indicators were organized into seven governance dimensions. Finally, each dimension was operationalized into measurable disclosure indicators suitable for structured content analysis.

The final instrument contains 30 disclosure indicators derived directly from internationally recognized standards, providing strong theoretical support and improving content validity.

Content analysis was conducted using annual reports, sustainability reports, governance reports, audited financial statements, and other publicly available corporate documents. Each indicator received a score of 1 when explicit evidence was identified and 0 otherwise. This dichotomous approach enhances objectivity, comparability, and measurement reliability (Krippendorff, 2019).

The GBSRI score was calculated as the proportion of disclosed indicators to the maximum possible score, producing values between 0 and 1, where higher scores indicate stronger integration of sustainability-related risks into governance and enterprise risk management.

The Governance-Based Sustainability Risk Integration Index was calculated using the following formula:

$$GBSRI_i = \frac{\sum_{j=1}^{30} X_{ij}}{30}$$

where:

$GBSRI_i$ = Governance-Based Sustainability Risk Integration score for company i;

X_{ij} = disclosure score for indicator j;

X_{ij} = 1 if the disclosure item is explicitly reported;

X_{ij} = 0 otherwise.

To enhance the reliability and replicability of the measurement process, a comprehensive coding manual was prepared before the content analysis was conducted. The coding manual specifies the operational definition, disclosure criteria, supporting

keywords, documentary evidence, and scoring procedures for each disclosure indicator. Applying identical coding procedures across all observations ensures measurement consistency, improves transparency, and facilitates future replication of the proposed Governance-Based Sustainability Risk Integration (GBSRI) Index in subsequent studies.

Variable Measurement

Firm value was measured using Tobin's Q (Chung & Pruitt, 1994). The independent variable, GBSRI, was measured as the proportion of disclosed governance-based sustainability risk integration indicators relative to the maximum score of 30. Ownership structure was treated as a dummy variable, with state-owned enterprises coded as 1 and privately owned firms as 0.

To improve model robustness, three control variables were included: profitability (Return on Assets), leverage (Debt-to-Assets Ratio), and firm size (natural logarithm of total assets) (Brigham & Ehrhardt, 2019; Dang et al., 2018). The operational definitions, measurement procedures, scales, and references for each variable are summarized in Table 4.

Table 4. Operational Definition of Variables

Variable	Proxy	Measurement	Scale	References
Firm Value (Dependent Variable)	Tobin's Q	(Market Value of Equity + Total Debt) ÷ Total Assets	Ratio	Chung & Pruitt (1994)
Governance-Based Sustainability Risk Integration (Independent Variable)	GBSRI Index	Total disclosed indicators ÷ 30	Ratio	Developed by the authors
Ownership Structure (Moderating Variable)	Dummy Variable	SOE = 1; Private = 0	Nominal	Annual Report
Profitability (Control Variable)	ROA	Net Income ÷ Total Assets	Ratio	Brigham & Ehrhardt (2019)
Leverage (Control Variable)	Debt Ratio	Total Debt ÷ Total Assets	Ratio	Brigham & Ehrhardt (2019)
Firm Size (Control Variable)	Firm Size	Natural logarithm of Total Assets	Ratio	Dang et al. (2018)

Source: Developed by the authors based on previous literature.

Data Analysis Technique

The empirical analysis was performed using IBM SPSS Statistics. Consistent with Baltagi (2021), pooled Ordinary Least Squares (OLS) is appropriate for balanced panel data when the objective is to estimate population-average relationships rather than firm- or time-specific effects.

The analysis proceeded in four stages. First, descriptive statistics summarized the characteristics of the variables. Second, classical assumption tests assessed normality, multicollinearity, heteroscedasticity, and autocorrelation. Third, Moderated Regression Analysis (MRA) estimated both the direct effect of GBSRI on firm value and the moderating role of ownership structure. Finally, hypotheses were evaluated based on the significance and direction of the regression coefficients.

The regression models are specified as follows.

