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The Impact of Corporate Governance on Sustainability Disclosure in Indonesian Listed Banks

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Abstract: Although sustainability reporting has gained attention in recent years, empirical evidence on the effectiveness of related regulations in Indonesia remains limited. Therefore, this study examines the influence of corporate governance on sustainability disclosure (SD) using panel data regression on 47 banks listed on the Indonesia Stock Exchange (IDX) from 2012 to 2022. The results indicate that the presence of a sustainability committee, audit committee, and CSR training has a significant impact on enhancing sustainability disclosure. In contrast, board age, board meetings, board independence, and the presence of women on the board showed no significant effect. These findings provide regulatory insights for developing sustainability frameworks and highlight the importance of internal structures in driving sustainability practices. The findings also align with international standards, such as the Global Reporting Initiative (GRI), the International Sustainability Standards Board (ISSB), and the EU's Corporate Sustainability Reporting Directive (CSRD), which promote and, in some cases, require the integration of sustainability into corporate governance systems. This study challenges the applicability of traditional agency-based governance theories in emerging markets, where mechanisms like board independence have limited effectiveness. It also highlights the importance of adapting governance frameworks by incorporating stakeholder and legitimacy theories, providing fresh empirical evidence from emerging Asian economies. Moreover, the extended period and broad sample size contribute to the robustness of the findings, offering practical implications for policymakers and corporate leaders committed to advancing sustainability agendas.

Keywords: sustainability disclosure, corporate governance mechanisms, sustainability report, sustainability committee, emerging markets.

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INTRODUCTION

Corporate accounting fraud, as evidenced by scandals such as Enron, WorldCom, and Satyam, is a critical issue. According to research, the growing number of these frauds has eroded investors' trust in the accuracy and reliability of financial statements, compromised the credibility of financial reports, and resulted in substantial financial losses (Lal Bhasin, 2013). This problem highlights the importance of socially responsible company operations. It also underscores the need for an in-depth investigation of corporate governance standards to mitigate the risk of financial fraud and mismanagement, thereby protecting public and investor confidence. The downfall of organizations is frequently rooted in ethical failures, not audit shortcomings. Therefore, companies must incorporate strategic CSR practices and disclose relevant CSR information effectively to foster transparency and trust among stakeholders (Lu & Abeysekera, 2021). Additionally, Alduais et al. (2022) found that companies with greater CSR disclosure experience reduced information asymmetry due to enhanced non-financial transparency.

Strong corporate governance is essential for effective CSR policies as it reflects ethical and responsible business practices. Di Miceli da Silveira (2021) reported that corporate governance mechanisms, such as board characteristics, are associated with better corporate ethical culture. Corporate governance now includes CSR, board dynamics, management processes, risk management, and ethical standards (Khan, 2010). Multiple researchers have analyzed the correlation between corporate governance practices and CSR initiatives. These studies address several aspects, such as board composition (Hameed et al., 2023; Fahad & Rahman, 2020; Khan, 2010; Pucheta-Martínez et al., 2021), board size (Oware et al., 2022; Pasko et al., 2024), and firm ownership (Su et al., 2022).

Bihari & Shajahan (2023) argue that while CSR has traditionally been voluntary, inconsistent implementation has prompted calls for mandatory regulations to ensure accountability. Moreover, although CSR allows flexibility and innovation, policymakers now emphasize the need for a legal framework. Regulatory initiatives, such as the EU's CSRD, supported by GRI and the ISSB, reflect this shift. However, as noted by Villiers et al. (2024) and Krivogorsky (2024), sustainability reporting still faces regulatory fragmentation, limited global reach, legitimacy issues, and risks of dominance by powerful actors, highlighting the need for harmonization and further research.

Meanwhile, Indonesia has established substantial regulations for CSR and corporate governance. The General Guidelines for Good Corporate Governance (GCG), introduced by the National Committee for Governance Policy (*Komite Nasional Kebijakan Governansi*/KNKG) in 1999, were last updated in 2021. CSR compliance is mandated under the Law on Limited Liability Companies (*Undang-Undang Perseroan Terbatas*) No. 40 of 2007, with reporting requirements outlined in POJK No. 51/POJK.03/2017 for public companies, issuers, and financial institutions on sustainable finance. However, despite having mandatory and voluntary regulations, Indonesian businesses still struggle to adhere to the highest corporate governance standards. According to the Centre for Governance and Sustainability at the National University of Singapore (NUS) Business School, Indonesian companies show lower levels of corporate social responsibility than companies in Thailand.

