

Unveiling the Drivers of Enterprise Risk Management Disclosure: The Influence of Firm Complexity, BoD, and CRO

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ABSTRACT

This study aims to examine the influence of firm complexity, the board of directors, and the chief risk officer (CRO) on enterprise risk management (ERM) disclosure in energy sector companies listed on the Indonesian Stock Exchange (IDX) from 2018 to 2023. The sample for this study comprised 50 companies, selected using purposive sampling, and provide 300 data points. The research employed panel data regression analysis to assess the relationships between the variables. The findings reveal that while firm complexity and the composition of the board of directors do not significantly affect ERM disclosure, the presence of a chief risk officer has a positive and significant impact on the level of ERM disclosure. These results suggest that energy companies should prioritize the role of the chief risk officer in enhancing the transparency and quality of their ERM practices. Furthermore, to optimize ERM disclosure, companies must carefully evaluate their strategies regarding organizational complexity and the role of the board of directors. This study underscores the importance of having a dedicated risk management function and offers practical insights for energy sector firms seeking to improve their ERM frameworks in the context of corporate governance.

Keywords: Board of Director; Chief Risk Officer; Enterprise Risk Management Disclosure; Firm Complexity, Risk Management

INTRODUCTION

In recent years, there has been a paradigm shift towards holistic risk management in organizations, known as enterprise risk management (ERM). ERM has gained prominence due to the complexity of risks and the evolving regulatory frameworks (Bohnert, Gatzert, Hoyt, & Lechner, 2017). Several companies have successfully implemented ERM, resulting in continuous performance improvement and increased stakeholder trust (Malik, Zaman, & Buckby, 2020). According to COSO (2017), enterprise risk management is an integrated and comprehensive technique for continuously monitoring of a company's risk portfolio. The primary objective of ERM is to stabilize the cost of capital and return. It aims to benefit all stakeholders and create value for the organization. ERM frameworks, such as those provided by COSO, have demonstrated the ability to enhance company performance (Baxter, Scott, Vos, & Whiteford, 2013).

While every business faces uncertainties, challenges, and risks, ERM is crucial in controlling these risks to maintain company value. ERM helps managers identify risks that have negative impacts and those that present opportunities. By balancing risks, profits, and company growth, ERM strategies allow for effective resource allocation and maximization of company performance (COSO, 2017). The adoption of ERM by numerous companies supports the belief that it improves company performance. ERM adoption brings benefits such as effective compliance coordination, efficient resource utilization, risk reporting, and the cultivation of a risk-focused culture. As a comprehensive control system, ERM operates strategically, emphasizing risk structure

management (COSO, 2017).

Energy sector companies are among Indonesia's biggest contributors to national income, but they are also the riskiest. This is due to the energy industry's complex nature and susceptibility to various risks, both operational and environmental (Hersh et al., 2023). Despite contributing significant revenues to the country, companies in the energy sector face significant challenges in managing these risks (Leisen et al., 2019).

The risks companies face come not only from internal factors but also from external factors. External factors such as fluctuations in global energy prices, changes in environmental regulations, and political turmoil in energy-producing countries often affect the energy sector (Nie & Yang, 2016). For example, a net-zero emission policy could change the structure of the energy industry and pose risks to fossil fuel-dependent companies (Tong et al., 2019). Energy crises, such as supply disruptions or natural disasters, can also cause significant operational disruptions for energy companies (Zakeri et al., 2022).

Energy companies' complex infrastructure is vulnerable to technical disruptions, accidents or leaks, which can threaten safety, the environment and operations (Sheremet, 2021). In addition, the public and stakeholders are increasingly concerned about the environmental impacts of the energy industry, including greenhouse gas emissions and toxic waste (Marin & Vona, 2021). Energy companies must therefore manage reputational and legal risks related to their environmental impacts, and integrate sustainable business practices into their operational strategies (Gangi et al., 2020). If the company cannot identify and mitigate these risks quickly, it will potentially cause significant losses to the business (Tabun et al., 2023). Therefore, energy companies must have a strong strategy to manage these risks to continue operating efficiently and sustainably.

