

Research Article

The Effect of Sustainability Reporting Practices on Environmental Performance in Manufacturing Firms Listed on the Indonesia Stock Exchange from 2018 to 2022

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Abstract: Sustainability reporting has been increasingly popular in recent years as businesses become more aware of environmental challenges. 96% of the top businesses in the world have implemented sustainability reporting practices, according to a KPMG survey. The effect of sustainability reporting practices on environmental performance is examined in this study. Sustainability reports, the implementation of GRI standards, and external assurance are used to gauge sustainability reporting procedures; firm size is used as a control variable. In this study, 305 observational data from manufacturing firm over a five-year period (2018-2022) were analysed quantitatively using binary logistic regression. The findings indicate that while the use of GRI standards has a positive and significant effect on environmental performance, sustainability reports and external assurance have no significant effect. These findings show that the implementation in GRI standards encourages business commitment to sustainable practices and transparency, both of which have a significant impact on environmental performance. In the meanwhile, external assurance and sustainability reports tend to be mostly symbolic and do not demonstrate a real commitment to environmental improvement. Environmental performance is positively impacted by the control variable, firm size. These findings suggest that a company's environmental performance is correlated with its size. As a control variable, firm size contributes to maintaining and clarifying the relationship between environmental performance and sustainability practices while ensuring objective and valid study findings. This study emphasizes the importance of strengthening the quality of sustainability reporting and expanding the application of external standards and assurance to improve the credibility and accountability of corporate environmental performance in Indonesia.

Keywords: Sustainability Reports; GRI Standards; External Assurance; Environmental Performance; Firm Size; Manufacturing Firms

1. Introduction

As companies grow more conscious of their social and environmental effects, sustainability concerns are receiving more and more attention worldwide. 96% of large international companies have adopted sustainability reporting, and almost 80% of Indonesian businesses have adopted the Global Reporting Initiative (GRI) standards, according to a KPMG survey conducted in 2022 (PricewaterhouseCoopers (PwC), 2022). In order to measure and disclose economic, social, and environmental performance in line with the SDGs (SDGs Bappenas, 2022) and the Triple Bottom Line principle (Elkington, 1998), sustainability reports are essential. POJK No. 51/2017 in Indonesia strengthens this reporting requirement by mandating that businesses provide sustainability reports (Otoritas Jasa Keuangan, 2017).

The use of external assurance, in addition to sustainability reports, is crucial for boosting report credibility and stakeholder trust (Simoni et al., 2020; Bellucci & Manetti, 2018). However, the outcomes of earlier studies have been inconsistent. According to Khatri & Kjørland (2023), environmental performance was positively impacted by sustainability reporting and the implementation of GRI standards, while external assurance had no effect. On the other hand, Braam & Peeters (2018) and (Simoni et al., 2020) discovered a positive relationship between environmental performance and external assurance.

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The important role of corporate responsibility for environmental management is demonstrated by a number of environmental contamination cases involving Indonesian manufacturing firms. Weak corporate sustainability practices are evident in the cases of PT Unilever Indonesia Tbk, which was identified by the Aliansi Zero Waste Indonesia (2022) as a significant contributor to sachet packaging waste, and PT Japfa Comfeed Indonesia Tbk, which is accused of contaminating the Tapak Kuda River through the unfiltered disposal of hazardous and toxic waste (Handru & Tina, 2020). This circumstance suggests subpar environmental performance, which is a crucial metric for evaluating a business's dedication to sustainability (Meiyana & Aisyah, 2019). In addition to demonstrating social responsibility, good environmental performance may improve a company's reputation and appeal to investors, which results in financial benefits over the long term (Hansen & Mowen, 2018).

Based on this phenomenon, the goal of this study is to investigate how sustainability reporting practices—such as sustainability reports, the implementation of GRI standards, and external assurance—affect the environmental performance of manufacturing firms listed on the Indonesia Stock Exchange between 2018 and 2022. It is anticipated that this study will offer an empirical addition to the knowledge of how sustainability reporting techniques might enhance business environmental performance in Indonesia.

2. Literature Review

Legitimacy Theory

Legitimacy theory, according to Dowling and Pfeffer (1975), is a resource that permits companies to carry on with their operations through a social compact between the firm and society. Shocker and Sethi (1973) emphasized that a company's sustainability depends on its ability to have a positive social, political, and economic impact. Suchman (1995) defined legitimacy as the belief that an organization's activities align with societal values and norms, echoing Deegan (2002) who emphasized legitimacy as a social construct that connects a company to its environment. Because society is dynamic, legitimacy also changes according to social, political, economic, and environmental conditions, requiring companies to adapt to survive.

In the context of sustainability, legitimacy theory explains the incentive for companies to transparently report non-financial performance to maintain public trust. A strategic method for showcasing contributions to all three of these challenges is sustainability reporting. The concept of materiality serves as a legitimacy tool (Ngu & Amran, 2021), where companies disclose relevant information to stakeholders to strengthen credibility. Legitimacy theory encourages companies to make sustainability reporting not merely symbolic, but also have a real effect on environmental performance (Deegan, 2002), while also demonstrating a commitment to social responsibility and long-term sustainability.

Stakeholder Theory

According to Freeman (1984), companies should consider the interests of everyone involved in or affected by their activities, not only shareholders. These stakeholders include creditors, consumers, suppliers, governments, and communities. Stakeholders are individuals or organizations that have a direct influence on the company's survival. Their involvement enables effective communication and helps companies understand multiple perspectives to reach comprehensive solutions. Donaldson and Preston (1995) emphasize that companies have broader social, environmental, and economic responsibilities than simply maximizing profits.

According to Hörisch et al. (2014), positive relationships with stakeholders can be maintained if companies are able to meet their expectations and interests. Therefore, this theory explains how pressure from stakeholders drives companies to increase transparency and accountability through sustainability reporting. Reporting transparency is not merely a means of communication, but rather a strategy for building reputation and public trust. Influential stakeholders can pressure companies to adopt better environmental management practices (Freeman, 1984). Thus, sustainability reporting serves as a strategic management and accountability tool that helps companies meet the demands of various parties and support long-term environmental and sustainability goals (Donaldson & Preston, 1995).

