

Research Article

Environmental Performance with Firm Size as an Intervening Variable

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Abstract

Environmental performance is significant in today's era. However, the high operational activity of the company has harmed the environment. This study examines the type of industry (TI) and the audit committee (AC) on environmental performance (EP). In addition, this paper uses firm size (FS) as an intervention. The research uses 198 units of analysis. The results show that the audit committee and firm size affected environmental performance. The type of industry and audit committee affect the firm size. Furthermore, firm size can mediate the relationship of the audit committee to environmental performance. However, the type of industry does not affect environmental performance. Therefore, firm size cannot mediate the relationship between the type of industry and environmental performance. Therefore, the company has to enhance the audit committee's role. Furthermore, the government should enforce regulations related to environmental performance, especially Law No. 32 of 2009 concerning the Protection and Management of the Environment, that all forms of environmental pollution carried out by individuals, corporations or officials can be subject to criminal sanctions. This study has limitations, only focusing on companies listed in the PROPER ranking. Future research could use all companies in many sectors for better interpretation.

Keywords: Audit committee; firm size; environmental performance; type of industry

1. Introduction

Environmental sustainability is an important issue today. Many parties demand the creation of adequate environmental sustainability and health. This aims to maintain the quality of public health, which will have a prolonged impact on the future generations of a nation. The emergence of various new diseases in pediatric patients is allegedly the impact of environmental pollution (Lee et al., 2021). Several mining companies are accused of causing severe environmental damage. The government has launched the Public Disclosure Program for Environmental Compliance (PROPER) through the State Ministry of the Environment. The PROPER program is part of the government's policy in managing the environment by providing guidelines for companies to achieve specific values according to the provisions of the ministry of environment. Apart from that, PROPER also aims to encourage company stakeholders to protect their environment and achieve the highest award from a government and global point of view in the environmental sector. The gold PROPER rating has higher credibility in the eyes of the public and international parties. This condition can attract investors to invest in the company.

The concentration of manganese (Mn) in the Antang Landfill (Makassar) was very high, exceeding the thresholds of 1660 and 1710 ppm. This pollution has also spread horizontally (Artiningsih et al., 2020). In 2021, 2,221 administrative sanctions were imposed on companies that polluted the environment (KLHK, 2021). Moreover, the energy sector, such as companies that use fuel for their operational processes, has contributed 55.62% of national emissions (KLHK, 2021). This environmental pollution condition has damaged the quality of people's lives. The government has tried hard to control environmental damage through some regulations. However, the condition is still worst.

Environmental pollution can be a determining factor in achieving the value of a company's environmental performance. In Indonesia, the PROPER rating is one environmental performance benchmark. The better the rating, the higher the investor confidence in the company. Several studies that have been conducted related to environmental performance show the integration of plan behavior theory into the practice of company environmental performance. Large companies have a greater incentive to implement a green supply chain, which equals a higher environmental performance level (Balasubramanian et al., 2020). In addition, firm size affects environmental performance (Uche et al., 2019). Environmental performance is vital in company management. Environmental performance can be the basis for the company's awareness rating in processing business waste not to pollute the environment. This environment includes the internal environment and the external environment. The internal environment includes how the organization controls the company's systems, employees, and operations.

Meanwhile, the external environment includes the surrounding natural conditions, society, government, and others. This requires companies to determine the right policies in managing the surrounding natural environment that impacts their business activities. Good stakeholder engagement can increase the value of the company. Therefore, the company's management is responsible for reporting all company activities transparently (Nkundabanyanga et al., 2021). The company's activities include waste management and the environment around the company that can improve environmental performance. In addition, company management must be able to improve environmental performance as a long-term strategy. The company no longer focuses on shareholders only but must be responsible to all stakeholders (Nguyen and Thanh, 2021).

Companies must create a good image in front of the community (Bashir, 2022). This will have a good impact on the company, such as increasing the company's value. Furthermore, the existence of awards related to the company's performance that can be achieved will significantly impact the company's existence. Moreover, innovation is essential for corporate social responsibility (Yoo et al., 2022). The industry sector is divided into low-profile, middle-profile and high-profile. Companies with high-profile categories get greater demands from society. This is because their company's operations significantly negatively impact environmental sustainability. The impact of manufacturing business activity is more significant than financial sector companies. High-profile companies make higher social disclosures than low-profile companies. The industry type significantly influences emission carbon disclosure (Hardiyansah et al., 2021). Based on legitimacy theory, companies need recognition from the community for their business continuity. Hence high-profile companies get more attention from the public. The audit committee has a crucial role in controlling the company. The success or failure of a company depends on the controlling role performed by the audit committee. The audit committee is tasked with bridging the interests of the company's internal parties with the company's external parties. The audit committee affects environmental performance (Chariri et al., 2017).