The energy sector is highly susceptible to risk due to economic uncertainty in global business, operating in a complex and hazardous environment. Fluctuations in energy commodity prices, such as oil and coal are often the main cause of risk in this sector. Fluctuating energy prices can affect the profit margins of energy companies and make business planning for energy sector companies difficult (Kong, Yang, & Xu, 2020). In running a business, a company must manage risk to protect the organization from potential losses and risks that can hinder achieving company goals (Kharisah, 2022).

The complexity of the company can be seen from how many business segments it has (Julikha, 2019); thus, the greater the number of business segments owned, the higher the level of business complexity owned by the company (Zenita et al., 2021). Therefore, good ERM disclosure is increasingly required as companies become more complex. This statement is in line with research by Pangestuti et al (2023), Zenita et al. (2021), and Rahmadani & Husaini (2021), which states that firm complexity has a positive influence on ERM disclosure. However, this contradicts Ariyanto et al (2021) and Triyanti (2019) research.

The board of directors has the responsibility of designing policies, strategies, and risk management frameworks by considering the level of risk and risk tolerance, and ensuring the implementation of an independent risk management function, especially in determining risk limits and their impact on the adequacy of the company's capital (Janitra & Moin, 2023), thus, the number of boards of directors can positively affect the quality of ERM disclosure. This statement is supported by research that has been conducted by Masri & Muslih (2022), Wijayanti et al. (2022), and Hidayah et al (2021). However, contrary to research by Muslih & Maghfiroh (2023) and Salem et al. (2019).

The chief risk officer has a major role in carrying out risk management effectively and efficiently and in conveying risk information to the entire company, so that a CRO in a company can increase ERM disclosure (Sitompul, 2022). This statement is supported by research conducted by Sitompul (2022), Al-Farsi (2020), and Rismawati & Rachmad (2019). However, contrary to previous research conducted by Putra et al. (2022) dan Oktavia & Isbanah (2019).

Previous studies have identified gaps in results, indicating the need for further research to determine and analyze the impact of firm complexity, board of directors, and chief risk officer on the disclosure of enterprise risk management in energy sector companies listed on the Indonesian Stock Exchange. This study is unique in its emphasis on the specific context of the energy sector in Indonesia. The study examines the impact of internal factors, such as complex organizational

structures and strategic decisions made by the board of directors and CRO, on the level of ERM disclosure in energy companies. Previous studies did not focus on this context. This study aims to enhance the understanding of ERM practices in the Indonesian energy sector and their impact on overall risk management and firm performance in the face of industry-specific challenges and risks. The study will focus on the variables and provide theoretical contributions and practical insights for energy sector companies and stakeholders. This will increase their resilience to uncertainty and global business dynamics.

LITERATURE REVIEW

Enterprise Risk Management Disclosure

Enterprise risk management (ERM) disclosure is a transparent process that involves planning, preparing, organizing, monitoring, and evaluating risks in a company (Ayudya & Sugeng, 2022). This disclosure represents the company's commitment to transparency in providing information to stakeholders in the company report (Belani & Putri, 2023). Thus, companies demonstrate their commitment to managing and controlling uncertainties in business operations.

Comprehensive risk management is crucial in the business as risks can significantly impact and even cause financial failure. Therefore, it is important to implement risk management, especially in situations with high levels of uncertainty (Jayanti et al., 2021). Risk disclosure should include both positive and negative aspects of risk management. Comprehensive risk disclosure provides stakeholders with the necessary tools to make informed decisions (Cindy et al., 2022). Adequate risk management disclosure can help reduce information asymmetry and improve the quality of a company's financial statements (Jannah & Maidatul, 2016).

