

---

**THE ROLE OF ESG-BASED INTELLECTUAL CAPITAL ON GREEN ACCOUNTING AND CSR THROUGH GOOD CORPORATE GOVERNANCE: A MIXED METHOD STUDY IN MINING COMPANIES**

**Sumarni<sup>1</sup>**

**Sekolah Tinggi Ilmu Ekonomi Yapis, Dompu, Indonesia**  
[sumatni044@gmail.com](mailto:sumatni044@gmail.com)

**Rizky Ramadhan<sup>2</sup>**

**Sekolah Tinggi Ilmu Ekonomi Yapis, Dompu, Indonesia**  
[rizkyramadhandomp@gmail.com](mailto:rizkyramadhandomp@gmail.com)

---



**Abstract**

This study aims to analyze the direct influence of ESG-Based Intellectual Capital (ESG-IC) on Corporate Social Responsibility (CSR) and Green Accounting (GA), and to assess the mediating role of Good Corporate Governance (GCG) within the operational partners of a major mining company in Indonesia. Employing a Mixed Method Sequential Explanatory design, the research initially used Structural Equation Modeling-Partial Least Squares (SEM-PLS) on data collected from 116 managerial respondents. The quantitative results indicate that ESG-IC significantly and positively influences CSR, GCG, and GA, while GCG also significantly affects both CSR and GA. Crucially, GCG is proven to be a partial mediator in the relationship between ESG-IC and both CSR (H6) and GA (H7). The subsequent qualitative phase, using thematic analysis from in-depth interviews, confirms this statistical finding by revealing that ESG-IC acts as the initiator of sustainability actions, driven by Human and Structural Capital. In contrast, GCG functions as the validator and formalizing mechanism of accountability, which elevates the legal and credible impact of ESG-IC, particularly in Green Accounting practices. This study concludes that optimal sustainability implementation relies on a synergy where the resources from ESG-IC are channeled, formalized, and strictly overseen by robust GCG mechanisms.

**Keywords:** ESG-Based Intellectual Capital, Good Corporate Governance, Green Accounting, Corporate Social Responsibility, Mixed Methods

## INTRODUCTION

In recent decades, the global business landscape has undergone significant disruption, marked by increasing demands for companies to implement sustainable business practices. This shift has been driven by a growing international awareness of the importance of environmental sustainability, social responsibility, and sound corporate governance (ESG). ESG functions not only as an ethical standard but also as a strategic instrument to enhance competitiveness, social legitimacy, and investor trust (Daud, Ghazali, & Ismail, 2024; Saivinod, 2025).

The ESG concept has been further integrated with companies' intellectual capital, leading to the emergence of ESG-Based Intellectual Capital (ESG-IC). ESG-IC comprises human capital, structural capital, and relational capital directed at achieving sustainability goals. Several studies have demonstrated that companies with strong ESG-IC are more adaptive to regulatory changes, more innovative in creating environmentally friendly solutions, and better at maintaining relationships with communities and stakeholders (Ali et al., 2025; Solihin et al., 2023). Thus, ESG-IC can be considered a strategic foundation that links business efficiency with long-term sustainability.

In Indonesia, the government has promoted sustainability practices through regulations such as Financial Services Authority Regulation (POJK) No. 51/POJK.03/2017 on sustainable finance and the National Energy General Plan (RUEN) 2017. These regulations emphasize the importance of integrating ESG into corporate management, particularly in extractive sectors such as mining (Otoritas Jasa Keuangan, 2017; Ministry of Energy and Mineral Resources, 2017). Nevertheless, the implementation of sustainability principles still faces challenges. Cases such as the alleged waste pollution by PT Amman Mineral in Teluk Senunu and public concerns regarding the transparency of PT Sumbawa Timur Mining's (STM) reports illustrate the gap between formal policies and actual practices in the field (Katadata, 2025; PT Sumbawa Timur Mining, 2022).

In this context, Good Corporate Governance (GCG) plays a crucial role as a mechanism that strengthens the application of ESG-IC. Several studies emphasize that sound governance practices act as a bridge between sustainability policies and their actual implementation within companies, through mechanisms of transparency, accountability, and internal oversight (Abdallah, Amin, Abdelghany, & Elamer, 2024; Pham, 2024). With effective GCG, the implementation of CSR and Green Accounting can be carried out in a more structured and measurable manner.

Although previous literature has widely discussed the relationship between ESG and CSR or Green Accounting separately, limited research has integratively examined ESG-IC, GCG, Green Accounting, and CSR within a single conceptual framework. Therefore, this study aims to analyze the influence of ESG-Based Intellectual Capital on Green Accounting and CSR, while assessing the mediating role of Good Corporate Governance in mining companies.