Company size determines stakeholders (Awwad and Heyari, 2022). Large companies tend to pay more attention to environmental conditions than small companies. Also, some studies believe the role of company size on high environmental performance. Firm size can positively impact environmental performance (Uche et al., 2019). Furthermore, the larger the company's size, the higher its environmental performance (Sukirman et al., 2021). Referring to the legitimacy theory, large companies have more significant demands from the community to show their legitimacy. However, the

size of the company cannot provide a role in the level of environmental performance (Luciawati and Efendi, 2021). The type of industry is related to the company's sensitivity in giving adverse effects on the environment (Yuyetta et al., 2017). The more complex the type of industry, the greater the destructive effect on the company. The higher the industry profile, the bigger the company size. Companies with high profile conditions have high sensitivity to the environment. This is because its business operations are close to the broader community. If there are errors or omissions in the company's operational processes, it will negatively impact the surroundings. High-profile companies include mining companies producing chemicals/chemical industry, processed food and beverage products, aviation, communications, and agribusiness funds.

Furthermore, the low-profile type is a company whose business activities have a negligible impact on the broader community and environment. The low-profile companies consist of companies in services, contractors, trade, textiles, household appliance products, the insurance sector, and the banking sector. High-profile companies tend to have a larger company size than low-profile companies. This is because high-profile companies need significant funds to manage waste from their business activities, indicating a more significant, high-profile company size. The audit committee plays a significant role in improving the company's performance. One indicator of company performance is company size. The better the audit committee's performance, the larger the company's size. This shows that the audit committee's role in controlling the company runs optimally. The audit committee has a positive effect on increasing firm value (Samasta et al., 2018). The audit committee can have a good impact on the company's management. The audit committee's effectiveness in working and controlling the company's internals can lead to continuous improvement of company performance. Furthermore, an audit committee also plays a vital role in improving company performance (Ali and Amir, 2018). This is a reference that the audit committee's role is very significant in improving company performance.

The type of industry is one of the determinants in implementing environmental management. The more complex the level of the industry and the larger the company's size, the higher the level of environmental performance. The company's size can mediate the level of the company's exploration of environmental performance. Companies with a high-profile type and a large company size will achieve a good rating regarding environmental performance. This is due to the support of the significant total assets owned, which can be used to carry out waste treatment and other environmental activities. The audit committee has a significant role in the company. The audit committee's performance in large companies will be more complex than in small companies. Therefore, the audit committee significantly affects environmental performance in large companies. This shows that company size can mediate the relationship between the audit committee and environmental performance. Audit committees that work for companies with high total assets will be more active and diligent in carrying out their functions. This is due to higher business complexity than companies with low total assets. The high level of effectiveness of the audit committee's performance can improve the company's environmental performance.

This research has novelty in using firm size as an intervening variable to determine the relationship between environmental performance, type of industry, and audit committee. No research has studied this model in the context of Indonesian firms. In addition, our research aims to verify whether and how the type of industry and audit committee through firm size can affect environmental performance.

2. Methods

The research population is companies listed on the Indonesian Stock Exchange (IDX). This study uses a non-random sampling technique (purposive sampling) where the sample is selected based on the following criteria.

Table 1 Research sample criteria

No	Criteria	Total
1	The company is listed on the Indonesia Stock Exchange and is included in the PROPER category for 2017-2019	75
2	The company does not issue annual financial statements during the observation period	5
3	The company's financial statements do not meet research needs	4
	Companies that become research sample	66
	Number of units of analysis (companies that become the research-research sample multiple by three years=66x3)	198

This study used the dependent variable, namely environmental performance. Environmental performance is the company performance ability to achieve good value in managing its business waste. This variable is measured using the PROPER rating achieved by the company. The highest score of 5 indicates that the company has been very good at achieving environmental performance. The value of 1 is a condition where the company is very weak/poor in managing its environment, impacting its operations.