This study aims to evaluate the impact of corporate governance mechanisms on sustainability disclosure within Indonesia's banking industry. Despite the application of numerous corporate governance and corporate social responsibility (CSR) regulations, there remains limited empirical evidence regarding their effectiveness, especially in the Indonesian context. Therefore, this study will examine 47 commercial banks listed on the Indonesia Stock Exchange between 2012 and 2022. The results aim to promote more effective governance frameworks and efforts to enhance CSR transparency, particularly in emerging economies such as Indonesia.

This study draws on three prominent theories in corporate governance and sustainability disclosure: the stakeholder, legitimacy, and agency theories. The stakeholder theory was developed at the Stanford Research Institute in 1963. This theory emphasizes that corporations have a commitment to all parties affected by their behavior, including consumers, suppliers, employees, lenders, and society. Freeman (1983) further developed this theory, arguing that companies should realistically evaluate their environment rather than relying solely on strict structural reforms. Thus, directors are encouraged to adopt proactive strategies to balance the interests of diverse stakeholders, including those with equity, economic, and political stakes.

Next, the legitimacy theory states that companies strive to operate within economic, social, and political standards. Based on the concept of a social agreement, businesses are expected to fulfill societal demands by disclosing relevant social information, thereby demonstrating accountability and securing public legitimacy for their operations. Such disclosures are typically reactive, aiming to legitimize corporate behavior, maintain trust, and validate the organization's sustainability (Guthrie & Parker, 1989).

Jensen & Meckling (1976) define agency theory as a framework that explains the conflict of interest between shareholders and managers, particularly when managers are granted decision-making authority on behalf of the owners. However, according to Rooly (2021), managers may not always address the owners' priorities, which can result in increased agency costs. Moreover, Ogabo et al. (2021) argue that a handful of managers controlling an excessive amount of influence can lead to decision-making errors, misuse of company assets, and the exploitation of minority shareholders. These agency conflicts arise when managers' interests conflict with those of the owner, ultimately leading to inefficiencies in corporate operations. Therefore, to mitigate agency-related risks and match the interests of managers and shareholders, good corporate governance is essential.

Over time, research has increasingly examined the impact of corporate governance on sustainability disclosure. Forker (1992) found that administrative costs and the presence of dominant individuals reduce disclosure quality, with limited links between internal monitoring (e.g., audit committees, non-executive directors) and share option disclosure. Fahad & Rahman (2020) reported that meeting frequency has a minimal impact on ESG and governance scores, while older boards reduce both. CEO duality and sustainability committees also improve disclosure (excluding governance), and board independence enhances ESG disclosure. Conversely, larger audit committees are associated with reduced environmental disclosure, and female board representation has a negative impact on all scores.

Meanwhile, Rashid & Hossain (2021) found that board independence improves CSR disclosure, while political affiliations hinder it. Independent directors can also help counter political influence by strengthening oversight and transparency. García-Sánchez et al. (2021) demonstrated that firms with board diversity, CSR committees, analyst coverage, and institutional ownership are more likely to seek CSR assurance. However, board independence reduces this likelihood. Additionally, Ratri et al. (2021) observed that CEO busyness and long tenure reduce CSR disclosure, while frequent board meeting attendance enhances it by helping CEOs address social and environmental issues.

Furthermore, Islam & Hossain (2022) found that board independence, audit committee size, and the frequency of audit committee meetings significantly enhanced climate change disclosure in Bangladeshi banks, with sponsor-directors' ownership also having a positive impact. According to Ali et al. (2022), CSR disclosure in developing countries is shaped by internal factors (e.g., firm size, governance, ownership) and external pressures (e.g., regulation, media, global stakeholders). Firms disclose their CSR initiatives to enhance their reputation, financial performance, and stakeholder relations. They disclose such information in accordance with legitimacy and stakeholder theories. However, Oware et al. (2022) stated that although board independence and size do not significantly influence CSR assurance under mandatory CSR policy, CEO duality reduces assurance engagement. CSR assurance improves social performance disclosure, particularly when interacting with board characteristics. Ananzeh et al. (2022) also found that larger board size enhances forward-looking CSR disclosure, while CEO duality and family ownership are associated with lower levels of such disclosure.

Moreover, Ji & Abdoune (2023) demonstrate that female directors with foreign knowledge backgrounds are linked to greater CSR disclosure. Individuals with international work experience typically make significant contributions to improve CSR performance, emphasizing the strategic governance role of internationally experienced women in emerging markets. Jin et al. (2023) also show that corporate governance, notably CEO authority and ownership type (such as SOEs and non-SOEs), influences the relationship between digitalization and CSR disclosure. Pasko et al. (2024) further highlight that board size and the presence of independent directors boost CSR disclosure, whereas high ownership concentration restricts transparency. Additionally, a previous study found that although CEO duality has a negative impact on CSR disclosure, the effect is insignificant. In China, large boards with independent directors are recommended. However, high ownership concentrations may hinder CSR initiatives, emphasizing the need to align governance and ownership structures with CSR goals.