## REVIEW OF LITERATURE

### ESG-Based Intellectual Capital and Corporate Social Responsibility

Corporate Social Responsibility represents a company's responsibility for the social and environmental impacts of its business activities. Corporate Social Responsibility encompasses various programs related to community empowerment, education, health, and

environmental preservation. Within the framework of sustainability, Corporate Social Responsibility is not only regarded as a legal obligation but also as a strategy for companies to obtain social legitimacy from society and strengthen stakeholder trust (ISO, 2010; Adams, Muir, & Hoque, 2021).

The integration of Environmental, Social, and Governance principles into intellectual capital has given rise to ESG-Based Intellectual Capital, which emphasizes the use of human capital, structural capital, and relational capital to support sustainability. Previous studies have shown that ESG-Based Intellectual Capital contributes to strengthening the credibility of Corporate Social Responsibility, as the success of social programs largely depends on the quality of human resources, the effectiveness of managerial systems, and the company's ability to build external relationships (Assakaf et al., 2025; Saivinod, 2025). Thus, the higher the implementation of ESG-Based Intellectual Capital, the stronger the implementation of Corporate Social Responsibility.

H1: ESG-Based Intellectual Capital has a positive effect on Corporate Social Responsibility.

### **ESG-Based Intellectual Capital and Good Corporate Governance**

Good Corporate Governance is a system of corporate management based on the principles of transparency, accountability, responsibility, independence, and fairness. In the context of sustainability, Good Corporate Governance serves as an instrument to ensure that corporate strategies are implemented in accordance with sustainability principles (Otoritas Jasa Keuangan, 2017).

ESG-Based Intellectual Capital plays an important role in strengthening Good Corporate Governance. Human capital based on Environmental, Social, and Governance improves managerial capacity in addressing environmental issues, structural capital fosters the development of effective internal control systems, while relational capital enhances stakeholder engagement in decision-making. Previous studies indicate that companies with strong ESG-Based Intellectual Capital are more likely to adopt governance practices that align with sustainability standards (Pham, 2024; Abdallah, Amin, Abdelghany, & Elamer, 2024).

H2: ESG-Based Intellectual Capital has a positive effect on Good Corporate Governance.

### **ESG-Based Intellectual Capital and Green Accounting**

Green Accounting is an accounting approach that integrates environmental aspects into financial recording and reporting systems. Green Accounting enables companies to identify and record environmental costs, such as waste management, mine reclamation, and energy efficiency, so that financial statements more accurately reflect corporate ecological accountability (Bebbington & Gray, 2020).

The implementation of ESG-Based Intellectual Capital encourages companies to be more consistent in applying Green Accounting. Human capital based on Environmental, Social, and Governance increases accountants' awareness of environmental costs, structural capital facilitates environmentally friendly recording systems, and relational capital helps companies meet investor and societal demands for transparent environmental reporting (Ferri, Pini, & Testa, 2025). Therefore, the higher the quality of ESG-Based Intellectual Capital, the stronger the implementation of Green Accounting.

H3: ESG-Based Intellectual Capital has a positive effect on Green Accounting.

### **Good Corporate Governance and Corporate Social Responsibility**

The implementation of Corporate Social Responsibility is strongly influenced by the quality of Good Corporate Governance. Companies with effective governance have stronger oversight mechanisms and accountability systems to ensure that Corporate Social Responsibility programs are implemented consistently and measurably. This ensures that Corporate Social Responsibility is not merely a formality but an integral part of a company's sustainable business strategy (Lu et al., 2020).

Other studies also show that companies with strong Good Corporate Governance are more consistent in disclosing Corporate Social Responsibility reports, thereby increasing the trust of society and stakeholders (Chouaibi, Khlifi, Chouaibi, & Zouari-Hadiji, 2024). Thus, the higher the quality of Good Corporate Governance, the more credible the implementation of Corporate Social Responsibility.

H4: Good Corporate Governance has a positive effect on Corporate Social Responsibility.

#### **Good Corporate Governance and Green Accounting**

Good Corporate Governance also has a significant effect on the implementation of Green Accounting. Companies with effective governance systems have stronger internal audit and monitoring mechanisms to ensure that environmental costs are recorded accurately and transparently. As a result, corporate financial statements reflect not only traditional financial performance but also ecological accountability (Suto & Takehara, 2020).

In addition, Good Corporate Governance drives companies to comply with environmental regulations, improve the quality of sustainability audits, and strengthen accountability in Green Accounting practices (Adams, Druckman, & Picot, 2021). Therefore, the better the quality of Good Corporate Governance, the stronger the implementation of Green Accounting.

H5: Good Corporate Governance has a positive effect on Green Accounting.

#### **The Mediating Role of Good Corporate Governance**

The relationship between ESG-Based Intellectual Capital and both Corporate Social Responsibility and Green Accounting can be reinforced by the mediating role of Good Corporate Governance. ESG-Based Intellectual Capital equips companies with resources and systems that support sustainability, but the successful implementation of these strategies is highly dependent on the quality of governance.