The significance of disclosing ERM is also evident in the company's endeavors to minimize the uncertainty and risk investors encounter (Lokaputra et al., 2022). Information about the company's risks is crucial in comprehending the risk profile and management strategies (Supriyadi & Setyorini, 2020). Effective ERM mitigates risks and yields numerous benefits for the company (Hardiyanti et al., 2022). Therefore, optimal risk management and disclosure are crucial for achieving success and building stakeholder confidence in the company.

Firm Complexity and ERM Disclosure

Firm complexity refers to the complexity of transactions that occur within a company (Cristansy & Ardiati, 2018). As businesses continue to grow and diversify, they often have multiple business units, branches, and product lines, which can increase complexity. This statement is consistent with the findings of Himawan et al., (2023) and Suryani et al., (2021), which suggest that firm complexity arises from the creation of departments and the allocation of workers to various units, including the number of operations, diversification of product lines and markets, and the formation of diverse departments and work sections.

According to Zenita et al. (2021), the level of firm complexity can be determined by the number of business segments it has. Companies with many business segments tend to have a higher level of business complexity, which in turn increasing various risks. Operational risk and financial risk are types of company risk. If a company cannot anticipate these risks from the start, it may experience losses (Arta et al., 2021).

Enterprise risk management is crucial for companies with multiple business units and high complexity (Zenita et al., 2021). Ariyanto et al. (2021) also emphasized the importance of ERM for such companies to manage risks comprehensively, efficiently, and across sectors, resulting in optimal risk analysis. Therefore, effective supervision and a strong supervisory infrastructure are necessary to manage the company's complexity. As the number of business segments owned by the company increases, so does the level of risk the company faces (Arifina, 2017).

This statement is based on research conducted by Pangestuti et al. (2023), Zenita et al. (2021), and Rahmadani & Husaini (2021), which indicate that firm complexity significantly affects the disclosure of enterprise risk management. The studies show that companies with a more complex business structure and various business units face more diverse and complicated risks. Based on this explanation, the hypothesis is formulated as follows:

$H_a: \beta_1 \neq 0$

H1: Firm complexity positively impacts the disclosure of ERM

Board of Directors and ERM Disclosure

The board of directors manages the company for its benefit (Lestari & Mutmainah, 2020). According to Sithipolvanichgul (2021), it is a decision-making body with authority over all organizational operations. According to Masri & Muslih (2022), the board of directors is responsible for formulating policies, strategies, and risk management, including setting overall risk limits by considering the level of risk to be taken and the risk tolerance applied. They also evaluate the impact of risk on capital adequacy.

The board of directors plays a crucial role in managing corporate risk, and having a larger number of board members can enhance the effectiveness of disclosures related to risk management (Ikhwan & Murtanto, 2023). The number of board members can be an important indicator of the role and quality of the board of directors in a company (Wijayanti et al., 2022). In Indonesia, there are no restrictions on the number of board members. According to the 2007 Limited Liability Company Law, Chapter VII outlines the requirements for the board of directors and the board of commissioners, including a minimum of one board member. The size of a company's board of directors should be adjusted to meet operational needs. As a company grows and more complex, it requires an appropriate number of board members to achieve optimal performance (Arisandy et al., 2022).

According to agency theory, a board of directors ensures managers fulfill their duties by board guidelines. By enforcing board guidelines, the board of directors can reduce opportunistic behavior by managers, including managing risk information (Hidayah et al., 2021). According to Husaini et al. (2020), agency theory suggests that a strong board of directors can reduce agency conflicts and align the managing risk information with the principal's. Therefore, the board of directors is crucial in ensuring adequate supervision.