Model 1

$$FV = \beta_0 + \beta_1 GBSRI + \beta_2 ROA + \beta_3 LEV + \beta_4 SIZE + \varepsilon$$

Model 2

$$FV = \beta_0 + \beta_1 GBSRI + \beta_2 OWN + \beta_3 ROA + \beta_4 LEV + \beta_5 SIZE + \varepsilon$$

Model 3 (Moderating Model)

$$FV = \beta_0 + \beta_1 GBSRI + \beta_2 OWN + \beta_3 (GBSRI \times OWN) + \beta_4 ROA + \beta_5 LEV + \beta_6 SIZE + \varepsilon$$

where:

- **FV** = Firm Value (Tobin's Q)
- **GBSRI** = Governance-Based Sustainability Risk Integration Index
- **OWN** = Ownership Structure
- **ROA** = Return on Assets
- **LEV** = Leverage
- **SIZE** = Firm Size
- **ε** = Error term

The moderating effect was assessed using the interaction term GBSRI × Ownership, where a significant interaction coefficient indicates that ownership structure influences the relationship between governance-based sustainability risk integration and firm value.

The complete sequence of empirical analyses is summarized in Table 5.

Table 5. Summary of Data Analysis

Analysis	Purpose
Descriptive Statistics	Describe the characteristics and distribution of the research variables
Classical Assumption Tests	Evaluate the assumptions of pooled OLS regression
Moderated Regression Analysis (MRA)	Estimate the direct and moderating effects
Hypothesis Testing	Evaluate the proposed hypotheses based on regression results

Source: Developed by the authors.

RESULTS AND DISCUSSION

Sample Characteristics

The empirical analysis is based on a balanced panel dataset comprising 75 firm-year observations from 15 companies operating in four Indonesian high-risk industries—Energy, Materials, Industrials, and Utilities—during the 2020–2024 observation period. These sectors were selected because they are characterized by relatively high environmental, operational, and regulatory risks, making sustainability governance and risk integration particularly relevant.

Among the sampled firms, five are state-owned enterprises (SOEs) and ten are privately owned companies, providing sufficient variation in ownership structure for examining its moderating role. The balanced panel design ensures that each company contributes an equal number of observations across the study period, thereby improving measurement consistency and facilitating comparison of governance practices over time.

Descriptive Statistics

The descriptive statistics presented in Table 6 indicate that the average GBSRI score of 0.688 suggests that the sampled firms disclosed approximately 69% of the governance-based sustainability risk integration indicators. This finding implies that sustainability-related risks have been incorporated into corporate governance to a moderate extent, although substantial variation remains across companies, as indicated by the standard deviation of 0.111.

The mean Tobin's Q value of 1.943 indicates that, on average, investors valued the sampled firms above their book value, suggesting positive market expectations regarding future performance. However, the relatively wide range of Tobin's Q values also reflects considerable differences in market valuation across firms.

The descriptive statistics for ROA, leverage, and firm size demonstrate adequate variation among observations, indicating that the selected control variables provide sufficient heterogeneity for the subsequent regression analysis.

Table 6. Descriptive Statistics

Variable	N	Minimum	Maximum	Mean	Std. Deviation
GBSRI Index	75	0.37	0.90	0.6880	0.11091
Tobin's Q	75	1.12	2.83	1.9433	0.52252
ROA	75	0.02	0.15	0.0816	0.03725
Leverage	75	0.30	0.70	0.5132	0.11450
Firm Size	75	28.04	31.90	29.8888	1.18407

Source: Processed data (2026).

Diagnostic Tests for the Pooled OLS Regression Model

The diagnostic test results confirm that the assumptions underlying pooled Ordinary Least Squares regression are generally satisfied. As reported in Table 7, the Kolmogorov–Smirnov test indicates that the residuals are normally distributed ($p = 0.067 > 0.05$). Although the Shapiro–Wilk test is statistically significant, the Kolmogorov–Smirnov statistic is considered more appropriate for the present sample size.