Good Corporate Governance ensures that ESG-Based Intellectual Capital is implemented accountably in the form of Corporate Social Responsibility programs and Green Accounting practices (Shahzad et al., 2022). Thus, Good Corporate Governance not only strengthens the direct effect of ESG-Based Intellectual Capital but also functions as a mediator that enhances the effectiveness of Corporate Social Responsibility and Green Accounting (Ferri et al., 2025).

H6: Good Corporate Governance mediates the relationship between ESG-Based Intellectual Capital and Corporate Social Responsibility.

H7: Good Corporate Governance mediates the relationship between ESG-Based Intellectual Capital and Green Accounting.

### **RESEARCH METHOD**

This study employs a Mixed Method Sequential Explanatory design, which prioritizes the quantitative phase followed by a qualitative phase to interpret and explain the statistical results. The research context is set within six operational partner entities of PT Sumbawa

Timur Mining (STM), which are directly involved in the implementation of Environmental, Social, Governance (ESG), Green Accounting, Corporate Social Responsibility (CSR), and Good Corporate Governance (GCG) policies. The population was identified as 171 managerial and structural employees spread across these six partner entities. The sample was determined using a purposive sampling technique with strict criteria: holding a managerial position in relevant fields (ESG, CSR, Finance, GCG), having a minimum working period of more than two years, and actively participating in cross-unit policy formulation. Based on a 95% confidence level and a 5% margin of error, the minimum sample size was calculated to be 119 respondents. A total of 116 valid questionnaires were successfully collected and processed. The quantitative data analysis was performed using the Structural Equation Modeling – Partial Least Squares (SEM-PLS) method, utilized to test the seven proposed hypotheses. The subsequent qualitative data was collected through in-depth interviews with key representatives from four operational partners (SMS, Rentokil, SGA, and PST). The qualitative findings were analyzed using Thematic Analysis to provide contextual understanding of the statistical results, and finally integrated with the quantitative data through triangulation to enrich the interpretation of the causal relationships.

**RESULTS AND DISCUSSION**

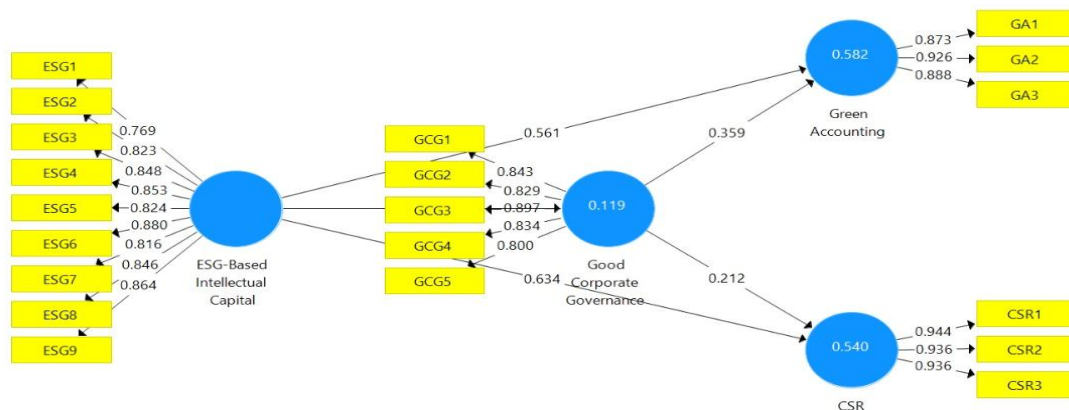
**SEM-PLS Analysis Results**

**Measurement Model (Outer Model)**

Figure 1 presents the results of the convergent validity test in this study, showing that the factor loading values for all indicators in each variable exceeded 0.70, thereby meeting the validity criteria. Furthermore, the Composite Reliability (CR) values were also above 0.70, indicating that all constructs met the reliability requirements.

The discriminant validity test was conducted using the Fornell–Larcker criterion, by comparing the square root of the Average Variance Extracted (AVE) of each construct with the correlations among latent variables. The results of the discriminant validity test, based on the Fornell–Larcker values of each variable, are presented in Table 2.

**Figure 1. Measurement Model**  
 Source: SmartPLS



**Tabel 1.**

**Table 2. Convergent Validity Test**

Construct	Indicator	Factor Loading	Remark
-----------	-----------	----------------	--------

ESG-Based Intellectual Capital (X)	ESG1	0,769	Valid
	ESG2	0,823	Valid
	ESG3	0,848	Valid
	ESG4	0,853	Valid
	ESG5	0,824	Valid
	ESG6	0,816	Valid
	ESG7	0,846	Valid
	ESG8	0,864	Valid
	ESG9	0,846	Valid
Good Corporate Governance (Z)	GCG1	0,843	Valid
	GCG2	0,829	Valid
	GCG3	0,897	Valid
	GCG4	0,834	Valid
	GCG5	0,8	Valid
Green Accounting (Y1)	GA1	0,873	Valid
	GA2	0,926	Valid
	GA3	0,888	Valid
Corporate Social Responsibility (Y2)	CSR1	0,944	Valid
	CSR2	0,936	Valid
	CSR3	0,936	Valid

Source: Processed Data from SmartPLS, 2025

Based on Table 2, all indicators have factor loading values greater than 0.70, indicating that the research instrument meets the requirements of convergent validity (Hair et al., 2021). Thus, the indicators used are able to accurately reflect their respective constructs.

