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Board of directors and firm performance in mining companies: Mediating analysis of intellectual capital and sustainability reporting

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ABSTRACT

Purpose — *This study aims to analyze the direct and indirect effects of board of directors on firm performance.*

Method — *This study focuses on a population of mining sector companies that went public on the Indonesia Stock Exchange between 2019 and 2021. We analyzed a sample of 30 such companies. Our independent variable is the role of the board of directors, while the dependent variable is the performance of the company. We further examined intellectual capital and sustainability reporting as mediating variables. For our analysis, we employed the Partial Least Squares method using the SmartPLS version 3 software.*

Result — *This study elucidates that while independent board directors do not directly influence a firm's performance, they significantly impact its intellectual capital, comprising knowledge, experience, intellectual property, and employee capabilities. This intellectual capital directly influences the firm's performance, suggesting an indirect route by which independent directors contribute to the firm's success. Moreover, independent directors also directly affect the firm's sustainability reporting, encompassing the disclosure of its economic, environmental, and social impacts. Like intellectual capital, sustainability reporting also impacts the firm's performance, providing another indirect pathway for independent directors to affect performance. Thus, intellectual capital and sustainability reporting serve as mediators between independent directors and firm performance, underscoring the crucial, albeit indirect, role these directors play in propelling a firm's success.*

Contribution — *This research provides a valuable contribution to the academic community. First, this study integrates previous research into one research model. Second, this study examines sustainability reports as a mediating variable that is rarely studied.*

Keywords: *intellectual capital, sustainability reporting, board of directors, firm performance*

INTRODUCTION

To address numerous global concerns, the economy needs continual strengthening. One approach is to implement corporate governance more effectively. The poor application of corporate governance in virtually all existing companies, both government-owned and privately-owned enterprises, is a main cause of the economic crisis in Indonesia and many other Asian countries (Soesastro, 2003; Syofyan & Putra, 2020). The Financial Services Authority and self-regulatory organizations, along with the Indonesia Stock Exchange, assist market participants in implementing the principles of good corporate governance. All corporations, especially public ones and those that raise and manage public funds, must establish good governance. Such a company can stimulate economic growth and serve as a cornerstone for accelerating the country's recovery.

Our interest in the topic of corporate governance has grown over time due to its potential impact on business performance, both in developed countries (Kowalewski, 2016; Lattemann, 2014) and in developing ones (Liedong & Rajwani, 2018; Aboagye & Otieku, 2010). Corporate governance, a system intended to guide business administration professionally based on the values of openness, responsibility, accountability, independence, fairness, and equality, has been a focus of many studies (El Junusi, 2020; Napitupulu, 2023). One of the primary reasons businesses adopt excellent corporate governance structures and practices is to improve financial performance. Such practices are essential for ensuring strong and sustained competitiveness (Aboagye & Otieku, 2010; Davies, 2016).

The effect of corporate governance practices on business performance has long been a topic of discussion among researchers and practitioners. The majority of researchers affirm that good governance has a positive impact on corporate performance (Chalhoub, 2009; Mollah et al., 2012). However, other researchers have found that governance has no effect on firm performance (Aboagye & Otieku, 2010; Shahwan & Fathalla, 2020).

One proxy of corporate governance, extensively researched for its potential to impact company performance, is the board of directors. Previous research indicates that the board of directors positively influences performance (Arosa et al., 2010; Merendino & Melville, 2019). However, other studies suggest a negative effect (Horváth & Spirollari, 2012; Harjoto & Wang, 2020; Elgadi & Ghardallou, 2022) or no effect at all (Al-Matari et al., 2014; Al-Absy & Hasan, 2023).

Many studies have built upon previous research by including intellectual capital as a mediating variable between corporate governance and financial performance (Shahwan & Fathalla, 2020; Aslam & Haron, 2021). The emphasis on traditional production factors - land, labor, capital, and tangible assets - has significantly shifted in the current global economy in favor of intangible assets as strategic resources for business organizations (Nadeem et al., 2018).