Table 8 demonstrates that all Variance Inflation Factor (VIF) values are well below the commonly accepted threshold of 10, while tolerance values exceed 0.10, indicating the absence of multicollinearity.

Furthermore, the Glejser test reported in Table 9 shows that all independent variables have significance values exceeding 0.05, suggesting that heteroscedasticity is not present. Collectively, these diagnostic results support the suitability of the regression model for hypothesis testing.

Table 7. Normality Test

Test	Statistic	Sig.
Kolmogorov–Smirnov	0.099	0.067
Shapiro–Wilk	0.967	0.044

Source: Processed data (2026).

Table 8. Multicollinearity Test

Variable	Tolerance	VIF
ROA	0.952	1.050
Leverage	0.975	1.026
Firm Size	0.940	1.064
GBSRI	0.642	1.558
Ownership	0.831	1.204
GBSRI × Ownership	0.614	1.628

Source: Processed data (2026).

Table 9. Heteroscedasticity Test (Glejser Test)

Variable	Beta	Sig.
Ownership	0.116	0.369
ROA	-0.029	0.807
Leverage	0.205	0.086
Firm Size	0.008	0.946
GBSRI	-0.110	0.454
GBSRI × Ownership	0.157	0.295

Source: Processed data (2026).

Hypothesis Testing

The results of the Moderated Regression Analysis are presented in Table 10.

Table 10. Moderated Regression Analysis Results

Variables	Model 1	Model 2	Model 3
GBSRI	0.079	−0.010	−0.260
Ownership	-	0.068	0.039
GBSRI × Ownership	-	-	0.991
ROA	−2.092	−2.126	−2.334
Leverage	0.342	0.346	0.350
Firm Size	0.013	0.013	0.014
R^2	0.029	0.032	0.039
Adjusted R^2	−0.027	−0.038	−0.046
F	0.514	0.456	0.463
Sig.	0.725	0.808	0.834

Source: Processed data (2026).

The empirical analysis was conducted using three regression models to examine the direct effect of Governance-Based Sustainability Risk Integration (GBSRI) on firm value and the moderating role of ownership structure.

Model 1 estimates the direct relationship between GBSRI and firm value while controlling for profitability, leverage, and firm size. The estimated coefficient of GBSRI is positive ($\beta = 0.079$) but statistically insignificant, indicating that the integration of sustainability-related risks into corporate governance does not significantly influence firm value. Accordingly, Hypothesis 1 is not supported.

Model 2 incorporates ownership structure as an additional explanatory variable. The ownership coefficient is also statistically insignificant ($\beta = 0.068$), suggesting that state ownership does not directly influence firm value after controlling for governance-based sustainability risk integration and the selected control variables. The explanatory power of the model increases only marginally, with R^2 rising from 0.029 to 0.032.

Model 3 evaluates the moderating role of ownership structure by introducing the interaction term between GBSRI and ownership structure (GBSRI × Ownership). Although the interaction coefficient is positive ($\beta = 0.991$), it is not statistically significant. This finding indicates that ownership structure does not strengthen or weaken the relationship between governance-based sustainability risk integration and firm value. Therefore, Hypothesis 2 is also not supported.

The estimated coefficients of the control variables—profitability (ROA), leverage, and firm size—remain statistically insignificant across all three models. These findings suggest that, within the sampled firms, variations in financial performance, capital structure, and organizational size do not explain differences in firm value after controlling for governance-based sustainability risk integration and ownership structure.

The regression models produce relatively low coefficients of determination, with R^2 values ranging from 0.029 to 0.039 and negative adjusted R^2 values across all specifications. These results indicate that the explanatory variables included in the models account for only a limited proportion of the variation in firm value. Considering that market valuation is simultaneously influenced by numerous firm-specific and external factors—including macroeconomic conditions, investor sentiment, commodity price fluctuations, corporate growth opportunities, industry dynamics, and overall market conditions—the relatively low explanatory power is not unexpected.

