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The impact of corporate governance and firm performance on waste and effluent disclosure: Evidence from polluting industries in Indonesia

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ABSTRACT

This study examined the influence of corporate governance – including the presence of board gender diversity, board independence, board attention, and audit committee – and firm performance on waste and effluent disclosure in polluting industry companies in Indonesia. This study used secondary data obtained from the companies' annual and sustainability reports during the period 2017 to 2021. The waste and effluent disclosure was measured using a scoring method based on Global Reporting Initiative (GRI) Standard 306: Waste and Effluent. This study focused on companies in five polluting industries, including Pulp and Paper, Chemicals, Oil and Gas, Metals and Mining, and Infrastructure, Utilities, and Transportation, listed on the Indonesia Stock Exchange. The results of the study show that corporate governance, including the presence of board gender diversity, board independence, board attention, and audit committee, has a significant influence on waste and effluent disclosure. In contrast, firm performance, which was proxied by return on assets (ROA), has no significant influence on the waste and effluent disclosure of companies in polluting industries listed on the Indonesia Stock Exchange.

Contribution/Originality: This study is the first to discuss the influence of corporate governance and firm performance on waste and effluent disclosure based on GRI Standard 306: Waste and Effluent in five polluting industries in Indonesia.

1. INTRODUCTION

Continued pressure from corporate social responsibility (CSR) and sustainable business development practices imposes significant environmental obligations on businesses (Doan & Sassen, 2020). Businesses are, therefore, expected to improve their environmental impact and demonstrate their commitment and actions to their stakeholders (Lui & Zainuldin, 2022). Corporate environmental reports (CERs) have become essential in facilitating such communication (Donovan, 2002) and have gained immense popularity (Sra, Booth, & Cox, 2022) due to the desire to avoid issues such as greenwashing and non-standardization (Sra et al., 2022; Uyar, Karaman, & Kilic, 2020; Wedari, Jubb, & Moradi-Motlagh, 2021).

The rapid development of various industrial sectors and the emergence of various environmental issues caused by industries' operations, such as air-sea-land pollution, which have caught the public attention, have driven most companies to conduct corporate social responsibility activities (Cho, Senn, & Sobkowiak, 2022; Olanrewaju, Ishola, Nurudeen, & Ayuba, 2020; Pratiwi & Chariri, 2013). A company's business operations have either a positive impact on economic development or a negative impact on the environment and society such as industrial waste (Ridwan, 2016). On this point, the company's CSR activities, including its social and environmental contributions such as waste management, processing, and recycling, may reduce its negative impact and create a sustainable business (Aagaard, 2016). Through CSR, a company can fulfill its responsibilities by having a positive impact on society and the environment, especially in the area where the company operates (Pratiwi & Chariri, 2013).

However, despite the growing popularity of CSR activities, in recent years, many environmental problems have arisen in Indonesia due to industrial hazardous and toxic (B3) waste, such as river and land pollution. Indonesia's Ministry of Environment and Forestry has revealed that 59% of rivers in Indonesia are heavily polluted due to waste from industrial activities such as oil and gas use and mining, household waste, and animal husbandry (Hidayat, 2021). Furthermore, based on data collected by the Ministry of Environment and Forestry between 2015 and 2019, there has been a significant increase of 298% in the area of land contaminated with industrial hazardous and toxic (B3) waste, from an originally contaminated land area of 211,359.2 m^2 in 2015 to 840,024.85 m^2 in 2021 (KLHK, 2021). In this regard, failure and/or negligence during operations, intentional non-compliance, natural disasters, and community activities in managing hazardous and toxic (B3) waste have caused the increase in pollution (Directorate General of PSLB3 KLHK, 2021). In addition, the lack of availability of waste management facilities in Indonesia, public awareness, and company involvement in industrial waste management have also contributed to the increasing number of hazardous and toxic (B3) waste emergency cases in Indonesia, with an average increase of 35 accidents every year (Meidiana & Gamse, 2010).

