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Environmental and Firm Performance: Evidence from Indonesia

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Abstract: This study aims to investigate the impact of environmental performance on firm performance in the companies listed on the Indonesia Stock Exchange from 2015 to 2022. Information about a company's environmental responsibility, including resource use, emissions, and innovation, is known as environmental performance. The environmental score from ESG measures environmental performance, and Tobin's Q measures firm performance. The descriptive statistics show that there is an increase in the company's environmental performance every year from 2015 to 2022. The research discovered a positive impact between environmental performance and corporate performance. Research demonstrates firms can improve their financial performance by adopting environmental performance strategies. It underscores the significance of sustainable development for businesses, suggesting that efficient environmental practices enhance financial performance while fostering corporate sustainability. The paper suggests that implementing environmental performance can directly enhance firm performance, leading to improvements in both the environmental and financial aspects of a company. The result offers valuable insights for policymakers and practitioners to improve firm environmental action in order to enhance firm performance, therefore improving transparency between companies and stakeholders.

Keywords: CSR, environmental, ESG, firm performance, sustainability.

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INTRODUCTION

Business strategies focused on sustainability and environmental regulations propel green innovation and enhance business environmental reputation (Zameer et al., 2024). Improved sustainable environmental practices within organizations are a result of increased levels of Corporate social responsibility (CSR) (Gazi et al., 2024). CSR initiatives compel modern enterprises to consider both social and economic dimensions (Shahzad et al., 2022). Organizations that actively engage in CSR practices often realize improved environmental outcomes (Saeidi et al., 2024). CSR is an intangible resource that firms employ to acquire specialized knowledge about stakeholders, thereby positively impacting innovations (Jadiyappa & Chauhan, 2023). Danish et al. (2024) demonstrated that the implementation of CSR and green practices positively influences sustainable business performance, aligning with the tenets of stakeholder theory.

The contribution of CSR to corporate branding activities is limited and fragmented, with brands perceived as dynamic corporate assets co-created socially by the corporation and its stakeholders (Maon et al., 2021).

Emphasizing ethical identity is essential for improving social and environmental performance, suggesting that organizations must incorporate ethical issues into their plans to enhance their total societal and environmental effect (Bag et al., 2024). Green innovation and environmental strategy serve as essential mediating factors that enhance the connection between CSR practices and environmental outcomes, indicating that the alignment of CSR objectives with environmental necessities can result in significant transformations towards more sustainable manufacturing processes (Khoshnaw et al., 2024).

Effective sustainability accounting enhances trust and reputation, supports informed decision-making, and promotes responsible resource management, thereby contributing to sustainable development and improved environmental performance (Rusu et al., 2024). Environmental performance refers to the endeavors and efficacy of organizations in pollution mitigation, resource optimization, and environmental risk abatement; organizations must meticulously regulate the manufacturing process to comply with environmental regulations (Cheng et al., 2024).

Enhancing the environmental performance of enterprises has emerged as a shared concern among the government, society, and businesses (Cheng et al., 2024). A standardization in sustainability reporting is necessary to align with critical environmental impact variables, effectively identifying key corporate impact information and improving transparency between companies and stakeholders, thereby facilitating enhanced external assessment of corporate sustainability (Wassenius et al., 2024).

Corporate sustainability reporting emphasizes the significance of transparency and accountability to stakeholders, with a particular emphasis on the economic, social, and environmental consequences of activities (Rusu et al., 2024). Sundarasen et al. (2024) the necessity for standardized reporting protocols and the incorporation of environmental factors into financial decision-making, which improves openness, accountability, and sustainability across sectors. It promotes better environmental performance and encourages firms to implement sustainable practices in their operations (Sundarasen et al., 2024). Sustainability reporting is an essential instrument for firms to assess and convey their sustainability performance, highlighting the necessity for openness and accountability to diverse stakeholders, including investors, consumers, employees, and local communities (Rusu et al., 2024). Transparent reporting by disclosing environmental, social, and governance activities can contribute to sustainable innovation and success in business (Rauf et al., 2024).

Corporations' environmental, social, and governance (ESG) is becoming a global metric for assessing their dedication to social responsibility and environmental protection (Chen et al., 2023). ESG is increasingly recognized as a critical consideration in investment decisions and is becoming central to the strategic and operational goals of enterprises (esg.idx.co.id, 2024). The environmental pillar of ESG pertains to business responsibility on topics such as resource utilization, emissions reduction, and environmental innovation. Effective environmental performance, as part of ESG, positively influences firm value by aligning with stakeholder interests (Li et al., 2024).