In addition to intellectual capital as a mediator, another variable with the potential to mediate the influence of governance on company performance is the sustainability report. Accounting has experienced rapid development over the last few decades, particularly in information disclosure (Thijssens et al., 2016). Simultaneously, society's concerns about sustainability have been increasing (Line et al., 2016). As a result, corporate sustainability has emerged as a key trend for multinational corporations (Derqui, 2020). The persistent rise in corporate misconduct, child labor, environmental degradation, and other economic, social, and environmental issues (Mokthsim & Salleh, 2014) has put pressure on businesses from both internal and external sources to address sustainability challenges (D'Souza et al., 2020). In developing nations, sustainability reporting is gaining popularity (Abeysekera, 2022). According to Dissanayake (2020), sustainability reports provide a better measure of sustainability performance. An organization's level of reporting on sustainability issues can be evaluated using indicators from the GRI framework (Tilt et al., 2021).

There are few studies examining sustainability reporting. Several researchers have analyzed the influence of governance on sustainability reports (Ong & Djajadikerta, 2020a; Jamil et al., 2021a). Furthermore, other researchers (Laskar & Gopal Maji, 2018; Buallay, 2019) have examined the effect of sustainability reports on company performance.

The purpose of this study is to analyze the direct and indirect effects of board directors on firm performance through intellectual capital and sustainability reporting. This research was conducted for two reasons. First, it integrates previous research into one research model. Second, it examines sustainability reporting as a mediating variable that is still rarely studied.

METHOD

The population under investigation in this study comprises companies operating in the mining sector that became publicly listed on the Indonesia Stock Exchange between 2019 and 2021. The researchers employed a purposive sampling technique to select their sample. The selected criteria for companies to be included in the sample are as follows:

1. Availability of complete financial report data for the reporting years 2019 to 2021.
2. Presence of data regarding the board of directors, intellectual capital, sustainability disclosure, and performance for these companies.

The study used 30 samples, with the number determined by the aforementioned criteria (Table 1).

Table 1. Research samples

Sample criteria	Number of companies
Number of Mining Companies listed on the IDX during 2019-2021	47
Companies that do not publish complete sustainability reports according to the data required in this study	10
Companies that do not publish complete financial statements in accordance with the required data as of December 31 for the period 2019-2021, respectively.	7
Total samples	30

Source: authors' compilation (2023)

For data analysis, this study employed partial least squares structural equation modeling (PLS-SEM), which is a variance-based method within the framework of structural equation modeling (SEM). PLS-SEM, also known as PLS Path Modeling, is widely recognized and widely used for multivariate data analysis (Hair et al., 2019).

Variables and measurement

This study examines four variables: the board of directors as the independent variable, company performance as the dependent variable, and intellectual capital and sustainability reporting as mediating variables.

The board of directors is measured by the proportion of independent directors to the total number of directors. Firm performance is assessed through the Return on Assets (ROA) metric, which involves dividing the company's net income by its average total assets, multiplying the result by 100, and converting it into a percentage. The Sustainability Report is evaluated using the Disclosure Index based on Global Reporting Initiative (GRI) indicators. Intellectual capital is measured using the VAIC method, which is the sum of three elements: Value

Added Capital Employed (VAC), Value Added Human Capital (VAHU), and Structural Capital Value Added (STVA).

Hypothesis development

Every firm, regardless of its location, must strive to improve its company performance as it reflects the efficient management and allocation of resources. An essential internal governance instrument is the board of directors, a group responsible for representing the interests of shareholders (Foo & Zain, 2010). A larger proportion of independent directors on the board is associated with higher profitability for the company, leading to enhanced monitoring and broader expertise. This increased oversight and improved control activities ultimately result in better financial performance. Previous research has shown a positive correlation between the number of independent directors and improved financial performance (Musa, 2020; Nguyen & Huynh, 2023).

Fama & Jensen (1983) suggest that the existence of an Independent Director can reduce agency problems by encouraging management to disclose more information. One of the areas covered by this information is intellectual capital. Intellectual capital is a concept consisting of knowledge and technology-based resources and provides a description of intangible assets that, when used optimally, assist the company in carrying out its strategy effectively and efficiently. Previous studies have demonstrated a positive correlation between the extent of intellectual capital disclosure and board independence (Ali & Oudat, 2021; Nassirzadeh et al., 2023).

In order to establish and sustain a company's competitiveness, intellectual capital plays a crucial role as a strategic asset. Businesses with strong intellectual capital outperform their peers in terms of financial stability (Shahwan & Fathalla, 2020). It is believed that effective use and management of intellectual capital significantly impact a company's financial performance. Previous research has shown that intellectual capital indeed affects firm performance (Susanti et al., 2020; Neves & Proença, 2021; A. Ali et al., 2022; Rahman & Liu, 2023).