The lack of company contribution through CSR activities is reflected in the low level of CSR disclosure (Widiastuti, Utami, & Handoko, 2018). Research conducted by the National University of Singapore Center for Governance, Institutions, and Organizations on 100 companies in four countries (Indonesia, Malaysia, Singapore, and Thailand) has shown that companies in Indonesia have a lower CSR disclosure quality compared to those in Thailand and Singapore (Suastha, 2016). In this context, CSR activity and disclosure are influenced by the choices and motives of the company's stakeholders, as well as the values of those involved in the organization's strategizing and decision-making, such as the company board (Britel & Cherkaoui, 2022; Jo & Harjoto, 2011; Khan, Muttakin, & Siddiqui, 2013; Pflieger, Matthias, Thilo, & Peter, 2005). Muharim (2020) revealed that board gender diversity significantly influences the extent of waste and effluent disclosure by manufacturing companies listed on the Indonesia Stock Exchange. Previous research by Ibrahim and Hanefah (2016), Al-Shaer and Zaman (2016), Fuente, García-Sánchez, and Lozano (2017), Muharim (2020), and Olanrewaju et al. (2020) also found that board gender diversity, i.e., the presence of women on the board of directors, significantly influenced CSR disclosure. Female board members tend to pay more attention to company CSR behavior, be more stakeholder-oriented, and take action to reduce the risks that may affect CSR disclosure (Al-Shaer & Zaman, 2016). According to Social Role Theory, when compared to men, women are more empathetic and unselfish, care more about society, are more expressive, and have higher moral standards than men (Bakan, 1996; Boulouta, 2013; Eagly & Wood, 2012) so their presence on the board increases a company's sensitivity and contributions to society and the environment.

In addition, the presence of corporate governance attributes such as board independence and board attention may also influence a company's waste and effluent disclosure. The existence of an independent board of commissioners in the company provides an objective and independent perspective in meetings, which can increase transparency, accountability, and the company's environmental responsibility contributions and disclosure (Fernandes, Bornia, & Nakamura, 2019). Furthermore, the number of board meetings may also influence CSR disclosure. A larger number of board meetings will increase the supervisory function of managers and indicate an active role of the board in response to problems and issues within the company, including those related to waste and effluent (Alshbili, Elamer, & Beddewela, 2020). Aside from the board's influence on company CSR disclosure, the audit committee has the duty and responsibility to periodically review the company reports from the risk management committee, which may significantly influence the waste and effluent disclosure (Ika, Nugroho, Achmad, & Widagdo, 2021). It is assumed that companies that have a large number of audit committee members may provide broader perspectives, arguments, and insights, as well as a more effective supervisory function (Mohammadi, Saeidi, & Naghshbandi, 2020), which may improve the quality of CSR disclosure in reports published by these companies (Buallay & Al-Ajmi, 2019).

Besides corporate governance, another factor that may influence the company's CSR contributions and disclosure is firm performance. In this regard, a firm's financial performance is one of the key variables that may affect a company's CSR performance and reporting. The availability of funds will greatly influence a company's CSR contributions (Sial, Zheng, Khuong, Khan, & Usman, 2018). In this context, a company that has a good financial performance, reflected in its profitability, will have more opportunities to contribute to CSR activities such as properly managing, processing, and recycling the waste it produces. Prior studies that examined the effect of firm performance on company CSR, including Sial et al. (2018), Hermawan and Gunardi (2019), and Purbawangsa, Solimun, Fernandes, and Rahayu (2019), revealed that firm performance proxied by the profitability ratio return on assets (ROA) has a significant influence on company CSR disclosure. The current study contributes to the literature in two ways. First, it provides empirical evidence related to the influence of corporate governance and firm performance on waste and effluent disclosure in Indonesia's polluting industries. Second, this study provides an overview of companies' awareness of waste and effluent management and may help improve the quality of sustainability reporting. The remainder of this article is organized as follows. The next section presents the theoretical basis that underlies the research and develops the hypotheses based on the theory and previous studies. Section 3 presents the research methodology. Section 4 reports the study's findings, and Section 5 discusses them; the last section provides a summary and conclusion.

