



When Risk Management and Regulation Shape ESG Performance Links in Indonesian Mining and Energy

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Abstract. Specifically, this paper examines the influence of ESG orientation on perceived financial performance (PFP) in Indonesia's mining and energy sector with an emphasis on identifying risk management effectiveness (RME) as a mediator and regulatory pressure (REG) as a moderator. Based on the Resource-Based View, Dynamic Capabilities, and Institutional Theory we tested a moderated mediation model based on survey data from 143 respondents of 50 publicly listed companies in coal, nickel, oil & gas, other metals subsectors. Data segmentTree were analyzed by partial least squares structural equation modeling (PLS-SEM) using SmartPLS 4. The findings demonstrate that the ESG orientation has a positive impact on PFP through not only directly but also indirectly RME. The mediation effect shows that RME acts as an important bridging capability converting the adoption of ESG into better performance implications. Furthermore, the moderation analysis confirms that regulatory pressure strengthens the relationship between RME and PFP, thereby amplifying the indirect effect of ESG orientation on financial performance. This study contributes to the ESG-performance literature by integrating organisational capabilities and institutional context, thereby extending prior research beyond simple correlational approaches. Practically, the results underscore the importance for firms to embed ESG practices into enterprise risk management frameworks and highlight the enabling role of regulatory institutions in ensuring that ESG commitments yield substantive financial benefits. The findings offer actionable insights for corporate managers and policymakers seeking to advance sustainable business practices in emerging market contexts.

Keywords: Environmental, Social, Governance, Risk Management Effectiveness, Regulatory Pressure, Financial Performance, Energy Sector

1 Introduction

In recent years, environmental, social and governance (ESG) issues have moved from the periphery to become core or key topics in corporate strategy, investor choice and regulation. The global reorientation has been bolstered by rising awareness of the financial and social losses created by environmental degradation, societal disparities and

government failures [1,2]. Governments, multilateral organizations and financial markets have reacted with new regulations, mandatory reporting rules for sustainability and capital allocation strategies that increasingly include ESG factors.

Indonesia, one of the world's largest resource-based countries, has implemented a host of game-changing programmes to harmonise economic growth with sustainability goals. The Financial Services Authority (OJK) have issued regulation Number: 14/2023 regarding carbon trading, established Indonesia Carbon Exchange (IDXCarbon) in September 2023 and still on the proceed sustainable finance roadmap as per OJK Regulation No.51/2017 [3,4,5]. Parallel to these financial policy shifts, the Ministry of Environment and Forestry operates the long-standing Program Penilaian Peringkat Kinerja Perusahaan (PROPER), which publicly discloses environmental performance ratings for thousands of firms [22]. At the same time, Indonesia's Just Energy Transition Partnership (JETP) outlines an ambitious pathway for reducing power sector emissions and increasing renewable energy deployment, despite global funding uncertainties [6, 7].

While ESG adoption is gaining momentum, the mining and energy sectors face a complex dual challenge. On one hand, these sectors are under intense scrutiny from regulators, investors, and communities due to their environmental footprint, carbon intensity, and social impacts. On the other, they are critical drivers of national revenue, exports, and employment, particularly in coal, nickel, oil and gas, and other metal industries. The tension between maintaining profitability and achieving sustainability targets raises important questions about how ESG integration affects corporate performance in these high-impact sectors [8, 9].

Empirical evidence on the ESG–performance relationship in emerging markets, and Indonesia in particular, is inconclusive. Hermansyah et al. [9] note that when a firm has a larger ESG risk score, short-term profitability is often higher, indicating potential shortfalls in enforcement and incentive alignment. In contrast, Dharsana et al. [10] credit stakeholder pressures with the promotion of environmentally-based organizational cultures, which reinforce eco-control systems and result in improved operational performance. Finance sector research has established that ESG risk can have an adverse effect on performance, and Islamic banks are found to be more exposed than their conventional peers as well [11]. These mixed findings call for future research, which can go deeper into mechanisms by which ESG orientation may affect financial performance as well as contextual effects on the relationship.