Board age Diversity

Board age diversity reflects generational diversity, influencing directors' values, goals, and decision-making styles. A mix of age groups can enhance ESG understanding and foster more positive ESG attitudes (Menicucci & Paoluicci, 2022). According to Gardiner (2022), age diversity can enhance board performance by combining the distinct knowledge, skills, and networks that younger and older directors bring to the table. As stated by Donkor et al. (2024), boomer directors are more committed to sustainability than traditionalists, Gen X, and Gen Y members, highlighting the importance of generational diversity on boards. Similarly, Al-Zaqeba (2022) reports a positive correlation between board member age and CSR disclosure, suggesting that older directors may be more likely to actively engage in promoting sustainability practices. However, studies have also shown that older board members tend to disclose lower-quality CSR and ESG information (Katmon et al., 2017; Fahad & Rahman, 2020).
H1: There is a negative association between board age and the SD level.

Frequency of Board Meetings

Board meetings play a crucial role in strategic decision-making and oversight. More frequent meetings enhance the board's ability to supervise, advise, and act in the shareholders' interests through clearer communication and better decision-making (Hossain & Oon, 2021). Based on the agency theory, frequent meetings improve monitoring, reduce agency costs, facilitate idea exchange, and enhance information access—factors that support better financial performance (Taluka et al., 2022). However, some studies report that the frequency of board meetings has no significant or even a negative relationship with disclosure (Fahad & Rahman, 2020; Harymawan, 2020; Ramdhony et al., 2023). In contrast, Ratri et al. (2021) reported that meeting frequency is positively associated with CSR disclosure due to increased opportunities for strategic discussions. Likewise, Aly et al. (2024) identified that board independence and meeting frequency are key drivers of environmental disclosure. During crises, frequent meetings can meet shareholder expectations and support CSR initiatives (Giannarakis, 2014).
H2: There is a positive association between board meetings and the SD level.

Board Independence

Khan et al. (2024) define board independence as the percentage of independent, non-executive directors (NEDs) who are not involved in management and have no significant ties to the firm, thereby allowing them to provide objective oversight. The agency theory suggests that board independence enhances the oversight of a company's management and promotes sustainability (Padungsaksawasdi & Treepongkaruna, 2023). Meanwhile, although several studies (Fahad & Rahman, 2020; Rashid & Hossain, 2021; Anyigbah et al., 2023; Pasko et al., 2024) support a positive correlation between board independence and CSR disclosure, others report mixed or insignificant findings (Fallah & Mojarrad, 2019; Orazalin, 2019; Hameed et al., 2023). In Indonesia, Wahyuningrum et al. (2023) found that board independence has no significant effect on water disclosure. In contrast, Al-Najjar & Abualqumboz (2024) reported a significant but negative effect on environmental management in the UK.
H3: There is a positive association between board independence and the SD level.

Audit Committee

The audit committee is essential for corporate governance, as it ensures operational transparency and integrity. Committees with specialized expertise can strengthen CSR transparency (Ng & Marsidi, 2022). Uyar et al. (2022) found that audit committee independence and expertise can enhance CSR reporting, assurance, and GRI adoption. Similarly, Pucheta-Martínez et al. (2021) reported that the existence and financial expertise of audit committees positively influence CSR disclosure. Meutia et al. (2023) also found that a bigger audit committee enhances sustainability reporting by ensuring alignment with stakeholder expectations and legitimacy principles. In contrast, attributes of the audit committee, including its size and independence, negatively affect CSR performance, suggesting that larger committees may be less effective (Nandi et al., 2023).
H4: There is a positive association between the size of the audit committee and the SD level.

Sustainability Committee

The primary regulatory instrument for social and environmental issues is the sustainability committee. Sustainability committees have been found to positively influence comprehensive CSR reporting, as they help firms gain structural and managerial legitimacy by adopting socially accepted governance practices and enhancing the credibility of disclosed information (Ali et al., 2023). The term "sustainability committee" refers to a voluntary board-level group comprising both internal and independent directors, which meets regularly to oversee the firm's ESG strategy, assess sustainability risks and opportunities, and ensure the company's performance aligns with stakeholder interests (Abdullah et al., 2023). Li et al. (2022) show that its presence and effectiveness significantly enhance environmental outcomes. Additionally, Kuzey et al. (2021) discovered that CSR committees increase business value in the tourism industry, albeit with a smaller effect in the healthcare and financial sectors.
H5: There is a positive association between the sustainability committee and the SD level.

