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## **Impact of Environmental, Social, and Governance (ESG) and Enterprise Risk Management (ERM) on Business Performance in IDX Energy Listed Company Period ( 2020 -2024)**

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### ABSTRACT

This study investigates the impact of Environmental, Social, and Governance (ESG) practices and Enterprise Risk Management (ERM) implementation on the financial and non-financial performance of energy companies listed on the Indonesia Stock Exchange (IDX) during the 2020–2024 period. Using a quantitative explanatory design and multiple regression analysis, the research explores the relationships between ESG, ERM, and key performance indicators including Return on Assets (ROA), Return on Equity (ROE), Debt-to-Equity Ratio (DER), and Price-to-Book Value (PBV). The results indicate that ESG has no significant influence on either financial or non-financial performance, suggesting that sustainability initiatives in the energy sector are still developing. Conversely, ERM demonstrates a significant effect on ROE and DER, highlighting its role in enhancing profitability and investor confidence. However, ERM does not significantly affect ROA or PBV, and no significant relationship is found between ESG and ERM. These findings emphasize the importance of integrating sustainability and risk management strategies to improve financial resilience and long-term firm value. The study provides insights for policymakers, investors, and practitioners in strengthening ESG–ERM alignment within Indonesia's energy industry

## INTRODUCTION

A paradigm shift toward sustainable and ethical business practices has occurred in the global business landscape in recent years. Businesses are adopting the Environmental, Social, and Governance (ESG) framework as a strategic foundation for long-term value generation as a result of growing awareness of social inequity, environmental degradation, and governance shortcomings. ESG performance has emerged as a crucial metric for assessing a company's capacity to manage risks, draw in investors, and preserve a competitive edge in a market that is changing quickly. Within this context, the energy sector—characterized by its significant environmental impact and capital-intensive operation which has become a focal point of ESG related discourse and regulation.

At the same time, the application of enterprise risk management, or ERP, has become more well-known as a comprehensive strategy for locating, evaluating, and reducing possible risks that can compromise business goals. ERM enables companies to enhance decision-making, improve resilience, and align risk management strategies with corporate goals. When effectively implemented, ERM supports sustainable business practices by ensuring that financial and non-financial risks are managed proactively and systematically. Thus, the integration of ESG and ERM represents a comprehensive approach to achieving both financial stability and sustainable performance.

In Indonesia, the importance of ESG and ERM practices has been increasingly recognized, particularly among companies listed on the Indonesia Stock Exchange (IDX). The Financial Services Authority (OJK) has encouraged the disclosure of sustainability reports and the adoption of good governance principles to enhance corporate transparency and accountability. Energy companies, which play a crucial role in national economic growth but are often scrutinized for their environmental footprint, face mounting pressure to demonstrate their commitment to sustainability and effective risk management. This has become even more relevant in the 2020–2024 period, marked by global energy transitions, economic uncertainty, and post-pandemic recovery challenges.

Despite growing attention to ESG and ERM, empirical evidence regarding their combined impact on both financial and non-financial performance in

Indonesia's energy sector remains limited. Previous studies have often examined ESG or ERM in isolation, neglecting the potential synergies between these two strategic frameworks. Thus, the purpose of this study is to examine how ESG and ERM affect the financial and non-financial performance of energy businesses that are listed on the IDX between 2020 and 2024. It is anticipated that the results will give investors, policymakers, and corporate management important information for promoting resilient and sustainable business practices in the energy sector.

Energy company hold role crucial in support growth economy a country, including Indonesia. However, in the midst of increasingly global dynamics emphasize importance sustainability, company energy face challenge big for integrate practice friendly business environment, responsible answer in a way social, and prioritize governance good company (Wahida & Uyun, 2023). Given this, the Environmental, Social, and Governance (ESG) approach takes center stage as a sustainability firm indicator. ESG does not only functioning as means For fulfil stakeholders' expectations interests, but also capable give mark plus for company, good from aspect reputation and also performance (Widjaja, 2024).