This hypothesis is formulated based on research conducted by Masri & Muslih (2022), Hidayah et al. (2021) and Wijayanti et al. (2022), which supports the statement that the board of directors has a positive influence on the disclosure of enterprise risk management. The hypothesis is formulated as follows:

$H_a: \beta_2 \neq 0$

H2: Board of directors positively impacts the disclosure of ERM

Chief Risk Officer and ERM Disclosure

The Chief Risk Officer (CRO) head the risk division and collaborates with other managers to develop effective risk management, as defined by COSO (2004). Faisal et al. (2022) also define the CRO as a driving force in the company's risk management. According to COSO (2017), the CRO is responsible for a) Assisting the board of directors and management in overseeing risk, b) Establishing ERM practices that are appropriate to the entity's needs, c) Fostering relationships with parties responsible for risk management throughout the organization, d) Communicating with management through forums, such as the enterprise risk management committee, to discuss the status of ERM, including significant and emerging risks, e) Driving ERM implementation to the CEO and operating unit leaders and assisting in integrating these practices into their business plans and reporting, f) Developing organizational capabilities by ERM maturity and suitability.

From the perspective of agency theory, the CRO role in the company is not only to minimize risk-averse behavior in investment decision-making, but also to signal to stakeholders that the company has implemented proper risk management and has superior risk supervision compared to other companies (Arief et al., 2020).

A dummy variable can be used to measure CRO. A value of 1 is given if the company has a CRO, and 0 if it does not (Rismawati & Rachmad, 2019). The presence or absence of a CRO can be found in each company's annual report by searching for keywords such as 'chief risk officer', 'executive vice president of risk', and 'chief enterprise risk officer' (da Silva et al., 2019).

The presence of a CRO in a company can enhance ERM's disclosure level. The CRO is

responsible for managing risks effectively and efficiently and conveying information about the risks that occur in a company (Sitompul, 2022). This statement is supported by research conducted by Al-Farsi (2020) and Rismawati & Rachmad (2019), which indicate that the CRO significantly impacts ERM. Based on this explanation, the hypothesis is formulated:

$$H_a: \beta_1 \neq 0$$

H3: Chief risk officer positively impacts the disclosure of ERM.

METHOD

The study examines the disclosure of ERM as the dependent variable, with firm complexity, the existence of a board of directors, and the role of the chief risk officer as independent variables. Purposive sampling was used to select 50 energy sector companies listed on the Indonesia Stock Exchange as samples. The study covers 2018 to 2023, resulting in a total of 300 data points. The 2017 COSO working paper is used as a proxy for disclosing enterprise risk management, through the disclosure of 20 items (COSO, 2017). The formula for ERM disclosure is as follows:

$$ERM = \frac{\text{total disclosed items}}{20 \text{ item}}$$

The 2017 COSO ERM framework provides 20 indicators to assist company leaders in analyzing and managing risks. These indicators are organized into five components: governance and culture, strategy and objective setting, performance, review and revision, and information, communication, and reporting.

Firm complexity is measured by the number of company segments (Pangestuti et al., 2023); Triyanti, 2019; Zenita et al., 2021), while the board of directors is measured by the number of board members (Muslih & Maghfiroh, 2023; Wijayanti et al., 2022). The presence of a chief risk officer (CRO) is indicated by a dummy variable, where a value of 1 is assigned if the company has a CRO and 0 if it does not (Rismawati & Rachmad, 2019).

In this research, panel data regression analysis was conducted using Eviews as the data analysis technique in this research. The analysis started with descriptive statistics, followed by model testing to determine the best model. Hypothesis testing was then performed, including partial tests (t-tests) and coefficient of determination tests.