CSR Training

In a highly competitive environment, companies increasingly invest in human capital through sustainability-focused training, recognizing it as more valuable than material resources. Such training builds employee capabilities and reinforces their perception of the company's sustainability commitment—an essential factor in encouraging sustainable behavior and enhancing organizational competitiveness (Kang et al, 2022). The association between employee CSR training and disclosure was first examined by Fahad & Rahman (2020), who discovered that such training enhances the employees' understanding of social and environmental initiatives, fosters teamwork, and enables them to comprehend how CSR affects business operations and performance.
H6: There is a positive association between employee CSR training and the SD level.

Female Board Representation

Donkor et al. (2023) argued that stronger governance, especially greater board diversity, enhances reporting quality, which is consistent with agency and stakeholder theories. Ghazwani (2025) also found that female board representation boosts social performance when supported by robust anti-corruption and sustainability measures. Omenihu et al. (2025) showed that having at least three female directors significantly improves ESG disclosure, supporting critical mass theory. However, Fahad & Rahman, 2020) revealed a negative association between female board representation and CSR scores. Ebaid (2022) observed a positive but insignificant effect, suggesting that female board representation does not always lead to increased CSR disclosure.
H7: There is a positive association between female board representation and the SD level.

METHODS

This study analyzed 47 banks that are listed on the Indonesia Stock Exchange (IDX) from 2012 to 2022. Data for the independent and control variables were collected manually through a content analysis of annual and sustainability reports from the IDX and bank websites. The financial data used in this study were collected from audited financial accounts from the same sources. Outliers in the independent and dependent variables were removed to improve the robustness of the statistical analysis. Analysis was conducted using panel data regression; missing variables that change over time are addressed using duration dependence approaches. Therefore, these panel regression models are estimated to account for unobserved, time-invariant heterogeneity.

$$SDit = \alpha_0 + \beta_1(BAGEit) + \beta_2(BMit) + \beta 3\ (BIit) + \beta 4(SACit) + \beta 5(SCit) + \beta 6(CSRTit) + \beta 7(FBit) + \beta 8(FAGEit) + \beta 9(FSIZEit) + \beta 10(FLEVit) + \beta 11(PROWit) + \beta 12(ROAit) + \eta i + \varepsilon i$$

SD refers to the quality of corporate sustainability disclosures. The independent variables included BAGE (board age), BM (board meeting frequency), BI (board independence), SAC (audit committee size), SC (presence of a sustainability committee), CSRT (CSR-related training), and FB (female representation on the board). The control variables are FAGE (firm age), FSIZE (firm size), FLEV (financial leverage), PROW (promoter's ownership), and ROA (return on assets). The subscript *i* denotes the individual firms, while *t* represents the time period. The term ηi captures unobserved heterogeneity or company-specific effects, and εi represents the error term. A detailed description and measurement of all variables used in the study are provided in Table 1.

Table 1 Definitions and measurements of the variables used in this study

No	Variables	Acronym	Operationalization
1.	Sustainability disclosure	SD	Collected from ESGI intelligence data, which examines each company's sustainability report to identify adopted GRI standards and expected disclosure items. A binary coding system (1 = disclosed, 0 = not disclosed)
2.	Board age	BAGE	Board members' average age
3.	Board meeting	BM	The number of board meetings each year
4.	Board independence	BI	The percentage of independent directors on the board
5.	Size of audit committee	SAC	The number of members on the audit committee
6.	Sustainability committee	SC	The value of the dummy variable is 1 If SC is formed, otherwise it is 0.
7.	CSR training	CSRT	The value of the dummy variable is 1 if CSRT is given, otherwise it is 0.
8.	Female board representation	FB	The percentage of female directors on board
9.	Firm age	FAGE	The firm's age (natural logarithm in years)
10.	Financial leverage	FLEV	Debt equity ratio
11.	Firm size	FSIZE	The firm's total assets (natural logarithm in years)
12.	Promoter's ownership	PROW	The percentage of shares that promoters own
13.	ROA	ROA	Return on asset