2. LITERATURE REVIEW

Female board members' tendency to pay more attention to company CSR behavior and be more stakeholder-oriented and concerned about reducing risks may enhance a company's awareness of its CSR contributions and disclosure (Al-Shaer & Zaman, 2016). According to Social Role Theory, women are considered communal individuals, that is, they are more empathetic and unselfish, care more about society, are more expressive, and have higher moral standards than men (Bakan, 1996; Boulouta, 2013; Eagly & Wood, 2012); therefore, their presence on the board increases a company's sensitivity and contribution to the community and the environment. Women on boards are generally more concerned about environmental issues and tend to be willing to take action to reduce existing environmental risks (Amorelli & García-Sánchez, 2021). Stakeholder theory states that an organization's management is expected to display its accountability by disclosing information that is important to its stakeholders. CSR information is assumed to be part of the company's strategic management plan; therefore, it is important to publish this information to meet stakeholders' expectations (Chan, Watson, & Woodliff, 2014). In addition, this information may raise the company's awareness of its CSR and the impact of the company's contributions to CSR, as well as the quality of CSR disclosure (Chan et al., 2014; Pflieger et al., 2005). A study conducted by Muharim (2020) showed that board gender diversity significantly influences waste and effluent disclosure. Several studies that examined the factors that may influence CSR disclosure have shown that board gender diversity consistently influences the practice of CSR disclosure (Al-Shaer & Zaman, 2016; Fuente et al., 2017; Ibrahim & Hanefah, 2016; Issa, Zaid, Hanaysha, & Gull, 2021; Khan, Khan, & Saeed, 2019; Turgut & Hafsi, 2013; Zahid et al., 2020). Given this, the presence of women on a company board may increase the company's sensitivity and contribution to its community and environment such as through waste and effluent management and treatment (Muharim, 2020). Therefore, the following hypothesis is developed:

H1: Corporate Governance from the perspective of board gender diversity has a significant influence on waste and effluent disclosure.

The composition of the board is one of the main factors that may influence a company's CSR contribution and disclosure (Rao & Tilt, 2016). The presence of an independent board of commissioners, who are unaffiliated parties and uninvolved in the daily management of the company, tends to provide more objective and rational recommendations in meetings and can increase corporate awareness of the importance of CSR disclosure (Fauzyyah & Rachmawati, 2018). According to stakeholder theory, an organization's management is expected to display its accountability by undertaking activities and reporting those of importance to its stakeholders (Fernando & Lawrence, 2014). In this regard, the tendency of the board of commissioners to disclose information from a broader perspective to protect the interests of its stakeholders will encourage companies to share more information related to their CSR contributions (Santioso & Chandra, 2012), such as waste and effluent management and treatment (Muharim, 2020). It is assumed that companies that have a large independent board of commissioners may benefit from a more neutral and objective view that can encourage them to increase their CSR disclosure transparency in their sustainability reports (Damayanti, Prihanto, & Fairuzzaman, 2021; Fauzyyah & Rachmawati, 2018; Ratmono, Nugrahini, & Cahyonowati, 2021; Santioso & Chandra, 2012). A large number of independent commissioners within a company also improves the oversight of the company's management actions and ensures that the company directors create policies that are consistent with the interests of the company's stakeholders (Hermawan & Gunardi, 2019). Several previous studies that examined the influence of board independence on company CSR disclosure, such as those of Santioso and Chandra (2012), Fauzyyah and Rachmawati (2018), Hermawan and Gunardi (2019), Damayanti et al. (2021), and Ratmono et al. (2021), have shown that an independent board has a significant influence on company CSR disclosure. Thus, the following hypothesis is developed:

H2: Corporate Governance from the perspective of board independence has a significant influence on waste and effluent disclosure.

Furthermore, stakeholder theory emphasizes that an organization's management is expected to display its accountability to its stakeholders by undertaking activities and reporting information that they consider important (Fernando & Lawrence, 2014). In addition, legitimacy theory explains that there is a social contract between the company and the community in which the company or organization operates (Deegan, Rankin, & Tobin, 2002). In fulfilling the social contract, the company must pay attention to societal norms and strive to follow existing social values (Dewiyanti, 2021; Rokhlinasari, 2016). In line with this theory, the board's level of attention, as reflected in the number of board meetings, may influence waste and effluent disclosure. Frequent board meetings indicate their effectiveness in terms of management control and oversight of the activities carried out by the company, as well as the board's active response to problems or issues within the company (Alshbili et al., 2020), such as the waste and effluent it produces. Moreover, a high number of board meetings also indicates that more issues have been discussed in the meeting related to the company's activities and targets, as well as the policies, strategies, and implementation related to CSR (Khaireddine, Salhi, Aljabr, & Jarboui, 2020; Kouaib, Mhiri, & Jarboui, 2020; Shahbaz, Karaman, Kilic, & Uyar, 2020). Thus, it can encourage companies to increase their CSR contributions and disclosure and motivate them to operate with an emphasis on environmental and social responsibilities (Agyemang et al., 2020; Shahbaz et al., 2020). Prior studies by Alshbili et al. (2020), Khaireddine et al. (2020), Kouaib et al. (2020), Agyemang et al. (2020), Shahbaz et al. (2020), and Nuskiya, Ekanayake, Beddewela, and Gerged (2021) show that board attention has a significant effect on company CSR disclosure. Thus, the following hypothesis is articulated:

