
THE EFFECT OF INNOVATION AND FOREIGN OWNERSHIP ON ESG DISCLOSURE



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Abstract

This study aims to determine the effect of innovation and foreign ownership on ESG (Environmental, Social, and Governance) disclosure in companies indexed in the ESG Sector Leaders. This study uses secondary data sourced from company annual reports and sustainability reports for the period 2022-2024. Data processing uses panel data regression methods with EViews 13 software. Data collection was conducted using content analysis techniques. ESG disclosure refers to the 2021 GRI (Global Reporting Initiative) standard guidelines. This study produced a data sample of 99 observations for the 2022-2024 period. The novelty of this study involves control variables that are indicated to have an influence on ESG disclosure outside the selected independent variables. These control variables serve as proxies to capture company heterogeneity that may affect ESG disclosure. The findings reveal that innovation and foreign ownership do not have a proven effect on ESG disclosure in companies indexed as ESG Sector Leaders. The control variable of company age has an effect on ESG disclosure, while the control variables of company size and leverage do not affect ESG disclosure.

Keyword: ESG Disclosure, Foreign Ownership, Innovation, ESG Sector Leaders

INTRODUCTION

Indonesia is one of the countries that hosts production processes that generate very high emissions and carbon footprints (Chandra & Sumani, 2023). Irresponsible production activities not only cause environmental damage but also impact the health and welfare of the communities surrounding the company (Chandra & Sumani, 2023). Therefore, companies need to be aware of the importance of implementing sustainable business practices. Corporate sustainability and social impact are measured based on environmental, social and governance (ESG) factors (Al Farooque et al., 2022). Indonesia has successfully responded to the development of sustainability (ESG) issues, particularly with the announcement of the Phase II Sustainable Finance Roadmap by the Financial Services Authority (OJK). The hope is to create a sustainable financial ecosystem for all development activities (OJK, 2021).

According to the Sustainable Finance Institute Asia (SFIA), ESG in Asia has increased by 30% in 2023. Specifically, around 12% of companies listed on the Indonesia Stock Exchange (IDX) have now implemented ESG principles (Alizar, 2024). The implementation of ESG is reflected and outlined in the disclosure of information through sustainability reports. Thus, the relationship between ESG implementation and ESG disclosure is mutually supportive in achieving sustainability goals. This means that ESG implementation affects the quality of ESG disclosure.

According to stakeholder theory, companies must consider all stakeholder demands, including those of investors, customers, the community and regulators, in order to legitimize their activities (Al Amosh & Khatib, 2022). Transparency regarding company activities is one of the demands of stakeholders, as well as a means of communication with various stakeholders. Innovation plays an important role in supporting the company's long-term goals. This can contribute to more transparent and responsible ESG disclosure. With foreign ownership, there are higher demands for transparency and social responsibility. This can provide stronger input and expectations for companies to improve disclosure on ESG issues (Amosh & Mansor, 2020).

The results of research conducted by Dicuonzo et al., (2022) show that R&D innovation plays an important role in supporting corporate sustainability practices and increasing ESG transparency and disclosure. This research contrasts with the findings of Ramadhan et al., (2023) in the context of Islamic companies, which show that R&D has no effect on ESG disclosure. The results of research conducted by Al Amosh & Khatib, (2022) state that foreign ownership tends to demand higher transparency and encourages companies to meet international sustainability standards. However, this is refuted by the results of research by Wibisono et al., (2023), which reveals that foreign ownership has a negative effect on ESG disclosure. This indicates that the higher the value of foreign ownership, the lower the value of ESG disclosure. Thus, this study aims to follow up on the inconsistency in the research results. To that end, this study involves external factors that are suspected to influence ESG disclosure.

This study focuses on ESG Sector Leaders, where companies listed in ESG Sector Leaders have been sorted from various industries or sectors that have good ESG ratings. The object of this research is novel in this study. The reason for choosing this object is that PT Bursa Efek Indonesia (BEI) officially launched ESG Sector Leaders on 14 December 2020 (idx.co.id). Quoted from the IDX press release, IDX ESG Leaders is based on ESG risk assessments that measure the extent to which ESG is implemented by listed companies based on their exposure to risk in each business field.

Based on the above explanation, this study aims to examine the effect of innovation through R&D and foreign ownership on ESG disclosure in companies included in the ESG Sector Leaders category. Three control variables indicated to be relevant to this study were included. The control variables selected were company age, company size, and leverage.