Dependent Variables

The dependent variable in this study is sustainability disclosure (SD). This data was obtained from ESGI Intelligence by Universitas Airlangga and measured through the content analysis of sustainability reports or annual reports from companies listed on the Indonesia Stock Exchange (IDX). This technique converts qualitative data into quantitative form for statistical analysis. The measurement adheres to the Global Reporting Initiative (GRI) standards, which have evolved from GRI G1 to the latest GRI Standards, each comprising a distinct number of disclosure items categorized into core (mandatory) and non-core (optional) items. Companies may choose to report either the core items or all items listed in the standard (including both core and non-core items). The assessment begins by identifying the specific GRI standard that each company has implemented. Each item was then reviewed to determine whether it was reported by the company. This study employed a dichotomous scoring strategy, assigning a score of 1 if an item was reported and 0 if it was not. All scores were then summed, and the total number of disclosed items was used as the measure of SD, or in the formula:

$$\text{Sustainability disclosure} = \sum_{i=1}^{n} Di$$

Where:
$Di = 1$ if item i is disclosed, and $Di = 0$ if not
n = total number of disclosure items based on the applicable GRI standard

Independent Variables

This study examined board age diversity, audit committee size, board meetings, board independence, CSR training, sustainability committees, and female board representation as independent variables. The control variables included firm age, size, financial leverage, promoter ownership, and ROA. Older firms positively influence CSR disclosure due to their greater sense of social responsibility (Jiraporn & Withisuphakorn, 2015). Large firms are also better positioned to undertake sustainability initiatives due to their abundant resources, whereas SMEs often lack the necessary resources for effective ESG implementation (Chen et al., 2021). Lower financial leverage enables companies to have more flexibility in engaging in CSR activities (Mahmood et al., 2023). Moreover, promoter ownership, through concentrated decision-making, supports CSR practices (Fahad & Rahman, 2020). Profitability, measured by ROA, is relevant as it shows a significant association with CSR (Lin et al., 2021).

Panel Data Regression

This study employed the panel data regression approach previously used by Miniaoui et al. (2022), estimating three panel specifications: pooled OLS, fixed effects (FE), and random effects (RE). The researchers then applied the model-selection sequence described by Noor et al. (2024). First, the Chow test determines whether to use a common intercept (pooled OLS) or individual intercepts (FE): if $p > 0.05$, pooled OLS is chosen; otherwise, FE is adopted. Second, the Hausman test compares RE and FE: a $p > 0.05$ indicates RE is appropriate, while $p < 0.05$ favors FE. Third, the Lagrange Multiplier test assessed whether pooled OLS or RE delivers the better fit: pooled OLS is retained when $p > 0.05$ and RE when $p < 0.0$.

RESULTS AND DISCUSSION

Descriptive results and correlation matrix

The descriptive statistics of the sample data, which included 517 observations, are summarized in Table 2. The analysis revealed a maximum score of 120, a median score of 0, and a standard deviation of 31.12. The mean sustainability disclosure (SD) score is 27.64. The wide range indicates that there are significant differences in sustainability disclosure levels between companies.

Table 2 Descriptive Statistics

Variables	Obs	Mean	Std. Dev.	Min	Max	Median	Skew.	Kurt.
SD	517	27.641	31.12	0	120	0	0.611	2.145
BAGE	517	53.059	3.01	40.5	69.18	53	0.115	3.498
BM	517	29.25	27.29	0	282	24	3.866	27.744
BI	517	0.049	0.114	0	0.7	0	2.962	12.878
SAC	517	3.838	1.239	0	12	4	1.876	9.253
SC	517	0.441	0.497	0	1	0	0.238	1.056
CSRT	517	0.487	0.5	0	1	0	0.05	1.003
FB	517	0.172	0.19	0	0.75	0.13	1.051	3.621
FAGE	517	3.725	0.494	2.639	4.844	3.784	0.385	2.355
FSIZE	517	10.209	1.936	5.02	14.5	9.93	0.169	2.337
FLEV	517	5.018	3.357	0	17.07	5.040	0.334	2.792
PROW	517	0.651	0.227	0.096	1	0.628	–0.119	2.047
ROA	517	0.007	0.028	-0.201	0.136	0.0091	–1.581	16.286

Table 3 shows that the correlations between the independent variables are within an acceptable range. This finding suggests that multicollinearity is not a significant issue, ensuring that the independent variables do not exhibit unreasonably high correlations that would compromise the regression analysis's reliability. Moreover, the reliability model of the panel data regression analysis is supported by Levin-Lin-Chu and Fisher- type Phillips-Perron unit root test results, which verify that the data is stationary.