Furthermore, the overall regression models are not statistically significant, as indicated by the F-test significance values of 0.725, 0.808, and 0.834 for Models 1, 2, and 3, respectively. These results suggest that the independent, moderating, and control variables, when considered jointly, do not provide sufficient explanatory power to predict firm value within the observed sample. Nevertheless, the absence of statistically significant relationships should not be interpreted as evidence that governance-based sustainability risk integration is unimportant. Instead, it may indicate that the benefits of sustainability governance are long-term in nature, while firm value—as measured by Tobin's Q—is strongly influenced by broader market conditions and other determinants not included in the present model.

Overall, the hypothesis testing results indicate that neither governance-based sustainability risk integration nor ownership structure significantly explains firm value among Indonesian high-risk companies during the 2020–2024 observation period. The findings suggest that investors may not yet fully incorporate governance-based sustainability risk integration into market valuation, or that the effects of such governance practices require a longer period to be reflected in firm value.

DISCUSSION

The Effect of Governance-Based Sustainability Risk Integration on Firm Value

The empirical findings indicate that Governance-Based Sustainability Risk Integration (GBSRI) does not exert a statistically significant influence on firm value among Indonesian companies operating in high-risk industries. Accordingly, the results do not support the expectation that stronger integration of sustainability-related risks into corporate governance immediately translates into higher market valuation. These findings suggest that investors have not yet incorporated governance-oriented sustainability practices as a major determinant of corporate value within the Indonesian capital market.

From the perspective of Stakeholder Theory, organizations that effectively integrate sustainability-related risks into governance structures are expected to strengthen stakeholder trust, improve corporate legitimacy, and ultimately enhance firm value. Strong governance mechanisms should signal organizational commitment to sustainable value creation and reduce uncertainty regarding long-term business performance. However, the insignificant relationship identified in this study indicates that these governance-related benefits may not yet be fully recognized by investors. In the Indonesian capital market, investment decisions continue to be dominated by conventional financial indicators, while governance-based sustainability initiatives appear to receive comparatively less attention in market valuation.

According to Legitimacy Theory (Suchman, 1995), organizations adopt sustainability governance to maintain social acceptance and organizational legitimacy by aligning their practices with prevailing social expectations. The findings of this study suggest that many firms operating in high-risk industries implement sustainability governance primarily to satisfy regulatory requirements rather than to generate immediate financial returns. Consequently, governance-based sustainability initiatives may function more as mechanisms for maintaining organizational legitimacy than as direct drivers of market value during the observation period.

Similarly, Agency Theory suggests that stronger governance mechanisms reduce agency conflicts through improved transparency, accountability, and board oversight. Governance-based sustainability risk integration should therefore reduce information asymmetry between managers and investors and enhance investor confidence. Nevertheless, the insignificant empirical relationship indicates that investors may not yet perceive governance-based sustainability integration as a sufficiently credible signal of future financial performance. As a result, the expected reduction in agency costs has not yet been reflected in market valuation. This finding is consistent with evidence from emerging markets, where corporate governance mechanisms do not always translate into higher firm value because institutional environments, investor protection, and governance quality remain heterogeneous (Claessens & Yurtoglu, 2013).

Another possible explanation relates to the relatively early stage of sustainability governance development in Indonesia. Although sustainability reporting has become increasingly important following the implementation of the Sustainable Finance Roadmap and the adoption of the IFRS Sustainability Disclosure Standards (IFRS S1 and IFRS S2), the incorporation of sustainability-related information into investment decision-making remains limited. Investors may require a longer period to evaluate the credibility, consistency, and economic relevance of sustainability governance before these practices are reflected in firm value. Although global institutional investors increasingly integrate ESG considerations into investment decisions (Eccles & Klimenko,

2019), such investment behavior appears to be less established within the Indonesian capital market, where conventional financial indicators continue to dominate valuation decisions.