Furthermore, this study contributes to management accounting literature by examining the influence of innovation and foreign ownership on ESG disclosure, framed using stakeholder theory. This study has theoretical contributions, namely, providing new contributions with the use of control variables, which strengthen the validity of the study as a literature insight into external factors that are expected to influence ESG disclosure. In terms of practical contributions, it provides companies with an in-depth view of the reality of innovation through R&D and the reality of foreign ownership in companies listed as ESG Sector Leaders, the extent to which they influence ESG disclosure, and serves as a reference for appropriate decision-making for companies.

REVIEW OF LITERATURE

Stakeholder Theory

Stakeholder theory is one of the recognized theories in the field of ESG research (Al Amosh et al., 2024). According to Wang et al., (2022), when environmental pollution, climate change, and rapid production of goods threaten the survival and quality of life of the community, the application of ESG in companies can urge them to pay attention to social responsibility, increase investment in research and development, and improve corporate governance mechanisms. Thus, good corporate governance activities can improve the relationship between companies and stakeholders in promoting sustainability.

Hypothesis Development

a. Innovation in ESG Disclosure

Clarkson et al., (2011), from a stakeholder theory perspective, argue that companies must consider environmental aspects when formulating business strategies. This is important because it can provide long-term economic benefits and help companies outperform their competitors, one of which is through innovation. Empirical evidence from Dicuonzo et al., (2022) shows a positive relationship between innovation and ESG performance, as this indicates companies' awareness of the importance of investing in innovation, both for sustainable development and survival. Companies that innovate in R&D tend to be more active and committed to disclosing ESG because innovation opens up opportunities to integrate sustainability and social responsibility into company operations Pinheiro et al., (2024). Thus, the hypothesis is formulated as follows:

H1: Innovation has a positive impact on environmental, social and governance (ESG) disclosure.

b. Foreign Ownership in ESG Disclosure

Al Amosh & Khatib (2022), based on the stakeholder theory perspective, state that foreign ownership contributes to improving corporate behaviour in disclosure. Companies and stakeholders gain trust and transparency with the presence of foreign shareholders in a company. Foreign investors encourage corporate governance practices and various disclosures, one of which is related to environmental, social and governance disclosure. The results of research conducted by Al Amosh & Khatib (2022) state that foreign ownership increases corporate performance disclosure in the area of sustainability in all aspects of the environment, society and governance, because foreign expertise is an important factor in

promoting sustainability disclosure in developing countries. Supported by research conducted by Mahmood et al., (2017) and Rustam et al., (2019), which revealed that foreign ownership plays an important role in motivating companies to participate in and report on sustainability activities. Therefore, the hypothesis is formulated as follows:

H2: Foreign ownership has a positive effect on environmental, social and governance (ESG) disclosure

RESEARCH METHOD

This study utilises secondary data sourced from companies' annual reports and sustainability reports for the period 2022-2024, using panel data. Data collection was conducted using content analysis techniques. ESG disclosure refers to the 2021 GRI (Global Reporting Initiative) standard guidelines. The selection of GRI 2021 is based on considerations that are particularly relevant to the context of Sector Leaders: First, GRI standards are one of the main reference frameworks used by Sustainalytics in its ESG risk assessment methodology (Sustainalytics, 2023), which forms the basis for the IDX ESG Sector Leaders assessment by the IDX. Second, Widyawati (2020) research found that 89% of Indonesian companies that publish sustainability reports use GRI. This creates alignment between research measurements and corporate disclosure practices in the sample.

The population in this study utilised ESG Sector Leaders. Sampling in this study employed purposive sampling, a technique of selecting samples according to criteria established by the researcher (Turner, 2020). Thus, only populations that met the requirements were selected as research samples. The selection criteria are as follows: first, companies that have been included in the ESG Sector Leaders index for the 2022-2024 period. The second criterion is companies that use the Global Reporting Initiative 2021 in their sustainability reports.

The population of this study includes 43 companies indexed as ESG Sector Leaders during the period 2022-2024. After sampling techniques were applied, there were 33 companies and 99 observations for the period 2022-2024.

The ESG disclosure calculation technique is carried out by comparing the number of indicators disclosed by the company with the total number of indicators contained in the 2021 GRI standard guidelines. The following is the calculation formula referring to the research (Adenina et al., 2024):

$$ESG\ score = \sum \frac{item\ disclosed}{total\ item} \times 100\%$$

Content analysis techniques are used to measure ESG disclosure indicators. To avoid subjectivity, assessors or observers other than researchers are needed so that the data obtained is reliable. Reliability in this study uses Cohen's Kappa test, which is a measurement involving assessments carried out by more than one assessor or observer (Wardhana, 2024).

