

STRENGTHENING FIRM PERFORMANCE THROUGH ENTERPRISE RISK MANAGEMENT AND SUSTAINABILITY PERFORMANCE: EVIDENCE FROM INDONESIA

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ABSTRAK

Ketidakpastian ekonomi global dan meningkatnya tuntutan terhadap praktik keberlanjutan di negara berkembang, termasuk Indonesia, mendorong perusahaan untuk mengintegrasikan manajemen risiko dengan strategi keberlanjutan. Penelitian ini bertujuan untuk menguji pengaruh ERM terhadap kinerja perusahaan dengan mempertimbangkan peran *sustainability performance*. Penelitian ini menggunakan regresi data panel pada 120 perusahaan non-keuangan yang terdaftar di Bursa Efek Indonesia selama periode 2019–2023. Hasil penelitian menunjukkan bahwa ERM dan *sustainability performance* berpengaruh positif terhadap kinerja perusahaan. Namun, *sustainability performance* tidak terbukti memediasi hubungan antara ERM dan kinerja perusahaan. Temuan ini menunjukkan bahwa manajemen risiko dan keberlanjutan berkontribusi terhadap kinerja perusahaan melalui jalur yang berbeda. Secara praktis, perusahaan perlu meningkatkan integrasi antara manajemen risiko dan strategi keberlanjutan, sementara regulator didorong untuk memperkuat standar pengungkapan keberlanjutan.

Kata Kunci: *Enterprise Risk Management*, Kinerja Perusahaan, Kinerja Keberlanjutan, Teori Pemangku Kepentingan

ABSTRAK

Growing global economic uncertainty and increasing sustainability demands in developing countries, including Indonesia, require firms to integrate risk management with sustainability strategies better. This study aims to examine the effect of ERM on firm performance while accounting for sustainability performance. The study employs panel data regression on 120 non-financial companies listed on the Indonesia Stock Exchange during the period 2019–2023. The results show that both ERM and sustainability performance have a positive effect on firm performance. However, sustainability performance does not mediate the relationship between ERM and firm performance. These findings suggest that risk management and sustainability contribute to firm performance through different pathways. In practice, firms need to align risk management with sustainability strategies better, while regulators should strengthen sustainability disclosure standards.

Keywords: *Enterprise Risk Management, Firm Performance, Sustainability Performance, Stakeholder Theory*

1. Introduction

In today's increasingly uncertain global business environment, marked by geopolitical tensions and economic instability, companies are facing greater operational and financial risks (Anggraini & Hidayat, 2025; Roscoe et al., 2023). In Indonesia, these challenges are even more pronounced. The country ranks as the second most vulnerable in the world according to the 2024 World Risk Index (WRR, 2024), highlighting the urgency for firms to manage risk more effectively. In this context, implementing Enterprise Risk Management (ERM) is no longer optional, but essential for navigating uncertainty and sustaining long-term performance (Nkansa et al., 2025; Nugroho, 2025).

That said, previous studies suggest that ERM is often applied only as a formality to meet regulatory requirements rather than being fully integrated into strategic decision-making (Al-Shaikh et al., 2021; Malik, 2026). From a stakeholder perspective, this "check-the-box" approach limits a company's ability to address environmental and social risks properly. As a result, ERM may not deliver real performance improvements and can even increase financial and reputational risks (Sitinjak & Khabibah, 2023).

To overcome this issue, ERM needs to be aligned with Sustainability Performance (SP), which reflects how firms respond to stakeholder expectations, particularly regarding Environmental, Social, and Governance (ESG) concerns (Saeidi et al., 2021). In Indonesia, this alignment is becoming increasingly important due to regulations from the Financial Services Authority (OJK), such as POJK No. 51/POJK.03/2017 and POJK No. 16/SEOJK.04/2021, which require companies to disclose sustainability practices (Rahmaniati & Ekawati, 2024). From a theoretical standpoint, sustainability performance can act as a bridge between ERM and firm performance. Companies that manage ESG-related risks effectively are more likely to meet stakeholder expectations and achieve better long-term outcomes (Kalash, 2023; Quang et al., 2024).

Despite its relevance, several gaps remain in the literature. First, findings on the relationship between ERM and firm performance remain inconsistent, suggesting that ERM's impact may depend on other supporting mechanisms (Nasr et al., 2019; Quang et al., 2024). Second, many studies measure ERM using qualitative approaches or disclosure indices, which may not fully reflect the effectiveness of risk management in practice (Khan et al., 2022). Third, research examining the combined relationship among ERM, sustainability performance, and firm performance remains limited, especially in emerging markets like Indonesia, where environmental and economic risks are relatively high.

To address these gaps, this study proposes an integrated framework that connects ERM, sustainability performance, and firm performance. ERM is measured using a disclosure index to capture how risk management is structured within firms. In addition, financial stability at the firm level is considered to provide a more complete view of risk-related outcomes. The main objective of this study is to analyze how ERM affects firm performance, with sustainability performance as a mediating variable.

This study offers several contributions. Academically, it provides a more comprehensive understanding of how risk management and sustainability interact to influence firm performance. From an ethical standpoint, it highlights the importance of incorporating stakeholder-related risks into risk management practices. In practice, it underscores the need for companies to align ERM with sustainability efforts to manage

both financial and non-financial risks. Finally, from a policy perspective, the findings can support the development of regulations that better integrate risk management and sustainability practices, particularly in emerging markets such as Indonesia.

This study offers several contributions. From an ethical perspective, it highlights the importance of addressing stakeholder risks, particularly environmental and social issues, within risk management practices. From a practical perspective, the study underscores the importance of integrating ERM with sustainability performance to manage both financial and non-financial risks. From a policy perspective, the findings point to the need for stronger alignment between ERM and sustainability. In particular, this study provides insights that may support the development of regulatory frameworks to optimize the role of ERM and sustainability performance within corporate strategy. From a policy perspective, the findings imply that strengthening sustainability may facilitate the integration of ERM and sustainability practices, particularly in emerging markets such as Indonesia.

2. Theoretical Framework and Hypothesis Development

2.1 Key Concept and Theory

This study adopts stakeholder theory to explain the mechanism linking ERM, SP, dan FP. Stakeholder theory posits that firms are responsible not only to shareholders but also to a broader set of stakeholders, including employees, customers, regulators, and society (Donaldson & Preston, 1995; Freeman, 1984). From this perspective, firm performance should not be assessed only in financial terms, but also in terms of how well the firm responds to environmental and social responsibilities that matter to its stakeholders.

Seen from this angle, managing risks related to stakeholder interests becomes an essential part of organizational strategy. ERM offers a structured approach that helps firms identify, assess, and manage risks, including those related to environmental, social, and governance (ESG) issues (Resende et al., 2024). When these risks are incorporated into strategic decision-making, ERM can improve governance quality, reduce uncertainty, and increase operational efficiency, all of which may contribute to stronger firm performance.