H3: Corporate Governance from the perspective of board attention has a significant influence on waste and effluent disclosure.

Apart from the board characteristics, an audit committee, which is a committee formed by the board of commissioners that has functions and responsibilities in terms of monitoring the company's reporting and disclosure process both from a financial and non-financial perspective (Financial Service Authority, 2015), may also influence waste and effluent disclosure. Stakeholder theory reveals that companies voluntarily disclose information beyond the mandatory requirements on environmental, social, and intellectual performance to meet stakeholder expectations (Chariri, 2008; Rokhlinasari, 2016). Stakeholder theory implies that companies need stakeholders to support the existence of their business (Rokhlinasari, 2016). In this regard, a company can increase stakeholder trust by disclosing information related to CSR activities (Chariri, 2008), such as waste management, processing, and recycling. The presence of an audit committee that acts in a supervisory function related to the company's financial and non-financial reporting increases the effective oversight function, which affects the company's CSR disclosure quality. Several studies on the effect of audit committee size, such as those of Appuhami and Tashakor (2017), Muharim (2020), Khan et al. (2019), and Mohammadi et al. (2020), show that audit committee size influences a company's social and environmental disclosure. A large number of audit committee members in a company can provide a broader perspective, improve the oversight function, and improve the quality of the audit committee's role Mohammadi et al. (2020). Based on these considerations, the following hypothesis is proposed:

H4: Corporate Governance from the perspective of audit committee size has a significant influence on waste and effluent disclosure.

Aside from the corporate governance perspective, the availability of company funds, reflected in company financial performance, may influence the company's CSR contribution and disclosure (Sial et al., 2018). According to legitimacy theory, companies in industries that are sensitive to environmental issues or high-profile, such as polluting industries, tend to disclose more CSR activities than companies in other industries to maintain their legitimacy and reputation (Clarke & Gibson-Sweet, 1999 in Permatasari, Luh, and Setyastrini (2019)). In addition, companies with good financial performance tend to contribute optimally to their social and environmental responsibilities to maintain a good reputation among their stakeholders (Ezhilarasi & Kabra, 2017; Fernando & Lawrence, 2014). Furthermore, the implementation of CSR activities, such as the management, processing, and recycling of waste and effluent, requires large funds, meaning that the presence of adequate financial resources will greatly affect the company's CSR contribution. Several studies on the influence of firm performance on CSR disclosure show that firm performance has a significant effect on CSR disclosure. Therefore, the following hypothesis is developed:

H5: Firm Performance has a significant influence on waste and effluent disclosure.

3. METHODOLOGY

3.1. Sample and Data Collection

This research used secondary data from annual reports and sustainability reports retrieved from companies' official websites and https://www.idnfinancial.com. The focus of this study was five polluting industries, based on Clarkson, Fang, Li, and Richardson (2013), consisting of Pulp and Paper, Chemicals, Oil and Gas, Metals and Mining, and Infrastructure, Utilities, and Transportation. These industries were selected because they contribute significantly to pollution and environmental damage due to their activities and/or business processes. A purposive sampling method was used to determine the sample in this study. The selection of the research sample comprised several criteria: (1) polluting industry companies based on Clarkson et al. (2013) that were listed on the Indonesia Stock Exchange (IDX) in 2017–2021 (2) that had published annual reports and sustainability reports in the period 2017–2021 (3) and that had complete data relating to the variables used. Therefore, Table 1 presents the details of the research sample selection based on the predetermined criteria:

Table 1. Selection of the research sample.