Environmental Performance

The degree to which institutions, policies, and economic activity impact ecological sustainability is reflected in environmental performance (Andrade et al., 2022). The relationship between environmental conservation and economic development is reflected in environmental performance. Green production has been shown to be positively associated

with higher ESG scores, indicating improved environmental performance as global awareness of sustainability grows (Almaqtari et al., 2023). The degree to which a business can manage and enhance the environmental effect of its activities is indicated by its environmental performance (Xaverius A W & Rahayu, 2023). This evaluation is crucial for ensuring long-term sustainability and mitigating environmental risks.

Conceptually, corporate participation in environmentally friendly initiatives is driven by two factors: the pursuit of competitive advantage (Haque & Ntim, 2020) and legitimacy strategies to gain social support (Al-Shaer & Zaman, 2016; Ntim, 2016). Environmental performance assessments typically include indicators such as natural resource conservation, carbon emission reduction, waste management, energy efficiency, and the use of sustainable raw materials (US Environmental Protection Agency, 2022).

In Indonesia, the Ministry of Environment and Forestry (KLHK) has implemented the Corporate Performance Rating Program in Environmental Management (PROPER) based on Ministerial Regulation No. 1 of 2021. This program aims to encourage companies to seriously manage their environmental impacts through a performance-based assessment system that also functions as a public oversight mechanism (Lestari & Khomsiyah, 2023). PROPER assesses performance from the basic level to sustainability innovation, with color ratings: gold, green, blue, red, and black (Menlhk, 2022).

Sustainability Reports

According to the Global Reporting Initiative (2013), sustainability reports help companies understand the link between sustainability issues and strategy, performance, and change management toward a sustainable economy. These reports balance profitability, social responsibility, and environmental management. If a report displays concrete sustainability efforts and performance data, it can be categorized as a sustainable report.

Academically, sustainability reports serve as a tool for assessing the effect of reporting practices on a company's environmental performance (Aluchna et al., 2023). The GRI emphasizes that non-financial reporting includes ESG aspects. According to Clarkson et al. (2008), businesses that do well in terms of the environment typically submit transparent reports, whereas those that perform poorly tend to provide less information. Sustainability reports are used to: (1) inform stakeholders about a company's economic, social, and environmental implications; and (2) allow the public to evaluate the degree of consistency between assertions and actual actions (Clarkson et al., 2008). The validity and reputation of a business are impacted by this transparency, which makes it crucial. The public views sustainability reports as evidence of social responsibility and successful sustainable performance (Axjonow et al., 2018).

GRI Standards

The Global Reporting Initiative (GRI) plays a key role in establishing globally recognized sustainability reporting guidelines. According to Global Reporting Initiative (2021), these guidelines help companies disclose their social, environmental, and economic impacts in a transparent and measurable manner, with the goal of creating reliable, consistent, and relevant reporting for stakeholders. Companies using GRI standards demonstrate their contribution to sustainable development through quantitative and qualitative data.

The GRI framework is modular, consisting of Universal Standards, Sector Standards, and Topic Standards. Universal Standards provide general reporting guidance, Sector Standards tailored to industry needs, while Topic Standards address thematic issues such as energy, water, emissions, and waste (Global Reporting Initiative, 2021). For example, GRI 302 addresses energy reporting, GRI 303 addresses water and waste, GRI 305 addresses greenhouse gas emissions, and GRI 306 addresses waste management. These indicators ensure reporting is not merely a formality but reflects real sustainability practices.

According to KPMG (2020) implementing GRI standards helps companies identify areas for environmental performance improvement, encourages innovation in resource management, and reduces negative impacts. GRI-based reporting enhances credibility, transparency, and stakeholder trust, which in turn strengthens constructive pressure for companies to continue improving their social and environmental responsibilities.

External Assurance

Global Reporting Initiative (2013) defines external assurance as an impartial third-party review method to examine the reliability, validity, and legitimacy of data in a sustainability report. The purpose is to guarantee that the information supplied reflects the genuine status of a company's governance, social, and environmental performance. In addition to assessing report content, this process also evaluates reporting methods and mechanisms, thereby enhancing transparency and accountability to stakeholders (Anisa & Nikmah, 2023). Global

Reporting Initiative (2021) emphasizes that external assurance is a crucial element in implementing the principles of accountability and transparency, as it involves an independent party verifying a company's sustainability performance. This action shows the company's moral commitment to social and environmental responsibility and enhances the report's credibility.

According to Global Reporting Initiative (2013), external assurance also provides strategic benefits, such as increasing trust in the quality of sustainability data from management, investors, regulators, and the public. Independently validated data serves as a basis for strategic decision-making and strengthens the company's ethical and transparent image, in line with legitimacy theory (Juliandry & Sugioko, 2019). Global Reporting Initiative (2013) explains that external assurance can include examining data collection techniques and validating data quality to improve report reliability. Unlike financial statement audits, which are quantitative and standardized, external assurance is more flexible because it covers broader issues—such as supply chain ethics, social engagement, and waste management—that vary across companies and industries. Therefore, external assurance procedures must be contextualized and tailored to the complexity of a company's operational impacts.

Firm Size

Firm size significantly influences public perception and investor confidence because larger companies have broader social, economic, and environmental impacts. Expectations for accountability and transparency increase with firm size (Roviqoh & Khafid, 2021). According to Wulandari & Machfoedz (1994), firm size is measured through quantitative indicators such as stock market value, total assets, and log size, which reflect financial stability, resource capacity, and growth prospects. Larger firms have better access to funding, infrastructure, and the ability to implement social and environmental responsibility (CSR). Information disclosure and the implementation of international reporting standards such as the GRI also strengthen a company's reputation and legitimacy. Rudangga & Sudiarta (2016) and Khatri & Kjærland (2023) define firm size based on total assets, where larger assets indicate higher operational and financial capacity. For consistent analysis purposes, firm size is often expressed in the form of the natural logarithm of total assets ($\ln$ Total Assets), as suggested by Wulandari & Machfoedz (1994), so that comparisons between companies can be made proportionally and objectively.