At the same time, stakeholder theory also suggests that firms are under increasing pressure to respond to sustainability demands. Sustainability performance reflects the extent to which firms address ESG issues and align their operations with stakeholder expectations. Firms with stronger sustainability performance are generally more likely to build trust, strengthen legitimacy, and maintain better relationships with stakeholders, which can improve both financial and non-financial performance outcomes (Zheng & Bu, 2024; Faqera et al., 2026; Loureiro et al., 2021).

Overall, stakeholder theory provides a useful framework for understanding how firms manage both risk and sustainability to create value. ERM is expected to improve firm performance directly through better governance and stronger risk control, while sustainability performance contributes by helping firms meet stakeholder expectations. The relationship among these elements ultimately depends on how closely risk management practices are aligned with sustainability objectives.

2.2 Hypothesis Development

2.2.1. ERM and Firm Performance

Dewi et al. (2024) argue that the effective implementation of ERM enhances firm performance by reducing performance volatility and improving the quality of managerial decision-making through systematic risk integration. From a stakeholder perspective, ERM serves as a critical mechanism for aligning firm actions with stakeholder expectations, particularly by enabling the identification and management of risks that affect both financial and non-financial outcomes. Such alignment may strengthen corporate reputation and stakeholder confidence, thereby contributing to superior firm performance (Iznillah & Rasuli, 2024).

ERM is conceptualized as a comprehensive and integrated framework for identifying, assessing, and managing risks that may influence organizational outcomes (Chartpolrak & Tangthong, 2020). Its implementation allows firms to mitigate uncertainty, limit unexpected losses, and enhance adaptive capacity in dynamic business environments (Murinda et al., 2021). Consequently, ERM is expected to improve firm performance across both financial and non-financial dimensions, including profitability and efficiency, as well as operational sustainability and corporate reputation (Sitinjak & Khabibah, 2023; Nur & Pangestuti, 2024).

In this study, ERM is operationalized using an ERM index that captures the structural embeddedness of risk management practices. The index, adapted from Florio & Leoni (2017) and extended by Dewi et al. (2024), encompasses key dimensions such as risk management function, governance structure, reporting mechanisms, and risk analysis processes. These dimensions reflect the degree to which risk management is institutionalized within corporate governance systems. A higher ERM index indicates a more formalized and comprehensive risk management implementation, which is expected to enhance organizational outcomes. Building on this theoretical foundation, ERM is hypothesized to influence firm performance positively.

H₁: Enterprise Risk Management has a positive effect on Firm Performance

2.2.2. ERM and Sustainability Performance

In response to increasing stakeholder pressure and intensifying global competition, firms are expected to manage not only financial risks but also ESG-related risks. In this context, ERM offers a comprehensive and integrated framework for identifying and managing such risks (Dewi et al., 2024; Resende et al., 2024). From a stakeholder perspective, the effective management of ESG risks is critical for aligning corporate activities with stakeholder expectations and achieving long-term sustainability outcomes.

The implementation of ERM facilitates integrating sustainability considerations into both strategic and operational decision-making. By embedding ESG risks within risk management processes, firms are better equipped to mitigate environmental and social risks, reduce negative externalities, and maintain legitimacy in the eyes of stakeholders. This integration is expected to enhance sustainability performance, particularly when supported by internal initiatives such as green practices and sustainability-oriented investments, which signal a firm's responsiveness to stakeholder demands (Ramadana et al., 2025; Supriyanto et al., 2025).

Moreover, ERM strengthens the incorporation of ESG factors into corporate governance and risk assessment mechanisms. By systematically evaluating sustainability risks and opportunities, firms can improve transparency, accountability, and the effectiveness of sustainability-related disclosures (Boffo & Patalano, 2020; Bhandari et al., 2022). As such, ERM not only supports risk mitigation but also facilitates the alignment between risk management practices and broader sustainability objectives. Based on this theoretical argument, ERM is expected to influence sustainability performance positively. H₂: Enterprise Risk Management has a positive effect on Sustainability Performance.

2.2.3. Sustainability Performance and Firm Performance

In today's increasingly complex and uncertain business environment, firms are expected to go beyond financial objectives by integrating sustainability considerations into their strategic decision-making (Aifuwa, 2020). Sustainability performance reflects how well a firm manages environmental, social, and governance issues which are becoming increasingly important for stakeholders and long-term value creation.

From a stakeholder perspective, firms with stronger sustainability performance are generally better equipped to meet stakeholder expectations, manage risks related to environmental and social issues, and maintain organizational legitimacy. These capabilities can contribute to improved firm performance by enhancing corporate reputation, strengthening relationships with stakeholders, and enabling more efficient resources use (Qaisi, 2019). In addition, sustainability-driven practices such as environmental initiatives and responsible governance aim to promote greater transparency and accountability, which can further support firm performance (Anita & Amalia, 2021; Ho et al., 2024).

Sustainability performance also plays an important role from an investor standpoint. It often serves as a signal of a firm's long-term viability and risk management quality. Firms that demonstrate strong ESG performance are more likely to attract investment, thereby positively affecting their financial outcomes (Widyastuti, 2024). Moreover, governance mechanisms that support sustainability practices can enhance organizational resilience, helping firms remain stable and competitive over time (Kuruppu et al., 2019; Mangla et al., 2019). These arguments suggest that sustainability performance is likely to influence firm performance positively.

H₃: Sustainability Performance has a positive effect on Firm Performance.

2.2.4. ERM, Firm Performance, and Sustainability Performance

The growing emphasis on environmental, social, and governance practices has made sustainability an increasingly important factor in evaluating firm performance. Today, firms are expected not only to achieve financial goals but also to respond to stakeholder expectations regarding social and environmental issues. From a stakeholder perspective, effectively managing these expectations is key to creating long-term value and maintaining organizational legitimacy (Rahi et al., 2022).

In this regard, ERM plays an important role by helping firms identify and manage ESG-related risks. When risk management is integrated with sustainability considerations, firms are better able to incorporate environmental and social risks into their strategic decisions. This integration can support the development of sustainability performance by improving how firms respond to ESG risks and opportunities (Rahmaniati & Ekawati,

2024). Sustainability performance is likely to influence firm performance. Firms with stronger sustainability performance tend to build better relationships with stakeholders, reduce potential risks, and enhance transparency and accountability. These factors can contribute to improved outcomes, both financially and non-financially (Arrive et al., 2019).

Taken together, these arguments suggest that ERM may affect firm performance indirectly through sustainability performance. In other words, ERM facilitates integrating ESG risks into organizational processes, thereby strengthening sustainability performance and enhancing firm performance. In this way, sustainability performance acts as a mediating mechanism linking ERM and firm performance.

H4: Sustainability Performance mediates the relationship between ERM and Firm Performance.