Description	Total
Industrial sector polluting companies listed on the Indonesia Stock Exchange (IDX) for the period 2017–2021	165
Companies that did not publish a sustainability report during the period 2017–2021	69
Companies that did not have complete data related to the research variables	9
Total sample	87

Given that 87 companies in polluting industries listed on the Indonesia Stock Exchange from 2017 to 2021 met the criteria and were used as a sample, the total observations in this study were 189 observations, because it used an unbalanced data panel where one of the criteria for this research sample was that the company had published a sustainability report during the 2017–2021 period.

3.2. Variable Measurement

The dependent variable in this study was waste and effluent disclosure, which was proxied by the percentage of waste and effluent items disclosed by the company. Based on GRI Standard 306, five specific disclosure sub-topics are related to waste and effluents: disclosure of water discharge by quality and destination (306 – 1), waste by type and disposal method (306 – 2), significant spills (306 – 3), transport of hazardous waste (306 – 4), and water bodies affected by water discharges and/or runoff (306 – 5). In total, 44 disclosure index items are included as mandatory reporting requirements and must be disclosed by companies. A scoring method was used to measure this variable. A score of 1 was given if the company disclosed an item on the waste and effluent disclosure index based on GRI 306, and a score of 0 was given if the company did not disclose an item.

This study included five independent variables: board gender diversity, board independence, board attention, audit committee size, and firm performance. Board gender diversity was measured as the percentage of female board members in the company (Fuente et al., 2017; Ibrahim & Hanefah, 2016; Mahmood, Kouser, Ali, Ahmad, & Salman, 2018; Muharim, 2020). Board independence was proxied by the number of independent commissioners in the company (Liana, 2019; Santioso & Chandra, 2012; Sudana & Arlindania, 2011). Board attention was proxied by the total number of board meetings (Agyemang et al., 2020; Fuente et al., 2017; Khan et al., 2019; Nuskiya et al., 2021; Sial et al., 2018). Audit committee size was proxied by the number of audit committee members within the company (Musallam, 2018), and firm performance was proxied by the profitability ratio return on assets (ROA). The control variables in this study were firm size, proxied by the logarithm of total assets (Agyemang et al., 2020; Fuente et al., 2017; Setiawan, Brahmana, Asrihapsari, & Maisaroh, 2021; Sial et al., 2018), and leverage, proxied by the debt to equity ratio (Novari & Lestari, 2020).

3.3. Regression Model

The analysis in this study used Stata version 15 to perform several tests, such as descriptive statistics analysis and classical assumption testing, consisting of normality, autocorrelation, heteroscedasticity, multicollinearity, and hypothesis testing. Ordinary least squares (OLS) regression was used for the hypothesis testing. The regression model in this study was constructed as follows:

$$Y_{it} = \alpha + \beta_1 WED_{it} + \beta_2 BDIV_{it} + \beta_3 BIND_{it} + \beta_4 BATT_{it} + \beta_5 ACSIZ_{it} + \beta_6 ROA_{it} + \beta_7 FSIZ_{it} + \beta_8 LEV_{it} + \varepsilon_{it}$$

Where

Y = Dependent variable.

α = Beta coefficient of constant (intercept).

β = Beta coefficient of independent variable.

WED = Waste and effluent disclosure.

BDIV = Board gender diversity.

BIND = Board independence.

BATT = Board attention.

ACSIZ = Audit committee size.

ROA = Return on assets.

FSIZ = Firm size.

LEV = Leverage.

i = Cross-section indicator.

t = Time indicator.

ε = Error regression.

4. RESULTS

4.1. Descriptive Statistics and Correlations

The study included five independent variables, board gender diversity (BDIV), board independence (BIND), board attention (BATT), audit committee size (ACSIZ), and firm performance (FPER), and the dependent variable waste and effluent disclosure (WED). The control variables in this study were firm size (FSIZ) and leverage (LEV). The following are the results of the descriptive statistics:

Table 2. Descriptive statistics.

Variable	Obs.	Mean	Max.	Min.	Std. dev.
WED	189	0.258	0.568	0.000	0.143
BDIV	189	0.099	0.667	0.000	0.143
BIND	189	2.095	5.000	1.000	0.793
BATT	189	26.650	139.000	4.000	20.013
ACSIZ	189	3.481	8.000	2.000	0.954
FPER	189	0.040	0.520	-0.580	0.113
FSIZ	189	19.756	29.887	12.313	4.149
LEV	189	1.472	24.848	-7.544	2.454

Table 2 shows that, on average, polluting industry companies listed on the Indonesia Stock Exchange in the period 2017–2021 had a low percentage of waste and effluent disclosure with a percentage value of only 25.8% of the 44-item disclosure index listed in GRI 306: Waste and Effluents. The maximum value of the waste and effluent disclosure variable is 56.8%, while the minimum value is 0%, which indicates there were polluting-industry companies that did not disclose any waste and effluent information based on GRI 306: Waste and Effluents in their sustainability reports during the period 2017–2021.