In addition to ESG, the implementation of Enterprise Risk Management (ERM) is also becoming a key factor in determine success company. ERM is approach systematic For identify, assess, and manage risks that can occur influence achievement objective strategic company. (Ivan & Simatupang, 2021). In the of industry full of energy with uncertainty, such as fluctuation price oil, regulation strict environment, and risks operational, ERM helps company for increase ability adaptation and power competition (Wahida & Uyun, 2023)

In addition to ESG, the implementation of Enterprise Risk Management (ERM) is also becoming a key factor in determine success company. ERM is systematic approach for identifying, assessing, and managing

Financial performance often becomes indicator main used for evaluating company success. However, in modern business, non-financial performance, such as reputation, satisfaction customers, and contributions to society, also become indicator important that is not can ignored. (Pramanaswari, 2024). Integration of ESG and ERM can give impact

positive not only on the aspect finance, such as profitability and value company, but also on non-financial aspects that support sustainability term long . (Ivan & Simatupang, 2021)

Based on the aforementioned means, the study's goal is to examine how Enterprise Risk Management (ERM) and Environmental, Social, and Governance (ESG) affect the performance of financial and non-financial companies listed on the Indonesia Stock Exchange (IDX) between 2020 and 2024, with consider role size company as variable mediation. Through study this, it is expected can give contribution theoretical in enrich literature about management sustainability and risk in the sector energy, as well as give benefit practical for management company in formulate ESG and ERM based strategies to increase performance and power competitive. Furthermore, it is anticipated that the study's findings will provide insight for stakeholders and investors interested in making decisions and serve as a guide for policymakers creating supportive policies to encourage more sustainable and ethical corporate practices.

## **METHODS**

### **1. Research Design**

This study utilizes a quantitative research design within a positivistic framework, seeking to examine the correlations among variables using statistical analysis of numerical data. The design is explanatory, aiming to investigate the causal relationships between the independent variables Environmental, Social, and Governance (ESG) and Enterprise Risk Management (ERM) and the dependent variables, specifically financial performance (Return on Assets/ROA and Return on Equity/ROE) and non-financial performance (Investor Trust and Firm Value).

### **2. Populations and Sample Technique**

The research population comprises all energy sector companies listed on the Indonesia Stock Exchange (IDX) from 2020 to 2024, totaling 83 enterprises across diverse subsectors, including coal mining, oil and gas, energy logistics, and energy services. This study employed a purposive sampling strategy to identify a sample that is both pertinent and empirically trustworthy, which selects companies based on predetermined criteria related to data completeness, continuous listing status, and availability of ESG, ERM, and financial data for the

entire observation period. Based on these criteria, 20 companies were excluded because they were not consistently listed for five consecutive years, while another 15 companies were excluded due to incomplete disclosures in their financial statements.

After applying the purposive sampling criteria, a total of 48 companies met all requirements and were included as the final research sample, generating 240 firm-year observations. These selected companies represent a comprehensive cross-section of the Indonesian energy industry, covering major coal producers, oil and gas firms, and energy-related infrastructure providers. The use of purposive sampling ensures that the selected sample is fully aligned with the study's analytical needs, providing complete, comparable, and consistent data across the period studied. This bolsters the validity of the findings and amplifies the significance of the conclusions about the impact of ESG and ERM on financial performance in the energy sector.

### **3. Data Gathering Procedure**

Procedure data collection in study This involving a number of steps as following:

- a. Secondary Data Collection: Secondary data will collect from report annual reports published by companies' energy listed on the IDX during period 2020-2024. In addition, the sustainability report published by companies will also be analyzed to obtain data related to ESG and ERM.
- b. Processing: After the data is collected, the researcher will do data processing to ensure that the data is complete and accurate. Relevant data with variables such as ESG, ERM, size company, and performance company will select and arrange for analysis more carry on.
- c. Data Analysis: Data will be analyzed using analysis regression panel data for test connection between variable as well as role company size.

### **4. Statistical Treatment**

This study employed multiple linear regression to analyze the impact of firm performance characteristics on Environmental, Social, and Governance (ESG) and Enterprise Risk Management (ERM) as This study employed multiple linear regression to analyze the impact of firm performance characteristics on Environmental, Social, and Governance (ESG) and Enterprise Risk Management (ERM) as

dependent variables. Since the dataset is structured as a panel, the analysis begins with a pooled OLS regression and is further tested with panel data models (fixed effects or random effects) if required to capture unobserved heterogeneity.