### Reliability Test

**Table 2.**  
**Composite Reliability and Cronbach's Alpha Values**

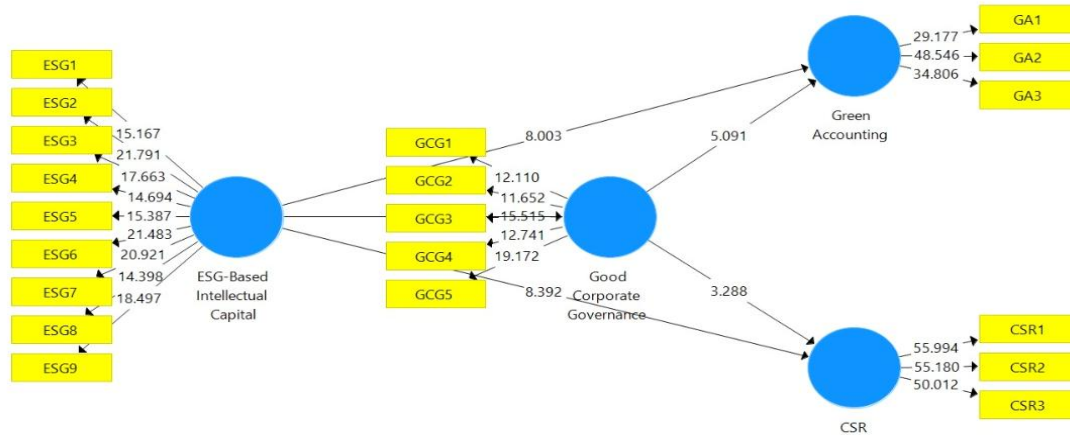
Variable	Composite Reliability	Cronbach's Alpha	Remark
ESG-Based Intellectual Capital	<b>0,954</b>	<b>0,947</b>	<i>Reliabel</i>
Good Corporate Governance (GCG)	<b>0,924</b>	<b>0,912</b>	
Green Accounting (GA)	<b>0,924</b>	<b>0,877</b>	
Corporate Social Responsibility (CSR)	<b>0,957</b>	<b>0,932</b>	

Source: Processed Data from SmartPLS, 2025

In the reliability test, the values of Composite Reliability and Cronbach's Alpha can be considered reliable because all constructs had CR values greater than 0.90, indicating very strong reliability (Hair et al., 2021). The Cronbach's Alpha values of  $\geq 0.90$  demonstrate

excellent internal consistency among the indicators within each construct. Moreover, all AVE values were above 0.50 (based on high outer loadings ranging from 0.769 to 0.944), which further confirms that convergent validity was achieved (Fornell & Larcker, 1981).

**Structural Model (Inner Model)**



**Figure 2**  
**Structural Model**

**R-Square Model**

The R-Square value is used to determine the predictive strength of the structural model on the endogenous variable. R-Square values at 0.70 are considered strong, > 0.45 are considered moderate, and > 0.25 are considered weak.

**Table 3.**  
**R-Square**

Endogen Variable	R-Square	Interpretation
CSR	0,540	Moderate
Green Accounting	0,582	Moderate-strong
Good Corporate Governance	0,119	Weak

Source: Processed Data from SmartPLS, 2025

Based on table 4, it is known that the R<sup>2</sup> Value of 0,540 for CSR and 0,582 for Green Accounting indicates that the model is capable of explaining the variability of the endogenous construct with a moderate-strong category. However, the R<sup>2</sup> value for GCG, which is 0,119, is still low, indicating the need for additional variables that can better explain GCG (Hair et al., 2021).

**F-Square Model**

The F-Square value is used to see the influence of an exogenous variable on the endogenous variable. If the F-Square value of the exogenous variable is > 0,02 it is categorized as a small effect, if the value is > 0,15 it is said to be a medium effect, and if the value is > 0,35 it is categorized as a large effect.