The board of directors is viewed as a structure that can grant access to resources necessary for the company's survival (Jamil et al., 2021a). There are two reasons why most governance codes encourage boards of directors to include independent directors. First, a company's independent directors might serve as a monitoring and control system to prevent dangerous or improper management actions. Second, by keeping themselves current and attesting to the efficiency of the reporting process, independent directors can ensure the success of other corporate governance instruments (Beffi, 2017). Companies are anticipated to provide more information, particularly sustainability information, when they have more independent directors. The larger the number of independent directors, the higher the disclosure of sustainability information (Ong & Djajadikerta, 2020a; Jamil et al., 2021b; Amidjaya & Widagdo, 2020a; Wahyudi, 2021).

Improved company performance is more likely when it aligns with increased social and environmental responsibilities. Stakeholders consider corporate social information as valuable as financial information, influencing their decision-making process. Issuing a sustainability report demonstrates corporate responsibility towards the environment, a result of the company's operational activities. Consequently, investors show greater interest in businesses with a positive reputation in the community, knowing that loyal customers contribute to increased sales and profitability (Buallay, 2019). Buallay (2022) also found that sustainability reports have a significant positive effect on company performance.

Based on the explanation above, the research hypothesis can be formulated as follows:
H1: Board of directors influences firm performance
H2: Board of directors influences intellectual capital
H3: Intellectual capital influences firm performance
H4: Board of directors influences the sustainability reporting
H5: Sustainability reporting influences firm performance
H6: Intellectual Capital mediates the influence of the board of directors on firm performance
H7: Sustainability reporting mediates the influence of the board of directors on firm performance

RESULT AND DISCUSSION

Direct effect

The results of the direct influence between variables are presented in table 2 below.

Table 2. Direct effect path coefficient

	Original Sample (O)	Sample Mean (M)	Standard Dev. (STDEV)	T Statistics (|O/STDEV|)	P Values
IC → P	0.379	0.377	0.086	4.426	0.000
SD → P	0.419	0.413	0.094	4.445	0.000
ID → P	0.044	0.043	0.072	0.616	0.538
ID → IC	0.466	0.462	0.098	4.781	0.000
ID → SD	0.349	0.345	0.128	2.721	0.007

Source: processed data (2023)

The findings in Table 2 indicate a p-value of 0.538 (>0.05) and a T-statistic of 0.616, suggesting that the board of directors does not have a significant effect on company performance. Consequently, Hypothesis 1 is rejected.

The effect of governance on intellectual capital is demonstrated in Table 2, which shows a T-statistics value of 4.781 and a p-value of 0.000. By considering the T-statistics value from Table 1, which is 4.781 (> 1.96), and the p-value, which is 0.000 (< 0.05), it can be concluded that the board of directors significantly influences intellectual capital. The observed influence on the path is positive, indicating that a higher number of independent board directors correlates with increased intellectual capital. Based on the results of testing this hypothesis, H2 is accepted.

The findings from Table 2 show that the hypothesis test resulted in a t-statistic value of 4.426, which exceeds the critical t-table value of 1.96, and a p-value of 0.000 < 0.05. These results indicate a significant positive relationship between a company's performance and the increase in intellectual capital, as well as a corresponding negative association when intellectual capital decreases. As a result, hypothesis 3 is confirmed.

The findings reveal that the T-statistics value for the influence of governance on sustainability reports is 2.271, and the corresponding p-value is 0.007. As the p-value is less than the significance level of 0.05 and the T-statistics value exceeds the critical value of 1.96, it can be concluded that the presence of independent board directors significantly impacts sustainability reports. This influence is positive, implying that higher numbers of independent board directors are associated with higher levels of sustainability reporting. Based on the results of testing this hypothesis, H4 is supported.

The findings from testing the fifth hypothesis (H5) clearly indicate that sustainability reports have a positive impact on company performance. This conclusion is supported by the results of the p-value and T-statistics tests. As shown in Table 4, the t-statistic value of 4.445 exceeds the critical t-table value of 1.96, and the p-value of 0.000 is less than the significance level of 0.05.

Therefore, H5 is accepted, demonstrating that sustainability reports play a significant role in enhancing company performance.