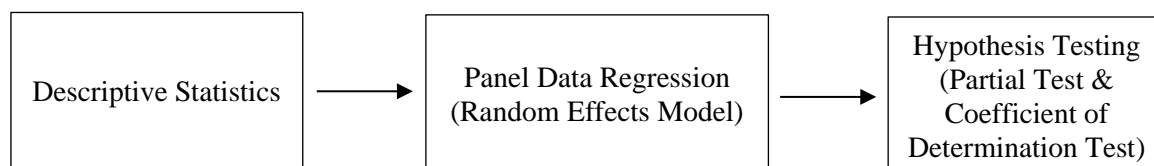


Figure 1. Hypotesis and Analysis Steps

RESULT

This study examines how firm complexity, the board of directors, and the chief risk officer (CRO) affect ERM disclosure in the Indonesian energy sector. Using descriptive statistics, panel regression and partial t-tests, the analysis found that only the presence of a CRO significantly increases ERM disclosure. The complexity of the firm and the board of directors had no significant impact. The low adjusted R-squared suggests that other factors may have a stronger impact on ERM disclosure. The following are the results of the discussion and tables presenting these results.

Table 1. Statistical Descriptive Test

Descriptive Statistics Analysis

Variable	Minimum	Maximum	Mean	Standard Deviation
FC	1.000000	8.000000	3.032000	1.515309
BOD	2.000000	11.000000	4.168000	1.660967
CRO	0.000000	1.000000	0.352000	0.478552
ERMD	0.450000	1.000000	0.792600	0.128144

The variable for ERM disclosure has an average value of 0.7926 with a standard deviation of 0.1281, indicating a positive trend. Among all companies, 58% are above average and 42% are below, reflecting a diverse distribution of ERM practices. The high values indicate that most companies implement good risk disclosure practices, creating a positive picture of transparency and risk management in Indonesia's energy sector.

The variable 'firm complexity' has a mean value of 3.0320 and a standard deviation of approximately 1.5153, indicating structural diversity among energy sector firms. The association between 'firm complexity' and ERM disclosure practices may indicate different risk management strategies, especially amid energy sector challenges such as complex regulations and engineering risks.

The variable 'board of directors' has a mean value of 4.1680 and a standard deviation of approximately 1.6609, indicating relative consistency in board structure. The variable 'chief risk officer' is identified through a dummy variable, where 65% of the 300 firms do not have a CRO, while 35% have one. The mean value of CRO is 0.3520 with a standard deviation of 0.4785, indicating low adoption of CRO in the Indonesian energy sector.

Table 2. Panel Data Regression Model Test

Random Effects Model Test

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.723118	0.036818	19.64029	0.0000
FC	0.005519	0.007276	0.758518	0.4489
BOD	0.007446	0.006562	1.134830	0.2576
CRO	0.061681	0.022444	2.748219	0.0064

The panel data regression equation for enterprise risk management disclosure in the random effects model test results is as follows: Enterprise risk management disclosure = 0.723118 + 0.005519 for firm complexity + 0.007446 for board of directors + 0.061681 for chief risk officer. This equation can be interpreted as follows: The constant value of 0.723118 indicates the level of disclosure of ERM (Y) when the complexity of the company (X1), the board of directors (X2), and the chief risk officer (X3) are all at zero. Additionally, the coefficient of firm complexity of 0.005519 indicates that an increase in firm complexity leads to a 0.005519 increase in enterprise risk management disclosure, suggesting a positive impact of firm complexity on ERM disclosure.

The coefficient of 0.007446 for the board of directors indicates a correlation with an increase in enterprise risk management disclosure, illustrating the board of directors' influence on the level of such disclosure. Finally, the coefficient of 0.061681 for the chief risk officer indicates a significant positive impact on enterprise risk disclosure, suggesting that an increase in the presence or role of the chief risk officer is correlated with greater disclosure of enterprise risk management.

Table 3. Partial Test (t-test) and Adjuster R²

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.723118	0.036818	19.64029	0.0000

FC	0.005519	0.007276	0.758518	0.4489
BOD	0.007446	0.006562	1.134830	0.2576
CRO	0.061681	0.022444	2.748219	0.0064
Adjusted R-squared	0.045281			

The variable for firm complexity (X1) has a coefficient of 0.005519. Its t-count (0.758518) is smaller than the t-table (1.969576). Furthermore, its significant level of 0.4489 (>0.05) indicates that the variable for firm complexity does not significantly influence the variable for ERM disclosure.