Table 2. PROPER criteria

Code Colour	Condition	Measurement
Gold	The company's management has succeeded in managing the environment with excellence, following the social values of society and nature conservation.	5
Green	The company management has efficiently managed resources by reducing, recycling, recovering, and being socially responsible.	4
Blue	The company management has managed the business according to applicable regulations.	3
Red	The company management carries out environmental management that is not following the regulations.	2
Black	The management violates regulations and carries out activities that pollute the environment.	1

The independent variables in this study consisted of two variables. First, the type of industry (TI) is the sensitivity level of the company to its environment, which consists of high-profile and low-profile. This variable is measured by a dummy variable, namely 0 for low profile companies and 1 for high profile companies. Second, the audit committee (AC) is measured by the committee's number of meetings during a year (Chariri et al., 2017). While the intervening variable in the form of firm size is measured using the company's total assets Ln Total Assets. Data were analyzed using WARPPLS 7.0.

3. Result and Discussion

3.1. Result

Convergent validity is based on the value of the loading construct that can be seen through the combined loading cross-loading output. If the construct's loading value exceeds 0.7, it is declared to meet the concurrent validity requirements. While if it does not meet 0.7, the construct dropped from the analysis model. Furthermore, it can be significant if the p-value is less than 0.5.

Table 3. Variable construct loading value

Variable	Loading Value	P-value	Description
EP	1.000	<0.001	Meet the convergent validity
FS	1.000	<0.001	Meet the convergent validity
TI	1.000	<0.001	Meet the convergent validity
AC	1.000	<0.001	Meet the convergent validity

Based on Table 3, it can be seen that EP, FS, TI, and AC have a p-value <0.05 with a loading value of more than 0.7, so the four variables based on the loading value have met the convergent validity requirements and can be said to be feasible to use in Research Model.

Table 4. Output latent variable coefficients

	EP	FS	TI	AC
R-Squared	0.223	0.131		
Adjusted R-Squared	0.207	0.120		
Composite Reliability	1.000	1.000	1.000	1.000
Cronbach's alpha	1.000	1.000	1.000	1.000
Avg. Var. Extrac	1.000	1.000	1.000	1.000
Full. Var. VIF	1.89	1.217	1.068	1.102
Q-Squared	0.227	0.132		

Based on Table 4, it can be seen that EP, FS, TI, and AC all have an AVE value of 1,000; this value is more significant than 0.5, so it can be said that based on the AVE value, the four variables have met *convergent validity*.

Table 5. Correlations among latent variables

	EP	FS	TI	AC
EP	1.000	0.348	0.214	0.218
FS	0.348	1.000	0.200	0.275
TI	0.214	0.200	1.000	0.068
AC	0.218	0.275	0.068	1.000

Table 5. shows the square root of the AVE for each variable has value of 1,000 more than the correlation coefficient between constructs in each variable. Therefore, it can be said that it has met the requirements of discriminant validity. Based on Table 4. shows the composite reliability values of EP, FS, TI and AC have composite reliability values more than 0.70. Hence, all variables have met the composite reliability criteria.

Table 6. Output latent variable coefficients

	EP	FS	TI	AC
<i>Composite Reliability</i>	1.000	1.000	1.000	1.000

Evaluation of the structural model (inner model) is seen by looking at the fit and quality indices model, the R-squared, and Q-squared values. After processing the data with the multiple mediating effects model, the fit indices and p-values model is produced as shown in table 5. as follows:

Table 7. Model Fit and quality indices

Model Fit & Quality Indices	Index	p-value	Criteria	Description
Average path coefficient (APC)	0.227	P=0.001	P<0.0.05	Accepted
Average Rsquared (ARS)	0.177	P=0.006	P<0.0.05	Accepted
Average adjusted Rsquared (AARS)	0.163	P=0.010	P<0.0.05	Accepted
Average block VIT (AVIT)	1.055	acceptable if <=5, ideally <=3.3		Ideally
Average full collinearity VIF (AFVIF)	1.144	acceptable if <=5, ideally <=3.3		Ideally
Tenenhaus GoF (GoF)	0.421	Small >= 0.1, medium >= 0.25, large >= 0.36		Large
Sympson's paradox ratio (SPR)	1.000	acceptable if >=0.7, ideally = 1		Accepted
R-squared contribution ratio (RSCR)	1.000	acceptable if >=0.9, ideally = 1		Accepted
Statistical suppression ratio (SSR)	1.000	acceptable if >=0.7		Accepted
Nonlinear bivariate causality direction ratio (NLBCDR)	1.000	acceptable if >=0.7		Accepted