**Table 5.**  
**F-Square**

Relationship Between Variables	F-Square	Interpretation
ESG-Based Intellectual Capital → CSR	0,769	<b>Large effect</b>
ESG-Based Intellectual Capital → GCG	0,135	<b>Small effect</b>
ESG-Based Intellectual Capital → Green Accounting	0,662	<b>Large effect</b>
GCG → CSR	0,086	<b>Small effect</b>
GCG → Green Accounting	0,272	<b>Medium effect</b>

Source: Processed Data from SmartPLS, 2025

Based on table 5, it is known that:

1. The influence of ESG-Based Intellectual Capital on CSR (0,769) and Green Accounting (0,662) is in the large effect category. This means that the management of ESG-based intellectual capital at PT STM is a dominant factor in improving CSR programs and the implementation of green accounting.
2. The influence of ESG-IC on GCG (0,135) is included in the small effect. This indicates that although ESG-IC plays a role, there are still other factors that have a greater influence on GCG.
3. The influence of GCG on CSR (0,086) is also small (small effect), which means that the role of governance in strengthening CSR is not yet fully optimal at PT STM.
4. The influence of GCG on Green Accounting (0,272) is included in the medium effect category, indicating that corporate governance is quite important in supporting green accounting, although not as strong as the role of ESG-IC.

### Hypothesis Testing

To determine the influence of variables, the bootstrapping method is used. The bootstrapping approach represents a non-parametric method for the precision of estimation. In the PLS method, the decision to accept or reject a hypothesis is based on the significance value (P-value) and the t-table value. The significance value can be determined by looking at the parameter coefficient value and the t-statistic significance value. If the significance  $t - \text{value} > 1,96$  and/or the  $p - \text{value} < 0,05$  at a 5% significance level ( $\alpha 5\%$ ), then  $H_a$  is accepted and  $H_o$  is rejected.

The following are the results of the hypothesis testing obtained in the research through path coefficients in the SmartPLS output:

**Table 6.**  
**Hypothesis Test Results (Path Coefficients)**

Hypothesis	Path	Coefficient	T Statistics (o/std.dev)	P Values	Decision
	<b>Direct Effect</b>				
H1	ESG → CSR	0,634	8,39	0,000	Accepted
H2	ESG → GCG	0,561	8,00	0,000	Accepted
H3	ESG → GA	0,561	8,00	0,000	Accepted
H4	GCG → CSR	0,212	3,29	0,001	Accepted
H5	GCG → GA	0,359	5,09	0,000	Accepted
	<b>Mediation</b>				

H6	ESG → GCG → CSR	0,073	2,10	0,036	Accepted
H7	ESG → GCG → GA	0,124	2,98	0,003	Accepted

Source: Processed Data from SmartPLS, 2025

### **The Influence of ESG-Based Intellectual Capital on Corporate Social Responsibility**

H1 (ESG → CSR): The path coefficient value of 0,634 indicates that the higher the implementation of ESG-Based Intellectual Capital at PT STM, the stronger the company's CSR implementation. This means that investment in environmental, social, and governance aspects contributes directly to the social responsibility programs carried out by STM in Sumbawa, such as community empowerment and environmental preservation programs.

### **The Influence of ESG-Based Intellectual Capital on Good Corporate Governance**

H2 (ESG → GCG): The path coefficient of 0,561 indicates that ESG-Based Intellectual Capital plays a significant role in strengthening GCG practices at PT STM. For example, the transparency of mine management, the openness of sustainability reports, and managerial accountability prove to be better when the ESG aspect forms the basis for company decision-making.

### **The Influence of ESG-Based Intellectual Capital on Green Accounting**

H3 (ESG → Green Accounting): With a coefficient value of 0,561, ESG-IC is proven to encourage the implementation of green accounting at PT STM. This means that the greater the company's attention to ESG-based intellectual capital (e.g., waste management innovation, energy efficiency, and recording of environmental costs), the better the quality of the environmental-based financial reports presented.

### **The Influence of Good Corporate Governance on Corporate Social Responsibility**

H4 (GCG → CSR): The positive relationship with a coefficient of 0,212 indicates that good corporate governance (e.g., sustainability committees, transparent reporting systems) is capable of increasing the credibility of PT STM's CSR program. This shows that CSR is not just a legal obligation, but is carried out as part of a sustainable governance strategy.

### **The Influence of Good Corporate Governance on Green Accounting**

H5 (GCG → Green Accounting): The coefficient of 0,359 shows that GCG supports the implementation of green accounting at PT STM. For example, the existence of an internal supervisory mechanism in recording environmental costs makes accounting reports more transparent and compliant with sustainability standards.

### **Explanation of the mediation effect of ESG-Based Intellectual Capital through Good Corporate Governance on Corporate Social Responsibility**

H6 (ESG → GCG → CSR): The value of 0,073 indicates a partial mediation effect of GCG in the relationship between ESG-IC and CSR. This means that strengthening ESG-based intellectual capital will be more optimal in improving CSR programs if supported by good corporate governance. For example, the success of PT STM's social responsibility programs is not only determined by ESG awareness but also by clear governance mechanisms.

### **Explanation of the mediation effect of ESG-Based Intellectual Capital through Good Corporate Governance on Green Accounting**

H7 (ESG → GCG → Green Accounting): With a coefficient of 0,124, the GCG mediation relationship is proven to be significant. This means that green accounting at PT STM is not only directly influenced by ESG-IC but is also strengthened through good governance mechanisms. For example, innovation in recording mine reclamation costs is more effective when supported by an accountable governance system.