Conceptual Framework

The conceptual framework in this study is described as follows.

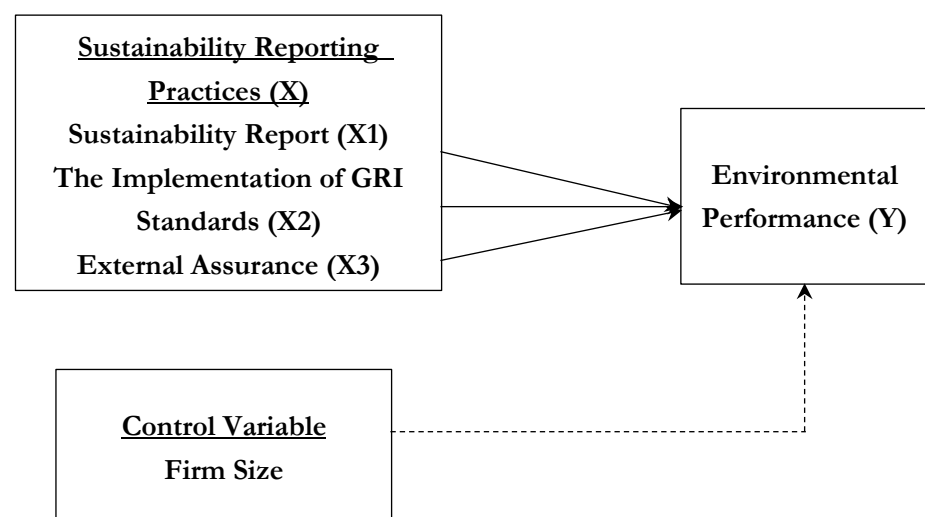


Figure 1. Conceptual Framework

Hypothesis

H1: Sustainability reports have a positive effect on environmental performance

Sustainability report help firms assess the linkages between sustainability issues and their strategy, performance, and planning toward a sustainable economic system (Global Reporting Initiative, 2013). These reports serve as internal evaluation tools and external communication tools for stakeholders. According to legitimacy theory, transparency and accountability are

necessary to maintain public trust (Aluchna et al., 2023). Sustainability reporting boosts reputation, attracts investors, and improves environmental performance, making it an essential tactic for maintaining a business's credibility and ability to compete in the market. According to study by Khatri & Kjærland (2023), there is often a link between sustainability reports and the environmental performance of Nordic corporations. Research by Al-Shaer & Hussainey (2022) and Nazari et al. (2017) suggests an association between environmental performance and sustainability reporting. Further research by Jiang et al. (2021) also indicates that the development of high-quality companies is positively influenced by environmental information disclosure. According to research by Papoutsis & Sodhi (2020), disclosures in sustainability reports (environmental indicators) have a precise and significant relationship with actual sustainability performance.

H2: The implementation of GRI standards has a positive effect on environmental performance

According to the Global Reporting Initiative (2021), implementing the GRI standards helps companies report their social, economic, and environmental effects in an open and structured manner. These standards ensure that important factors, particularly those related to environmental performance, are adequately explained, making reports more comprehensive and accessible to the public and stakeholders. This transparency enhances accountability and enables objective evaluation of sustainability performance. Furthermore, implementing the GRI strengthens an organization's image, social legitimacy, and public trust by proving its commitment to transparency and sustainable environmental management. According to study by Khatri & Kjærland (2023), the environmental performance of Nordic businesses is positively and significantly impacted by GRI standards. Another study by Artamelia et al. (2021) found that environmental performance has a favourable and significant influence on environmental disclosure. The PROPER grade is used to assess environmental performance, whereas the GRI standards are used to monitor environmental disclosure. Research by Khan et al. (2023) further demonstrates that sustainability disclosure, comprising economic, social, and environmental factors based on GRI criteria, has a beneficial influence on better environmental performance.

H3: External assurance has a positive effect on environmental performance

External assurance, according to the Global Reporting Initiative (2013), is an impartial third-party evaluation procedure that assesses the dependability, correctness, and completeness of data in a sustainability report. The objective is to boost stakeholder trust in the information provided and the report's reliability. This process ensures that sustainability data is supported by concrete evidence and assessed objectively. In addition to strengthening reputation and public trust, external assurance also demonstrates a company's commitment to ethical and transparent environmental management. Research by Khatri & Kjærland (2023) found that external assurance on sustainability reporting and environmental performance have an insignificant relationship. However, a number of other research, like those by Simoni et al. (2020), determined that external assurance and environmental performance were positively correlated. Additionally, Braam & Peeters (2018) study found a strong and favourable correlation between external assurance on sustainability reporting and sustainability performance. Broader third-party assurance coverage is typically preferred by businesses with high CSP (Corporate Social Performance) than those with low CSP. The perceptions of investors and other stakeholders regarding the dependability of published CSP information may be actively managed by employing external assurance as a risk management strategy. External assurance on sustainability reports has a beneficial impact and will be more important when paired with high sustainability performance, according to research by Alon A. & Vidovic M. (2015).

3. Method

Sample Selection and Data

The population of the research consisted of manufacturing businesses that were listed on the Indonesia Stock Exchange between 2018 and 2022. The sample was selected via purposeful sampling in accordance with certain criteria, including: a). Manufacturing firms who were listed on the IDX and continuously used this from 2018 to 2022; b). Manufacturing firms taking part in PROPER and using it continuously from 2018 to 2022; c). From 2018 to 2022, manufacturing businesses regularly posted yearly reports on the IDX website or their own websites.