Based on the fit and quality indices model, the values obtained from the ten criteria have been met, so it can be said that the model has met the fit requirements. The pictures of the estimation results of the indirect effect model are as follows:

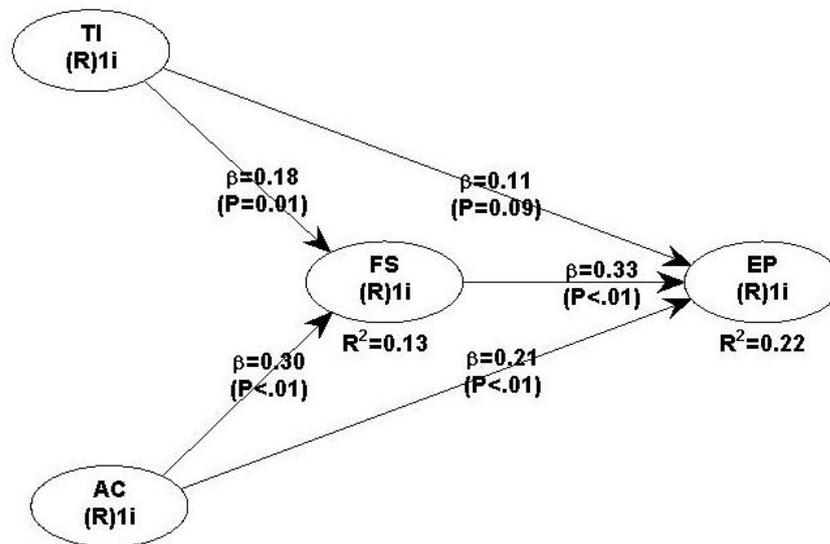


Figure 1. Indirect effect model test results

Based on the indirect effect model image that the R-squared value of the TI and AC variables on EP through FS is 0.22, meaning that the exogenous latent variables in this study can affect the EP by 0.22, so this study is classified as weak because it has an R-squared value smaller than 0.25. Based on the output latent variable coefficients in Table 8. it shows that the Q-Squared value of the EP variable is 0.131. Therefore, it can be interpreted that the research model has predictive relevance because it has a Q-Squared of more than zero. Next, this paper implemented the path coefficient and significance level to measure the correlation between constructs (Table 9).

Table 8. Output latent variable coefficient describing q-squared

	TI	AC	FS	EP
<i>Q-Squared</i>			0.223	0.131

Table 9. Research hypothesis test results

No	Hypothesis	Hypothesis Test Results			
		Coefficient	Sig.	a	Explanation
1.	TI a significant positive effect on EP	0.110	0.086	0.05	Rejected
2.	AC has significant positive effect on EP	0.215	0.003	0.05	Accepted
3.	FS has significant positive effect on EP	0.333	<0.001	0.05	Accepted
4.	TI has significant positive effect on EP	0.175	0.014	0.05	Accepted
5.	AC has significant positive effect on EP	0.304	<0.001	0.05	Accepted
6.	TI has significant positive effect on EP through FS as a mediating variable	0.058	0.154	0.05	Rejected
7.	AC has significant positive effect on EP through FS as a mediating variable	0.101	0.038	0.05	Accepted

3.2. Discussion

Based on the data analysis, the first hypothesis is rejected. The type of industry does not affect environmental performance. Therefore, this industry cannot provide high impact or pressure for companies to realize good environmental performance. However, this study contradicts other studies stating that manufacturing firms are more likely to have higher environmental performance (Nguyen and Thanh, 2021). The more complex the type of company, the better the environmental performance will be. However, this study confirms that the type of company cannot influence environmental performance. This is due to the company's high and low environmental performance, depending on how the top tone is running the company. Whatever the type of company, if you have a tone at the top that is aware of environmental performance's importance, everything will go well. However, suppose the tone at the top cannot control it. In that case, a mining-level company that provides severe environmental damage will not be able to achieve a high predicate for its environmental performance—indiscriminate waste. When viewed from the industry, it belongs to a hazardous waste processing service company that significantly impacts the environment. It seems clear that the type of industry does not guarantee that the company will have an excellent environmental performance.