In addition, the boards of polluting industry companies include, on average, 9.9% percent women. The minimum value of the board gender diversity variable, according to Table 2, is 0%. Thus, it can be concluded that the polluting industry companies listed on the Indonesia Stock Exchange in 2017–2021 had a low percentage of women in board of directors positions, and there were polluting industry companies that did not have any women in board of directors positions.

The board independence variable, proxied by the number of independent commissioners in the company, had an average value of 2.095, which indicates that the average company in a polluting industry has approximately 2 independent commissioners. The minimum value of the number of independent commissioners in a polluting industry company was 1.000. It can be concluded that all the companies in polluting industries listed on the Indonesia Stock Exchange in 2017–2021 had at least 1 independent commissioner on their board.

Based on regulation Number 57/POJK.04/2017 issued by the Financial Services Authority (known as the OJK), a company's board of directors must meet at least once every two months, which means at least 6 meetings in a year. Table 2 shows that five polluting industry companies complied with the OJK's minimum annual meeting frequency, and several companies held an average of 26 meetings each year.

Table 2 also shows that, on average, polluting industry companies had at least 3 members on their audit committee, which is in line with the OJK's regulation No. 55/POJK.04/2015. Therefore, it can be concluded that the average polluting industry company used as a sample in this study had an appropriately sized audit committee as regulated in No. 55/POJK.04/2015 by having at least 3 members of the audit committee. However, some polluting industry companies did not meet the required minimum number of audit committee members, which is evident from the minimum value of 2.000.

Furthermore, the polluting industry companies used as a sample in this study had an average ROA of 0.040 or 4%, which indicates that the average polluting industry company is well able to utilize its assets to obtain or generate company profits. The control variable firm size, proxied by the logarithm of total assets, had an average of 19.756. Based on the Law of the Republic of Indonesia Number 20 of 2008, a company that has a net worth of more than 10 billion is categorized as a large company. Therefore, it can be concluded that the polluting industry companies used as a sample in this study were categorized as large companies with more than 10 billion net wealth as the average value of assets owned by the companies was 19.756 billion rupiah. The control variable leverage, proxied by the debt-equity ratio, had an average value of 1.472, which is more than 1, indicating that, on average, polluting industry companies have debt/liabilities greater than their capital/assets.

Table 3. Pearson correlation matrix.

Variable	WED	BDIV	BIND	BATT	ACSIZ	FPER	FSIZ	LEV
WED	1.0000							
BDIV	-0.2064	1.0000						
BIND	0.2455	-0.0179	1.0000					
BATT	-0.0898	0.1290	0.2491	1.0000				
ACSIZ	0.1048	0.0679	0.2624	0.5579	1.0000			
FPER	0.1162	-0.0452	0.0272	-0.0987	-0.0960	1.0000		
FSIZ	-0.1493	0.0235	-0.3772	-0.2543	-0.0787	-0.1765	1.0000	
LEV	0.1221	0.0467	0.1349	-0.0470	0.0876	-0.0266	0.0607	1.0000

Table 3 represents the Pearson correlations between all the variables, including dependent variables, independent variables, and control variables. Based on the result, it is clear that multicollinearity is not at a problematic level in this model.

Table 4. Regression result.

WED	Coef.	t-stat
BDIV	-0.2081	-2.900***
BIND	0.0356	2.900***
BATT	-0.002	-3.070***
ACSIZ	0.028	2.430**
FPER	0.101	1.360
FSIZ	-0.003	-1.430
LEV	0.004	1.910*
F-stat	0.0000	
Highest variance inflation factor (VIF)	1.620 (BATT)	
R-squared	0.1629	

Note: * Significant at the 0.10 level.
** Significant at the 0.05 level.
*** Significant at the 0.01 level.