Table 3 Correlation Matrix

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
(1) SD	1.000												
(2) BAGE	0.056	1.000											
(3) BM	0.386	-0.039	1.000										
(4) BI	0.054	0.016	-0.051	1.000									
(5) SAC	0.329	-0.035	0.199	-0.035	1.000								
(6) SC	0.698	0.093	0.345	0.033	0.224	1.000							
(7) CSRT	0.685	0.131	0.308	0.086	0.134	0.810	1.000						
(8) FB	0.045	-0.046	-0.079	0.128	0.010	-0.012	0.005	1.000					
(9) FAGE	0.418	0.287	0.382	0.114	0.147	0.372	0.412	0.002	1.000				
(10) FSIZE	0.599	0.066	0.487	0.076	0.323	0.546	0.497	0.050	0.459	1.000			
(11) FLEV	0.352	-0.064	0.421	-0.012	0.214	0.277	0.242	0.004	0.207	0.474	1.000		
(12) PROW	-0.032	0.105	-0.026	0.038	-0.042	-0.061	-0.041	0.016	0.166	-0.129	-0.184	1.000	
(13) ROA	0.090	0.178	0.022	-0.069	0.037	0.084	0.024	0.057	0.128	0.175	0.028	-0.006	1.000

Table 4 shows the fixed effects model (FEM) is superior to the common effects model (CEM), with a significant F-statistic (p = 0.0000). The Hausman Test findings (χ^2 = 25.197, p = 0.014) demonstrates that FEM is a better fit than REM because it yields more reliable estimates (Table 5). Additionally, as the Chow test had already proven FEM to be the best model, and there was no need to compare it to REM. Thus, the LM test was not conducted.

Table 4 Chow Test Results

F (46, 458)	4.90
Prob > F	0.0000

Table 5 Hausman Test Results

	Coef.
Chi-square test value	25.197
P-value	0.014

The results revealed that the independent variables do not have multicollinearity problems (Table 6). The Variance Inflation Factor (VIF) test results were all less than 10, with an average VIF of 1.648. The Wooldridge Test results (F = 15.328, p = 0.0003), as shown in Table 7, indicate the presence of first-order autocorrelation and reject the null hypothesis. Additionally, the Wald test findings (χ^2 = 2476.44, p = 0.0000) in Table 8 indicate that the model is heteroskedastic. According to the test results, multicollinearity is not a problem. Robust standard errors were also applied, as indicated by the presence of autocorrelation and heteroskedasticity, to ensure the accuracy of the estimates.

Table 6 Variance Inflation Factors (VIF)

	VIF	**1/VIF**
SC	3.244	0.308
CSRT	3.135	0.319
FSIZE	2.165	0.462
FAGE	1.635	0.612
BM	1.542	0.649
FLEV	1.424	0.702
BAGE	1.169	0.855
SAC	1.148	0.871
PROW	1.116	0.896
ROA	1.097	0.912
BI	1.064	0.940
FB	1.04	0.961
Mean VIF	**1.648**	.

Table 7 Wooldridge Test Results

H0: no first order autocorrelation	
F (1, 46)	15.328
Prob > F	0.0003

Table 8 Wald Test Results

H0: sigma(i)^2	sigma^2 for all i
chi2 (47)	2476.44
Prob > chi2	0.0000

Regression Test

Table 9 presents the regression results using Driscoll-Kraay standard errors to address autocorrelation and heteroskedasticity. The model exhibits moderate statistical significance (F = 9840.69, p = 0.0000), with an R- squared value of 43.41%, indicating that the independent variables account for a considerable portion of the variation in sustainability disclosure. Among the corporate governance variables tested, only audit committee size (H4), sustainability committee (H5), and CSR training (H6) are significantly associated with sustainability disclosure. Meanwhile, board age (H1), frequency of board meetings (H2), board independence (H3), and female board representation (H7) had no significant effect on SD.

The regression results do not support H1, as the relationship between average board age and sustainability disclosure is positive but not significant. Although some studies report a negative association, suggesting that younger directors are more inclined toward CSR (Katmon et al., 2017; Fahad & Rahman, 2020), our findings are consistent with other studies that report no significant relationship between the two factors (Giannarakis, 2014; Fallah & Mojarad, 2018). However, the positive direction relationship aligns with Donkor et al. (2024), who found that Boomer directors are more committed to sustainability than other generations, and with Al-Zaqeba (2022), who reported a positive association between board age and CSR disclosure.

Next, H2, which suggests that the frequency of board meetings may positively influence sustainability disclosure, is not supported, indicating that frequent meetings alone do not ensure greater transparency. This finding is consistent with prior studies (e.g., Giannarakis, 2014; Harymawan, 2020; Fahad & Rahman, 2020; Ramdhony et al., 2023) that reported no significant relationship between the variables. Therefore, the number of board meetings may not necessarily result in effective oversight, as meaningful CSR disclosure depends more on the agenda content, the quality of discussions, and a strategic focus on sustainability.