The hypotheses in this research are illustrated in Figure 1. This figure represents the study's framework and provides a visual overview of the proposed relationships between the variables.

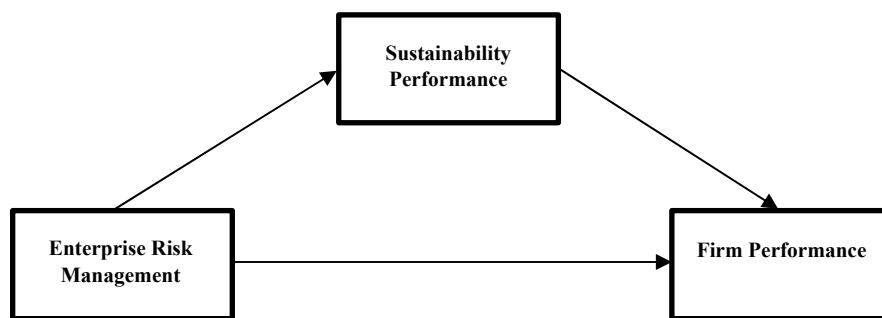


Figure 1. Research Model

3. Research Method

3.1 Data and Sample

This study used panel regression data to analyze 120 non-financial companies. The approach used is quantitative, taking a sample of non-financial companies listed on the Indonesia Stock Exchange (IDX) for the 2019-2023 period. The non-financial sector reflects real economic activity through the production of goods and services, thereby playing an important role in boosting economic growth. A total of 600 observable data points were obtained. This study aims to determine the influence of several variables on a company's performance, using data from each company's financial and sustainability reports.

All companies listed on the Indonesia Stock Exchange during this period were included in the research sample. Some of these companies will then be grouped based on their industry sectors, namely: (1) basic materials, (2) energy, (3) infrastructure, (4) healthcare, (5) non-cyclical consumers, (6) industry, (7) property, (8) cyclical consumers, (9) technology, and (10) transportation. This approach enable a more structured analysis, allowing differences in sectors characteristics to be examined in relation to the variables being studied.

Table 1. Research Sample Criteria

Criteria	Total
Non-financial companies listed on the Indonesian Stock Exchange	850
Companies that did not publish sustainability report	730
Total Sample	120
5 years of observation (120x5)	600

3.2 Variables Measurement

In this study, ERM is measured using an ERM Index, which reflects how risk management is structurally implemented within the firm. The index is adapted from Florio & Leoni (2017) and extended by Dewi et al. (2024) to suit the Indonesian context better. The index includes several key components, such as the existence of a risk management division or committee, the appointment of a head or director responsible for risk management, the presence of a risk management committee that reports to the board of commissioners, the frequency of risk reporting, the depth of risk analysis, and the methods used to assess risk. Each component is measured using a dummy scoring approach, where a score of 1 is assigned if the firm meets the criterion and 0 if it does not. The total score ranges from 0 to 6, with higher scores indicating a more structured and comprehensive implementation of risk management practices. Overall, this index shows the extent to which risk management is formally embedded in the firm's governance structure and organizational processes.

Table 2. Measurement Variables

Variables	Indicator	Source	References
Enterprise Risk Management (ERM)	A score of 1 is assigned if the company fulfills each ERM effectiveness criterion and 0 if it does not. The criteria include the existence of a risk management division/committee, head of risk management, reporting to the board, reporting frequency, depth of risk analysis, and risk analysis methods. Companies that fulfill all six criteria receive a total score of 6 (100%).	ERM Index	
Sustainability Performance (SP)	Measured using Environmental, Social, and Governance (ESG) score based on sustainability reporting standards from the Global Reporting Initiative (GRI).	ESG Score	GRI Standards
Firm Performance (FP)	Measured using Return on Assets (ROA), which shows how effectively a company utilizes its assets to generate profits.	ROA	Financial Report
Leverage (LEV)	Measured using Debt to Asset Ratio (DAR), which represents the proportion of company assets financed by debt	Total Debt /Total Assets	Financial Report
Firm Age (FIRMAGE)	Calculated as Observation Year – Year of Establishment + 1 to represent how long the company has been operating.	Company Age	Company Profile

Variables	Indicator	Source	References
Firm Size (FIRMZ)	Measured using the natural logarithm of total assets to normalize company size differences.	In (Total Assets)	Financial Report

Sustainability Performance (SP) can be measured by using the Environmental, Social, and Governance (ESG) score, which is referenced in a sustainability reporting standard from the Global Reporting Initiative (GRI). ESG can guide the extent to which the company implements a sustainability principle in three main aspects, including (1) the environment, which includes a management of the company's impact on the environment; (2) social, providing a mirror on the company's responsibility to a stakeholder; and (3) economics, the focus on a company's contribution to good governance and economic development. The ESG score is obtained on a company's contribution to good governance and economic development. ESG scores can be obtained from a company's sustainability report and reflect how an ESG principle is applied in its operational activities.

A measurement of Firm Performance (FP) provides a value of how effectively the company utilizes its assets to obtain profits. This indicator shows the net profit per unit of the company's assets, making it a very important measure for assessing profitability from a financial perspective. The higher the ROA, the more efficiently the company uses its assets to generate profits.

This research can include several control variables, such as leverage, measured as the ratio of total debt to total assets, to indicate the proportion of the company's funding derived from liabilities. The age of the company can be calculated by subtracting the year of the data from the year of the company's establishment, then adding 1, so that it reflects how long the company has been operating. Meanwhile, the company's size can be calculated by taking the natural logarithm of total assets to adjust the data scale and reduce bias caused by differences in the company size.

3.3 Research Method

The empirical model is estimated using panel-data regression to test the proposed relationships, as presented in Equations 1-3.

$$FP = \alpha_1 + \beta_1ERM + \beta_2LEV + \beta_3FIRMAGE + \beta_4FIRMSZ + \varepsilon \dots \dots \dots (1)$$

$$SP = \alpha_2 + \beta_1ERM + \beta_2LEV + \beta_3FIRMAGE + \beta_4FIRMSZ + \varepsilon \dots \dots \dots (2)$$

$$FP = \alpha_3 + \beta_1ERM + \beta_2SP + \beta_3LEV + \beta_4FIRMAGE + \beta_5FIRMSZ + \varepsilon \dots \dots \dots (3)$$

Where,

ERM = Enterprise Risk Management
 SP = Sustainability Performance
 FP = Firm Performance
 LEV = Leverage
 FIRMAGE = Firm Age
 FIRMZ = Firm Size

4. Results and Discussion

Based on Table 3, the sample includes 600 firm-year observations drawn from 120 non-financial companies during the 2019–2023 period. The energy sector accounts for the

largest share of the sample, with 135 observations, followed by consumer cyclicals (105), infrastructure (100), and consumer non-cyclicals (70). Other sectors, such as industrials, healthcare, and property and real estate, are moderately represented, while technology and transportation have the fewest observations.