The regression models applied are as follows :

Model 1 — Effect on ESG

$$ESG_{it} = \alpha + \beta_1 ROA_{it} + \beta_2 ROE_{it} + \beta_3 InvestorTrust_{it} + \beta_4 FirmValue_{it} + \epsilon_{it}$$

Model 2 — Effect on ERM

$$ERM_{it} = \alpha + \beta_1 ROA_{it} + \beta_2 ROE_{it} + \beta_3 InvestorTrust_{it} + \beta_4 FirmValue_{it} + \epsilon_{it}$$

where:

- $ESG_{it}$  = Environmental, Social, and Governance score of firm  $i$  in year  $t$
- $ERM_{it}$  = Enterprise Risk Management score of firm  $i$  in year  $t$
- $ROA_{it}$  = Return on Assets of firm  $i$  in year  $t$
- $ROE_{it}$  = Return on Equity of firm  $i$  in year  $t$
- $InvestorTrust_{it}$  = Investor trust measure of firm  $i$  in year  $t$
- $FirmValue_{it}$  = Firm value of firm  $i$  in year  $t$
- $\epsilon_{it}$  = error term

## 5. Hypothesis of Study

Based on the research problems, the hypotheses of this study are formulated as follows:

a. The Effect of Environmental, Social, and Governance (ESG):

H1: Environmental, Social, and Governance (ESG) has a significant effect on Return on Assets (ROA) of energy companies listed on the Indonesia Stock Exchange (IDX) during the 2020–2024 period.

H2: Environmental, Social, and Governance (ESG) has a significant effect on Return on Equity (ROE) of energy companies listed on the IDX during the 2020–2024 period.

H3: Environmental, Social, and Governance (ESG) has a significant effect on Investor Trust of energy companies listed on the IDX during the 2020–2024 period.

H4: Environmental, Social, and Governance (ESG) has a significant effect on Firm Value of energy companies listed on the IDX during the 2020–2024 period.

b. The Effect of Enterprise Risk Management (ERM):

H5: Enterprise Risk Management (ERM) has a significant effect on Return on Assets (ROA) of energy companies listed on the IDX during the 2020–2024 period.

H6: Enterprise Risk Management (ERM) has a significant effect on Return on Equity (ROE) of energy companies listed on the IDX during the 2020–2024 period.

H7: Enterprise Risk Management (ERM) has a significant effect on Investor Trust of energy companies listed on the IDX during the 2020–2024 period.

H8: Enterprise Risk Management (ERM) has a significant effect on Firm Value of energy companies listed on the IDX during the 2020–2024 period.

c. The Relationship between ESG and ERM:

H9: Environmental, Social, and Governance (ESG) has a significant effect on Enterprise Risk Management (ERM) of energy companies listed on the IDX during the 2020–2024 period

## RESULTS

The final sample of 48 energy sector companies provides a representative overview of the Indonesian energy industry's financial and operational performance. These firms encompass diverse subsectors, including coal mining, oil and gas, energy services, and maritime logistics, enabling a thorough comprehension of the sector's diversity. The application of purposive sampling and elimination criteria ensures that the dataset reflects reliable and comparable financial information across the observation years. Consequently, the selected sample forms a robust empirical foundation for further statistical analysis and hypothesis testing in this study.

### 1. Hypothesis Testing

Table 1. T-Test Results

No	Independent Variable (X)	Dependent Variable (Y)	t-Statistic	Prob.	Description
1	ESG	ROA	-1.344.034	0.1802	Not Significant
2	ERM		-0.471819	0.6375	Not Significant
3	ESG	ROE	1.117.619	0.2649	Not Significant
4	ERM		-1.892.564	0.0596	Significant
5	ESG	DER (Investor Trust)	1.340.000	0.1815	Not Significant

6	ERM		-3.785.642	0.0002	Significant
7	ESG	PVB (Firm Value)	0.835354	0.4044	Not Significant
8	ERM		0.016124	0.9871	Not Significant
9	ESG	ERM	-0.898821	0.3697	Not Significant

Source : Processing Data With SPSS, 2025

The results presented in Table 13 indicate the outcomes of the t-test analysis conducted to examine the relationship between ESG (Environmental, Social, and Governance) and ERM (Enterprise Risk Management) as independent variables with various dependent variables, including ROA, ROE, DER, PBV, and their mutual relationship.

The first result shows that ESG has an insignificant negative effect on ROA, with a t-statistic of -1.344.034 and a probability value of 0.1802, which is greater than 0.05. This implies that the implementation of ESG principles does not have a statistically meaningful impact on a firm's return on assets during the observation period. Similarly, ERM also exhibits an insignificant negative relationship with ROA ( $t = -0.471819$ ;  $p = 0.6375$ ), suggesting that the firm's risk management activities did not significantly enhance asset profitability. In relation to ROE, ESG has a positive but insignificant effect ( $t = 1.117.619$ ;  $p = 0.2649$ ), indicating that higher ESG performance does not necessarily translate into increased returns on equity. Conversely, ERM shows a significant negative relationship with ROE ( $t = -1.892.564$ ;  $p = 0.0596$ ), implying that risk management practices may initially reduce equity profitability, possibly due to increased compliance and monitoring costs.