The results showed that board independence has no significant effect on sustainability disclosure, leading to the rejection of H3. This finding aligns with studies from other emerging markets (Fallah & Mojarad, 2019; Orazalin, 2018) and ASEAN countries (Triwahyuni & Mita, 2024), suggesting that formal independence may not reflect actual autonomy, as directors may still have ties to controlling parties. Moreover, Indonesia's two-tier board system does not mandate independent directors, reducing their oversight effectiveness. In contrast, Elafify (2021) found a significant positive relationship between board independence and sustainability disclosure in Egypt, where a one-tier system allows independent directors to have more direct involvement in governance. This contrast highlights how board structure and regulatory context shape the impact of independence on sustainability disclosure.

Table 9 Panel data regression analysis with fixed effects

Regression with Driscoll-Kraay standard errors	Number of obs	=	517
Method: Fixed-effects regression	Number of groups	=	47
Group variable (i): Bank_ID	F (12, 10)	=	16461.31
maximum lag: 2	Prob > F	=	0.0000
	within R-squared	=	0.4341

CSRD	Coefficient	Drisc/Kraay std.err	t	P>|t|	[95% conf.	interval]
BAGE	0.506	0.204	2.480	0.082	0.052	0.961
BM	-0.021	0.053	-0.400	0.700	-0.138	0.096
BI	-2.562	10.744	-0.240	0.816	-26.500	21.377
SAC	2.677	0.428	6.250	0.000	1.723	3.631
SC	12.668	3.377	3.750	0.004	5.144	20.192
CSRT	17.843	3.679	4.850	0.001	9.647	26.040
FB	0.798	4.172	0.190	0.852	-8.499	10.094
FAGE	33.967	12.094	2.810	0.019	7.019	60.914
FSIZE	1.270	0.423	3.000	0.013	2.213	0.327
FLEV	0.485	0.165	2.950	0.015	0.118	0.852
PROW	-1.495	4.812	-0.310	0.762	-12.218	9.227
ROA	12.319	22.089	0.560	0.589	-36.900	61.537
_cons	-138.293	40.703	-3.400	0.007	-228.986	-47.600

BAGE board average age, BM board meeting, BI board independence, SAC size of audit committee, SC sustainability committee, CSRT employee CSR training, FB women on board, FAGE firm age, FSIZE firm size, FLEV financial leverage, PROW promoters' ownership, and ROA return on asset.

Regarding H4, the results confirm a positive relationship between the size of the audit committee and sustainability disclosure. Larger committees are more likely to provide stronger oversight and improve transparency. This finding aligns with Pucheta-Martínez et al. (2021) and Meutia et al. (2023), who emphasized the importance of independent audit committees in ensuring credible reporting and increasing investor trust. Similarly, Das et al. (2021) found that firms with a greater number of board and audit committee members tend to disclose more environmental information, attributing this to the wider range of knowledge and expertise present in the boardroom, which improves the quality of environmental decision-making and disclosure.

The positive and significant impact of sustainability committees on sustainability disclosure, as confirmed in this study, supports H5. It aligns with the findings of Li et al. (2022), and Fahad & Rahman (2020), who emphasized its role in facilitating effective CSR planning and transparency. Nonetheless, Abdullah et al. (2024) reported no significant association between sustainability committees and CSP in FTSE 150 companies. This disparity highlights the risk of greenwashing, where firms prioritize disclosure to gain legitimacy without undertaking meaningful environmental and social initiatives.

Next, this study found that CSR training significantly improves sustainability disclosure, supporting H6. This finding aligns with Kang et al. (2022), who found that sustainability training shapes employees' perceptions of corporate sustainability responsibility, leading to enhanced awareness and behavior. Similarly, Fahad & Rahman (2020) reported that CSR training boosts employee involvement in sustainability efforts, suggesting that improved training initiatives enhance CSR transparency. Systematic reviews also support this statement. Sult et al. (2024) found that well-aligned sustainability training improves environmental, social, and economic performance. Moreover, Bilderback (2023) showed that integrating training with the SDGs promotes sustainable behavior and enhances organizational reputation. Overall, effective training, especially when embedded within strategic frameworks such as the GRI and the SDGs, is crucial for enhancing the transparency, effectiveness, and disclosure of sustainability efforts.

Meanwhile, female board representation had an insignificant effect on sustainability disclosure, leading to the rejection of H7. This result aligns with Ebaid (2022). Conversely, some studies (Donkor et al., 2023; Omenihu et al., 2025) argue that female board representation and board diversity improves CSR or ESG disclosure. More recently, Ali & Firmansyah (2023) also found a significant positive relationship between gender diversity on corporate boards and ESG disclosure. Their study highlights that the presence of at least three female directors, a condition referred to as critical mass, can meaningfully enhance environmental and governance disclosures. Studies found that to improve ESG performance and sustainability disclosure, firms need to establish an inclusive governance environment where women are not only present but also actively involved in sustainability-related decision-making. Therefore, to meaningfully advance corporate sustainability, companies must go beyond formal compliance and cultivate leadership structures that empower women to play an active and strategic role in achieving long-term sustainability goals.