Indirect effect

The board of directors' indirect influence on corporate performance through intellectual capital and sustainability reporting is examined in Table 3 below.

Table 3. Indirect effect path coefficient

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (|O/STDEV|)	P Values
ID → IC →P	0.177	0.172	0.047	3.784	0.000
ID → SR→P	0.146	0.146	0.068	2.138	0.033

Source: processed data (2023)

The results of testing hypothesis 6 (H6) provide evidence that intellectual capital indeed mediates the influence of the board of directors on a company's performance. The study's findings reveal a significant indirect effect of governance on company performance through intellectual capital (p-value 0.000 <0.05; T-statistics 3.784 > 1.96). This implies that a higher number of independent board directors positively affects the intellectual capital, subsequently leading to improved financial performance. Therefore, H6 is accepted, confirming the mediating role of intellectual capital in the relationship between the board of directors and firm performance.

The results of this study further indicate that the indirect effect of the board of directors on company performance through sustainability reports is significant. The observed indirect effect of governance on company performance through sustainability reports (p-value 0.033 <0.05; T-statistics 2.138 > 1.96) holds statistical significance. This suggests that a higher number of independent board directors positively influences the quality of the sustainability report, which, in turn, enhances the financial performance of the company. As a result, H7 is accepted, confirming the mediating role of sustainability reports in the relationship between the board of directors and firm performance.

Discussion

Board of directors and company performance

The results of this study indicate that the independent board of directors does not significantly affect company performance. Two reasons can explain these insignificant findings. Firstly, many independent boards of directors are appointed not based on their abilities but due to particular interests in the company. Additionally, the selection process for the board of directors is subjective, making it challenging to establish a direct correlation between the presence of independent directors and the company's financial performance. Certain positions held or connections maintained by independent board directors might also influence their appointment. For instance, they may be appointed to facilitate regulatory matters in the company's operations. Secondly, the proportion of independent board directors in some companies may be so small that they cannot effectively fulfill their functions in running the company.

This research does not support previous studies that found a positive relationship between the number of independent directors and company performance (Maama et al., 2019; Shahwan & Fathalla, 2020; Coleman & Wu, 2021; Puni & Anlesinya, 2020). However, it aligns with research conducted by Al-Matari et al. (2014) and Al-Absy & Hasan (2023).

Board of directors and intellectual capital

The results of this study provide evidence that the independent board of directors has a significant and positive direct effect on intellectual capital. This suggests that a higher proportion of independent board directors is associated with increased intellectual capital. The presence of independent directors ensures that stakeholders receive more attention and encourages better information dissemination. Under these circumstances, it is expected that the increased control, monitoring, and stakeholder-oriented capabilities of independent directors will promote the disclosure of higher-quality intellectual capital.

This study aligns with other research that indicates the impact of independent boards of directors on intellectual capital (Dashtbayaz et al., 2020; Ali & Oudat, 2021; Nassirzadeh et al., 2023).

Intellectual capital and company performance

The results of this study provide strong evidence that intellectual capital has a significant direct and positive effect on the company's financial performance. This indicates that a high level of intellectual capital can exert a major influence on the company's overall performance. When companies effectively manage their intellectual capital, they can increase their added value. According to the resource-based view, businesses must possess valuable, rare, inimitable, and non-substitutable resources to strengthen their competitive advantages.

Companies with high intellectual capital can enhance their competitiveness, contributing to improved company performance.

The research findings are consistent with previous studies that also highlight the influential role of intellectual capital on company performance (Pucci et al., 2015; Smriti & Das, 2018; Pratama et al., 2019; Susanti et al., 2020; Neves & Proença, 2021; A. Ali et al., 2022; Rahman & Liu, 2023).

Board of directors and sustainability reporting

The results of this study provide compelling evidence that the independent board of directors has a significant and positive direct effect on the sustainability report. Apart from managing the company as a whole, the main duties of the board of directors include making reports for shareholders and the government and ensuring the company's compliance with applicable laws and regulations. Independent directors are regarded as observers who safeguard the interests of stakeholders. Their ability to monitor effectively and play a significant role in controlling the company's managerial decisions stems from their lack of conflicts of interest, as their positions come from external companies. Companies with a higher number of independent directors are expected to disclose more information, including sustainability information.