The characteristics of high-risk industries may further explain the insignificant relationship. Companies operating in the Energy, Materials, Industrials, and Utilities sectors are exposed to substantial operational uncertainty, environmental obligations, commodity price volatility, and regulatory pressures. These external risks may exert a stronger influence on market valuation than governance-related sustainability initiatives. Consequently, investors may place greater emphasis on financial performance, growth prospects, and macroeconomic conditions than on governance-based sustainability integration when valuing firms.

Although a comprehensive meta-analysis by Friede et al. (2015) generally reports a positive association between ESG performance and financial performance, the present findings are more closely aligned with Buallay (2019), who argues that sustainability initiatives do not necessarily generate immediate improvements in firm value because their benefits often materialize over a longer investment horizon. Initial investments in sustainability governance may increase compliance costs, organizational restructuring, and implementation expenditures before producing measurable financial returns. However, the present findings differ from studies conducted in more mature capital markets, where sustainability governance has become an increasingly important determinant of investment decisions. Such differences may reflect variations in institutional environments, regulatory maturity, investor awareness, ESG implementation, and capital market development.

From a practical perspective, the findings suggest that companies should regard governance-based sustainability risk integration as a long-term strategic capability rather than as a mechanism for generating immediate market value. Sustainability governance should be embedded within enterprise risk management, strategic planning, and corporate decision-making to enhance organizational resilience over time. Regulators may also consider strengthening sustainability governance guidelines and encouraging more consistent implementation of IFRS S1 and IFRS S2 to improve the credibility and comparability of sustainability disclosures, thereby increasing investor confidence.

Beyond its empirical findings, this study contributes to the sustainability accounting literature by introducing the Governance-Based Sustainability Risk Integration (GBSRI) Index as a governance-oriented measurement framework. Unlike conventional ESG disclosure indices that primarily evaluate disclosure completeness, the proposed GBSRI Index measures the extent to which sustainability-related risks are integrated into governance structures, enterprise risk management, strategic decision-making, monitoring mechanisms, and sustainability reporting. Although the empirical results indicate no significant relationship with firm value, the framework offers a theoretically grounded and replicable instrument for assessing organizational preparedness in managing sustainability-related risks, particularly within high-risk industries.

The Moderating Role of Ownership Structure

The empirical findings further indicate that ownership structure does not moderate the relationship between Governance-Based Sustainability Risk Integration and firm value. The insignificant interaction effect suggests that investors respond similarly to governance-based sustainability practices regardless of whether companies are state-owned enterprises (SOEs) or privately owned firms. Consequently, Hypothesis 2 is not supported.

From a theoretical perspective, ownership structure is commonly regarded as an important governance mechanism because differences in ownership may influence organizational objectives, monitoring effectiveness, accountability, and strategic decision-making. State-owned enterprises generally operate under greater government oversight and are expected to implement sustainability initiatives in line with national development priorities. In contrast, privately owned firms often possess greater managerial flexibility and stronger market-oriented incentives, potentially enabling them to respond more rapidly to stakeholder expectations and competitive pressures.

Despite these theoretical differences, the present findings indicate that ownership status alone is insufficient to alter the relationship between governance-based sustainability risk integration and firm value. One possible explanation is that both SOEs and privately owned companies have increasingly adopted similar sustainability governance practices following the expansion of ESG-related regulations and sustainability reporting requirements in Indonesia. Consequently, investors may perceive sustainability governance as a standard corporate responsibility rather than as a distinguishing characteristic associated with ownership type.

The characteristics of Indonesian high-risk industries may also contribute to this finding. Firms operating within these sectors face relatively similar environmental obligations, regulatory requirements, and operational risks regardless of ownership status. Under these circumstances, the effectiveness of sustainability governance may depend more on the quality of implementation than on ownership classification. Investors therefore appear to evaluate governance quality rather than ownership identity when assessing corporate value.