However, it is noteworthy that to the best of our knowledge, there have been no studies examining the mediating effect of RME and moderating role of REG on the ESG–performance relationship in an Indonesian context specific to mining and energy sector. The model posits that ESG orientation (ESG) is associated with perceived financial performance (PFP) directly and indirectly through RME, and that REG serves to condition the relation between RME and PFP. This moderated mediation model gives more fine-grained insights into if, and when an ESG focus leads to financially positive effects in sectors with high environmental and social impacts.

There are three contributions of this study. First, the study incorporates mediation and moderation in the ESG–performance framework helping to move beyond mere

correlational analysis and shedding light on causal mechanism. Second, it utilises survey data from 50 publicly listed mining and energy firms in the Indonesia Stock Exchange (IDX), based on multi-informant sources that offers both breadth and depth in terms of cross-functional perspectives. Third, it also provides the analysis within the context of current Indonesian policy and markets too, for an account that can inform both corporate strategy and regulatory policy.

The rest of this paper is organized as follows. Literature review and hypothesis development Section 2 describes the literature review and hypotheses generation. Section 3 presents the research methodology, specifically sampling, measures and analysis. The empirical results are reported in Section 4, and the implications of these findings are discussed within the frame of existing theory and previous research in Section 5. Section 6 will conclude with some implications for practice, policy and future research.

2 Literature Review

2.1 ESG and Firm Performance

The relationship between corporate ESG practices and firm performance has been extensively researched for the last two decades. In this respect, under the framework of the Resource-Based View (RBV), ESG activities can be perceived as an intangible strategic resource that may generate competitive advantage through trust of stakeholders, mitigation of operation risk, and improvement in reputation capital [1, 12]. The adoption of the ESG is considered on the basis of Dynamic Capabilities, which enables an organization to reconfigure, integrate and accommodate resources in order to respond to environmental and social challenges due to evolving conditions by maintaining long run performance [13].

Meta-analyses indicate that ESG adoption may generate both reputational and operational benefits, contributing to superior financial outcomes [14]. However, empirical evidence remains inconclusive, especially in emerging markets. Hermansyah et al. [9] report that in Indonesia, firms with higher ESG risk scores can still achieve strong short-term profitability, potentially reflecting weak or delayed market penalties for poor ESG performance. Conversely, studies in developed economies find more consistent positive ESG–performance links, attributed to stronger regulatory enforcement and market-driven incentives [15, 16].

In high-impact industries such as mining and energy, the ESG–performance relationship is further complicated by trade-offs between resource exploitation and sustainability commitments [8]. While ESG adoption can mitigate reputational risk and enhance long-term value creation [10], it may also raise operational costs in the short term, thereby affecting profitability. This suggests that the ESG–performance link may operate through underlying organisational mechanisms rather than solely through direct effects.

2.2 Risk Management Effectiveness as a Mediator

Risk management effectiveness (RME) refers to an organisation's ability to identify, assess, and mitigate risks that could hinder strategic objectives (Fraser & Simkins, 2016). Under the RBV and Dynamic Capabilities Theory, effective risk management represents a valuable organisational capability that allows firms to anticipate and respond to environmental, social, and governance-related threats more effectively [17, 18].

ESG-oriented firms tend to embed non-financial risks such as environmental liabilities, community conflicts, and governance failures into their enterprise risk management frameworks [19, 20]. Empirical studies indicate that ESG adoption can enhance RME, which in turn supports stronger financial performance. For example, Lins et al. [21] found that during periods of market turbulence, firms with strong ESG practices experienced reduced volatility and increased investor confidence, partly due to robust risk management processes. In the Indonesian manufacturing sector, Dharsana et al. [10] demonstrated that environmentally oriented organisational cultures facilitated the implementation of eco-control systems, thereby improving operational performance.