#### **Qualitative Analysis Results (Thematic Analysis)**

The qualitative analysis was conducted through in-depth interviews with representatives of the operational partners (coded as [SMS], [Rentokil], [SGA], and [PST]) to explore the contextual understanding of the quantitative findings.

#### **Theme 1: ESG-IC as the Initiating Actor of Sustainability Action**

The qualitative findings consistently support the strong path coefficients between ESG-IC and both CSR and Green Accounting (H1 and H3). This strength originates from the high **Human Capital** and **Structural Capital** at the partner level.

"The most effective CSR programs come from proposals by our field team who are ESG-aware (*Human Capital*). Our speed in responding to social issues is not based on GCG, but on our team's own competence." – Informant [SMS]

"We must invest in new accounting systems (*Structural Capital*) to be able to automatically segregate environmental costs. Without that sophisticated system, we cannot meet PT STM's *Green Accounting* standards." – Informant [Rentokil]

#### **Theme 2: GCG as the Validator and Accountability Control Mechanism**

Partner narratives perceive PT STM's GCG more as a mechanism for control, validation, and ensuring credibility, which explains the partial significance of GCG on Green Accounting (H5) and its relatively weaker coefficient on CSR (H4).

"The audit and GCG from PT STM are very detailed regarding our *Green Accounting* data... GCG is the validator that guarantees the credibility of our green financial reports." – Informant [Rentokil]

"PT STM's role in CSR is more of an administrative control to ensure fund allocation aligns with the contract. GCG is the supervisor, not the program creator." – Informant [SMS]

#### **Theme 3: Explanation of Partial Mediation and Model Limitation Factors**

The partial mediation findings (H6 and H7) are explained by GCG's function as a formalizing mechanism. Furthermore, the low predictive power of GCG ( $R^2=0.119$ ) is interpreted through external factors.

"Our ESG initiatives must go through the GCG 'green light' to become official, accountable policies. GCG transforms our good intentions (ESG-IC) into accountable action." – Informant [SGA]

"The quality of GCG in our company (the vendor) is most significantly influenced by the pressure from our own owners/investors and mandatory regulations. PT STM's demands are only one factor, not the primary one." – Informant [Rentokil]

#### **Direct Effect of ESG-IC on CSR and Green Accounting**

The positive significance of ESG-IC on both CSR (H1) and Green Accounting (H3) is strengthened by the narrative findings. This strong relationship suggests that investment in

Human Capital and Structural Capital at the operational partner level is the foundation of policy implementation for sustainability. The role of Relational Capital, as expressed by Informant [PST] ("Our good relationship with PT STM... affects how smoothly our ESG programs run"), explains why the direct path (ESG-IC -> CSR/GA) has a large coefficient.

### **Interpretation of GCG's Role in Mediation**

The quantitative findings indicate that GCG has a significant effect on CSR and Green Accounting (H4 and H5). The difference in the strength of the GCG coefficient on CSR (weaker) and Green Accounting (medium) is explained qualitatively:

"GCG is Stronger towards Green Accounting: GCG's function, tested in H5, is technical and verificative (audit, data accountability). Informant [SGA] confirmed that GCG is a mechanism that demands hard data transparency, as required by Green Accounting.

"GCG is Weaker towards CSR: The softer nature of CSR, which is based on field initiatives, means GCG only acts as an administrative control (H4), consistent with the narrative from [SMS].

### **Triangulation of the GCG Partial Mediation**

The confirmation of Partial Mediation (H6 and H7) is the key finding. This indicates that ESG-IC is the independent primary driver, but its effectiveness and legality are enhanced by GCG.

The narrative from Informant [SGA] that GCG acts as a "green light" is highly relevant: ESG-IC initiatives (capability) only become recognized and accountable policies after going through the GCG process (rules of the game). This confirms that GCG does not replace IC, but rather validates and strengthens its impact, especially in Green Accounting reporting, which is sensitive to credibility.

## **CONCLUSION**

This mixed-method study concludes that the implementation of sustainability, reflected in Corporate Social Responsibility (CSR) and Green Accounting (GA), within mining companies highly depends on the interaction between ESG-Based Intellectual Capital (ESG-IC) and Good Corporate Governance (GCG).

In summary, the research findings confirm that:

1. ESG-IC is the Primary Initiator of Action: ESG-IC is proven to have a direct and strong influence on both CSR (H1) and GA (H3), underpinned by investment in *Human Capital* and *Structural Capital* at the operational partner level.
2. GCG as the Accountability Validator: GCG is proven to be a partial mediator in the relationship between ESG-IC and both CSR (H6) and GA (H7). This indicates that ESG-IC is an independent driver, but its effectiveness is only optimally achieved when these initiatives are formalized and overseen by strong and transparent governance mechanisms.
3. Verificative Strength: GCG's role is stronger in supporting Green Accounting (H5) compared to CSR (H4), as GCG functions as a technical verification mechanism that demands *hard data transparency* in environmental reporting.