This research aligns with previous studies that found a positive relationship between the proportion of independent directors and the level of sustainability information disclosure (Herda et al., 2012; Ienciu et al., 2012; Ong & Djajadikerta, 2020b; Jamil et al., 2021c; Amidjaya & Widagdo, 2020b; Wahyudi, 2021).

Sustainability reporting and company performance

The findings of this study highlight that sustainability reports indeed have a positive impact on company performance. The preparation of a sustainability report demonstrates the company's commitment to address social, environmental, and economic issues. This report serves as a testament to the company's corporate responsibility towards the environment in which it operates, thereby enhancing the company's image. Consequently, investors become more interested in investing in the company. The preparation of a sustainability report goes beyond mere compliance with regulations; it becomes an obligation for the company to ensure its survival and sustainability.

The results of this study corroborate the research conducted by Laskar & Gopal Maji (2018) and Buallay (2019), both of which found a significant positive effect of sustainability reports on company performance.

Board of directors on company performance with intellectual capital as the mediating variable

According to the study's findings, intellectual capital acts as a mediator between the board of directors and a company's performance. Independent directors contribute to the board's enhanced prestige and expertise, facilitating its effective functioning. Their presence ensures stronger control and monitoring capabilities, encouraging greater information disclosure (Liao et al., 2015). As a result of the incentives motivating independent directors to use their decision-making authority to preserve intellectual capital, boards with a higher number of independent outside directors gain more control over managerial decisions. By effectively utilizing strategic resources such as intellectual capital assets, firms can establish competitive advantages, which, in turn, positively influence their overall performance. This finding aligns with previous research conducted by Saeed et al. (2015), Shahwan & Fathalla (2020), and Aslam & Haron (2021).

Board of directors on company performance with sustainability reporting as the mediating variable

The findings of this study demonstrate the indirect influence of the board of directors on corporate performance through sustainability reporting. Independent directors are typically seen as authorities responsible for overseeing, controlling, and monitoring management, providing valuable recommendations and counsel for management's decisions on environmental performance (De Villiers et al., 2011; Chang et al., 2017). Acting as both agents and advocates, independent directors work for the interests of all stakeholders and their own reputations, involvement, and acceptance in society. They aim to disclose more information about the organization's environmental policies to minimize costs (Ioannou & Serafeim, 2010; Ghoul et al., 2017). Companies with a stronger reputation for social responsibility also tend to perform better financially.

This study complements earlier research by Arayssi et al. (2016), which found that the impact of boards of directors on corporate performance is mediated through sustainability reporting. The role of Corporate Governance in the business environment is increasingly crucial as it serves as one of the pillars to achieve a company's competitive advantage.

CONCLUSION

The role of Corporate Governance in the business environment is indeed becoming increasingly important. It serves as one of the key pillars to attain a company's competitive advantage. Public companies must have an independent board of directors to foster the implementation of Good Corporate Governance principles. The primary responsibility of independent directors is to maintain a balance among other affiliated directors, consider the interests of all stakeholders, including majority, minority, and public shareholders, and ensure adherence to the principles of Good Corporate Governance.

The study's findings indicate the following: (1) Independent board members have no direct impact on the company's performance; (2) Independent board members have a direct impact on intellectual capital; (3) Intellectual capital has a direct impact on firm performance; (4) Independent board members have a direct impact on sustainability reporting; (5) Sustainability reporting influences company performance; (6) Intellectual capital mediates the influence of independent board members; and (7) Sustainability reporting acts as a mediator between the influence of independent board members and firm performance.

Organizational performance is of utmost importance and requires enhancement in the increasingly competitive era of global competition, especially for mining companies. To survive and excel, mining companies must strive to improve their performance. Achieving this goal entails being accountable to stakeholders regarding social, environmental, and economic activities. Additionally, companies must consistently enhance their intellectual capital, comprising intangible assets that offer knowledge-based resources to elevate the company's performance and competitiveness.

This research can serve as a foundation for companies to reconsider the policies related to environmental and social activities they have implemented. Moreover, investors and potential investors should not solely focus on financial information but also consider non-financial information, such as the social, economic, and intellectual capital aspects, when evaluating a company to invest their funds in.

Further research can delve into additional governance variables not explored in this study, such as institutional ownership, managerial ownership, and the composition of the independent board of commissioners. Future studies could also expand on this research by incorporating other mediating variables, like Enterprise Risk Management.

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