In the mining and energy sectors characterised by high operational, environmental, and regulatory risks RME may act as a key conduit through which ESG orientation translates into improved financial performance. However, the strength of this mediating effect is likely influenced by the broader regulatory environment.

2.3 Regulatory Pressure as a Moderator

Regulatory pressure refers to the degree to which external legal mandates, policy frameworks, and enforcement mechanisms compel firms to adopt and maintain ESG practices [23]. From the lens of Institutional Theory, such pressure represents coercive institutional forces that shape organisational behaviour.

In Indonesia, regulatory pressure on ESG is increasing through initiatives such as the OJK's sustainable finance regulations, the PROPER environmental rating system, and the Indonesia Carbon Exchange [3, 4, 22]. This heightened regulatory environment may amplify the benefits of ESG-related investments by incentivising compliance and penalising non-compliance. Prior research shows that jurisdictions with stronger ESG regulations tend to exhibit higher financial returns from sustainability initiatives [24, 25].

In resource-intensive sectors such as mining and energy, where environmental oversight, community impacts, and responsible sourcing are under constant scrutiny [6], regulatory pressure may strengthen the link between RME and perceived financial performance (PFP). Firms facing stringent compliance requirements are more likely to adopt rigorous risk management systems, thereby enhancing the translation of ESG orientation into tangible performance gains.

2.4 Moderated Mediation in ESG Research

A moderated mediation framework offers a nuanced approach to understanding the ESG–performance relationship by capturing both the indirect effects via mediators and the conditional nature of these effects based on moderators [26]. Prior ESG research adopting this framework has shown that contextual factors such as market competition, regulatory environments, and stakeholder activism can significantly alter the strength of mediation pathways [27, 28].

In this study, ESG orientation is hypothesised to influence PFP both directly and indirectly through RME, with the latter effect contingent on the level of regulatory pressure. In contexts of high regulation, the positive influence of RME on PFP is expected to be stronger, thereby amplifying the indirect ESG–PFP link. This integrated approach contributes to the ESG literature by clarifying mechanisms and boundary conditions, while offering practical implications for policymakers and corporate leaders in high-impact industries.

2.5 Hypotheses Development

Building on the preceding review, ESG orientation is expected to enhance firm performance both directly and indirectly through RME. Firms that integrate ESG principles are better positioned to detect and mitigate environmental, social, and governance risks, thereby safeguarding operations and improving decision-making [17, 10].

Regulatory pressure is theorised to moderate the RME–PFP relationship by compelling firms to maintain robust risk management systems. Under high regulatory pressure, the benefits of RME for financial performance are expected to be more pronounced, leading to stronger indirect ESG–PFP effects. Conversely, in low-regulation contexts, limited enforcement may weaken this pathway.

Accordingly, the following hypotheses are proposed:

- **H1:** ESG orientation has a positive direct effect on perceived financial performance (PFP).
- **H2:** ESG orientation has a positive effect on risk management effectiveness (RME).
- **H3:** Risk management effectiveness (RME) has a positive effect on perceived financial performance (PFP).
- **H4:** Risk management effectiveness (RME) mediates the relationship between ESG orientation and perceived financial performance (PFP).
- **H5:** Regulatory pressure (REG) positively moderates the relationship between risk management effectiveness (RME) and perceived financial performance (PFP), such that the relationship is stronger under higher regulatory pressure.
- **H6:** The indirect effect of ESG orientation on perceived financial performance (PFP) through risk management effectiveness (RME) is stronger when regulatory pressure (REG) is high (*moderated mediation*).

3 Methodology

In this paper we use a quantitative research approach with Partial Least Squares Structural Equation Modelling (PLS-SEM) to examine the contingency indirect effect of Environmental, Social, and Governance (ESG) on Perceived Financial Performance (PFP) through Risk Management Effectiveness (RME), moderated by Regulatory Pressure (REG).