The coefficient for the board of directors variable is 0.007446. Its t-count (1.134830) is smaller than the t-table (1.969576), and its significant level is $0.2576 > 0.05$, indicating that the board of directors variable does not significantly affect the variable disclosure of enterprise risk.

The coefficient for the chief risk officer variable is 0.039558. Its t-count (2.748219) is greater than the t-table (1.969576), and its significance level is $0.0064 < 0.05$. These result indicate that the chief risk officer variable has a significant positive effect on the ERM disclosure variable.

Based on the table 3 above, the adjusted R-squared value is 0.045281, indicating that only 4.5% of the variation in the dependent variable can be explained by the three independent variables in this study. In comparison, the remaining 95.5% is influenced by other factors not included in the research model.

DISCUSSION

The Impact of Firm Complexity on ERM Disclosure

The study's results suggest that firm complexity does not have a significant positive impact on ERM disclosure. In other words, the first hypothesis (H_1) is rejected. According to Zenita et al. 2021, implementing ERM in the energy sector can help identify and manage risks associated with the industry's unique challenges and uncertainties. However, the energy sector in Indonesia is heavily regulated, and the government exerts significant influence on industry operations and performance. Furthermore, state-owned companies dominate the energy sector in Indonesia, which may restrict opportunities for private companies to operate and innovate in the sector (Rahmadani & Husaini, 2021). Therefore, the potential impact of firms on the energy sector's ERM disclosures in Indonesia may be limited due to specific characteristics such as government regulations and the dominance of SOEs.

Previous research has demonstrated that implementing ERM can positively impact firm performance in Malaysia's oil and gas industry (Kashif Shad & Lai, 2019). However, it is important to note that the relationship between ERM and firm performance may vary depending on the industry and its specific context (Kashif Shad & Lai, 2019). In Indonesia's energy sector, the impact of firm complexity on ERM disclosure and firm performance may be limited by the industry's unique characteristics and government policies. It is important to note that subjective evaluations have been excluded from this analysis.

The findings do not align with previous research that consistently indicates a significant impact of firm complexity on the disclosure of enterprise risk management. This is contrary to the research conducted by Zenita et al. (2021), Pangestuti et al. (2023), and Rahmadani & Husaini (2021). Triyanti (2019) argues that the complexity of ERM disclosure is not affected by variations in a company's business segments, as the diversity of business segments does not always indicate the complexity of the company's overall business activities in the context of firm complexity. For instance, companies with a single business segment may face increased complexity and associated risks in other areas, such as geography.

The research conducted by Ariyanto et al. (2021) and Triyanti (2019) supports the findings that firm complexity does not affect ERM disclosure. These result suggest that the impact of firm complexity on ERM disclosure practices may vary depending on the business context and industry-specific factors.

The Impact of the Board of Directors on ERM Disclosure

The study concludes that the board of directors does not have an impact on the disclosure of ERM in energy sector companies. As a result, the second hypothesis (H_2) is rejected.

These findings do not align with the agency theory proposed by Jensen & Meckling (1976). According to agency theory, the presence of a board of directors should minimize the opportunistic behavior of managers and align the interests of the agent with those of the principal. However, a board of directors that is too large can increase agency conflicts and reduce the board's effectiveness in carrying out its responsibilities, including implementing corporate risk management (Hidayah et al., 2021; Husaini et al., 2020).

Agency conflicts that arise from differences in interests between managers and shareholders can become increasingly complex and difficult to overcome as the number of board members increases (Ismanto et al., 2023). The existence of diverse preferences and interests among board members may hinder compliance with ERM disclosure requirements. Furthermore, an increase in the number of board members can impede effective coordination, hinder decision-making related to corporate risk, and ultimately undermine transparency and accountability in risk management as a whole.