The overall sample size for this study was 305 throughout the course of the five-year study period, with 61 of the 236 manufacturing firms meeting these requirements. Annual reports and sustainability reports from the IDX website or the official websites of each firm served as the data sources. Another source of information was the outcomes of PROPER.

Measurement

Dependent Variable: Environmental Performance

According to the KLHK explanation of each PROPER rating, the study's PROPER ratings are divided into two categories: 0 and 1.

- 1) Firms that get red and black PROPER ratings (scores 2 and 1) are given Code 0. These firms are classified as having bad environmental performance and consequently receive red and black ratings from the KLHK.
- 2) Firms that get gold, green, and blue PROPER ratings (scores 5, 4, and 3) are given Code 1. These firms are classified as having good environmental performance and are accordingly awarded gold, green, and blue ratings by the KLHK.

Independent Variables: Sustainability Reporting Practices

We used three measures of sustainability reporting practices—sustainability reports, GRI standards implementation, and external assurance—in accordance with research by Khatri & Kjærland (2023). A dummy variable that scored 1 if the firm released a sustainability report and 0 otherwise was used in this study to measure sustainability reports. A dummy variable that scored 1 if the business used GRI-based standards in its sustainability reporting and disclosure and 0 otherwise was used to assess the use of GRI standards in this study.

Two factors led to the selection of this variable as an indicator in this investigation. First, since the early 2000s, businesses have primarily adhered to GRI guidelines. Second, the global framework for sustainability reporting is dominated by GRI standards. A dummy variable was used in this study to quantify external assurance; a score of 1 indicated that the firm has ensured its sustainability reporting and disclosure through an external audit or accounting body, and a score of 0 otherwise.

Control Variable: Firm Size

In this research, firm size acts as a control variable. Khatri & Kjærland (2023) state that the business size in this study is calculated using the natural logarithm of total assets.

$$\text{Size} = \ln(\text{Total Assets})$$

Study Model

The following binary logistic regression equation is used to examine how sustainability reporting practices effect environmental performance.

$$EP = \alpha + \beta_1 SR + \beta_2 GRI + \beta_3 SRA + \beta_4 SIZE$$

4. Results and Discussion

Descriptive Statistics

Table 1. Descriptive Statistics Results.

	N	Minimum	Maximum	Mean	Std. Deviation
SR	305	0	1	0.60	0.490
GRI	305	0	1	0.41	0.493
SRA	305	0	1	0.10	0.298
SIZE	305	26.998	32.826	29.45333	1.395570
EP	305	0	1	0.91	0.280

With a mean value of 0.60, a minimum value of 0, and a maximum value of 1, the descriptive statistical test findings for the Sustainability Report (SR) variable from 305 samples showed that the average sample firm disclosed a sustainability report of 60%. A good data distribution is shown by the standard deviation of 0.490, which is lower than the mean.

With a mean value of 0.41, a minimum value of 0, and a maximum value of 1, the descriptive statistical test results for the GRI Standards Implementation variable from 305 samples showed that the average sample firm adopted the GRI standards at a rate of 41%. A bad data distribution is shown by the standard deviation value of 0.493, which is higher than the mean.

With a mean value of 0.10, a minimum value of 0, and a maximum value of 1, the descriptive statistical test findings for the External Assurance (SRA) variable from 305 samples showed that the average sample firm employed external assurance at a rate of 10%.

A bad data distribution is shown by the standard deviation value of 0.298, which is higher than the mean.

The Firm Size variable's descriptive statistical test results from 305 samples showed a mean value of 29.453. PT Century Textile Industry Tbk. (CNTX) has a minimum value of 26.998 in 2021. PT Indofood Sukses Makmur Tbk (INDF) has a maximum value of 32.826 in 2022. A good data distribution is shown by the standard deviation value of 1.395570, which is smaller than the mean.

Descriptive statistical tests for the Environmental Performance (EP) variable from 305 samples showed a mean value of 0.91, a minimum value of 0, and a maximum value of 1, suggesting that the average sample firm performs well in terms of the environment. Good data distribution is shown by the standard deviation value of 0.280, which is lower than the mean value.

Overall Model Fit Test

Table 2. Overall Model Fit Test Result.

-2 Log Likelihood awal (block number = 0)	177.753
-2 Log Likelihood akhir (block number = 1)	154.223

According to Table 2, the -2 Log Likelihood (-2LL) value was 177.753 before to the independent variables being input, and it dropped to 154.223 following their addition. Because the initial -2LL is larger than the end -2LL, this drop in value suggests that the regression model's quality has increased. Thus, factors like sustainability report (SR), GRI standard implementation (GRI), external assurance (SRA), and firm size (SIZE) may be included to the study model to make it better.

Goodness of Fit Test

The following are the hypotheses used.

H_0 : The model is suitable for use

H_a : The model is not suitable for use

Table 3. Goodness of Fit Test Result.

Chi-square	df	Sig.
15.100	8	0.057

Table 3 indicates that the significance value (Sig.) is 0.057. If the significance value exceeds 0.05, H_0 is considered acceptable. These findings show that the study's regression model fits the eligibility conditions and can reliably predict observed values.

Determination Coefficient Test (Nagelkerke R Square)

Table 4. Determination Coefficient Test (Nagelkerke R Square) Results.

-2 Log Likelihood	Cox & Snell R Square	Nagelkerke R Square
154.223	0.074	0.168

According to Table 4, the Nagelkerke R Square value of 0.168 indicates that the independent variables—sustainability report (SR), GRI standard implementation (GRI), external assurance (SRA), and company size (SIZE)—can explain 16.8% of the dependent variable—environmental performance. Meanwhile, the remaining 83.2% is influenced by other factors not included in this study.

Hypothesis Test Results

Partial T Test (Wald Test)

Table 5. Partial T Test (Wald Test) Result.

	B	S.E.	Wald	Sig.	Exp(B)
SR	-0.102	0.474	0.046	0.830	0.903
GRI	1.668	0.823	4.112	0.043	5.302
SRA	16.446	7249.150	0.000	0.998	13878988.87
SIZE	0.526	0.229	5.270	0.022	1.692

The regression coefficient for the Sustainability Report (SR) variable is 0.102, which is negative. The Sustainability Report variable has no partial impact on Environmental Performance since it received a significance value of 0.830, which is higher than 0.05.