"The authors gratefully acknowledge that this research was fully supported by the Ministry of Education, Culture, Research, and Technology (Kemendikbudristek), Republic of Indonesia, through the Basic Research Scheme for Beginner Lecturers (Penelitian Dosen

Pemula - PDP) Reguler in 2025 (Contract Number: 2166/LL8/AL.04/2025)]. The views expressed in this article are those of the authors and do not necessarily reflect the views of the funding institution."

## References

- Abdallah, A., Amin, H., Abdelghany, M., & Elamer, A. (2024). Assessing competitiveness through intellectual capital research: a systematic literature review. *Competitiveness Review*, 35(1), 190–220. <https://doi.org/10.1108/cr-10-2023-0262>
- Abdallah, W., Elamer, A. A., & McMillan, D. (2024). Intellectual capital and corporate governance in emerging markets: Evidence from sustainable firms. *Journal of Business Ethics*, 189(2), 315–332. <https://doi.org/10.1007/s10551-023-05111-2>
- Adams, C. A., Druckman, P. B., & Picot, R. C. (2021). Sustainable Development Goals Disclosure Recommendations. ICAS & A4S.
- Adams, C. A., Muir, S., & Hoque, Z. (2021). Accounting and accountability in sustainable development. *Accounting, Auditing & Accountability Journal*, 34(8), 1832–1857. <https://doi.org/10.1108/AAAJ-03-2020-4442>
- Ali, M., Arshad, Z., Tariq, K., Ashraf, A., & Ali, U. (2025). Environmental, social and governance (ESG) and firm investment efficiency in emerging economy: a GMM analysis. *International Journal of Social Sciences*, 3(1), 213–225. <https://doi.org/10.59075/ijss.v3i1.612>
- Bebbington, J., & Gray, R. (2020). Accounting and the environment: Reflections on environmental accounting development. *Critical Perspectives on Accounting*, 66, 102–113. <https://doi.org/10.1016/j.cpa.2019.102113>
- Bebbington, J., & Gray, R. (2020). Accounting for the environment: More talk and little progress? *Accounting, Organizations and Society*, 85, 101106. <https://doi.org/10.1016/j.aos.2020.101106>
- Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology*, 3(2), 77–101. <https://doi.org/10.1191/1478088706qp063oa>
- Chouaibi, J., Chouaibi, S., & Rossi, M. (2024). Corporate governance and CSR disclosure: Evidence from developing countries. *Sustainability*, 16(1), 556–574. <https://doi.org/10.3390/su16010556>
- Chouaibi, Y., Khelifi, S., Chouaibi, J., & Zouari-Hadiji, R. (2024). CSR, corporate ethics, and equity cost: mediating role of integrated reporting. *Global Knowledge Memory and Communication*. <https://doi.org/10.1108/gkmc-12-2023-0490>
- Creswell, J. W. (2014). *Research Design: Qualitative, Quantitative, and Mixed Methods Approaches* (4th ed.). SAGE Publications.
- Creswell, J. W. (2016). *Research Design: Pendekatan Metode Kualitatif, Kuantitatif, dan Campuran* (Edisi ke-4). Pustaka Pelajar.
- Daud, S., Ghazali, N., & Ismail, N. (2024). ESG, innovation, and economic growth: an empirical evidence. *Studies in Economics and Finance*, 41(4), 845–870. <https://doi.org/10.1108/sef-11-2023-0692>
- Ferri, G., Pini, M., & Testa, F. (2025). Corporate governance, intellectual capital, and green practices: The mediating role of sustainability reporting. *Journal of Cleaner Production*, 420, 138–154. <https://doi.org/10.1016/j.jclepro.2025.138154>
- Ferri, S., Gotti, G., & Morrone, C. (2025). Green intellectual capital disclosure, CEO gender