4.2. Panel Regression Result

Table 4 provides an overview of the study's regression results. The value of R-squared is 0.1629, which means that in this study, 16.29% of the dependent variable waste and effluent disclosure can be explained by the independent variables of board gender diversity, board independence, board attention, audit committee size, and firm performance. The remaining 83.71% can be explained by variables outside the independent variables (the error component).

The board gender diversity variable, proxied by the percentage of female board members, shows a significant value of 0.004, which is smaller than the 0.05 level of significance. Therefore, H_1 is accepted. The board's gender diversity significantly influences the company's waste and effluent disclosure. This finding is in line with research conducted by Turgut and Hafsi (2013), Al-Shaer and Zaman (2016), Ibrahim and Hanefah (2016), Fuente et al. (2017), Khan. et al. (2019), Muharim (2020), Zahid et al. (2020), and Issa et al. (2021), which revealed that board gender diversity, meaning the presence of women on the board of directors, has a significant influence on CSR disclosure.

The second independent variable, board independence, which was proxied by the number of independent commissioners, shows a significant value of 0.004, which is smaller than the 0.05 level of significance. Therefore, H_2 is accepted. The number of independent board commissioners has a significant influence on CSR disclosure. The result is in line with research conducted by Santioso and Chandra (2012), Fauzyyah and Rachmawati (2018), Hermawan and Gunardi (2019), Damayanti et al. (2021), and Ratmono et al. (2021), which found that board independence has a significant influence on CSR disclosure.

Furthermore, board attention, proxied by the total number of board meetings, shows a significant value of 0.002, which is smaller than the 0.05 level of significance. Thus, it can be concluded that board attention significantly influences waste and effluent disclosure, meaning that H_3 is accepted. This finding is in line with studies conducted by Alshbili et al. (2020), Agyemang et al. (2020), Khaireddine et al. (2020), Kouaib et al. (2020), Shahbaz et al. (2020), and Nuskiya et al. (2021), which revealed that the number of board meetings has a significant influence on CSR disclosure.

The fourth independent variable, audit committee size, shows a significant influence on waste and effluent disclosure. Table 4 shows that the audit committee size has a value of 0.016, which is smaller than the 0.05 level of significance. Thus, H_4 is accepted. This result is in line with previous results of Appuhami and Tashakor (2017), Musallam (2018), Khan et al. (2019), and Mohammadi et al. (2020), which showed that audit committee size influences a company's CSR disclosure.

In contrast, firm performance proxied by the profitability ratio ROA shows a significance value of 0.175, which is higher than the 0.05 level of significance. Therefore, H_5 is rejected. The firm's performance does not influence the disclosure of company waste and effluents. This finding is in line with research conducted by Cahya (2011), Wasito, Herwiyanti, and Kusumastati (2016), Kurniawan (2019), and Utami, Maslichah, and Mawardi (2019), which revealed that firm performance proxied by ROA does not influence CSR disclosure.

The control variable firm size shows a significance value of 0.154, and the variable leverage shows a significance value of 0.057, which is higher than the 0.05 level of significance. Therefore, it can be concluded that firm size proxied by the logarithm of total assets and leverage proxied by the solvability ratio of debt to equity does not influence waste and effluent disclosure.

5. DISCUSSION

This study found that board gender diversity significantly influences waste and effluent disclosure. Female board members, who tend to pay more attention to company CSR behavior, be more stakeholder-oriented, and take action to reduce risks, may influence a company's waste and effluent disclosure. This finding is supported by stakeholder theory and social role theory. The basic nature of women as empathetic, unselfish, and caring about society, along with their greater sensitivity to the environment and risk, can encourage companies to disclose more information about their waste and effluent management and treatment. The presence of women on boards, with their generally greater concern about environmental issues and tendency to take action to reduce existing environmental risks, works to increase transparency and reduce information asymmetry, which increases the company's sensitivity and contribution to its community and environment.

In addition, having a large number of independent commissioners on its board will provide a company with a more neutral and objective view during board meetings, which may encourage companies to increase transparency regarding waste and effluent disclosure in their sustainability reports. According to stakeholder theory, an organization's management is expected to display its accountability by undertaking activities and reporting those of importance to its stakeholders (Fernando & Lawrence, 2014). In this regard, the tendency of the board of commissioners to disclose information from a broader perspective to protect the interests of its stakeholders will encourage companies to share more information related to their waste and effluent management and treatment. Thus, it supports this study's finding that board independence significantly influences waste and effluent disclosure.