This distribution suggests that the sample covers firms with varying degrees of exposure to environmental, social, and operational risks. For example, companies in the energy and infrastructure sectors generally face greater environmental and regulatory pressures. In contrast, firms in technology and transportation are often exposed to relatively lower levels of such risk.

Although the study includes firms from a range of industries, sector-specific effects are not explicitly incorporated into the regression model. Instead, the analysis relies on firm-level control variables to capture part of the variation across firms. This condition should be noted as a limitation, as industry characteristics may shape the relationships among enterprise risk management, sustainability performance, and firm performance. Future studies could strengthen the analysis by incorporating industry-based models or conducting sectoral comparisons to better account for these differences.

Table 3. Distribution of Industrial Sectors

SIC	Year					Total
	2019	2020	2021	2022	2023	
<i>Energy</i>	27	27	27	27	27	135
<i>Basic Materials</i>	6	6	6	6	6	30
<i>Industrials</i>	11	11	11	11	11	55
<i>Consumer Non-cyclicals</i>	14	14	14	14	14	70
<i>Consumer Cyclicals</i>	21	21	21	21	21	105
<i>Healthcare</i>	9	9	9	9	9	45
<i>Property and Real Estate</i>	9	9	9	9	9	45
<i>Technology</i>	1	1	1	1	1	5
<i>Infrastructure</i>	20	20	20	20	20	100
<i>Transportation & Logistics</i>	2	2	2	2	2	10
Total	120	120	120	120	120	600

Source(s): Authors analysis

4.1 Descriptive Statistics

Table 4. Descriptive Statistics Test Result

Variable	N	Mean	Std. Deviation	Minimum	Maximum
FP	600	6.538	10.094	-11.950	59.930
ERM	600	1.777	0.417	0.000	1.000
SP	600	0.362	0.258	0.010	1.000
LEV	600	0.525	0.234	0.060	1.769
FIRMAGE	600	37.187	22.593	1.500	116.500
FIRMSZ	600	9.318	1.469	5.035	12.125

Source(s): Authors analysis

Based on Table 4, a descriptive statistical test of 600 samples indicates an initial characteristic of each variable before further analysis. An FP variable averages 6.538, with a range of -11.950 to 59.930, suggesting a significant variation in the company's

performance. indicating a high level of variation in company performance across the sample. The relatively large standard deviation of 10.094 further suggests substantial dispersion, implying that firms experience significantly different performance outcomes, indicating a variation in risk management practices between companies, most of which have succeeded in adopting an ERM strategy, while others have not been optimal (Karina et al., 2023).

In contrast, an SP variable has an average of 0.362 and a range of 0.010-1.000, indicating that most companies have low to moderate sustainability performance, so sustainability is not yet a top priority. In addition, the Leverage (LEV) control variable has an average of 0.525. The maximum value of 0.060 and the maximum of 1.769 reflect a company's dependence on debt in its capital structure. The variable for company age (FIRMAGE) has an average of 37.187. The range of values 1.5-116.5 indicates a variation in the age of the companies in the sample, from newly established to long-established. Meanwhile, a company size (FIRMSZ) has an average of 9.318, with a range of 5.035-12.125. This finding reflects a difference in the size of the company in the sample, from small to large. Overall, these findings can provide an important preliminary picture of the distribution and variation of the data, as a basis for further analysis in this study.

4.2 Empirical Result

Based on Table 5, which presents a Pearson correlation test, it is concluded that an ERM shows a weak but statistically significant positive correlation with FP ($r = 0.116$; $p < 0.01$). This result can provide a clue to a better ERM implementation and higher company performance, indicating an effective application of risk management in improving company performance (Anugerah et al., 2023). In addition, SP can provide clues to the presence of a positive and significant correlation between FP ($r = 0.223$; $p < 0.01$), suggesting that a company's sustainability performance can contribute to overall performance improvement (Dayal et al., 2024). A LEV variable indicates a negative correlation of FP ($r = -0.056$), but this relationship cannot be significant ($p > 0.1$), so the effect cannot be confirmed consistently. Some other control factors, such as FIRMAGE and FIRMSZ, may indicate a different outcome: a firm's age has a positive and significant correlation with FP ($r = 0.122$; $p < 0.01$), while firm size cannot provide a significant correlation with FP ($r = -0.028$; $p > 0.1$). This result provides clues that the size of the company is not always a guarantee of increased profitability or operational efficiency (Kristianthy & Ekawati, 2024). Overall, the results of this study indicate that ERM and SP have significantly contributed to improving a company's performance, while a control variable has a lower influence.

Table 5. Pearson Correlation Test Result

	FP	ERM	SP	LEV	FIRMAGE	FIRMSZ
FP	1.000					
ERM	0.116*** (0.004)	1.000				
SP	0.223*** (0.000)	0.058 (0.159)	1.000			
LEV	-0.056	0.110***	-0.081**	1.000		

	FP	ERM	SP	LEV	FIRMAGE	FIRMSZ
	(0.170)	(0.007)	(0.048)			
FIRMAGE	0.122***	0.127***	0.065	0.093**	1.000	
	(0.003)	(0.002)	(0.110)	(0.023)		
FIRMSZ	-0.028	0.205***	0.193***	0.022	0.198***	1.000
	(0.494)	(0.000)	(0.000)	(0.590)	(0.000)	

p-values in parentheses

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Source(s): Authors analysis

Table 6. Regression Test Results

	(1) FP	(2) SP	(3) FP
ERM	2.976***	0.010	2.871***
	(2.75)	(0.37)	(2.87)
LEV	-3.440	-0.111***	-2.269
	(-0.85)	(-2.68)	(-0.56)
FIRMAGE	0.057	0.000	0.052
	(1.52)	(0.88)	(1.51)
FIRMSZ	-0.548	0.032***	-0.882*
	(-1.17)	(3.81)	(-1.81)
SP			10.555***
			(4.13)
_cons	4.715	-0.076	5.520
	(0.88)	(-0.93)	(1.02)
Year FE	Yes	Yes	Yes
r ²	0.046	0.340	0.094
r ² _a	0.033	0.331	0.080
N	600	600	600

t statistics in parentheses

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Source(s): Authors' own work

Table 7. Path Analysis of ERM, SP, and FP

Variable	Path	Coef	t	Sig.
ERM	ERM → FP (Direct)	2.976	3.68	0.000***
ERM	ERM → SP	0.010	0.37	-
ERM	SP → FP	10.555	4.13	0.000***
ERM	ERM → FP (with SP)	2.871	3.77	0.000***
ERM	ERM → SP → FP (Indirect)	0.1056	-	-

Source(s): Authors analysis

4.3 Discussion

This study employs a path analysis to examine the relationships among enterprise risk management, as measured by the ERM index (ERM), SP, and FP. The analysis is conducted using several regression models. Model (1) examines the direct effect of ERM on firm performance (ERM → FP). Model (2) tests the effect of ERM on sustainability

performance (ERM → SP). Model (3) evaluates the effect of sustainability performance on firm performance (SP → FP). Models (4) and (5) incorporate the mediating variable to assess the indirect effect, with its significance further evaluated using the Sobel test.