The following are the results of Cohen's kappa calculation after two assessors conducted the assessment to ensure consistency. The results are as follows:

$$K = \frac{0,8491 - 0,5060}{1 - 0,5060}$$

The analysis results showed a Cohen's kappa value of 0.69, indicating substantial agreement between the two assessors. This level of reliability shows that both assessors had good consistency in categorising the research data. The following are the measurement proxies for each variable:

Table 1
Variable Measurement

Variable	Measurement
Innovation	Dummy variable = 1 if reporting, 0 if the opposite is true
Foreign Ownership	(Number of shares owned by foreigners / total shares outstanding) x 100%
Age	Research year – year of establishment
Size	LN (Total Asset)
Leverage	DER = Liability / Equity

Panel data regression analysis testing with four equation models was used in this study. The four equation models are as follows:

$$ESGD = \alpha + \beta_1 LnR\&D_{it} + \beta_2 FOROWN_{it} + \beta_6 AGE_{it} + \beta_7 SIZE_{it} + \beta_8 LEV_{it} + \varepsilon_{it} \quad (1)$$

$$ENV D = \alpha + \beta_1 LnR\&D_{it} + \beta_2 FOROWN_{it} + \beta_6 AGE_{it} + \beta_7 SIZE_{it} + \beta_8 LEV_{it} + \varepsilon_{it} \quad (2)$$

$$SOC D = \alpha + \beta_1 LnR\&D_{it} + \beta_2 FOROWN_{it} + \beta_6 AGE_{it} + \beta_7 SIZE_{it} + \beta_8 LEV_{it} + \varepsilon_{it} \quad (3)$$

$$GOVD = \alpha + \beta_1 LnR\&D_{it} + \beta_2 FOROWN_{it} + \beta_6 AGE_{it} + \beta_7 SIZE_{it} + \beta_8 LEV_{it} + \varepsilon_{it} \quad (4)$$

RESULTS AND DISCUSSION

Descriptive Statistical Analysis

Table 2
Results of Descriptive Statistical Analysis

	Mean	Std. Dev	Maximum	Minimum
ESGD	0.668485	0.161955	0.990000	0.190000
RnD	0.111111	0.315869	1.000000	0.000000
FOROWN	0.320763	0.254610	0.930900	0.000000
AGE	41.39394	21.67422	111.0000	7.000000
SIZE	31.58027	1.882525	35.42550	22.58210
LEV	3.512157	19.12682	190.5440	0.000000

Source: Eviews 13 Output Results

The data used was collected from 99 of the 33 companies over a period of three years. According to the descriptive statistics results, this provides a statistical overview of the dependent, independent, and control variables in this study. Based on the results shown in Table 1, Environmental, Social, and Governance Disclosure (ESGD) in this research sample shows that most companies in the sample have a fairly high and consistent level of ESG disclosure. The RnD variable shows that the intensity of research and development is still relatively low, with considerable variation between companies. Meanwhile, Forown shows moderate variability in foreign ownership structure, indicating that the research sample includes companies with quite diverse levels of foreign ownership.

Control variables show diverse characteristics, with company age indicating a mix of established and relatively new companies. Company size indicates a fairly good level of homogeneity in terms of company size, indicating that the majority of companies in the sample are within a relatively similar size range. The leverage variable indicates very high leverage variation between companies, with some companies having extremely high leverage levels (maximum 190.54).

A. Regression Analysis

The regression analysis results are presented in a table that includes p-values and coefficients. The following are the results of testing the regression model hypothesis involving control variables in this study.

Table 3
Regression Analysis Results

Variable	Model 1	
	p-value	Coefficient
RnD	0.9106	-0.0043
Forown	0.1225	0.1021
Age	0.0028	0.0813
Size	0.7203	-0.0667
Lev	0.3504	-0.0144
R-Squared	0.125169	
Adjusted R-Squared	0.078135	
Prob(F-Statistics)	0.027066	

Source: Eviews 13 Output Results

In Table 3, Model 1 shows that innovation (RnD) and foreign ownership (Forown) with p-values of 0.9106 and 0.1225, respectively, exceed the threshold of 0.05, indicating that they have no effect on ESG disclosure. Meanwhile, the only control variable that affects ESG disclosure is company age, with a p-value of 0.0028, while the control variables of size and leverage, with p-values of 0.7203 and 0.3504, exceed 0.05, meaning they have no effect on ESG disclosure.