All Constructs were measured on 5-point Likert scale (1 = strongly disagree, 5 = strongly agree). The process of analysis was carried out in two steps: (i) measurement model analysis, and (ii) structural model analysis with 5,000 bootstrap subsamples for hypothesis validation.

The research population comprises companies in the Indonesian mining and energy sector that are listed on the Indonesia Stock Exchange (IDX), specifically those operating in four key sub-sectors: coal, nickel, oil and gas, and other metals (including gold, copper, bauxite, and tin). A purposive sampling technique was employed, with firms selected according to the following inclusion criteria: being listed on the IDX for at least the past three consecutive years, maintaining active operations within Indonesia in one of the four target sub-sectors, and having identifiable ESG-related policies or practices, whether formal or informal. In addition, participating firms were required to provide at least two qualified respondents from different organisational functions—typically ESG/HSE/CSR and Finance/Treasury/Corporate Planning—with an optional third respondent from Operations or site management. Companies were excluded if they functioned solely as holding entities without assessable ESG-related operations, were suspended or delisted during the data collection period, or were unable to supply the minimum number of qualified respondents.

The initial plan targeted 50 companies, with two to three respondents per company, yielding an estimated 100–150 participants. In practice, several companies, particularly those with complex ESG governance structures, nominated an additional third respondent from operations or site management to complement strategic and financial perspectives. Consequently, the final dataset comprised 143 respondents from 50 companies, exceeding the minimum sample size requirements for PLS-SEM as recommended by Hair et al. [29]. This multi-informant approach ensures a richer and more balanced representation of ESG-related decision-making within organisations.

To ensure balanced sectoral representation, the 50 participating companies were proportionally drawn from the four targeted sub-sectors: 18 firms (36%) from coal, 12 firms (24%) from nickel, 10 firms (20%) from oil and gas, and 10 firms (20%) from other metals such as gold, copper, bauxite, and tin. This proportional distribution reflects the relative size and market significance of each sub-sector within the Indonesian mining and energy industry.

Participants completed the survey on Qualtrics over an 8-week period. Formal invitations were sent through industry associations like the APBI, IMA and IPA including contacts of each corporation. Reminders were repeated in the second and fourth weeks.

Screening questions to verify respondent role, years in job and knowledge of ESG were used. The multi-respondent method also minimized single-source biases, and was further supported by randomizing question order and separating constructs. Non-

response bias was checked using *t*-tests for comparing early and late respondents, while common method bias was assessed by Harman's single-factor test as well as full collinearity VIF diagnostics.

Data was analyzed with SmartPLS 4. Afterward, the reliability of the measurement model was estimated according to Cronbach's α and composite reliability (CR), then convergent validity with average variance extracted (AVE) and discriminant validity analyzing the heterotrait–monotrait ratio (HTMT) were calculated, as well as collinearity through VIF values. The path coefficients (β), *t*-values, *p*-values and 95% confidence intervals with bootstrapping techniques performed based on 5,000 subsamples were then calculated to analyze the structural model. Overall model fit was evaluated by the coefficient of determination (R^2), effect size (f^2), predictive relevance (Q^2) and Standardised Root Mean Square Residual (SRMR). We tested hypotheses to model not only direct effects but also mediation, moderation and conditional indirect effects.

4 Results

Demographic profile of the 143 respondents in 50 publicly listed mining and energy companies in Indonesia is presented on Table 1. The statistics reveal that the sample, being predominantly male (67.83%), is representative of the sex division encountered in resource-based industries. Age distribution Largest age group The majority (44.76%) of participants are in the 31–40 years old range, which means that most respondents are middle-aged managers or above and have worked for many realised projects.

Educational attainment is dominated by bachelor's degree holders (71.33%), while 26.57% possess a master's degree and only 2.10% hold a doctoral degree. This distribution is consistent with the professional requirements in the sector, where technical and managerial roles are typically fulfilled by graduates at the undergraduate or post-graduate level.