The second hypothesis, the audit committee is proven to affect environmental performance. The more effective the audit committee's performance, the higher the environmental performance rating. This shows the audit committee contributes to ensuring the implementation of the company's strategy and model in managing its activities for environmental sustainability. The audit committee has the power to pressure management to be aware of and care about the surrounding environment. The audit committee always periodically evaluates the company's short-term and long-term strategies. This has a positive impact on implementing efforts to improve environmental performance. The more often the audit committee meets, the higher the company's environmental performance. Coordination and monitoring that are carried out regularly can find things that deviate from the company's goals. This early detection can improve environmental performance. This study strengthens the agency theory that it is necessary to have an independent party to ensure the agent's performance to achieve the principal's goals, one of which is good environmental performance.

The third hypothesis is that firm size can influence firms in improving environmental performance. High-profile companies care more about the surrounding environment (Liute and de Giacomo, 2022). The results of this study align with the contingency theory that companies need relationships with various elements around them, including the company's size, that can affect the achievement of the company's environmental performance. The fourth hypothesis showed that the type of industry significantly affected firm size. The more complex the industrial level (high profile), the

greater the total assets owned. Moreover, total assets are essential for high-profile companies to maintain business continuity.

The fifth hypothesis, the audit committee, positively affects firm size. The better the audit committee's performance, the larger the company's size. This is due to the audit committee's excellent effectiveness in monitoring and evaluating through regular committee meetings. The more often the audit committee discusses through various meetings and meetings, the audit committee will be able to discuss all matters related to the company. This discussion is not only limited to human resource issues but also includes the progress of the development of achieving the company's profit targets. This condition can trigger an increase in the company's performance which can be measured by increasing the company's assets. This supports the agency theory that there is a need for monitoring from the party representing the principal, which in this case is the audit committee. This monitoring aims to ensure the achievement of company performance.

The sixth hypothesis is rejected. The firm size cannot mediate the relationship between the type of industry and environmental performance. The character of the industry is equipped with a high company size cannot affect the company's performance. This is because the company's high or low profile is not a determining factor for management to be aware of the importance of environmental sustainability. In other words, no matter how big the size of the company and how good the type of industry is, it will not be able to encourage companies to improve their environmental performance. On the other hand, the ability to tone at the top in directing companies to achieve environmental sustainability awareness will improve the company's environmental performance. Tone at the top, like the board of commissioners, becomes the dominant thing in determining the direction of company policy (Hidayah et al., 2020).

The last hypothesis is proven that the existence of an audit committee that works effectively and in a large company will improve environmental performance. In addition, firm size can mediate the effect of corporate social responsibility on economic value added (Schiessl et al., 2022). Hence, the firm size is essential to enhance environmental performance. The audit committee has a crucial role in achieving high environmental performance scores. Coupled with the condition of companies with significant assets will be able to boost optimal environmental performance. In addition, the larger the company size will increase the complexity of the business so that the audit committee meets more often to discuss important matters. The frequency of these meetings will certainly impact more attention related to the company's environmental performance. This study proves that firm size can be an intervening variable in the relationship between audit committees and environmental performance.

4. Conclusions

The audit committee has a positive influence on environmental performance. The results of this study strengthen the agency theory. The more effective the audit committee's performance, the higher the achievement of environmental performance. Company size has a significant positive effect on environmental performance. This strengthens the legitimacy theory. The bigger the company, the higher the motivation to always have good environmental performance.

Furthermore, the type of industry has a positive effect on firm size. The characteristics of high-profile and low-profile companies will impact asset ownership. Furthermore, the audit committee has a significant positive effect on firm size. This shows that the audit committee's effectiveness can improve company performance. However, the type of industry does not impact environmental performance. This is because implementing environmental care actions depends on the tone at the top. The audit committee significantly affects environmental performance through firm size as a mediating variable. This condition shows that the company's size is essential in driving the realization of good environmental performance. The better the audit committee's performance, which is supported by the size of the company, will also encourage the realization of good environmental performance.

On the other hand, firm size cannot mediate the relationship between industry type and environmental performance. This is consistent with the second hypothesis. Whatever the type of industry and how big or small the company's size is, it will not be able to encourage its environmental performance. This is because environmental performance is more influenced by the human resources that manage it, not based on the characteristics of the industry. This study contributes to making policies that support the welfare of the audit committee. This is due to the importance of the audit committee's role in achieving company performance and environmental performance because of the importance of company size to encourage environmental performance.

Furthermore, the company must have a tone at the top that supports the achievement of the company's performance and environmental performance. This study has limitations that only focus on PROPER listings. For further research, it should be able to expand the scope of the sample company and not only be limited to companies listed in the PROPER listing.

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