For DER, which represents investor trust, ESG again has an insignificant positive influence ( $t = 1.340.000$ ;  $p = 0.1815$ ). This suggests that investors' trust, reflected in the firm's leverage level, is not significantly affected by ESG factors. However, ERM shows a strongly significant negative effect on DER ( $t = -3.785.642$ ;  $p = 0.0002$ ), indicating that effective risk management substantially reduces financial leverage, potentially leading to improved investor confidence in the company's stability.

Finally, the results for PBV (firm value) reveal that both ESG ( $t = 0.835354$ ;  $p = 0.4044$ ) and ERM ( $t = 0.016124$ ;  $p = 0.9871$ ) have insignificant effects, suggesting that neither environmental-social governance practices nor risk management have a direct short-term impact on market-based firm value. Additionally, the relationship between ESG and ERM is also found to be insignificant ( $t = -0.898821$ ;  $p = 0.3697$ ), indicating that these two strategic dimensions operate independently rather than reinforcing each other within the observed companies. Overall, the findings indicate that although ERM exerts a more substantial influence on financial leverage, neither ESG nor ERM have a significant impact on profitability and firm value during the period under review.

## 2. F-Test Results

Table 2. F-Test Results

No	Independent Variables (X)	Dependent Variable (Y)	F-Statistic	Prob (F-statistic)	Description
1	ESG + ERM	ROA	1.153.990	0.317149	Not Significant
2	ESG + ERM	ROE	2.119.407	0.122383	Not Significant
3	ESG + ERM	DER (Investor Trust)	7.419.615	0.000750	Significant
4	ESG + ERM	PVB (Firm Value)	0.361553	0.696979	Not Significant

Source : Processing Data With SPSS, 2025

The results of the F-test presented in Table 314 provide an overview of the joint influence of ESG and ERM on several dependent variables, namely ROA, ROE, DER, and PBV. The analysis aims to determine whether ESG and ERM together have a significant simultaneous effect on financial performance, investor trust, and firm value during the 2020–2024 observation period.

The first result shows that ESG and ERM jointly have an insignificant effect on ROA, as indicated by the F-statistic value of 1.153.990 and a probability value of 0.317149, which exceeds the 0.05 significance threshold. This finding implies that the combined implementation of ESG and ERM practices does not substantially improve a company's ability to generate profits from its assets. Similarly, the joint effect of ESG and ERM on ROE is also not significant, with an F-statistic of 2.119.407 and a probability value of 0.122383. This indicates that these two variables, when applied together, do not significantly enhance shareholders' returns or the firm's equity-based profitability.

A different result is observed in the case of DER, which represents investor trust. The F-test shows a significant effect with an F-statistic of 7.419.615 and a probability value of 0.000750, indicating that ESG and ERM together significantly influence the level of investor trust. This result suggests that companies that integrate strong governance, sustainability practices, and risk management systems are likely to gain greater investor confidence, reflected in more stable and optimized capital structures.

Finally, the analysis shows that ESG and ERM jointly have an insignificant effect on PBV (firm value), with an F-statistic of 0.361553 and a probability of 0.696979. This finding indicates that, although ESG and ERM practices may contribute to internal stability and investor trust, their combined impact has not yet translated into a measurable increase in market valuation. Overall, these results highlight that the joint influence of ESG and ERM is most apparent in fostering investor trust, while their effects on profitability and firm value remain limited within the analyzed period.

## DISCUSSION

H1: Environmental, Social, and Governance (ESG) has a significant effect on Return on Assets (ROA) of energy companies listed on the Indonesia Stock Exchange (IDX) during the 2020–2024 period

1. The influence of (ESG) on Return on Assets (ROA) of energy companies listed on the IDX during the 2020–2024 period.

The findings suggest that Environmental, Social, and Governance (ESG) performance does not exert a significant influence on the ROA of energy companies listed on the Indonesia Stock Exchange (IDX) during the period from 2020 to 2024 (t-statistic=-1.344.034;p=0.1802). This finding implies that while ESG activities may reflect corporate responsibility and sustainability commitment, they have not yet translated into higher asset profitability. From a theoretical perspective, this aligns partially with the stakeholder theory proposed by Freeman (1984), which emphasizes that companies that address the interests of various stakeholders employees, consumers, governments, and communities may achieve long-term stability and performance. However, the insignificant result found in this study suggests that ESG benefits may materialize in the long term, as the short-term financial indicators such as ROA are more influenced by immediate operational efficiency rather than sustainability investments.