Finally, among the control variables, firm age, size, and financial leverage all showed positive relationships with sustainability disclosure, with age and leverage being statistically significant. Older and larger firms are more likely to disclose their sustainability information due to stakeholder pressure. Highly leveraged firms may disclose more to reassure lenders and reduce agency problems (Fahad & Nidheesh, 2020). On the other hand, promoter ownership and return on assets have no significant impact, suggesting that ownership concentration and short-term profitability do not strongly influence CSR transparency.

CONCLUSION

This study examined the impact of corporate governance on sustainability disclosure in 47 banking companies listed on the Indonesian Stock Exchange (IDX) from 2012 to 2022. Seven corporate governance mechanisms were analyzed, revealing several key variables that significantly influence sustainability disclosure (SD). CSR training was found to have a positive impact on sustainability disclosure, promoting greater transparency and accountability. Additionally, the size of the audit committee and the presence of a sustainability committee are positively associated with sustainability disclosure. In contrast, board age, board meetings, and board independence showed insignificant relationships with sustainability disclosure. The findings also revealed that female board representation does not significantly influence sustainability disclosure. The control variables reflect external influences on sustainability disclosure. Firm age, firm size, and financial leverage show positive associations with sustainability disclosure, likely due to organizational stability and pressure from creditors for greater transparency. On the other hand, promoters' ownership and return on assets showed no significant effect, indicating their limited role in shaping CSR transparency. The key insights from this study can be beneficial for policymakers, companies, and investors. Firstly, for policymakers, this study highlights the importance of strengthening regulatory frameworks related to corporate governance and sustainability disclosure. A notable step has been taken through the Financial Services Authority Regulation (POJK No. 51/ POJK.03/2017) on Sustainable Finance, which encourages financial institutions, issuers, and public companies to adopt sustainability principles. However, regulators could further advance sustainable development by integrating a broader range of SDG-related aspects into mandatory governance practices. For instance, making sustainability committees mandatory, structuring sustainability training, and implementing more rigorous sustainability oversight would enhance companies' capacity to address sustainability challenges in a more accountable and measurable manner. Secondly, the findings highlight the importance of companies strengthening their internal governance to enhance their sustainability disclosure and performance. Stronger governance structures directly support several SDGs. For example, SDG 8 (Decent Work and Economic Growth) is advanced through responsible business practices; SDG 5 (Gender Equality) is supported by the meaningful inclusion of women in decision-making roles; and SDG 7 (Affordable and Clean Energy) and SDG 13 (Climate Action) are promoted when companies reduce emissions and transition to renewable energy. Companies should focus on impactful mechanisms such as forming sustainability committees, offering CSR-related training, and strengthening audit functions, rather than merely complying with superficial board attributes. Real progress demands a shift from formality to genuine, sustainability-driven leadership. Lastly, the study offers a stronger foundation for evaluating corporate sustainability for investors and the wider public. Transparent sustainability disclosure can serve as an early signal of a company's commitment to sustainability, indicating alignment with green values. However, disclosure must be accompanied by real performance; otherwise, it risks becoming a formality driven by regulatory compliance or a tool for greenwashing. Investors should look beyond surface-level indicators and prioritize firms with authentic governance and a demonstrated commitment to ESG. Supporting such companies mitigates risk and contributes significantly to the success of the Sustainable Development Goals. However, despite this study's valuable insights, its focus on a single industry context may limit the broader applicability of its findings. Additionally, the time period analyzed corresponds to an early phase in the evolution of sustainability reporting, during which variations in disclosure standards may have introduced interpretive subjectivity. Although core control variables such as firm size, leverage, and profitability were considered, broader external variables — particularly regulatory frameworks, cultural environments, and market dynamics — were not fully addressed. Moreover, the analysis concentrates solely on sustainability disclosure without examining its alignment with actual sustainability performance (SP), which could provide a more comprehensive understanding of a firm's sustainability practices. Finally, this study did not differentiate between committees dedicated specifically to sustainability and those with broader responsibilities for CSR, potentially overlooking significant variations in governance effectiveness. Therefore, these limitations could be addressed in future research by incorporating multi-industry data, more recent reporting periods, comparisons with sustainability performance (SP), and a more detailed classification of sustainability-related governance structures.

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