In addition, the GRI Standards Implementation variable shows a positive regression coefficient of 1.668. The GRI Standards Implementation variable has a minor impact on environmental performance, as indicated by the significance value of 0.043, which is less than 0.05. Additionally, the Exp (B) value shows that the group with a value of 1 has a higher

probability (odds) of the event happening than the group with a value of 0 for the independent variable. With an Exp(B) value or odds ratio of 5.302 for the GRI Standards Implementation variable, manufacturing firms that apply GRI standards are 5.302 times more likely to achieve good environmental performance than those that do not.

Additionally, there is a positive regression coefficient of 16.446 for the External Assurance (SRA) variable. The significance value for the External Assurance variable is 0.998, which is higher than 0.05. Consequently, there is no partial impact of the External Assurance variable on Environmental Performance.

Additionally, there is a positive regression coefficient of 0.526 for the Company Size (SIZE) variable. The significance value of the Company Size variable is less than 0.05, at 0.022. Consequently, Environmental Performance is somewhat impacted by the Firm Size variable. Additionally, the Firm Size variable displays an Exp(B) value or odds ratio of 1.692, which may be understood to indicate that bigger manufacturing firms have 1.692 times higher probabilities of having strong environmental performance than smaller manufacturing firms.

Simultaneous Significance Test (Omnibus Tests of Model Coefficients)

Table 6. Simultaneous Significance Test (Omnibus Tests of Model Coefficients) Result.

Chi-square	df	Sig.
23.530	4	<0.001
23.530	4	<0.001
23.530	4	<0.001

As shown in Table 6, the significance value obtained is <0.001. The Sig. value of the independent variable is less than 0.05 indicating that the variable influences the dependent variable simultaneously (Hosmer & Lemeshow, 2000). The Sig. value of <0.001, which means less than 0.05, indicates that the independent variables—Sustainability Report (SR), GRI Standards Implementation (GRI), External Assurance (SRA) and Firm Size (SIZE)—simultaneously influence Environmental Performance.

Additional Analysis

To investigate the impact of sustainability reporting practices on environmental performance, this research carried out further analysis. The five PROPER ratings (5 for gold, 4 for green, 3 for blue, 2 for red, and 1 for black) were utilised to assess the dependent variable, environmental performance, using ordinal logistic regression as the data analysis approach. The outcomes of the ordinal logistic regression analysis are as follows.

Table 7. Hypothesis Test Results (Wald Test) using Ordinal Logistic Regression.

	B	Estimate	Std. Error	Wald	df	Sig.
Threshold	EP = 2	10.748	4.101	6.869	1	0.009
	EP = 3	16.541	4.235	15.252	1	<0.001
	EP = 4	18.910	4.276	19.554	1	<0.001
Location	SIZE	0.495	0.134	13.697	1	<0.001
	SR	0.156	0.430	0.132	1	0.717
	GRI	-2.478	0.553	20.110	1	<0.001
	SRA	0.736	0.505	2.125	1	0.145

As shown in Table 7, the Sustainability Report (SR) variable has a regression coefficient of 0.156, indicating a positive relationship. The significance value obtained is 0.717, which is greater than 0.05. This result indicates that the Sustainability Report variable has no partial effect on Environmental Performance. Therefore, the first hypothesis (H1), which states that the Sustainability Report has a positive effect on Environmental Performance, is rejected.

Furthermore, the GRI Standards Implementation variable has a regression coefficient of 2.478, but it shows a negative relationship. The significance value obtained is <0.001, which is less than 0.05. This result indicates that the GRI Standards Implementation variable has a partial effect on Environmental Performance. Thus, the second hypothesis (H2), which states that the Implementation of GRI Standards has a positive effect on Environmental Performance, is rejected. This is because the regression coefficient indicates a negative relationship, thus contradicting H2.

Furthermore, the External Assurance (SRA) variable has a regression coefficient of 0.736, indicating a positive relationship. The significance value obtained is 0.145, which is greater than 0.05. This result indicates that the External Assurance variable has no partial effect on Environmental Performance. Therefore, the third hypothesis (H3), which states that External Assurance has a positive effect on Environmental Performance, is rejected.

The three research hypotheses were not significantly supported by the results of testing using ordinal logistic regression analysis. To obtain analytical results that better align with the data characteristics and research objectives, the analytical method used in this study was re-adjusted from ordinal logistic regression to binary logistic regression. This method divides the Environmental Performance variables into two main groups: bad environmental performance (red and black PROPER ratings) and good environmental performance (gold, green, and blue PROPER ratings). This grouping is done so that the relationship between independent and dependent variables in the research model is clearer and makes it easier to interpret the results.

Discussion

The Effect of Sustainability Report on Environmental Performance

According to Table 5's results, the Sustainability Report variable has a negative regression coefficient with a significance value of 0.830 (>0.05), indicating that it has no impact on environmental performance and that the hypothesis is unsupported. This result is in line with the findings of Boiral & Heras-Saizarbitoria (2020), Balluchi et al. (2020), and Michelon et al. (2015), who clarify that sustainability reports are frequently symbolic, do not demonstrate a genuine dedication to environmental measures, and are even susceptible to greenwashing. These reports promote openness, yet they frequently include misleading or irrelevant information. Sustainability reports are a communication tool used by businesses to build credibility and meet external demands. Stakeholder and legitimacy theories serve as the foundation for these reports. However, the study's conclusions demonstrate that sustainability reports are still primarily employed as a way to win over the community rather than as a key tactic for improving environmental performance.