The results of the regression and path analyses provide an integrated understanding of the relationships among ERM, as measured by the ERM index, sustainability performance (SP), and firm performance (FP). Overall, the findings indicate that ERM has a positive and significant effect on firm performance, suggesting that firms with more structured risk management practices are better able to manage uncertainty and achieve superior performance outcomes. These findings support prior studies highlighting that effective risk management contributes to improved organizational performance through enhanced risk control and strategic decision-making (Resende et al., 2024).

However, a different pattern emerges when examining the relationship between ERM and sustainability performance. The results show that ERM affects sustainability performance, suggesting that formal risk management structures do not necessarily translate into improved sustainability outcomes. This result suggests that the existence of risk management committees, reporting systems, and governance structures may not be sufficient to drive sustainability initiatives in practice.

In contrast, sustainability performance has a strong, significant effect on firm performance, underscoring its role as an important driver of corporate value. Firms with higher sustainability performance are more likely to improve their operational efficiency, strengthen stakeholder relationships, and enhance their reputation, which ultimately contributes to better firm performance (Biju et al., 2025)

When sustainability performance is included in the model, the direct effect of ERM on firm performance remains significant. It indicates that sustainability performance does not mediate the relationship between ERM and firm performance. In other words, ERM contributes to firm performance primarily through direct mechanisms, such as improved governance, risk control, and strategic decision-making, rather than through sustainability performance.

These findings suggest a gap between formal risk management implementation and its integration with sustainability practices. In many firms, risk management is implemented as part of governance compliance, while sustainability initiatives are managed separately, resulting in limited interaction between the two. This condition may explain why ERM does not significantly influence sustainability performance and why the mediating role of sustainability performance is not supported.

This insignificant relationship between ERM and sustainability performance may be related to the institutional and organizational context in Indonesia. In the Indonesian setting, risk management and sustainability functions are often structured as separate organizational units, with ERM primarily focusing on financial and operational risks. In contrast, sustainability initiatives are commonly associated with corporate social responsibility or compliance functions. Although regulations such as POJK No. 51/POJK.03/2017 mandate sustainability reporting, corporate responses may emphasize formal disclosure rather than the integration of sustainability considerations into risk management processes. As a result, ERM implementation may place greater emphasis on governance structures and regulatory compliance, without fully embedding ESG

considerations into strategic decision-making. This separation may limit ERM's ability to influence sustainability performance, which helps explain the non-significant relationship between ERM and SP observed in this study.

From a stakeholder theory perspective (Freeman, 1984). Firms are expected to integrate risk management and sustainability to address broader stakeholder expectations. However, the findings of this study indicate that such integration has not been fully realized in practice. As a result, sustainability performance functions as an independent driver of firm performance rather than as a transmission mechanism linking risk management to performance outcomes.

Overall, this study highlights that ERM and sustainability performance contribute to firm performance through different pathways. ERM acts as a direct driver of performance, while sustainability performance independently enhances firm performance but does not mediate the relationship. These results emphasize the importance of aligning risk management practices with sustainability strategies to achieve more integrated and sustainable value creation.

To further confirm this mediating role, a Sobel test was conducted. The mediating role of sustainability performance was examined using the Sobel test. ERM was used as an independent variable. The results of the Sobel test showed a Z-value of 0.37, which is below the critical value at the 5% significance level. It indicates that the role of sustainability performance in explaining the relationship between ERM and firm performance appears limited, even though there is a significant positive relationship between sustainability performance and firm performance.

Table 8. Sobel Test

Path	a	SEa	b	SEb	Z-value
ERM → SP → FP	0.010	0.027	10.555	2.556	0.37

The results indicate that ERM does not have a significant effect on sustainability performance. This finding suggests that formal risk management structures may not necessarily be integrated into firms' sustainability practices. In other words, the existence of risk management committees and disclosures does not automatically translate into improved environmental or social performance. This result can be interpreted from an institutional perspective, where organizations may adopt formal structures to meet regulatory expectations and maintain legitimacy, without fully embedding these practices into their strategic decision-making processes. In addition, this study is limited to non-financial firms in Indonesia, which may restrict the generalizability of the findings across different industries. Variations in industry characteristics and risk exposure may influence how risk management practices relate to sustainability performance. Therefore, future research is encouraged to conduct cross-sector analysis to capture these differences better.

This result suggests that the SP plays a mediating role in ERM and FP. An effective sustainability performance will transform risk management practices into a competitive advantage, because a company that prioritizes sustainability is more resilient in the face of risk and gains stakeholder support. Sustainability can also contribute to a company's reputation, competitiveness, and increased value and performance (Bhandari et al., 2022;

Carvajal & Nadeem, 2023). This result reinforces a stakeholder theory that emphasizes a mutual relationship between the company and its stakeholders, where ERM plays a role in managing risk boosting sustainability performance, which ultimately leads to increased financial results. Thus, a linkage among ERM, SP, and FP will become a strategic element amid the dynamics and pressure from external businesses.

5. Conclusions, Implications, and Limitations

This study examines the relationship between ERM, SP, and FP. The results show that ERM has a positive and significant effect on firm performance, suggesting that more structured risk management practices are associated with better organizational outcomes. However, ERMB does not have a significant effect on sustainability performance, and the mediating role of SP is not supported. These findings indicate that although risk management contributes directly to firm performance, its integration with sustainability practices remains relatively limited.

From a practical perspective, these results suggest that firms need to move beyond treating ERM as merely a compliance requirement. More specifically, companies should integrate risk management processes with sustainability planning by including ESG risks in enterprise risk registers, aligning the roles of risk management and sustainability functions to reduce fragmented decision-making, and incorporating sustainability risk indicators into performance evaluation and internal control systems. Through this kind of integration, risk management can play a broader role not only in protecting firm value but also in supporting long-term sustainability goals.

From a policy perspective, the findings imply that regulators may need to strengthen the connection between risk management and sustainability disclosure frameworks. For instance, regulatory guidance could encourage firms to more explicitly link ERM practices with ESG risk management and sustainability reporting requirements. This guidance could improve the effectiveness of risk management implementation beyond formal compliance and increase transparency in corporate sustainability practices.

This study also has several limitations. First, the sample includes only non-financial firms in Indonesia, which may limit the generalizability of the findings to other sectors or settings with different risk profiles. Second, the ERM index captures the structural side of risk management implementation, but it may not fully reflect how effective those practices are in practice. Third, because the study relies on secondary data, it cannot fully capture the internal processes involved in integrating risk management and sustainability.