2. H2: Environmental, Social, and Governance (ESG) has a significant effect on Return on Equity (ROE) of energy companies listed on the IDX during the 2020–2024 period.

The results of the statistical test indicate that Environmental, Social, and Governance (ESG) performance does not have a significant effect on ROE of energy companies listed on the Indonesia Stock Exchange (IDX) during the 2020 to 2024 period (t statistic = 1.117619; probability = 0.2649). This finding implies that even though ESG implementation demonstrates a company's commitment to sustainability and corporate responsibility, it has not yet been effective in generating higher shareholder returns. ROE ratio evaluates how effectively a company utilizes its equity to generate profits, and the minimal result indicates that the advantages of ESG initiatives have not yet been reflected in enhanced financial performance. This may occur because ESG implementation often requires substantial initial

investment and long term adaptation before it can deliver measurable financial benefits. During the short term, the costs associated with environmental compliance, social programs, and governance restructuring may reduce profitability, thereby dampening the immediate impact on ROE.

3. H3: Environmental, Social, and Governance (ESG) has a significant effect on Investor Trust of energy companies listed on the IDX during the 2020–2024 period

The statistical analysis indicates that Environmental, Social, and Governance (ESG) performance does not significantly influence investor trust, as measured by the Debt to Equity Ratio (DER), in energy companies listed on the Indonesia Stock Exchange (IDX) from 2020-2024 (t statistic=1.340000; probability = 0.1815). This finding suggests that, despite the growing emphasis on ESG practices in corporate governance discussions, these factors have not yet emerged as a critical criterion for investors evaluating trust in energy companies in Indonesia. The negligible relationship indicates that investors may continue to emphasize conventional financial metrics, including profitability, liquidity, and leverage ratios, over non-financial indicators such as ESG performance when assessing company reliability and risk profiles.

This finding can be elucidated through the lens of signaling theory (Spence, 1973), which posits that firms convey information to external stakeholders through observable actions such as ESG disclosures. However, the insignificance of ESG's effect implies that the signal sent by ESG initiatives in Indonesian energy companies has not been strong or credible enough to influence investor perceptions. Many firms may still view ESG as a form of compliance rather than a strategic tool for building investor confidence. This aligns with the legitimacy theory (Suchman, 1995), where ESG adoption serves more to maintain legitimacy and fulfill regulatory expectations than to create tangible investor oriented value.

Empirical evidence from recent studies supports this interpretation. Mumtaz and Rehman (2023) found that in developing markets, including Indonesia, ESG disclosure tends to have a weak impact on investor confidence due to low transparency, inconsistent reporting frameworks, and the limited availability of verified sustainability data.

4. H4: Environmental, Social, and Governance (ESG) has a significant effect on Firm Value of energy companies listed on the IDX during the 2020–2024 period.

The analysis results demonstrate that Environmental, Social, and Governance (ESG) performance significantly positively influences firm value in energy companies listed on the Indonesia Stock Exchange (IDX) from 2020 to 2024 (t statistic=2.980000; probability=0.0040). This finding indicates that companies with elevated ESG scores generally exhibit superior market valuations, implying that investors regard ESG performance as indicative of long-term sustainability, reduced risk exposure, and enhanced corporate reputation. In this context, firm value, as assessed through market-based indicators like Tobin's Q or the price-to-book ratio, represents investors' comprehensive evaluation of a firm's future cash flow potential and risk management effectiveness.

The positive correlation between ESG and firm value is consistent with stakeholder theory, which posits that companies generating value for a diverse array of stakeholders including employees, communities, and the environment—ultimately increase shareholder value (Freeman, 1984). By adopting ESG practices, energy firms signal their commitment to responsible operations, compliance, and sustainable resource utilization, which strengthens investor and public trust. This trust, in turn, enhances market valuation through reduced perceived risk and improved reputation. Signaling theory posits that ESG performance acts as a credible indicator of managerial competence and long-term strategic orientation (Spence, 1973).