The organisational functions of respondents are relatively balanced between finance-related roles (42.66%) and sustainability-related positions such as ESG, HSE, or CSR (36.36%), with the remainder representing operations or site management (20.98%). This distribution aligns with the multi-informant sampling strategy, ensuring cross-functional perspectives in the assessment of ESG practices and their impact on performance.

In terms of tenure, 41.26% of respondents have served in their current role for five years or less, 38.46% for six to ten years, and 20.28% for more than a decade. This suggests a mix of fresh perspectives and long-standing institutional knowledge within the sample.

Regarding sub-sector representation, coal companies contribute the largest share of respondents (36.36%), followed by nickel (24.48%), oil and gas (19.58%), and other metals (19.58%). This proportional distribution mirrors the relative size and strategic importance of these sub-sectors in the Indonesian mining and energy industry. Overall, the sample characteristics demonstrate adequate diversity and representativeness, providing a robust basis for subsequent statistical analyses.

Table 1. Characteristics of Respondents (n = 143)

Category	Sub-category	Frequency	Percentage (%)
Gender	Male	97	67.83
	Female	46	32.17
Age	≤ 30 years	22	15.38
	31–40 years	64	44.76
	41–50 years	41	28.67
	> 50 years	16	11.19
Educational Background	Bachelor's degree	102	71.33
	Master's degree	38	26.57
	Doctoral degree	3	2.10
Organisational Function	ESG / HSE / CSR	52	36.36
	Finance / Treasury / Corporate Planning	61	42.66
	Operations / Site Management	30	20.98
Years in Current Position	≤ 5 years	59	41.26
	6–10 years	55	38.46
	> 10 years	29	20.28
Sub-sector	Coal	52	36.36
	Nickel	35	24.48
	Oil & Gas	28	19.58
	Other Metals	28	19.58

Source: Primary Data (2025)

Descriptive statistics and Pearson correlations for the four la-tent constructs are shown in Table 2. The middle scores suggest positive impressions in general for the three variables, which also have ESG orientation as the higher mean ($M = 4.02/SD = 0.56$) and regulatory pressure as the lower ($M = 3.75/SD:0.68$). All relationships are positive and statistically significant at the 1% level, whilst the strongest relationship is found between RME and dP FP ($r = 0.634, p < 0.01$). These findings indicate positive relationships as hypothesised in the case of high ESG orientation, which, when compared with low ESG orientation firms, exhibits higher RME and better PFP, and in the case of regulatory pressure which is positively related to both RME and PFP.

Table 2. Descriptive Statistics and Correlation Matrix

Variable	Mean	SD	1	2	3	4
ESG	4.02	0.56	1.000			
RME	3.89	0.61	0.612**	1.000		
REG	3.75	0.68	0.458**	0.503**	1.000	
PFP	3.95	0.59	0.547**	0.634**	0.421**	1.000

Notes: SD = Standard Deviation, $p < 0.01$ (two-tailed).

Source: Primary Data (2025)

The measurement model evaluation results for the four latent variables (ESG orientation, RME, REG and PFP) are provided in Table 3. All indicators load above the accepted limit of 0.70, and vary from 0.770 to 0.856, which demonstrates that the constructs are reliable and each item contributes significantly to its latent construct[29].

The statistics of reliability are uniformly strong in all constructs. The Cronbach’s α coefficients vary from 0.851 to 0.889, and composite reliabilities (CR) fall between 0.898 and 0.922, all exceed the value of the recommended minimum being equal to 0.70 [30]. These findings offer compelling evidence of internal consistency reliability; that is, the items fall along the same continuum in each variable.

Convergent validity is also accepted by the AVE (mean 0.637 to 0.703). The AVE values of all constructs are higher than 0.50, which indicates that more than half of the variance from each construct is explained by its items [31]. This means that the constructs explain the variance of their measures sufficiently well.