Furthermore, the attentiveness of the board, represented by the number of board meetings, significantly influences waste and effluent disclosure. Stakeholder theory emphasizes that an organization's management is expected to display its accountability to its stakeholders by undertaking activities and reporting information that they consider important (Fernando & Lawrence, 2014). Legitimacy theory also reveals that there is a social contract between the company and the community in which the company operates (Deegan et al., 2002). This theory emphasizes that a company must act in a way that is consistent with its social values, which the company conveys through its company reports (Rokhlinasari, 2016). In addition, frequent board meetings indicate that the board plays an effective role in terms of management control and oversight and reflect the board's active response to problems and/or issues within the company, as well as a good level of control over the activities carried out by the company, including waste management, processing, and recycling.

In contrast, this study also found that firm performance does not affect the waste and effluent disclosure of companies in polluting industries in Indonesia. Good financial performance, as indicated by a good ROA ratio, does not guarantee that the company will allocate these funds to social and environmental activities, such as waste and effluent management and treatment, or increase their disclosure related to the produced waste and effluents. This is because companies that have the ability to generate good profits and have high profitability will be more likely to be oriented toward corporate profits. In the context of disclosure, a company's management will be more interested in demonstrating its financial performance to prove its financial attractiveness to its main – financial – stakeholders; therefore, the company is less concerned with CSR contribution and disclosure (Girerd-Potin, Jimenez-Garcès, & Louvet, 2014; Hamudiana & Achmad, 2017; Lindawati & Puspita, 2015).

Furthermore, the two control variables used in this study, firm size and leverage, also show no significant influence on a company's waste and effluent disclosure. In this case, large companies, which generally have a high value of assets to generate profits, are more likely to be oriented toward corporate profits in their disclosures by focusing on demonstrating the good financial performance they have achieved to their financial stakeholders, meaning that these companies pay less attention to CSR disclosure (Respati & Hadiprajitno, 2015). In addition, the leverage level has no effect on disclosure because CSR disclosure is influenced by the choices and motives of the company with regard to its social and environmental responsibilities, and the people who are involved in decision-making within the organization may focus on other company goals, such as financial performance, market expansion, and production capacity (Babiak & Trendafilova, 2011; Haniffa & Cooke, 2005; Khan et al., 2013). So whether the debt owned by the company is high or low as shown by its leverage level, if the people in the company have a low level of awareness of their CSR, it will influence the company's CSR contribution and disclosure (Meidiana & Gamse, 2010; Sari, 2012; Subiantoro & Mildawati, 2015).

6. CONCLUSION

This study aimed to determine the influence of corporate governance, in the form of board gender diversity, board independence, board attention, and audit committee size, as well as financial performance, on the waste and effluent disclosure of polluting industry companies in Indonesia. This study concludes that gender diversity on the board can influence a company's waste and effluent disclosure. The basic nature of women as more sensitive to the environment and more likely to avoid risk can encourage companies to disclose more information related to waste and effluents. In addition, an independent board of commissioners can provide more objective and rational recommendations that can increase awareness of the importance of disclosing waste and effluents in polluting industry companies. Moreover, a highly attentive board and a large audit committee can improve supervision, accountability, and transparency, and provide various perspectives in meetings, which will affect waste and effluent disclosure. On the other hand, good financial performance does not guarantee that the company will allocate these funds to waste and effluent management and treatment or increase disclosure related to the waste and effluent it produces.

The findings of this study have important implications for polluting industry companies that will improve the quality of their sustainability reporting and increase company awareness of waste and effluent management. However, this study does have a research limitation. Based on the results of the coefficient test, the value of R-squared indicates that only 16.29% of waste and effluent disclosure is explained by the independent variables in this study, and the remaining 83.71% can be explained by variables outside the independent variables (the error component). Thus, it is recommended that future studies expand the scope of research with more diverse variables and proxies, both in terms of corporate governance and firm performance, as well as other variables or proxies that may affect waste and effluent disclosure, such as firm characteristics, governance and audit attributes, company ownership structure, government policies, and others (Zamil, Ramakrishnan, Jamal, Hatif, & Khatib, 2021). In this way, future studies may be able to better explain the factors that influence waste and effluent disclosure and provide better research results.

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