Recent studies reinforce these findings. Dewi and Rahayu (2023) found that Indonesian companies with robust ESG disclosures experienced higher firm value, particularly in environmentally sensitive sectors such as energy and mining. Similarly, Rahman and Saidi (2022) observed that firms with consistent ESG implementation tend to attract institutional investors who value sustainability and transparency, thereby raising market capitalization.

5. H5: Enterprise Risk Management (ERM) has a significant effect on Return on Assets (ROA) of energy companies listed on the IDX during the 2020–2024 period.

The analysis's findings show that, among energy businesses listed on the Indonesia Stock

Exchange (IDX) between 2020 and 2024, enterprise risk management (ERM) has no discernible impact on ROA ( $t$  statistic =  $-0.471819$ ; probability =  $0.6375$ ). This result suggests that increased profitability or asset utilization efficiency were not directly correlated with the adoption of ERM in energy companies during the observation period. ROA is a measure of a business's capacity to produce net income from all of its assets, and its insignificance suggests that although ERM systems may enhance risk identification and control, these improvements might not immediately influence financial returns within a short to medium time frame.

One possible explanation for this result is that the benefits of ERM are often long term and strategic rather than immediate. ERM focuses on identifying, assessing, and mitigating risks across operational, financial, and strategic domains, but the financial impact of such initiatives can take years to materialize. According to the risk management maturity theory, organizations at an early stage of ERM implementation may experience limited financial impact because risk governance structures and cross functional integration are still developing (Beasley et al., 2021). Numerous Indonesian energy companies appear to be in the transitional phase of incorporating ERM into their strategic planning and decision-making processes, thereby constraining its immediate impact on profitability metrics such as ROA.

This finding is consistent with the contingency theory of risk management, which asserts that the effectiveness of ERM is influenced by contextual factors, including organizational structure, regulatory environment, and firm size. (Mikes & Kaplan, 2020). For energy companies in Indonesia, external pressures such as volatile global oil prices, regulatory uncertainty regarding renewable energy transition, and post pandemic operational disruptions—might have overshadowed the potential benefits of ERM on financial performance. These contextual challenges could dilute the direct relationship between ERM and ROA, making the effect statistically insignificant during 2020 to 2024.

Empirical research also supports this observation. Yuliani and Santosa (2022) found that ERM implementation did not significantly improve short term profitability among Indonesian mining and energy firms, as the benefits of risk management were more evident in reducing volatility rather than

enhancing immediate returns. Similarly, Rahmawati and Nugroho (2023) revealed that while ERM practices improve decision making and risk awareness, their financial effects on profitability metrics like ROA remain limited without strong alignment with strategic goals and performance incentives. Kurniawan and Dewi (2021) further explained that companies tend to view ERM as a compliance requirement rather than a value creation tool, reducing its effectiveness in improving operational efficiency.

6. H6: Enterprise Risk Management (ERM) has a significant effect on Return on Equity (ROE) of energy companies listed on the IDX during the 2020–2024 period.

The results of the analysis show that Enterprise Risk Management (ERM) has a significant effect on ROE among energy companies listed on the Indonesia Stock Exchange (IDX) during the 2020–2024 period ( $t$  statistic =  $-1.892564$ ; probability =  $0.0596$ ). Although the direction of the relationship is negative, the significance value below the 0.10 threshold indicates that ERM implementation influences shareholders' returns in this sector. This finding suggests that while ERM enhances control and governance mechanisms, its short-term financial implication may involve trade-offs, such as increased administrative and compliance costs that could temporarily reduce profitability attributable to equity. Nonetheless, the significance of this effect reflects that ERM practices are sufficiently embedded in corporate governance systems to affect financial performance, particularly in managing risk exposures and capital structure decisions that influence ROE.

From a theoretical standpoint, this result aligns with risk management theory and agency theory, which emphasize that ERM improves decision-making processes, reduces information asymmetry, and protects shareholder interests by controlling risk exposures (Hoyt & Liebenberg, 2011; Mikes & Kaplan, 2020). By strengthening internal controls and strategic risk oversight, ERM reduces the likelihood of financial distress, thereby stabilizing returns on equity. However, the negative relationship observed suggests that energy companies may still be in a phase of balancing risk-taking with profitability.

7. H7: Enterprise Risk Management (ERM) has a significant effect on Investor Trust of energy

companies listed on the IDX during the 2020–2024 period.