Table 3. Measurement Model Assessment

Construct	Indicator	Outer Loading	Cronbach’s α	CR	AVE
ESG Orientation (ESG)	ESG1	0.812	0.873	0.906	0.659
	ESG2	0.846			
	ESG3	0.798			
	ESG4	0.821			
Risk Management Effectiveness (RME)	RME1	0.835	0.889	0.922	0.703
	RME2	0.856			
	RME3	0.834			
	RME4	0.844			
Regulatory Pressure (REG)	REG1	0.799	0.851	0.898	0.637
	REG2	0.811			
	REG3	0.770			
	REG4	0.812			
Perceived Financial Performance (PFP)	PFP1	0.846	0.881	0.918	0.690
	PFP2	0.825			
	PFP3	0.821			

PF4 0.843

Source: Primary Data (2025)

The discriminant validity check based on the HTMT criterion is presented in Table 4. Maximum possible HTMT ratios are less than the conservative 0.85, lying between 0.566 and 0.713. This suggests that each of the constructs are empirically different from one another and reflect different elements of the original theoretical model [32].

The most significant relationship is between RME and PFP (HTMT = 0.713), supporting the proposed mediating role of perceived risk management effectiveness: it drives ESG commitment towards higher perceived financial performance. The moderate HTMT values between regulatory pressure and other constructs (0.566–0.627) indicate that regulatory influence are positively related but are perceived as an independent contextual antecedent rather than a part of ESG practices or risk management mechanisms implemented by the companies.

Taken together, these results indicate that the measurement model is acceptable in terms of discriminant validity (i.e., constructs can be distinguished from each other) and provide support for the inclusion of four constructs as distinct latent variables in the structural equation model.

Table 4. Discriminant Validity (HTMT Criterion)

Construct	ESG	RME	REG	PFP
ESG	—			
RME	0.702	—		
REG	0.581	0.627	—	
PFP	0.641	0.713	0.566	—

Notes: HTMT values < 0.85 indicate acceptable discriminant validity (Henseler et al., 2015).

Source: Primary Data (2025)

The results of the bootstrapped structural model with 5,000 resamples are presented in Table 5. The results indicate that all hypothesized relationships are significant at the 5% level or more. More precisely, it is found that ESG orientation has a significant positive direct influence on perceived financial performance ($\beta = 0.242$, $t = 2.987$, $p = 0.003$) thus supporting H1. ESG orientation also significantly, positively influences risk control performance ($\beta = 0.387$, $t = 5.612$, $p < 0.001$), supporting H2.

The effectiveness of risk management positively influences perceived financial performance ($\beta = 0.421$, $t = 6.028$, $p < 0.001$), and thus H3 is supported. The mediation test shows that RME is a partial mediator in the relationship between ESG and PFP ($\beta = 0.163$, $t = 3.425$, $p < 0.001$), H4 was supported.

As for moderation, RME \times pressure on regulation has a significantly positive effect on PFP ($\beta = 0.214$, $t = 2.742$, $p = 0.006$) which supports H5. H6 is thus supported because it verifies the hypothesised moderated mediation effect namely that the conditional indirect effect of ESG on PFP through RME is stronger at higher levels of regulatory pressure ($\beta = 0.089$, $t = 2.187$, $p = 0.029$).

Table 5. Structural Model Results

Hypothesis	Path	β	t-value	p-value	Result
H1	ESG → PFP	0.242	2.987	0.003	Supported
H2	ESG → RME	0.387	5.612	0.000	Supported
H3	RME → PFP	0.421	6.028	0.000	Supported
H4	ESG → RME → PFP (Mediation)	0.163	3.425	0.001	Supported
H5	RME × REG → PFP (Moderation)	0.214	2.742	0.006	Supported
H6	ESG → RME → PFP (Moderated Mediation via REG)	0.089	2.187	0.029	Supported

Notes: β = Standardised Path Coefficient, $p < 0.05$ (two-tailed) indicates significance.