B. Robustness Check

This study also included a robustness check, in which the main model was retested by dividing the ESG dependent variable into three components, namely environmental disclosure (model 2), social disclosure (model 3), and governance disclosure (model 4). Consistent results showed the model's resilience to variations in ESG measurements. The following are the results of the robustness check:

Table 4
Robustness Check Results

Variable	Model 2	Model 3	Model 4
	p-value	p-value	p-value
RnD	0.8384	0.6278	0.8449
Forown	0.3060	0.0631	0.4825
Age	0.1148	0.0099	0.0000
Size	0.7281	0.9550	0.4949
Lev	0.1514	0.2699	0.3649

Source: Eviews 13 Output Results

Based on Table 4, Model 2 shows that the variables of innovation and foreign ownership as well as the control variables (age, size and leverage) do not have a significant effect on environmental disclosure. Model 3 shows that innovation and foreign ownership do not affect social disclosure. Meanwhile, the control variable of company age with a p-value of $0.01 < 0.05$ means that it has a positive effect on social disclosure, while the control variables of size and leverage have no effect on social disclosure. Model 4 shows that innovation and foreign ownership with a p-value above 0.05 have no effect on governance

disclosure, while the control variable of company age with a p-value of $0.0000 < 0.05$ means that it has a positive effect on governance disclosure, and the control variables of size and leverage exceed the threshold of 0.05, meaning that they do not have a significant effect on governance disclosure. Thus, it can be concluded that the robustness check results show that the direction and significance of innovation and foreign ownership are generally consistent with the main regression results, namely that they do not have a significant effect on ESG disclosure. The consistency of these results indicates that the empirical findings are not sensitive to the alternative model specifications used in the robustness test.

Innovation (RnD) in Environmental, Social, and Governance (ESG) Disclosure

The results of this study reject the hypothesis by showing that innovation has no influence on environmental, social, and governance disclosure. These findings support the research by Ramadhan et al., (2023), which states that although R&D is often associated with innovation and environmental efficiency, not all R&D activities focus on ESG issues. On the one hand, there is a theoretical assumption that R&D investment will contribute to the development of environmentally friendly technology and sustainable business practices. However, empirical reality shows that corporate R&D allocation is still oriented towards achieving short-term competitive advantage and profit maximization, rather than long-term sustainability goals. Not all companies report R&D results in the context of sustainability or ESG. Companies are more likely to allocate R&D to the development of new commercial products or technologies, improvements in production efficiency, rather than environmental sustainability, and innovation activities that do not necessarily impact transparency or sustainability reporting.

This research can be explained through the stakeholder theory approach, which states that companies must pay attention to the interests of all stakeholders, not just shareholders Al Amosh & Mansor (2021). According to this perspective, companies operating in complex networks are stakeholders who have different interests, expectations, and powers to influence company behavior. Stakeholder theory argues that sustainable competitive advantage and long-term value creation can only be achieved when companies are able to identify, understand, and respond to the expectations of various stakeholder groups. In this context, companies will allocate resources and attention according to the intensity and legitimacy of stakeholder pressure. If companies do not perceive pressure or demands from key stakeholders such as regulators, sustainability-oriented investors, and the general public regarding ESG transparency, then R&D activities are unlikely to be directed towards supporting sustainability reporting. This means that even if companies innovate, if there are no stakeholder expectations regarding ESG transparency, the results of these innovations will not be reflected in ESG disclosure.

Robustness checks on the three ESG components, namely Environmental, Social, and Governance, showed consistent results. First, innovation had no effect on environmental disclosure. The research by Evana et al., (2021) supports this finding, revealing that companies with high R&D investment tend to focus their resources and managerial attention on technological and product innovation, rather than on external reporting. R&D is more oriented towards long-term value enhancement or competitive advantage, whereas environmental disclosure is responsive to stakeholder and regulatory pressures. Therefore, it may be delayed or reduced when the company's focus is not on public reputation.