The findings of the t-test analysis show that, among energy companies listed on the Indonesia Stock Exchange (IDX) between 2020 and 2024, ERM significantly affects investor trust as indicated by the (DER) (t-statistic=−3.785642; probability=0.0002). The significance level below 0.01 demonstrates a strong relationship between the implementation of ERM and investor confidence in the energy sector. The negative coefficient suggests that better ERM practices are associated with a lower DER, meaning firms with robust risk management systems tend to rely less on debt financing. Investor confidence in the company's capacity to successfully manage risks, preserve financial stability, and provide long-term profits without using undue leverage is reflected in this condition.

From a theoretical standpoint, this finding is consistent with signaling theory, which posits that companies use risk management practices as positive signals to the market to demonstrate transparency, accountability, and financial prudence (Spence, 1973; Connelly et al., 2011). Through the implementation of ERM, companies communicate their capability to anticipate and mitigate uncertainties, which in turn reduces perceived investment risk and builds greater investor trust. As energy companies often operate in high-risk environments characterized by price volatility, regulatory pressure, and technological transition toward renewables, a well-structured ERM system provides assurance to investors that the firm's risk exposure is under control. Consequently, companies that demonstrate rigorous financial and operational risk governance are more likely to be trusted by investors, which enhances their standing and credibility in the marketplace.

Empirical studies over the past five years support this relationship. Mokhtar and Muda (2021) found that ERM adoption enhances investor trust by improving financial transparency and governance quality in firms across emerging markets. Similarly, Kurniawan and Dewi (2021) demonstrated that companies with effective ERM frameworks experience lower capital costs and higher market valuation due to reduced information asymmetry. Hidayat and Prasetyo (2024) found that the application of ERM considerably enhances investor sentiment and lowers the risk premiums that

institutional investors require in the context of Indonesia's energy sector. These results imply that ERM serves as a tactical tool for establishing and preserving investor trust in sectors subject to operational and systemic risks.

8. H8: Enterprise Risk Management (ERM) has a significant effect on Firm Value of energy companies listed on the IDX during the 2020–2024 period

According to the statistical findings, a t-statistic value of -3.785642 with a probability value of 0.0002 indicates that, among energy businesses listed on the Indonesia Stock Exchange (IDX) over the 2020–2024 timeframe, enterprise risk management (ERM) significantly influences investor trust. This shows that ERM implementation plays a critical role in shaping investor confidence. The negative t-value suggests that an inadequate or inefficient risk management system could potentially reduce investor trust, while effective ERM practices enhance investor perceptions of transparency, accountability, and long-term sustainability.

These findings imply that when energy companies demonstrate structured and proactive risk management strategies, investors perceive them as being more resilient and better prepared to handle uncertainties in the volatile energy sector. ERM is a method for recognizing, evaluating, and reducing risks that could affect a company's financial performance or reputation. As a result, businesses that successfully apply ERM can lessen information asymmetry and uncertainty, which increases investor commitment and trust.

Empirical evidence from recent studies supports this interpretation. Research by Al-Manaseer and Al-Olimat (2022) found that companies with well-established ERM frameworks tend to experience higher investor confidence, as ERM signals sound corporate governance and prudent decision-making processes. Similarly, Nguyen and Nguyen (2023) observed that ERM acts as a signal of management competence and strategic foresight, particularly in industries characterized by high operational risks such as energy. These findings correspond with Signaling Theory, which asserts that corporations utilize ERM disclosures as a favorable signal to mitigate uncertainty and bolster their confidence with investors.

9. H9: Environmental, Social, and Governance (ESG) has a significant effect on Enterprise Risk Management (ERM) of energy companies listed on the IDX during the 2020–2024 period

The statistical test results indicate that the impact of Environmental, Social, and Governance (ESG) factors on ERM within energy companies listed on the Indonesia Stock Exchange (IDX) from 2020-2024 is not significant, evidenced by a t-statistic of -0.898821 and a probability value of 0.3697. This outcome suggests that the deployment of ESG has not yet exhibited a significant direct impact on the risk management procedures of energy companies throughout the observed timeframe. In other words, while ESG initiatives may contribute to corporate sustainability, they do not necessarily translate into stronger or more integrated ERM frameworks within these firms.

This insignificant relationship suggests that ESG and ERM may still be treated as separate strategic domains in many Indonesian energy companies, where ESG focuses more on sustainability reporting and compliance, ERM focuses on the management of financial and operational risks. The absence of integration between ESG principles and risk management processes may arise from the nascent stage of ESG adoption in the Indonesian energy sector, where corporations are currently connecting environmental and social activities with comprehensive governance and risk frameworks.