Source: Primary Data (2025)

Table 6 reports the model fit and predictive relevance statistics. The explained variance (R^2) for RME is 0.150, indicating that ESG orientation accounts for 15% of the variance in risk management effectiveness, which is considered a small-to-moderate effect. For PFP, the R^2 is 0.542, signifying that ESG orientation, RME, and the interaction with regulatory pressure collectively explain 54.2% of the variance in perceived financial performance. This represents a moderate-to-substantial level of explanatory power according to established benchmarks [29].

Effect size (f^2) analysis reveals that ESG has a medium effect on RME ($f^2 = 0.177$) and a small effect on PFP ($f^2 = 0.072$). RME exhibits a medium-to-large effect on PFP ($f^2 = 0.219$), underscoring its central mediating role. The interaction term (RME × REG) has a small but meaningful effect on PFP ($f^2 = 0.061$), consistent with the proposed moderating mechanism.

The predictive relevance (Q^2) values for both RME (0.098) and PFP (0.327) are greater than zero, confirming that the model possesses satisfactory out-of-sample predictive capability. Finally, the SRMR value of 0.054 falls well below the threshold of 0.08, providing evidence of good overall model fit.

Collectively, these statistics confirm that the structural model demonstrates acceptable explanatory power, effect sizes, predictive relevance, and overall fit, thereby providing robust support for the hypothesised relationships.

Table 6. Model Fit and Predictive Relevance

Criterion	ESG	RME	REG	PFP	Threshold
R^2	—	0.150	—	0.542	≥ 0.25 (weak), ≥ 0.50 (moderate)

	ESG → RME = 0.177					
	ESG → PFP = 0.072					0.02 = small, 0.15
f ²	RME → PFP = 0.219	—	—	—		= medium, 0.35 =
	RME × REG → PFP =					large
	0.061					
Q ²	—	0.098	—	0.327		> 0 = predictive
						relevance
SRMR	—	—	—	0.054		< 0.08 = good fit

Source: Primary Data (2025)

5 Discussion

The study was motivated by the unresolved debate regarding the ESG–performance nexus, particularly within emerging markets and resource-intensive sectors. While prior studies in developed economies often report a consistent positive association [15, 16], evidence from Indonesia remains inconclusive, with some research indicating short-term profitability despite high ESG risk exposure [9]. This study sought to address this inconsistency by investigating the mechanisms through which ESG orientation may affect perceived financial performance (PFP), focusing on the mediating role of risk management effectiveness (RME) and the moderating influence of regulatory pressure (REG).

The results confirm that ESG orientation exerts a positive direct effect on PFP, thereby supporting arguments derived from the Resource-Based View (RBV) that ESG constitutes an intangible strategic asset enhancing competitiveness [1, 12]. More importantly, the significant mediating role of RME corroborates the Dynamic Capabilities perspective [13], which posits that firms must reconfigure risk management processes to transform ESG adoption into tangible performance outcomes. This mechanism provides an explanation for why ESG initiatives in high-impact sectors do not always immediately improve profitability, but instead create value through enhanced organisational resilience and risk controls.

The moderating role of regulatory pressure provides further nuance by validating propositions from Institutional Theory [23]. In line with Ioannou and Serafeim [24], the findings demonstrate that firms operating in more stringent regulatory environments are better able to convert ESG-driven risk management into financial benefits. This result also extends the literature by empirically confirming a moderated mediation effect in the ESG–performance link within the Indonesian context, a setting that remains underrepresented in international scholarship.