Stakeholder theory asserts that organizations should take into account the interests of all stakeholders, including environmental considerations, to attain sustainable business performance (Danish et al., 2024). Addressing stakeholder pressures enhances firm performance, indicating that organizations can improve outcomes by implementing sustainable practices that align with stakeholder expectations and environmental sustainability objectives (Huang et al., 2024). Kong et al. (2023) mentioned that the significance of incorporating the interests of all stakeholders in corporate decision-making is particularly relevant to sustainability performance.

The United Nations established the Sustainable Development Goals (SDGs) in 2015 as a set of 17 global objectives. Their primary objective is to address global challenges associated with environmental degradation, climate change, inequality, poverty, peace, and justice (SDGs UN, 2024). Indonesia stands as a nation dedicated to the pursuit of the Sustainable Development Goals (Indonesia UNSDSN, 2024). Gutiérrez-Ponce & Wibowo (2023) found a significant increase of 60% in the disclosure of the SDGs in sustainability reports by Indonesian listed companies from 2017 to 2021.

Corporations that engage in comprehensive sustainability reporting are more likely to articulate their sustainability initiatives and their alignment on SDGs (Gallardo-Vázquez et al., 2024). In Indonesia, the framework for sustainability reporting mandates that companies listed on the Indonesia Stock Exchange incorporate sustainability reports within their annual reports, while the production of separate sustainability reports remains optional (Zarefar et a., 2022). Jadiyappa & Chauhan (2023) found that sustainability regulation positively impacted firm innovations. Government assistance and eco-regulation, which encourage eco-innovation adaptation, have a major impact on corporate sustainability (Achmad et al., 2023). Iqbal & Nosheen (2023) mentioned that adoption of SDGs positively impacts corporate performance. Embracing SDGs addresses the environmental consequences of green investments and their correlation with long-term firm performance (Diantini et al., 2023).

Alahdal et al. (2024) found environmental performance positively affects firm performance (measured with Tobin Q). In line with the result by Dohrmann et al. (2024) identified a positive correlation between environmental performance and firm performance, indicating that firms with enhanced environmental practices are likely to attain superior financial outcomes. The performance of ESG factors typically enhances firm value, suggesting that markets and investors are increasingly acknowledging the significance of ESG considerations in fostering long-term corporate growth (Li et al., 2024). Kong et al. (2023) revealed that ESG has a positive association on firm performance. Enhancing environmental performance markedly boosts firm profitability, especially via mechanisms like heightened green technology innovation, diminished financing constraints, and elevated operating income (Hu & Zhao, 2024). Wu & Nguyen (2024) discovered that ESG practices enhance both accounting-based performance and market-based performance, suggesting that firms with ESG generally outperform their industry counterparts and increase firm performance. Ho et al. (2024) found ESG has positive impact on firm performance. Companies are encouraged to proactively evaluate board reorganization to improve the oversight and promotion of ESG policies (Alodat & Hao, 2024).

Several previous studies found dissimilarity results. Ifada (2023) found that environmental performance had a negative impact on economic performance. This may result in reduced profitability for the company, which in turn reduces the return on shareholders' investment and reduces the value of the company (Achyani et al., 2024). Doffour et al. (2023) mentioned that implementing sustainable business practices initiatives does not result in an increment in financial returns, as it involves incurring additional costs that decrease profits. In order to gain corporate legitimacy, companies with delicate environmental commitments or reputations may use sustainability reporting techniques to assemble the reputation, rather than to genuinely improve their environmental performance (Khatri & Kjærland, 2023).

The contradictory findings of prior studies necessitate additional exploration of the relationship between environmental performance and firm performance. The varying regional regulations of each country may pose challenges for academics in obtaining results. Although many studies examine CSR in developed contexts, there is a significant need for more thorough research in developing countries (Zarghami & Fatourehchi, 2020).

As a developing country located on the equator, Indonesia has potential to implement a sustainability economy (UNDP, 2024). Indonesia demonstrates a commendable economic growth rate of 5.05% in 2023, surpassing the 4.1% growth rate observed among developing nations (Asean Exchange, 2024).