The Effect of GRI Standards Implementation on Environmental Performance

According to Table 5's results, the GRI Standards Implementation variable influences environmental performance and supports the study hypothesis with a positive regression coefficient and a significance value of 0.043 (<0.05). This result is in line with studies by Khan et al. (2023), Artamelia et al. (2021), and Khatri & Kjærland (2023) that claim the implementation of GRI standards promotes accountability, transparency, and a stronger dedication to sustainable environmental practices. Companies may find opportunities for improvement and better manage their environmental consequences with the aid of GRI standards. The use of these norms, which are grounded on legitimacy theory and stakeholder theory, enhances public confidence and satisfies the requirements of environmental responsibility. Despite the fact that just 41% of Indonesian manufacturing firms have adopted GRI (2018–2022), the study's findings demonstrate that adopting GRI promotes a meaningful approach to reporting, prevents greenwashing, and greatly enhances environmental performance.

The Effect of External Assurance on Environmental Performance

According to Table 5's data, the external assurance variable has a positive regression coefficient with a significance level of 0.998 (>0.05), indicating that it has no impact on environmental performance and that the study hypothesis is unsupported. According to Khatri & Kjærland (2023), Boiral & Heras-Saizarbitoria (2020), and H. Cho et al. (2014), external assurance is frequently a formality and symbolic gesture without any real gains in environmental performance. This conclusion is consistent with their findings. Instead of being the main force behind significant environmental change, external assurance serves more as a communication tactic and legitimacy tool to enhance a company's reputation. Despite not yet exhibiting a significant environmental commitment, firms employ external assurance to satisfy expectations and preserve public trust, according to stakeholder theory and legitimacy theory. According to empirical data, only 9.8% of Indonesian manufacturing firms employed external assurance between 2018 and 2022, suggesting that this practice has not yet gained traction due to its non-mandatory nature, high prices, and indirect advantages.

The Effect of Firm Size on Environmental Performance

In order to maintain the stability of the relationship between the independent and dependent variables and ensure that the research findings are not affected by unforeseen external influences, firm size was utilised as a control variable in this study. The firm size variable exhibits a positive regression coefficient with a significance value of 0.022, which is less than 0.05, as Table 5 shows. This finding suggests that environmental performance is influenced by firm size. As a result, the firm size variable can regulate how the dependent variable of corporate environmental performance is affected by the independent variable of sustainability reporting practices, as determined by sustainability reports, the implementation of GRI standards, and external assurance.

The results of this study support the findings of Khatri & Kjærland (2023) and Al-Shaer & Hussainey (2022), who claimed that environmental performance is positively impacted by firm size. Because they have greater financial, technological, and operational capabilities, as well as a motivation to uphold their brand and adhere to legislation through more thorough sustainability reporting, larger firms typically do better environmentally. As a control variable to guarantee consistent environmental performance reporting, firm size is particularly crucial because larger companies provide more information.

Based on empirical data, every Indonesian manufacturing firm, regardless of size, that took part in the PROPER program between 2018 and 2022 (100%) documented their environmental performance. According to stakeholder theory and legitimacy, big firms are subject to more public scrutiny because of the wide-ranging effects of their operations, which motivates them to show more environmental responsibility. However, small firms still have to report their performance in order to keep the public's trust and legitimacy.

5. Conclusions

The first hypothesis is not supported, as sustainability reports does not significantly impact environmental performance. This suggests that sustainability reports remain symbolic and focuses more on public image and legitimacy, rather than on concrete actions to improve environmental performance.

The use of the GRI standards has a favourable and noteworthy effect on environmental performance, supporting the second hypothesis. Through a proactive approach, environmental investment, and stakeholder involvement, the GRI standards promote clear, organised reporting and the incorporation of sustainable practices into business strategy and operations, therefore improving environmental performance.

Since external assurance has little effect on environmental performance, the third hypothesis is not substantiated. Due to its high expenses, external assurance is typically avoided by small and medium-sized businesses and is sometimes utilised symbolically to obtain credibility without significant change.

Environmental performance is positively and significantly impacted by the control variable, company size. Big businesses tend to report more information and demonstrate better environmental performance due to their greater resources, although small firms still need to report their performance to maintain credibility and legitimacy.

6. Limitations and Suggestion

This study has several limitations. The variables used—sustainability reports, GRI standards implementation, and external assurance, with company size as a control variable—only explain 16.8% of the effect on environmental performance, leaving many other factors unexplored. The measurement of sustainability reporting practices is not fully balanced because in Indonesia, sustainability reports are mandatory, while GRI standards implementation and external assurance are still voluntary, limiting the relevance of the information. Each independent variable is measured using a dummy variable without considering the quality or specific items within each indicator. This approach is based on the research method of Khatri & Kjærland (2023) and previous research that used binary data (present/absent) to measure GRI adoption and external assurance.

This study offers two main suggestions. (1) Academic Recommendation: Future research is recommended to add new variables or measurement methods, for example, comparing the external assurance standards used, and expanding the sample to all companies listed on the IDX to provide a more representative picture of the effect of sustainability reporting practices on environmental performance in Indonesia; (2) Practical Recommendation: To accurately portray their environmental performance, businesses should apply external assurance and GRI criteria in their sustainability reports. In the perspective of stakeholders and the general public, transparency and certainty in reports will improve credibility and accountability.