The findings differ from previous studies suggesting that state-owned enterprises generally exhibit stronger sustainability performance because of greater government supervision and policy support. They also contrast with research arguing that privately owned firms are better positioned to transform sustainability initiatives into financial value due to stronger market incentives and managerial flexibility. These inconsistencies emphasize that the relationship between ownership structure and sustainability governance remains highly dependent on institutional context, regulatory development, and industrial characteristics.

The insignificant moderating effect further suggests that ownership structure may not represent the most appropriate contingency variable for explaining the effectiveness of governance-based sustainability integration. Other governance characteristics—including board effectiveness, sustainability committee expertise, institutional ownership, governance quality, environmental performance, or organizational risk maturity—may provide stronger explanatory power. Future studies are therefore encouraged to incorporate these governance-related variables to better understand the conditions under which sustainability governance contributes to firm value.

The principal contribution of this study lies in demonstrating that ownership status alone is insufficient to strengthen the relationship between governance-based sustainability risk integration and firm value within Indonesian high-risk industries. Instead, the findings suggest that long-term value creation depends on the effectiveness with which organizations integrate sustainability-related risks into governance processes, enterprise risk management, and strategic decision-making rather than on ownership characteristics alone.

CONCLUSIONS AND SUGGESTIONS

This study examined the effect of Governance-Based Sustainability Risk Integration (GBSRI) on firm value and investigated whether ownership structure moderates this relationship among Indonesian listed companies operating in high-risk industries. Using a balanced panel dataset comprising 75 firm-year observations from 15 companies over the 2020–2024 period, the empirical findings indicate that governance-based sustainability risk integration does not significantly influence firm value. Furthermore, ownership structure, measured by the distinction between state-owned enterprises and privately owned firms, does not moderate the relationship between governance-based sustainability risk integration and market valuation. These findings suggest that sustainability-oriented governance practices have not yet become a primary determinant of investors' valuation decisions within the Indonesian capital market.

Despite the absence of statistically significant relationships, this study makes an important contribution to the sustainability accounting and corporate governance literature through the development of the Governance-Based Sustainability Risk Integration (GBSRI) Index. Unlike conventional ESG disclosure measures, the proposed framework evaluates the extent to which sustainability-related risks are embedded within corporate governance, enterprise risk management, strategic decision-making, monitoring activities, and sustainability disclosure. Accordingly, the GBSRI Index provides a theoretically grounded and replicable measurement framework that extends existing approaches to sustainability governance assessment, particularly for firms operating in high-risk industries.

The findings also provide several practical implications. For corporate managers, governance-based sustainability risk integration should be regarded as a long-term strategic capability that strengthens organizational resilience and supports sustainable value creation rather than as a mechanism for generating immediate market valuation. For regulators and policymakers, the findings highlight the importance of strengthening sustainability governance guidelines and promoting more consistent implementation of the IFRS Sustainability Disclosure Standards (IFRS S1 and IFRS S2) to improve the credibility, comparability, and usefulness of sustainability-related disclosures for investors.

Several limitations should be acknowledged. First, the study is limited to 15 Indonesian listed companies operating in four high-risk industries during the 2020–2024 observation period, resulting in a relatively small balanced panel dataset. Second, the regression models exhibit limited explanatory power, indicating that firm value is influenced by numerous financial, governance, macroeconomic, and market-related factors beyond those incorporated in the present analysis. Finally, the study applies pooled Ordinary Least Squares estimation and therefore does not explicitly account for firm-specific or time-specific heterogeneity.

Future research is encouraged to extend the proposed framework by examining larger and more diverse samples across industries and countries, employing longer observation periods, and applying alternative panel-data estimation techniques where appropriate. Future studies may also incorporate additional governance and market-related variables—such as board effectiveness, sustainability committee expertise, institutional ownership, environmental performance, or organizational risk maturity—to better explain the relationship between governance-based sustainability risk integration and firm value. Finally, further validation and refinement of the GBSRI Index in different

institutional settings would enhance its generalizability and contribute to the continued development of governance-oriented sustainability measurement.

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