Given these limitations, future research could extend this work in several ways. It could compare firms across sectors to examine whether the relationship between ERM, sustainability performance, and firm performance differs by industry, expand the observation period to capture changes over time, and use qualitative approaches such as case studies or interviews to gain a deeper understanding of how firms actually integrate risk management and sustainability practices.

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Conflict of Interest Statement

The authors declare that there is no conflict of interest regarding the publication of this article.

Data Availability Statement

The data supporting the findings of this study are available from the corresponding author upon reasonable request.

Author Contributions

Conceptualization: [Mariska Ramadana]; Methodology: [Mariska Ramadana, Sellina Monica]; Data Collection: [Sellina Monica]; Data Analysis: [Mariska Ramadana, Sellina Monica, Robby Krisyadi]; Writing – Original Draft: [Mariska Ramadana, Sellina Monica, Robby Krisyadi]; Writing, Review, & Editing: [Mariska Ramadana, Robby Krisyadi]; Supervision: [Mariska Ramadana].

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References

- Adi, D., Wardoyo, K., Saifi, M., & Imamah, N. (2024). Enterprise risk management and corporate governance effect towards sustainability and performance moderated by market crash. *Profit: Jurnal Administrasi Bisnis*, 18(2), 185–201. <https://doi.org/10.21776/ub.profit.2024.018.02.4>
- Afrizal, F., Oktavendi, T. W., & Irawan, D. (2025). Risk management committee and firm performance: The moderating effect of political connection. *Jurnal Akuntansi dan Investasi*, 26(1). <https://doi.org/10.18196/jai.v26i1.20082>
- Ahmad, S. A., & Teo, P.-C. (2024). The implementation of enterprise risk management (ERM) frameworks in small and medium enterprises (SMEs): A literature review. *International Journal of Academic Research in Business and Social Sciences*, 14(9), 290–307. <https://doi.org/10.6007/ijarbss/v14-i9/22353>
- Aifuwa, H. O. (2020). Sustainability reporting and firm performance in developing climes: A review of literature. *Copernican Journal of Finance & Accounting*, 9(1), 9–19. <https://doi.org/10.12775/cjfa.2020.001>
- Al-Shaikh, F. A., Al-Adeem, Z., & Al-Qahtani, N. (2021). Determinants of enterprise risk management adoption and implementation: Evidence from Saudi Arabia. *International Journal of Economics and Financial Issues*, 11(2), 65–74.
- Anggraini, A., & Hidayat, N. (2025). The influence of company complexity and risk management on sustainability performance. *International Journal of Social Science, Humanity & Management Research*, 4(1), 118–126. <https://doi.org/10.58806/ijsshmr.2025.v4i1n14>

- Anita, & Amalia, D. P. (2021). Pengaruh tanggung jawab sosial dan kepemilikan terkonsentrasi terhadap kinerja keuangan. *Jurnal Ekonomi Modernisasi*, 17(1), 54–68. <https://doi.org/10.21067/jem.v17i1.5283>
- Anton, S. G., Elena, A., & Nucu, A. (2020). Enterprise risk management: A literature review and agenda for future research. *Journal of Risk and Financial Management*, 13(11), 281. <https://doi.org/10.3390/jrfm13110281>
- Anugerah, R., Ariyanto, N. R., & Sari, R. N. (2023). Effect of enterprise risk management and corporate governance mechanisms on firm performance: Evidence from listed companies in Indonesia. *Problems and Perspectives in Management*, 21(3), 589–600. [https://doi.org/10.21511/ppm.21\(3\).2023.46](https://doi.org/10.21511/ppm.21(3).2023.46)
- Arrive, J., Feng, M., Yan, Y., & Chege, S. M. (2018). The involvement of telecommunication industry in the road to corporate sustainability and corporate social responsibility commitment. *Corporate Social Responsibility and Environmental Management*, 25(4), 565–576. <https://doi.org/10.1002/csr.1667>
- Ayudhea, Y., & Puspita, D. A. (2023). Analisis prediksi kebangkrutan perusahaan sub sektor pariwisata, restoran dan hotel sebelum dan saat pandemi Covid-19. *Nominal: Barometer Riset Akuntansi dan Manajemen*, 12(2), 242–253. <https://doi.org/10.21831/nominal.v12i2.59416>
- Azar, B. K., & Ulpah, M. (2024). The effect of enterprise risk management (ERM) implementation on operational performance and firm value on Indonesian agricultural sector. *Dinasti International Journal of Economics, Finance & Accounting*, 5(4), 2338–2350. <https://doi.org/10.38035/dijefa.v5i4.2873>
- Bhandari, K. R., Ranta, M., & Salo, J. (2022). The resource-based view, stakeholder capitalism, ESG, and sustainable competitive advantage: The firm's embeddedness into ecology, society, and governance. *Business Strategy and the Environment*, 31(4), 1525–1537. <https://doi.org/10.1002/bse.2967>
- Biju, A. V. N., Geetha, S., Prasad, S., Sasidharan, A., & Jayachandran, A. (2025). ESG–firm performance nexus: Evidence from an emerging economy. *Business Strategy and the Environment*, 34(3), 3469–3496. <https://doi.org/10.1002/bse.4152>
- Boffo, R., & Patalano, R. (2020). ESG investing: Practices, progress and challenges. OECD. <https://doi.org/10.1787/b4f71091-en>
- Carvajal, M., & Nadeem, M. (2023). Financially material sustainability reporting and firm performance in New Zealand. *Meditari Accountancy Research*, 31(4), 938–969. <https://doi.org/10.1108/MEDAR-06-2021-1346>
- Chartpolrak, P., & Tangthong, S. (2020). Causes and effects between an enterprise risk management framework and firm financial performance for energy efficiency services. *International Journal of Innovation, Creativity and Change*, 14(11), 882–917.
- Dayal, M., Soni, N., & Aggarwal, R. (2024). Linking ESG disclosure to firm performance and risk. *Indian Journal of Marketing*, 54(5), 24–39. <https://doi.org/10.17010/ijom/2024/v54/i5/174641>
- Dewi, A. A., Saraswati, E., Rahman, A. F., & Atmini, S. (2024). Moderating role of enterprise risk management in the relationship between sustainability performance and a firm's competitive advantage. *Problems and Perspectives in Management*, 22(2), 226–239. [https://doi.org/10.21511/ppm.22\(2\).2024.18](https://doi.org/10.21511/ppm.22(2).2024.18)