References

- Aliansi Zero Waste Indonesia. (2022). Saatnya Unilever stop sachet – Aliansi Zero Waste Indonesia. <https://ali-ansizerowaste.id/2022/06/15/saatnya-stopsachet-unilever/>
- Almaqtari, F. A., Elsheikh, T., Abdelkhair, F., & Mazrou, Y. S. A. (2023). The impact of corporate environmental disclosure practices and board attributes on sustainability: Empirical evidence from Asia and Europe. *Heliyon*, 9(8), e18453. <https://doi.org/10.1016/j.heliyon.2023.e18453>
- Alon, A., & Vidovic, M. (2015). Sustainability performance and assurance: Influence on reputation. *Corporate Reputation Review*, 18(4), 337–352.
- Al-Shaer, H., & Hussainey, K. (2022). Sustainability reporting beyond the business case and its impact on sustainability performance: UK evidence. *Journal of Environmental Management*, 311, 114883. <https://doi.org/10.1016/j.jenvman.2022.114883>
- Al-Shaer, H., & Zaman, M. (2016). Board gender diversity and sustainability reporting quality. *Journal of Contemporary Accounting & Economics*, 12(3), 210–222. <https://doi.org/10.1016/j.jcae.2016.09.001>
- Aluchna, M., Roszkowska-Menkes, M., Jastrzębska, E., & Bohdanowicz, L. (2023). Sustainability reporting as a social construct: The systematic literature review within socio-political view. *Social Responsibility Journal*, 19(8), 1535–1554. <https://doi.org/10.1108/SRJ-06-2022-0231>
- Andrade, D. C., Romeiro, A. R., & Simões, M. S. (2022). Economic development, economic complexity and environmental performance: In search of common ground. In *Environmental Sustainability and Industries* (pp. 461–482). Elsevier. <https://doi.org/10.1016/B978-0-323-90034-8.00015-4>
- Anisa, Y. D., & Nikmah. (2023). The role of external assurance in moderating the effect of sustainability reporting quality on firm value. *Ilomata International Journal of Tax and Accounting*, 5(1), 15–27. <https://doi.org/10.52728/ijtc.v5i1.974>
- Artamelia, F. N., Surbakti, L. P., & Julianto, W. (2021). Pengaruh kinerja lingkungan terhadap pengungkapan lingkungan dan pengungkapan lingkungan terhadap nilai perusahaan.
- Axjonow, A., Ernstberger, J., & Pott, C. (2018). The impact of corporate social responsibility disclosure on corporate reputation: A non-professional stakeholder perspective. *Journal of Business Ethics*, 151(2), 429–450. <https://doi.org/10.1007/s10551-016-3225-4>
- Balluchi, F., Lazzini, A., & Torelli, R. (2020). CSR and greenwashing: A matter of perception in the search of legitimacy (pp. 151–166). https://doi.org/10.1007/978-3-030-41142-8_8
- Bellucci, M., & Manetti, G. (2018). Stakeholder engagement and sustainability reporting. In *Stakeholder engagement and sustainability reporting*. <https://doi.org/10.4324/9781351243957>
- Boiral, O., & Heras-Saizarbitoria, I. (2020). Sustainability reporting assurance: Creating stakeholder accountability through hyperreality? *Journal of Cleaner Production*, 243, 118596. <https://doi.org/10.1016/j.jclepro.2019.118596>
- Braam, G., & Peeters, R. (2018). Corporate sustainability performance and assurance on sustainability reports: Diffusion of accounting practices in the realm of sustainable development. *Corporate Social Responsibility and Environmental Management*, 25(2), 164–181. <https://doi.org/10.1002/csr.1447>
- Cho, C. H., Michelon, G., Patten, D. M., & Roberts, R. W. (2014). CSR report assurance in the USA: An empirical investigation of determinants and effects. *Sustainability Accounting, Management and Policy Journal*, 5(2), 130–148. <https://doi.org/10.1108/SAMPJ-01-2014-0003>
- Clarkson, P. M., Li, Y., Richardson, G. D., & Vasvari, F. P. (2008). Revisiting the relation between environmental performance and environmental disclosure: An empirical analysis. *Accounting, Organizations and Society*, 33(4–5), 303–327. <https://doi.org/10.1016/j.aos.2007.05.003>

- Deegan, C. (2002). Introduction. *Accounting, Auditing & Accountability Journal*, 15(3), 282–311. <https://doi.org/10.1108/09513570210435852>
- Donaldson, T., & Preston, L. E. (1995). The stakeholder theory of the corporation: Concepts, evidence, and implications. *Academy of Management Review*, 20(1), 65–91. <https://doi.org/10.5465/amr.1995.9503271992>
- Dowling, J., & Pfeffer, J. (1975). Organizational legitimacy: Social values and organizational behavior. *The Pacific Sociological Review*, 18(1), 122–136. <https://doi.org/10.2307/1388226>
- Elkington, J. (1998). Accounting for the triple bottom line. *Measuring Business Excellence*, 2(3), 18–22. <https://doi.org/10.1108/eb025539>
- Freeman, R. E. (1984). *Strategic management: A stakeholder approach*.
- Global Reporting Initiative. (2013). The external assurance of sustainability reporting. Global Reporting Initiative: Research and Development Series, 1–20. <https://www.globalreporting.org/resource/library/GRI-Assurance.pdf>
- Global Reporting Initiative. (2021). A short introduction to the GRI standards. In *GRI standards* (pp. 1–6).
- Handru, & Tina. (2020). Sungai Tapak Kuda Bandar Masilam tercemar limbah PT. JAFPA. Nawacitapost. <https://nawacitapost.com/hukum/2020/02/02/sungai-tapak-kuda-bandar-masilam-tercemar-limbah-pt-jafpa/>
- Hansen, D. R., & Mowen, M. M. (2018). *Cornerstones of cost management* (4th ed.). Cengage Learning.
- Haque, F., & Ntim, C. G. (2020). Executive compensation, sustainable compensation policy, carbon performance and market value. *British Journal of Management*, 31(3), 525–546. <https://doi.org/10.1111/1467-8551.12395>
- Hörisch, J., Freeman, R. E., & Schaltegger, S. (2014). Applying stakeholder theory in sustainability management. *Organization & Environment*, 27(4), 328–346. <https://doi.org/10.1177/1086026614535786>
- Hosmer, D. W., & Lemeshow, S. (2000). *Applied logistic regression*. Wiley. <https://doi.org/10.1002/0471722146>
- Jiang, Y., Guo, C., & Wu, Y. (2021). Can environmental information disclosure promote the high-quality development of enterprises? The mediating effect of intellectual capital. *Environmental Science and Pollution Research*, 28(24), 30743–30757. <https://doi.org/10.1007/s11356-021-12921-x>
- Juliandry, & Sugioko, S. (2019). Kritik determinan nilai perusahaan: Analisis corporate governance dan assurance sebagai variabel moderasi. *Prosiding Working Papers Series in Management*, 11(2), 67–84. <https://doi.org/10.25170/wpm.v11i2.4506>
- Khan, I., Fujimoto, Y., Uddin, M. J., & Afridi, M. A. (2023). Evaluating sustainability reporting on GRI standards in developing countries: A case of Pakistan. *International Journal of Law and Management*, 65(3), 189–208. <https://doi.org/10.1108/IJLMA-01-2022-0016>
- Khatri, I., & Kjarland, F. (2023). Sustainability reporting practices and environmental performance amongst Nordic listed firms. *Journal of Cleaner Production*, 418(May), 138172. <https://doi.org/10.1016/j.jclepro.2023.138172>
- KPMG. (2020). *The KPMG survey of sustainability reporting 2020*.
- Lestari, A. D., & Khomsiyah, K. (2023). Pengaruh kinerja lingkungan, penerapan green accounting, dan pengungkapan sustainability report terhadap nilai perusahaan. *Jurnal Ekonomi Bisnis, Manajemen dan Akuntansi (JEBMA)*, 3(3), 514–526. <https://doi.org/10.47709/jebma.v3i3.2799>
- Meiyana, A., & Aisyah, M. N. (2019). Pengaruh kinerja lingkungan, biaya lingkungan, dan ukuran perusahaan terhadap kinerja keuangan dengan corporate social responsibility sebagai variabel intervening. *Nominal: Barometer Riset Akuntansi dan Manajemen*, 8(1), 1–18. <https://doi.org/10.21831/nominal.v8i1.24495>
- Menlhk. (2022). PROPER. <https://www.menlhk.go.id/program/proper/>