Comprehending the distinct challenges and opportunities associated with corporate social responsibility in specific regions is essential for promoting sustainable practices and policies that are adapted to the unique socio-economic contexts of developing areas (Zarghami & Fatourehchi, 2020). Despite the significant development of CSR research in Indonesia over the past decade and the established presence of CSR in accounting literature, it remains a compelling area for further exploration (Sari & Aryani, 2023). It is the necessity of investigation from emerging market countries and the importance of integrating sustainability considerations into business strategies (Chopra et al., 2024).

Based on the background, this research aims to investigate the impact of environmental performance on firm performance in the companies listed on the Indonesia Stock Exchange from 2015 to 2022. The research found that environmental performance has positive relationship on firm performance in Indonesia. This finding shows valuable insights for stakeholders and policymakers aiming to enhance corporate environmental performance in relation to firm performance especially in emerging markets firms.

METHODS

This study examines companies listed on the Indonesia Stock Exchange for the period 2015–2022. The financial sector is excluded from the study to reduce the impact of different business activities. The total number of research observations is 342. As a emerging market with stable economic growth rate in ASEAN, Indonesia can attract investors' interest for investing in Indonesian companies. The unique socio-economic and environmental in Indoensia context, there are obstacles and opportunities in their pursuit of sustainable financial performance (Dharmayanti et al., 2023). The type of data used in this research is secondary data with a quantitative approach, which refers to information collected from Refinitiv database. This research used STATA 17 software to derive descriptive statistics and statistical inference panel data.

Several studies examine company performance by measuring various measurements. This study examines firm performance measured by the Tobin Q because Tobin Q is an appropriate indicator to represent company performance which is measured not only from assets but also involving firm liabilities and the stock market in the calculation measurement. Several previous studies proxied firm performance measured by Tobin Q (Such as Dohrmann et al., 2024; Wu & Nguyen, 2024; Fan, 2024; Alahdal et al., 2024). This research measured Tobin Q = (equity market value + Total Liabilities)/Total Asset.

Environmental performance is a score of activities carried out by companies in maintaining the environment. The environmental score is part of the ESG score value taken from the Refinitiv database. Refinitiv ESG score presents comprehensive score because the score is taken from environmental assessments in the company's annual report, company sustainability report, company website, and media information related to the company's sustainability. Moreover, the assessment is reviewed by management to produce quality score data before being published in the Refinitiv database. The environmental score contains an assessment of the use of natural resources, emissions, and company innovation in protecting the environment. Dohrmann et al. (2024) used environmental score by Refinitiv ESG score as environmental performance measurement and found that environmental performance has a positive relationship on firm performance. Alahdal et al. (2024) discovered that environmental performance positively on firm performance. This research measured environmental performance = environmental score of ESG.

The study uses control variables to minimize the error value in the company performance equation. The control variables of the study are leverage, company size, and company age. Information on control variables is taken from the Refinitiv database. Several studies examined the relationship of leverage, company size, and company age on firm performance. Maji & Lohia (2023) and Truong (2024) examined the relationship between leverage and firm performance. Truong (2024) found leverage has a positive impact on firm performance. Makhdoom et al. (2023) examined the effect of firm age and firm size on firm performance and found that firm size has a positive impact on firm performance. Leverage is measured by the ratio of debt to equity. Firm size is measured by the natural logarithm of total assets. Firm age is number of years since initial public offering (IPO) (Ahmad et al., 2021). The research equation is:

$$Q_{it} = \alpha + \beta_1 ENV_{it} + \beta_2 LEV_{it} + \beta_3 SIZE_{it} + \beta_4 AGE_{it} + \varepsilon$$

Where Q is firm performance, ENV is environmental performance, LEV is firm leverage, SIZE is firm size, and AGE is firm age since IPO.

RESULTS AND DISCUSSION

Figure 1 shows ESG performance in Indonesia listed firm period 2015–2022. It shows the number of companies implemented ESG performance increase every year during 2015 to 2022. In 2015, there is 33 companies adopted ESG, and in 2022 there is 64 companies implemented ESG which means there is an increase of 94%. It indicates that the company in Indonesia aware of sustainability by disclose their corporate social responsibility through implementing ESG performance.