- Ding, L., Cui, Z., & Li, J. (2024). Risk management and corporate ESG performance: The mediating effect of financial performance. *Finance Research Letters*, 69, Article 106274. <https://doi.org/10.1016/j.frl.2024.106274>
- Donaldson, T., & Preston, L. E. (1995). The stakeholder theory of the corporation: Concepts, evidence, and implications. *Academy of Management Review*, 20(1), 65–91. <https://doi.org/10.2307/258887>
- Faedfar, S., Özyeşil, M., Çıkırıkçı, M., & Benhür Aktürk, E. (2022). Effective risk management and sustainable corporate performance integrating innovation and intellectual capital: An application on Istanbul exchange market. *Sustainability*, 14(18), Article 11532. <https://doi.org/10.3390/su141811532>
- Faqera, A. F., Jadi, D., Aniza, N., & Aziz, A. (2026). Disaggregated financial risk and ESG performance: Firm-level evidence from Malaysia. *Cogent Business & Management*, 13(1). <https://doi.org/10.1080/23311975.2025.2597709>
- Fitriana, S., & Wardhani, R. (2020). The effect of enterprise risk management and sustainability reporting quality on performance: Evidence from Southeast Asia countries. *International Journal of Economic Policy in Emerging Economies*, 13(4), 344–355. <https://doi.org/10.1504/IJEPEE.2020.109588>
- Florio, C., & Leoni, G. (2017). Enterprise risk management and firm performance: The Italian case. *The British Accounting Review*, 49(1), 56–74. <https://doi.org/10.1016/j.bar.2016.08.003>
- Fraser, J. R. S., Quail, R., & Simkins, B. J. (2022). Questions asked about enterprise risk management by risk practitioners. *Business Horizons*, 65(3), 251–260. <https://doi.org/10.1016/j.bushor.2021.02.046>
- Freeman, R. E. (1984). Strategic management: A stakeholder approach. <https://doi.org/10.2139/ssrn.263511>
- Ho, L., Nguyen, V. H., & Dang, T. L. (2024). ESG and firm performance: Do stakeholder engagement, financial constraints and religiosity matter? *Journal of Asian Business and Economic Studies*, 31(4), 263–276. <https://doi.org/10.1108/JABES-08-2023-0306>
- Iznillah, M. L., & Rasuli, M. (2024). Reaksi investor terhadap corporate sustainability performance: A review of literature using stakeholder theory. 4th Proceeding of Conference on Economic and Business, 2, 300–311. <https://doi.org/10.56870/4pce9r80>
- Javed, M. Y., et al. (2024). Exploring sustainable investments: How they drive firm performance in Indian private and publicly listed companies. *Sustainability*, 16(16), 1–17. <https://doi.org/10.3390/su16167240>
- Junaidi, W., & Hanggraeni, D. (2024). Revealing the impact of ERM and ESG disclosures on the performance of non-financial public companies in Indonesia: An empirical study from 2017–2022. *Eduvest: Journal of Universal Studies*, 4(11), 10847–10858. <https://doi.org/10.59188/eduvest.v4i11.44745>
- Kalash, I. (2023). Do agency costs and business risk affect the corporate sustainability–financial performance relationship? *Journal of Economic and Administrative Sciences*. <https://doi.org/10.1108/JEAS-07-2023-0172>
- Karina, R., Lestari, F., & Ivone, I. (2023). The effect of enterprise risk management on financial performance and firm value: The role of environmental, social and governance performance. *Global Financial Accounting Journal*, 7(2), 213. <https://doi.org/10.37253/gfa.v7i2.8706>

- KBA News. (2025). Assessing Indonesia's economic resilience: From crisis to recovery (2020–2025). <https://kbanews.com/english-edition/assessing-indonesias-economic-resilience-from-crisis-to-recovery-2020-2025/>
- Khan, A. K., Shah, S. Z. A., & Ahmad, W. (2022). The effect of enterprise risk management on firm performance: The mediating role of research & development investment. *International Journal of Management Science and Engineering Management*. <https://doi.org/10.1142/S1363919624500233>
- KPMG. (2025). Top geopolitical risks 2025. <https://assets.kpmg.com/content/dam/kpmgsites/xx/pdf/2025/03/top-geopolitical-risks-2025-web.pdf>
- Kristianthy, L. T., & Ekawati, E. (2024). The effect of company growth on sustainable performance: A moderating perspective of stock mispricing in Indonesia and Japan. *Investment Management and Financial Innovations*, 21(2), 323–335. [https://doi.org/10.21511/imfi.21\(2\).2024.26](https://doi.org/10.21511/imfi.21(2).2024.26)
- Kuo, K. C., Yu, H. Y., Lu, W. M., & Le, T. T. (2022). Sustainability and corporate performance: Moderating role of environmental, social, and governance investments in the transportation sector. *Sustainability*, 14(7), Article 4095. <https://doi.org/10.3390/su14074095>
- Kuruppu, S. C., Milne, M. J., & Tilt, C. A. (2019). Gaining, maintaining and repairing organisational legitimacy: When to report and when not to report. *Accounting, Auditing & Accountability Journal*, 32(7), 2062–2087. <https://doi.org/10.1108/AAAJ-03-2013-1282>
- Loureiro, B., Model, E. R., & Yang, H. (2021). Disclosure of enterprise risk management in ASEAN 5: Sustainable development for green economy. *IOP Conference Series: Earth and Environmental Science*, 716(1), Article 012101. <https://doi.org/10.1088/1755-1315/716/1/012101>
- Malik, I. (2026). A literature review: Effect of enterprise risk management (ERM) implementation on micro, small and medium enterprises (MSMEs). *Eksis: Jurnal Ilmiah Ekonomi dan Bisnis*, 14(1), 1–4. <https://doi.org/10.33555/embm.v14i1.267>
- Malik, M. F., Zaman, M., & Buckby, S. (2020). Enterprise risk management and firm performance: Role of the risk committee. *Journal of Contemporary Accounting & Economics*, 16(1). <https://doi.org/10.1016/j.jcae.2019.100178>
- Manab, N. A., & Aziz, N. A. A. (2019). Integrating knowledge management in sustainability risk management practices for company survival. *Management Science Letters*, 9(4), 585–594. <https://doi.org/10.5267/j.msl.2019.1.004>
- Mangla, S. K., Sharma, Y. K., Patil, P. P., Yadav, G., & Xu, J. (2019). Logistics and distribution challenges to managing operations for corporate sustainability: Study on leading Indian dairy organizations. *Journal of Cleaner Production*, 238, Article 117620. <https://doi.org/10.1016/j.jclepro.2019.117620>
- Medina, F. A. S., & Kimura, H. (2022). Impacts of the COVID-19 pandemic on operational losses. *Frontiers in Applied Mathematics and Statistics*, 8. <https://doi.org/10.3389/fams.2022.940102>
- Murinda, C. S., Islahuddin, I., & A, N. (2021). Firm value: Does corporate governance and research & development investment matter? *Jurnal Reviu Akuntansi dan Keuangan*, 11(2), 266–284. <https://doi.org/10.22219/jrak.v11i2.16786>