- Michelon, G., Pilonato, S., & Ricceri, F. (2015). CSR reporting practices and the quality of disclosure: An empirical analysis. *Critical Perspectives on Accounting*, 33, 59–78. <https://doi.org/10.1016/j.cpa.2014.10.003>
- Nazari, J. A., Hrazdil, K., & Mahmoudian, F. (2017). Assessing social and environmental performance through narrative complexity in CSR reports. *Journal of Contemporary Accounting & Economics*, 13(2), 166–178. <https://doi.org/10.1016/j.jcae.2017.05.002>
- Ngu, S. B., & Amran, A. (2021). Materiality disclosure in sustainability reporting: Evidence from Malaysia. *Asian Journal of Business and Accounting*, 14(1), 225–252. <https://doi.org/10.22452/ajba.vol14no1.9>
- Ntim, C. G. (2016). Corporate governance, corporate health accounting, and firm value: The case of HIV/AIDS disclosures in Sub-Saharan Africa. *The International Journal of Accounting*, 51(2), 155–216. <https://doi.org/10.1016/j.intacc.2016.04.006>
- Otoritas Jasa Keuangan. (2017). Penerapan keuangan berkelanjutan bagi lembaga jasa keuangan, emiten, dan perusahaan publik (POJK Nomor 51/POJK.03/2017). Otoritas Jasa Keuangan. <https://www.ojk.go.id/id/ regulasi/Pages/Penerapan-Kuangan-Berkelanjutan-bagi-Lembaga-Jasa-Kuangan,-Emiten,-dan-Perusahaan-Publik.aspx>
- Papoutsis, A., & Sodhi, M. S. (2020). Does disclosure in sustainability reports indicate actual sustainability performance? *Journal of Cleaner Production*, 260, 121049. <https://doi.org/10.1016/j.jclepro.2020.121049>
- PricewaterhouseCoopers (PwC). (2022). Sustainability counts II: State of sustainability reporting in Asia Pacific. <https://www.pwc.com/id/en/services/environmental-social-governance/sustainability-counts-ii.html>
- Roviqoh, D. I., & Khafid, M. (2021). Profitabilitas dalam memediasi pengaruh kepemilikan institusional, komite audit, dan ukuran perusahaan terhadap pengungkapan sustainability report. *Business and Economic Analysis Journal*, 1(1), 14–26. <https://doi.org/10.15294/beaj.v1i1.30142>
- Rudangga, I. G. N. G., & Sudiarta, G. M. (2016). Pengaruh ukuran perusahaan, leverage, dan profitabilitas terhadap nilai perusahaan. *E-Jurnal Manajemen Unud*.
- SDGs Bappenas. (2022). Goal 9 - Membangun infrastruktur yang tangguh, meningkatkan industri inklusif dan berkelanjutan, serta mendorong inovasi. SDGs Indonesia. <https://sdgs.bappenas.go.id/17-goals/goal-9/>
- Shocker, A. D., & Sethi, S. P. (1973). An approach to incorporating societal preferences in developing corporate action strategies. *California Management Review*, 15(4), 97–105. <https://doi.org/10.2307/41164466>
- Simoni, L., Laura, B., & Marco, B. (2020). Effects of social, environmental, and institutional factors on sustainability report assurance: Evidence from European countries. *Meditari Accountancy Research*, 28(6), 1059–1087.
- Suchman, M. C. (1995). Managing legitimacy: Strategic and institutional approaches. *Academy of Management Review*, 20(3), 571. <https://doi.org/10.2307/258788>
- US Environmental Protection Agency. (2022). Framework for the assessment of environmental performance standards and ecolabels for federal purchasing (pp. 1–30).
- Wulandari, & Machfoedz, M. (1994). Financial ratio analysis and the predictions of earnings changes in banking industries in Jakarta Stock Exchange. *Gadjah Mada University Business Review*, 114–137. <https://etd.repository.ugm.ac.id/penelitian/detail/143873>
- Xaverius, A. W. F. T., & Rahayu, M. (2023). The effect of corporate governance mechanisms and environmental performance on sustainability reports. *Business and Accounting Research (IJE BAR)*, 7(1), 2614–1280. <https://jurnal.stie-aas.ac.id/index.php/IJE BAR>