Second, innovation has no effect on social disclosure. Based on the findings of Fauziah et al., (2020), companies separate product innovation and process innovation from

social activities, so that R&D activities are not considered part of social disclosure. Third, innovation has no effect on governance disclosure. This finding is in line with the research by Chen et al., (2019), which reveals that companies with high innovation (R&D) activities do not show different governance patterns compared to those with low R&D. This means that R&D activities do not directly encourage increased governance disclosure, such as board structure or transparency of executive decisions.

Foreign Ownership in Environmental, Social, and Governance (ESG) Disclosure)

The results of this study reject the proposed hypothesis by proving that foreign ownership has no influence on environmental, social, and governance disclosure. These results are in line with Wibisono et al., (2023), who state that relatively low or moderate levels of foreign ownership do not exert sufficient pressure for increased ESG disclosure. This is due to the lack of foreign control in decision-making and the fact that foreigners focus more on short-term returns than on social and environmental sustainability aspects. These findings are not in line with the expectations expressed by stakeholder theory, which states that the higher the foreign ownership, the more management tends to be encouraged to improve ESG disclosure.

Wibisono et al., (2023) revealed that this was due to the low average foreign ownership in the sample, meaning that foreign parties did not have significant control over company regulations and did not sufficiently motivate companies to disclose ESG information more openly. From a stakeholder theory perspective, this research shows that the existence of foreign ownership that is not large enough and does not have significant control does not automatically encourage companies to increase ESG disclosure.

If the proportion of foreign ownership is relatively small or only as portfolio investors (not strategic), then foreign pressure on company management to disclose ESG becomes insignificant. This is in line with stakeholder theory, which explains that companies will increase sustainability disclosure if stakeholders demand more transparent information regarding environmental, social, and governance performance. However, as Sandri et al., (2021) state, not all stakeholders (including foreign ones) have high demands for sustainability. Foreign influence can be low if there is no direct interest in the company's social or environmental impact. Companies are more responsive to stakeholders who are more active in demanding aspirations and exerting social influence.

Testing of the three ESG components, namely Environmental, Social, and Governance, showed consistent results. First, foreign ownership had no influence on environmental disclosure. This finding indicates that foreign investors are more focused on profit-making than on environmental protection initiatives. Gede et al., (2024) state that in the context of Malaysia, this indicates that capital markets in developing countries may not yet provide significant rewards for environmental disclosure. Second, foreign ownership has no effect on social disclosure. Garanina & Aray, (2021) explicitly state that foreign investors tend to lack strong incentives to encourage increased social disclosure because foreign parties are more oriented towards optimising ownership structures and tax efficiency than sustainable business practices. Third, foreign ownership has no influence on governance disclosure. The results of this study can be understood through the lens of stakeholder theory, which emphasises the complexity of the relationship between companies and various stakeholder groups. This theory shows that stakeholder relationships are not always linear and are influenced by various contextual factors. Foreign investors may not have a deep understanding of the local governance context. The governance standards that apply in the

foreign investor's home country may not necessarily be suitable or directly applicable in the country of investment, so foreign parties do not exert effective pressure to improve governance disclosure.

Discussion of Control Variables

- **Age of the Company**

After reviewing the use of control variables, environmental, social and governance (ESG) disclosure is significantly influenced by the control variable of company age. The longer a company has been operating, the higher the expectations of the public and stakeholders regarding the company's social and environmental responsibilities, which are realized through ESG disclosure. Older companies tend to have gone through many stages of organizational development, and long-established companies are more aware of the importance of maintaining public legitimacy, reputation, and meeting investor expectations (Roestanto et al., 2022). From a stakeholder theory perspective, long-established companies have more and diverse stakeholders. Therefore, demands for transparency and accountability on social and environmental issues also increase. ESG disclosure serves as a communication tool for companies to demonstrate to stakeholders that they are committed to sustainability (Yustin & Suhendah, 2023).

These findings are in contrast to those of Nguyen et al., (2021), who stated that the age of a company does not significantly affect the level of corporate social responsibility disclosure. These findings indicate that the length of time a company has been in existence does not determine how extensive and transparent its sustainability information disclosure is. In the context of public companies in Vietnam, other factors such as company size, government ownership, industry sensitivity and liquidity levels have proven to be more dominant in influencing sustainability reporting practices. Thus, the age of a company is not a determining factor in sustainability disclosure, and the implication is that investors and stakeholders cannot use age as the main reference for assessing CSR transparency, but rather need to pay attention to other more relevant company characteristics.