- Mykyta, S. (2025). Global trends in logistics: The impact of geopolitical factors on supply chains. *The American Journal of Management and Economics Innovations*, 7(3), 46–55. <https://doi.org/10.37547/tajmei/Volume07Issue03-07>
- Nasr, A. K., et al. (2019). How enterprise risk management (ERM) can affect short-term and long-term firm performance: Evidence from the Iranian banking system. *Entrepreneurship and Sustainability Issues*, 7(2), 1387–1403. [https://doi.org/10.9770/jesi.2019.7.2\(41\)](https://doi.org/10.9770/jesi.2019.7.2(41))
- Neacșu, M. C., Negut, S., & Vlăsceanu, G. (2018). The impact of geopolitical risks on tourism. *Amfiteatru Economic*, 20 (Special Issue 12), 633–647. <https://doi.org/10.24818/EA/2018/S12/870>
- Nguyen, T. A. (2026). Enterprise risk management and earnings management under financial distress: Evidence from an emerging market. *Cogent Business & Management*, 13(1). <https://doi.org/10.1080/23311975.2026.2625536>
- Nkansa, P., Barr-Pulliam, D., & Walker, K. (2025). From compliance to strategic partnerships: The role of internal audit in enterprise risk management and opportunities for future research. *Journal of Risk and Financial Management*, 18(12), Article 707. <https://doi.org/10.3390/jrfm18120707>
- Noth, F., & Schüwer, U. (2023). The impact of natural disasters on the performance and solvency of US banks. *International Journal of Managerial Finance*. <https://doi.org/10.1108/IJMF-08-2020-0406>
- Nugroho, W. C. (2025). Financial distress: Studi intellectual capital dan karakteristik direksi pada perusahaan ritel di Indonesia. *Owner*, 9(1), 421–435. <https://doi.org/10.33395/owner.v9i1.2487>
- Nur, A., & Pangestuti, F. (2024). Analisis kinerja organisasi di lingkungan Sekretariat Jenderal Kemendagri. *Jurnal Ekonomi Kreatif dan Organisasi*, 3(2). <https://doi.org/10.57151/jeko.v3i2.382>
- Qaisi, F. A. (2019). Corporate social responsibility effect on firms financial performance in Jordan. *International Journal of Monetary Economics and Finance*, 12(4), 325–342. <https://doi.org/10.1504/IJMEF.2019.101942>
- Quang, L. V., Ngoc-Long, N., & Giang, P. X. (2024). Enterprise risk management and firm performance: Exploring the roles of knowledge, technology, and supply chain. *Problems and Perspectives in Management*, 22(2), 150–164. [https://doi.org/10.21511/ppm.22\(2\).2024.13](https://doi.org/10.21511/ppm.22(2).2024.13)
- Rahi, A. F., Akter, R., & Johansson, J. (2022). Do sustainability practices influence financial performance? Evidence from the Nordic financial industry. *Accounting Research Journal*, 35(2), 292–314. <https://doi.org/10.1108/ARJ-12-2020-0373>
- Rahmaniati, N. P. G., & Ekawati, E. (2024). The role of Indonesian regulators on the effectiveness of ESG implementation in improving firms' non-financial performance. *Cogent Business & Management*, 11(1). <https://doi.org/10.1080/23311975.2023.2293302>
- Ramadana, M., Julia, J., & Wati, E. (2025). Green practices on sustainability performance: The moderating role of slack resources. *Jurnal Akuntansi dan Keuangan Indonesia*, 22(1). <https://doi.org/10.7454/jaki.v22i1.1973>
- Rehman, H., Ramzan, M., Zia, M., Haq, U., & Hwang, J. (2021). Risk management in corporate governance framework. *Sustainability*, 13(9), Article 5015. <https://doi.org/10.3390/su13095015>

- Resende, S., Monje-Amor, A., & Calvo, N. (2024). Enterprise risk management and firm performance: The mediating role of corporate social responsibility in the European Union region. *Corporate Social Responsibility and Environmental Management*, 31(4), 2852–2864. <https://doi.org/10.1002/csr.2719>
- Roscoe, S., Mena, C., & Mena, F. (2023). Geopolitical disruptions in global supply chains: A state-of-the-art literature review. *International Journal of Production Research*. <https://doi.org/10.1080/09537287.2023.2286283>
- Saeidi, P., Saeidi, S. P., Gutierrez, L., Streimikiene, D., Alrasheedi, M., & Mardani, A. (2021). The influence of enterprise risk management on firm performance with the moderating effect of intellectual capital dimensions. *Economic Research-Ekonomska Istraživanja*, 34(1), 122–151. <https://doi.org/10.1080/1331677X.2020.1776140>
- Shatnawi, S. A., et al. (2020). The factors influencing the enterprise risk management practices and firm performance in Jordan and Malaysia. *International Journal of Recent Technology and Engineering*, 8(5), 687–702. <https://doi.org/10.35940/ijrte.d8114.018520>
- Sitinjak, J., & Khabibah, N. A. (2023). Literatur review manfaat dari enterprise risk management di Indonesia. *Jurnal Ekonomi STIEP*, 8(1), 92–100. <https://doi.org/10.54526/jes.v8i1.137>
- Supriyanto, S., Ramadana, M., & Istiqomah, N. (2025). The role of green investment in enhancing environmental disclosure in Indonesia. *Asian Review of Accounting*. <https://doi.org/10.1108/ARA-09-2024-0274>
- Tewu, M. L. D., Bernarto, I., Suwarno, S., & Lisdiono, P. (2024). The effect of enterprise risk management and compliance practices on the firm performance of Indonesian banking companies. *Indonesian Journal of Business and Entrepreneurship*, 10(1), 52–64. <https://doi.org/10.17358/ijbe.10.1.52>
- Widyastuti, T. (2024). Exploring the influence of green accounting on sustainability performance: A literature review. *Greenation International Journal of Economics and Accounting*, 2(1), 53–60. <https://doi.org/10.38035/gjjea.v2i1.166>
- World Economic Forum. (2025). The global risks report 2025: 20th edition. https://reports.weforum.org/docs/WEF_Global_Risks_Report_2025.pdf
- World Risk Report 2024. (2024). GoodStats Data. Institute for International Law of Peace and Armed Conflict (IFHV) at Ruhr University Bochum. <https://data.goodstats.id/statistic/indonesia-masuk-jajaran-negara-dengan-risiko-bencana-alam-tertinggi-46H5e>
- Xie, J., Nozawa, W., Yagi, M., Fujii, H., & Managi, S. (2019). Do environmental, social, and governance activities improve corporate financial performance? *Business Strategy and the Environment*, 28(2), 286–300. <https://doi.org/10.1002/bse.2224>
- Zheng, X., & Bu, Q. (2024). Enterprise ESG performance, digital transformation, and firm performance: Evidence from China. *SAGE Open*, 14(4), 1–18. <https://doi.org/10.1177/21582440241291680>