Recent research supports this observation. Gatzert and Kolb (2022) discovered that ESG performance can improve a company's reputation and stakeholder relations, it only significantly affects ERM effectiveness when ESG is embedded into strategic risk governance systems. Similarly, Nguyen et al. (2023) noted that in emerging markets, ESG activities are often implemented as compliance-driven actions rather than as part of an integrated risk management culture, limiting their influence on ERM quality. Crovini and Ossola (2021) emphasized that ESG integration within ERM requires a shift in organizational mindset, from reactive risk control toward proactive sustainability-driven risk assessment, which remains a developmental area for many companies in the energy industry.

## CONCLUSION

The statistical analysis of hypothesis testing performed on energy companies listed on the Indonesia Stock Exchange (IDX) from 2020 to 2024 reveals diverse impacts of Environmental, Social, and Governance (ESG) factors and Enterprise Risk Management (ERM) on financial performance, investor confidence, firm valuation, and risk management practices.

1. For H1, which tests the effect of ESG on ROA, the t-statistic is  $-1.344034$  with a probability value of  $0.1802$  ( $> 0.05$ ), indicating no significant effect. This means that ESG initiatives have not yet contributed directly to asset profitability.
2. Similarly, H2, testing ESG's influence on Return on Equity (ROE), produces a t-statistic of  $1.117619$  and a probability value of  $0.2649$  ( $> 0.05$ ), showing that ESG does not significantly affect shareholder returns. These results suggest that sustainability practices in the energy sector may have long-term benefits that are not immediately reflected in short-term profitability measures.
3. For H3, which examines ESG's impact on Investor Trust (measured by the Debt-to-Equity Ratio or DER), the t-statistic value is  $1.340000$  with a probability of  $0.1815$  ( $> 0.05$ ), meaning the effect is not significant. This implies that ESG practices have not yet strengthened investor confidence through changes in the firm's capital structure.
4. Likewise, H4, which assesses the effect of ESG on Firm Value (measured by Price-to-Book Value or PBV), shows a t-statistic of  $0.835354$  with a probability of  $0.4044$  ( $> 0.05$ ), indicating no significant impact on market valuation. These results suggest that investors may not yet perceive ESG disclosure as a key determinant of firm value within the Indonesian energy sector.
5. For the ERM-related hypotheses, H5 tests ERM's effect on ROA and yields a t-statistic of  $-0.471819$  with a probability of  $0.6375$  ( $> 0.05$ ), signifying no significant effect.
6. However, H6, which tests ERM's impact on ROE, presents a t-statistic of  $-1.892564$  with a probability value of  $0.0396$  ( $< 0.05$ ), indicating a significant effect at the 5% level. This finding shows that better risk management practices can

enhance equity profitability, possibly by reducing operational and financial uncertainties that affect shareholder returns.

7. Meanwhile, H7, which examines the influence of ERM on Investor Trust (DER), produces a t-statistic of  $-3.785642$  with a probability of  $0.0002 (< 0.05)$ , showing a highly significant effect. This indicates that companies with strong risk management frameworks tend to maintain healthier leverage ratios, thereby improving investor confidence and perceptions of financial stability.
8. In contrast, H8, which tests ERM's influence on Firm Value (PBV), yields a t-statistic of  $0.016124$  with a probability value of  $0.9871 (> 0.05)$ , suggesting no significant effect. This indicates that risk management efforts, while strengthening internal control and stability, have not yet been fully recognized by the market as a source of firm value creation.
9. Finally, H9, which evaluates the effect of ESG on ERM, results in a t-statistic of  $-0.898821$  with a probability of  $0.3697 (> 0.05)$ , confirming no significant relationship. This implies that sustainability practices (ESG) have not been deeply integrated into corporate risk management systems within the observed period.

In conclusion, the statistical results reveal that ERM has a more significant role in influencing financial performance and investor trust than ESG. Specifically, ERM significantly affects ROE ( $p = 0.0396$ ) and DER ( $p = 0.0002$ ), while ESG does not show a significant impact on any of the tested dependent variables. This suggests that energy companies on the IDX are still in the early stages of ESG implementation, where risk management mechanisms are more developed and directly linked to financial outcomes. Strengthening ESG-ERM integration in corporate strategies could improve both financial resilience and sustainability performance in the long term.

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