The results of the robustness check show that company age has a significant positive effect on model 3 (social disclosure) and model 4 (governance disclosure). However, the results for model 2 (environmental disclosure) show no significant effect. Although there are theoretical arguments supporting the role of company age in environmental disclosure, empirical evidence shows that other factors such as company size, corporate governance characteristics and environmental performance are more dominant in determining the quality of environmental disclosure. This indicates that in the context of modern sustainability reporting, a company's ability to make quality environmental disclosures does not depend on the length of time the company has been operating, but rather on the company's strategic commitment and governance structure.

- **Company Size**

The findings of this study also reveal that the control variable of company size does not significantly affect ESG disclosure. Dicuonzo et al., (2022) state that company size is not a major factor influencing ESG disclosure. This explanation indicates that institutional pressures such as regulations and social norms are not always associated with company size but are more determined by industry sector characteristics and internal strategies such as commitment to sustainability. This perspective shows that institutional pressure is more effective than the assumption that large companies automatically face greater pressure to disclose ESG information. Thus, even small companies with innovative strategies and strong

governance structures can still demonstrate good ESG performance. This shows that financial capacity does not automatically translate into a commitment to social and environmental responsibility practices. Sinaga & Teddyani, (2020) provide a contextual explanation that the low influence of company size on sustainability disclosure may be due to low regulatory and public pressure for sustainability transparency. These findings emphasize the important role of supervisory bodies, regulators and investors in encouraging broader sustainability disclosure without relying solely on company size.

In the robustness check results, the findings show consistent results that company size has no significant effect on environmental disclosure (model 2), social disclosure (model 3) and governance disclosure (model 4). The consistency of the results in all three aspects of ESG disclosure shows that this phenomenon occurs across the board. This means that the company size factor does not apply to all aspects of ESG disclosure, but only to one aspect.

- **Leverage**

Company leverage, as measured by the debt-equity ratio (DER), does not have a significant effect on ESG disclosure. Theoretically, companies with high leverage should have greater motivation to disclose ESG information as a form of signalling mechanism to creditors. According to Fuadah et al., (2022), this finding is not in line with expectations based on stakeholder theory. The theory states that companies that have financial relationships with external parties, such as creditors, are expected to be more motivated to increase transparency through ESG disclosure. This aims to reduce concerns about social and environmental risks that could affect the company's ability to meet its financial obligations. However, in reality, the effect of leverage on ESG is insignificant, indicating that this theoretical mechanism is not in line with predictions. Creditors likely rely on alternative risk assessment mechanisms that do not depend on public ESG disclosure. These findings show the same results in a robustness check, which reveals that leverage does not significantly affect environmental disclosure (model 2), social disclosure (model 3) and governance disclosure (model 4)

CONCLUSION

This study found that innovation and foreign ownership do not have a proven effect on ESG disclosure. These findings reject the hypothesis proposed in this study. The conclusions of these findings are also supported by the results of testing the three components of ESG, which include environmental, social and governance factors. These findings indicate that the role of innovation and foreign ownership structure on ESG disclosure has not consistently encouraged comprehensive ESG disclosure. There are indications that companies indexed as ESG Sector Leaders are likely to have high ESG standards that are inherent to these companies.

The results of this study found that innovation and foreign ownership contradict stakeholder theory predictions, which state that companies will respond to pressure and expectations from stakeholders by increasing transparency, including through ESG disclosure. This shows that there are different implications regarding the findings of this study. It is possible that not all innovation (R&D) activities are directed towards ESG objectives, such as energy efficiency, low emissions, and social issues, and that foreign investors may be more oriented towards financial gains than sustainability issues, thus not exerting sufficient pressure on ESG disclosure. In addition, this study has practical implications for the management of companies indexed as ESG Sector Leaders. Companies

need to evaluate the direction of innovation to support sustainability issues, and management needs to ensure that research and development (R&D) investments also include sustainability solutions, such as energy efficiency, waste reduction, or the development of environmentally friendly products. Thus, companies and regulators need to play an active role in making ESG part of their core strategy and not just a reporting formality.

This study has limitations in terms of its relatively short observation period of only three years. This is due to the fact that ESG disclosure is based on GRI 2021, which came into effect at the beginning of 2023. As a result, not many companies have published sustainability reports using the latest GRI standards as they are still in the adjustment phase. This situation has limited the time period used by researchers. Further research is recommended to extend the observation period so that the data obtained is sufficiently varied and can easily capture strong patterns of relationships between variables. This would provide more accurate and stable results.

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