These findings align with prior research conducted by Muslih & Maghfiroh (2023) and Salem et al. (2019), which indicate that having an excessive number of board members can lead to effectiveness issues within a company. Additionally, it has been explained that a board that is too large can impede efficient decision-making and slow down responses to changing market conditions, particularly in dynamic industries like the energy sector.

In contrast, previous studies by Masri & Muslih (2022), Wijayanti et al. (2022), and Hidayah et al. (2021) have shown that the board of directors has a positive influence on ERM disclosure. These studies emphasize that a large board size should exhibit a diversity of knowledge and experience, which can support better decision-making regarding corporate risk management. This statement is supported by the signaling theory proposed by Spence (1973), which suggests that a large number of boards of directors in a company signals a positive message to investors.

In this case, the research findings indicate that a large number of boards of directors does not significantly affect ERM disclosure. However, it is important to note that other factors, such as industry-specific characteristics of the energy sector, including regulatory challenges, may significantly impact the relationship between the board of directors and ERM disclosure. It is necessary to investigate these factors further understand their influence on the relationship.

The Impact of the Chief Risk Officer on ERM Disclosure

The study found that the variable of the CRO has a positive and significant impact on ERM disclosure, supporting hypothesis H_3 . This is consistent with previous research that highlights the positive influence of CRO on corporate risk management. Sitompul (2022) suggests that the existence of a CRO can enhance the level of corporate risk management disclosure. This is because the CRO is responsible for managing risks effectively and efficiently, as well as conveying information about the risks that occur in a company. Additionally, Faisal et al. (2022) describe the CRO as the main driver in corporate risk management.

Signaling theory can explain how CROs can influence ERM disclosure due to the problem of asymmetric information between company management and external parties, such as shareholders (Sari et al., 2019). The existence of a CRO can signal to external parties the company's commitment to managing risk effectively. Companies can signal that they are serious about managing risks with the presence of a CRO.

In agency theory, the CRO plays a crucial role in mitigating risk aversion. Risk aversion refers to management's tendency to avoid or reduce risk when making investment decisions, even if those decisions are not optimal for the company. This can affect the company's internal and external signaling (Agista & Mimba, 2017). CROs have a special responsibility to balance the interests of management and shareholders by effectively managing risk, thus helping to reduce management's tendency to avoid risks that can actually provide added value.

However, these findings contrast with the research of Putra et al. (2022) and Oktavia & Isbanah (2019), which suggest that CRO has no impact on ERM disclosure. This disparity may be due to differences in company characteristics or the dynamics of the energy sector in Indonesia, which

could affect the role of CRO in certain contexts.

In Indonesia's energy sector, effective risk management is crucial due to the impact of risks such as oil price fluctuations and geopolitics. One way to improve risk management is through increased disclosure of enterprise risk management, which can help companies manage complex risks and build trust with stakeholders.

CONCLUSION

Based on the result and discussion described, this study concludes that firm complexity does not affect ERM disclosure in the energy sector. In addition, the board of directors does not affect enterprise risk management disclosure in the energy sector. However, the chief risk officer positively and significantly affects ERM disclosure in the energy sector.

This research has limitations. The diversity of the energy industry creates very diverse conditions and characteristics. Therefore, the findings cannot be directly applied to all corporate entities in this sector. In addition, external factors such as changes in government policies, energy price volatility, and global economic conditions can also impact corporate risk management. These macroeconomic factors, which are beyond the control of the study, can significantly influence the results.

Future researchers should consider expanding sector and research period coverage as well as adding variables that affect enterprise risk management disclosure. For energy companies, it is recommended to re-evaluate risk management strategies by considering firm complexity, increasing the role of the CRO, and integrating risk management functions. Investors should be aware that firm complexity does not necessarily indicate a good level of ERM disclosure. It is important to consider the presence of a CRO. The government should respond positively to the role of CROs by providing increased support for risk management, evaluating regulations, and offering incentives to promote transparency and effective risk implementation in company operations.

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