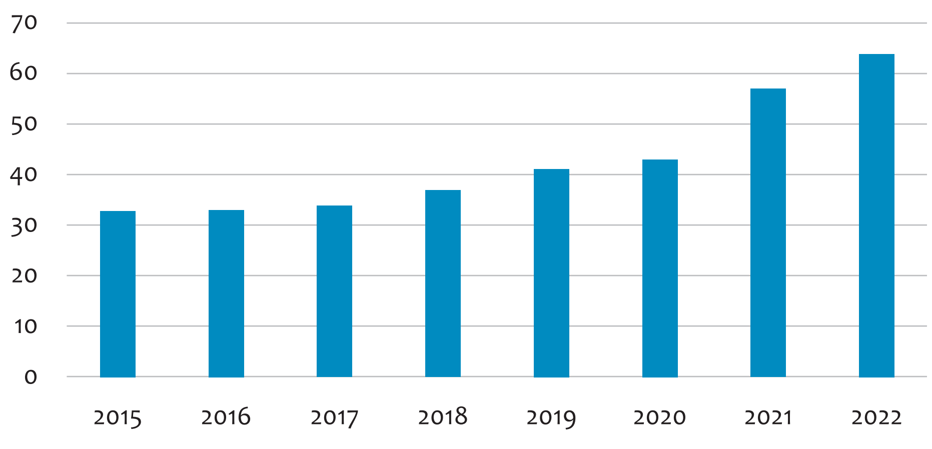

Figure 1 ESG in Indonesia

The results of descriptive statistics on Table 1 show that the average value of Tobin Q (firm performance) is 2.2 with a minimum value of 0.129 and a maximum value of 22.23. The results show that if the average company performance ratio is above 1, the company is valued higher in the market than its recorded value (overvalued). This value implied means that the market value is higher than company's stated book value (Alajlani & Posecion, 2018).

Table 1 Descriptive Statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
Q	342	2.234	2.872	0.129	22.233
ENV	342	35.906	24.536	0	87.86
SIZE	342	31.186	1.04	26.687	33.655
LEV	342	1.862	3.016	−3.899	22.233
AGE	342	20.605	8.843	3	40

The average environmental performance score for companies in Indonesia is 35.90 with a minimum score of 0 and a maximum of 87. The average of 35.9 is sufficient at grade C, which indicates good relative environmental performance and above average degree of transparency in reporting material environmental action publicly. Minimum score 0 means there is no transparency about their environmental responsibility. It indicates poor relative ESG performance and insufficient degree of transparency in reporting material ESG data publicly. The maximum score of 87 indicates excellent relative performance and high degree of transparency in reporting material of firm environmental data publicly. The average company size is 31.186, the leverage is 1.86, and company age since IPO is a maximum of 40 years and a minimum of 3 years with an average of 20 years.

The pairwise correlation on Table 2 shows that environmental performance is positively correlated with company performance. The results of the findings of pairwise correlations cannot be the main reference in testing the significance of the influence of environmental performance on company performance. The influence between these two variables was tested using a panel data regression test using a random effect test. The result of the regression test is presented in Table 3.

Table 2 Pairwise correlations

Variables	(1)	(2)	(3)	(4)	(5)
(1) Q	1.000				
(2) ENV	0.114*	1.000			
(3) SIZE	−0.236*	0.222*	1.000		
(4) LEV	0.774*	−0.054	−0.118*	1.000	
(5) AGE	0.219*	0.157*	0.117*	0.094	1.000

* $p < 0.05$

The regression test result on Table 3 shows that environmental performance has a significant positive effect on company performance. These results indicate that companies that perform better environmentally can improve company performance. In this case, companies in Indonesia that show that the average company has a sufficient score in environmental performance have a positive influence on firm performance.

This finding is supported by Dohrmann et al. (2024) found environmental performance positively impact on firm performance. This suggests that companies with enhanced environmental procedures typically attain improved financial performance (Dohrmann et al., 2024; Saeidi et al., 2024). This provides companies with a competitive advantage in the acquisition and utilization of natural resources, reduces transaction costs, settles distribution conflicts among primary stakeholders, and ultimately improves corporate performance (Ruan & Liu, 2021). Narula et al. (2024) mentioned that companies with higher ESG ratings tend to perform better financially.

Table 3 Regression result

Q	Coef.	St.Err.	t-value	p-value	[95% Conf	Interval]	Sig
ENV	0.008	0.005	1.43	0.077	−0.003	0.018	*
SIZE	−0.415	0.148	−2.81	0.000	−0.705	−0.125	***
LEV	0.437	0.027	16.17	0.000	0.384	0.49	***
AGE	0.036	0.02	1.78	0.038	−0.004	0.075	**
YEAR	yes	.	.	.	.	.	
Constant	13.868	4.469	3.10	.002	5.109	22.628	
Mean dependent var		2.234	SD dependent var			2.872	
Overall r-squared		0.659	Number of obs			342	
Chi-square		358.745	Prob > chi2			0.000	
R-squared within		0.529	R-squared between			0.553	

*** p < .01, ** p < .05, * p < .1

Environmental Score reflects the environmental performance of the company, including resource use, emissions, and innovation. Companies undertake sustainability reporting to acquire legitimacy and uphold a favorable image among stakeholders, therefore enhancing company reputation, competitive advantage, and overall firm performance (Zarefar et al. 2022).