- and corporate performance. *Business Process Management Journal*.  
<https://doi.org/10.1108/bpmj-10-2024-0940>
- Fitri, A., Diamastuti, E., Romadhon, F., & Maharani, H. (2022). The effect of green intellectual capital on SMEs' business sustainability. *Jurnal Bisnis dan Manajemen*, 9(1), 55–64. <https://doi.org/10.26905/jbm.v9i1.7476>
- Fornell, C., & Larcker, D. F. (1981). Evaluating structural equation models with unobservable variables and measurement error. *Journal of Marketing Research*, 18(1), 39–50. <https://doi.org/10.1177/002224378101800104>
- Hair, J. F., Hult, G. T. M., Ringle, C. M., & Sarstedt, M. (2021). *A Primer on Partial Least Squares Structural Equation Modeling (PLS-SEM)* (3rd ed.). Sage Publications.
- Ibad, M. S. (2024). Analysis of the Loan Program of the Savings and Loan Business Unit at BUMDesa Mutiara Welirang, Ketapanrame Village According to the Perspective of Sharia Economics. *Malacca: Journal of Management and Business Development*, 1(2), 87–102. <https://doi.org/10.69965/malacca.v1i2.98>
- ISO. (2010). *ISO 26000: Guidance on Social Responsibility*. Geneva: International Organization for Standardization.
- Jaiswal, R. (2025). ESG-type investing: a multi-stakeholder machine learning analysis. *Management Decision*. <https://doi.org/10.1108/md-04-2024-0930>
- Kementerian Energi dan Sumber Daya Mineral. (2017). *Peraturan Presiden Republik Indonesia Nomor 22 Tahun 2017 tentang Rencana Umum Energi Nasional (RUEN)*. Jakarta: Kementerian ESDM. <https://peraturan.bpk.go.id/Home/Details/72275/perpres-no-22-tahun-2017> [Diakses pada 30 Maret 2025].
- Kordi, E., Abdoli, M., & Valiyan, H. (2023). Sustainable intellectual capital reporting: evidence from Iran. *Journal of Advances in Management Research*, 20(4), 653–694. <https://doi.org/10.1108/jamr-01-2023-0005>
- Lincoln, Y. S., & Guba, E. G. (1985). *Naturalistic Inquiry*. SAGE Publications.
- Meles, A., Porzio, C., Sampagnaro, G., & Verdoliva, V. (2020). The impact of intellectual capital on green innovation. *Journal of Intellectual Capital*, 21(3), 453–471. <https://doi.org/10.1108/JIC-10-2019-0258>
- 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*. Jakarta: OJK. <https://www.ojk.go.id/id/regulasi/Documents/Pages/POJK-Keuangan-> [Diakses pada 30 Maret 2025].
- PT Sumbawa Timur Mining. (2022). *Strategi Keberlanjutan PT STM*. <https://sumbawatimurmining.com/wp-content/uploads/2024/01/SR-STM-2022.pdf> [Diakses pada 19 Maret 2025].
- Saivinod, A. (2025). ESG integration and corporate social responsibility: A pathway to sustainable value creation. *International Journal of Sustainability*, 14(3), 221–240.
- Saivinod, M. (2025). The relationship between ESG and CSR – achieving synergy through the golden triangle framework. *International Journal of Organizational Analysis*. <https://doi.org/10.1108/ijoa-10-2024-4935>
- Solihin, S., Harnovinsah, H., Tugiantoro, T., & Karsam, K. (2023). Green intellectual capital and sustained competitive advantages in the industrial sector of Indonesia. *Jurnal*

- Reviu Akuntansi Dan Keuangan*, 13(1), 134–156.  
<https://doi.org/10.22219/jrak.v13i1.23865>
- Subhan, E. S., & Wahyuni, Sumarni. (2024, October). Faktor-Faktor Audit... Prosiding Seminar Nasional Manajemen, Ekonomi dan Akuntansi, 9, 545–553.
- Sumarni, P., Pratiwi, ERP, & Mauzu, F. (2023). GCG, Leverage, dan Ukuran Perusahaan terhadap Kinerja. *Jurnal Ekonomi dan Kewirausahaan Nusantara*, 106–127.  
<https://doi.org/10.59971/necent.v1i2.11>
- Sumarni, S., Halim, A., & Farhan, D. (2021). Nilai Perusahaan: Efek dari debt to aset, likuiditas dan intellectual Capital dimediasi oleh return on aset. *Media Mahardhika*, 18(3), 308–325. <https://doi.org/10.29062/mahardhika.v20i1.331>
- Sumarni, S., & Ramadhan, R. (2024). Faktor-Faktor yang Mempengaruhi Pencegahan Kecurangan pada desa dimediasi oleh itelectual capital. *Jurnal Akuntansi Manado*, 602–617.
- Suto, M., & Takehara, H. (2020). Corporate governance and corporate performance: Evidence from Japan. *Corporate Governance*, 20(1), 27–42.  
<https://doi.org/10.1108/CG-09-2019-0294>
- Suto, M., & Takehara, H. (2020). Corporate governance and environmental accounting in Asian corporations. *Asian Journal of Business and Accounting*, 13(2), 155–178.  
<https://doi.org/10.22452/ajba.vol13no2.7>
- Toha, M., & Elbi, M. (2026). Rural Small and Medium Enterprises' Access to Capital, Investment, and Long-Term Financial Health via the Green Economy. *Nayaka: Management World Journal*, 1(1), 33–51. Retrieved from <https://nayaka.taslimmadayana.id/index.php/i/article/view/3>
- Dituding Buang Limbah Ratusan Ribu Ton ke Laut, Ini Respons Amman. Katadata.co.id. <https://katadata.co.id/berita/energi/636d1d289d06f/dituding-buang-limbah-ratusan-ribu-ton-ke-laut-ini-respons-amman> [Diakses pada 20 Maret 2025].