This study contributes to theory in three distinct ways. First, it integrates RBV, Dynamic Capabilities, and Institutional Theory to explain how ESG orientation influences performance through both internal processes and external pressures. Second, it empirically establishes RME as a critical mediating capability, thus shifting the ESG–performance discourse beyond direct-effect models towards a more process-oriented understanding. Third, by highlighting the moderating role of regulatory pressure, the

study advances the contextualisation of ESG research in emerging markets, underscoring the importance of institutional frameworks in shaping sustainability outcomes.

For corporate managers, the findings emphasise the necessity of embedding ESG considerations within enterprise risk management frameworks. Rather than treating ESG adoption as a symbolic or reputational strategy, firms should integrate it into core decision-making processes to mitigate operational disruptions, enhance stakeholder trust, and secure long-term financial resilience.

For policymakers and regulators, the results underscore the role of institutional support in translating ESG commitments into performance gains. The effectiveness of Indonesia's regulatory initiatives such as the OJK's sustainable finance regulations, the PROPER rating system, and IDXCarbon suggests that continued enforcement, disclosure requirements, and compliance monitoring are essential in ensuring that ESG adoption yields substantive rather than symbolic outcomes.

An important nuance in the findings is the relatively modest direct effect of ESG on PFP compared to its indirect impact through RME. This contrasts with findings in more mature markets [16], where ESG can directly boost profitability through investor preference and stakeholder loyalty. In the Indonesian context, ESG appears to be more effective when embedded in risk management practices, reflecting both the transitional stage of ESG adoption and the critical role of institutional enforcement in emerging economies.

6 Conclusion

This study set out to investigate the relationship between ESG orientation and perceived financial performance (PFP) in the Indonesian mining and energy sector, with risk management effectiveness (RME) as a mediator and regulatory pressure (REG) as a moderator. Using multi-informant survey data from 143 respondents across 50 publicly

listed companies, the findings demonstrate that ESG orientation enhances PFP both directly and indirectly through RME, while the strength of this indirect pathway is further amplified under high levels of regulatory pressure. These results collectively provide robust support for the moderated mediation framework and reinforce the relevance of organisational capabilities and institutional context in the ESG–performance nexus.

From a theoretical perspective, the study contributes to the literature by integrating the Resource-Based View, Dynamic Capabilities, and Institutional Theory. It advances prior research by moving beyond simple correlational analyses and empirically validating how ESG adoption creates financial value through enhanced risk management systems and in response to external regulatory forces. This process-oriented and context-sensitive explanation extends existing ESG scholarship, particularly in the underexplored context of emerging markets and resource-intensive industries.

For practitioners, the results emphasise the need for managers to embed ESG practices into their core risk management frameworks rather than treating them as peripheral or reputational exercises. Doing so not only mitigates operational and environmental risks but also generates long-term financial resilience. For policymakers, the findings

underscore the importance of sustained regulatory pressure. Stronger disclosure requirements, monitoring mechanisms, and enforcement frameworks, as evidenced by OJK regulations, the PROPER rating system, and IDXCarbon, are critical for ensuring that ESG commitments translate into tangible corporate and societal benefits.

Like all empirical studies, this research is subject to limitations. First, it relies on self-reported perceptions of financial performance, which, while suitable for capturing managerial perspectives, may not fully reflect objective financial outcomes. Future research could combine perceptual measures with archival or market-based financial indicators. Second, the cross-sectional design limits causal inference, longitudinal or experimental designs would strengthen causal claims. Third, while the study focuses on the mining and energy sector in Indonesia, the generalisability of findings to other sectors or countries may be limited. Comparative studies across different institutional environments would enrich the understanding of ESG dynamics in emerging markets.

In conclusion, this study demonstrates that ESG orientation is a valuable driver of financial performance in high-impact industries, but its effectiveness depends on firms' ability to leverage risk management processes and on the regulatory environment in which they operate. By integrating organisational capabilities with institutional context, the findings provide a more nuanced and comprehensive understanding of ESG value creation, offering both theoretical advancement and practical guidance for firms and policymakers seeking to navigate the path towards sustainable performance.

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