Enhancing environmental performance markedly boosts business profitability, especially via methods including augmented green technology innovation, diminished financing constraints, and elevated operating income (Hu & Zhao, 2024). Environmental performance functions as a mechanism for firms to assess and convey their sustainability achievements, highlighting the necessity for transparency and accountability to stakeholders (Rusu et al., 2024). The requirements and advantages of green aspects, thereby emphasizing the communication of green objectives to employees through vision and mission, thereby establishing a new cultural dimension that enhances the sustainability of the natural environment (Le et al., 2024).

Implementing green manufacturing into the production process not only promotes environmental sustainability but also improves competitiveness in the global market and enhances overall corporate performance (Jain et al., 2024). Enhancements in environmental performance markedly increase both social and economic outcomes within firms, suggesting that environmental management strategies should be adopted not solely for regulatory adherence but also for the prospective economic advantages they offer (Machingura et al., 2024).

The research is supported by the stakeholder theory which emphasizes the importance of considering the interests of all stakeholders in corporate decision-making, particularly in relation to environmental performance. Organizations can enhance their results by embracing sustainable practices that are in line with stakeholder expectations and environmental sustainability objectives, as addressing stakeholder concerns positively affects company performance (Huang et al., 2024).

These findings contribute to the existing body of literature on the environmental and firm performance nexus and are supported by the stakeholder theory. Ho et al. (2024) discovered the linkage is driven by environmental performance on firm performance when it moderates by stakeholder engagement. Considering the complexity of firms' environmental strategies and the multidimensional nature of the variable, which includes a diverse array of corporate behaviors related to relationships with communities, suppliers, consumers, and broader environmental responsibilities, it is essential to expand the scope of the study by incorporating other significant aspects of environmental sustainability (Khalil et al., 2024).

This finding underscores the importance for companies to implement effective CSR initiatives to foster sustainable development and enhance firm reputation (Khoshnaw et al., 2024). Continuous green innovation will be advantageous to businesses in terms of the environment, earnings, and corporate image (Le et al., 2024). Organizations are required to exhibit ethical responsibility towards society, extending beyond simple compliance with moral guidelines (Bag et al., 2024).

CONCLUSION

The study aims to analyze the impact of environmental performance on firm performance in Indonesia listed companies from 2015–2022. The research found that corporate environmental performance enhances firm performance. The result underscores the importance of integrating environmental action considerations into business strategies, promoting sustainable development goals (SDGs), and guiding government policies to foster a more environmentally responsible corporate landscape. The result supports stakeholder theory that enhancing environmental performance can lead to competitive advantages and improved stakeholder relations. The finding suggests that firms with better environmental practices tend to have better firm performance, indicating the importance of integrating environmental considerations into business strategies for improved financial performance. The study contributes to the literature on environmental performance and firm performance by providing evidence of the positive influence of environmental performance on firm performance, as measured by Tobin's Q. It offers valuable insights for policymakers and practitioners to re-formulate their environmental policies in order to enhance environmental performance, based on the findings regarding the relative importance and critical thresholds of the examined factors. This study contributes to academics as additional material for literature related to environmental performance and firm performance. Environmental performance is crucial as it positively influences firm performance, as evidenced by the research findings which show a significant relationship between the two. Improved environmental practices can enhance firm performance. The study is limited to Indonesia companies, which may restrict the generalizability of the findings to other regions or industries, potentially affecting the applicability of the results in different contexts. The study emphasizes the need for better solutions and highlights gaps in past and current policies, suggesting that existing frameworks may not adequately address the complexities of environmental performance and sustainable development in Indonesia. Another area for future research could involve examining the role of environmental reports in enhancing firm performance, particularly in different geographical contexts. Future research could explore the specific mechanisms through good corporate governance since Indonesia adopts a two-tier board system comprising the directors and the board of commissioners. Exploring how other factors within the organizational structure, such as board composition or employee diversity, interact with top management team functional in the influence of environmental performance and firm performance.

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