Environmental Disclosure, Financial Performance, and Firm Value in the Mining and Manufacturing Industry

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ABSTRACT

Mining is an integral pillar of Indonesia's emerging market economy, contributing 9% of the total GDP in 2022, while the manufacturing sector grew by 5.01% in 2022. This study investigated the effect of environmental disclosure (ED) on firm value (FV) in Indonesia's mining and manufacturing sectors, with financial performance as a moderating factor. Using a sample of 260 data points from companies listed in the Indonesia Stock Exchange between 2020 and 2021, we employed multiple regression models to analyze the data. Our findings revealed that environmental disclosure did not have a significant direct impact on firm value. However, financial performance strengthened the positive relationship between environmental disclosure and firm value, suggesting that investors placed more importance on financial performance than on environmental disclosure alone. The results reflected the evolving but still cautious approach of Indonesian investors toward sustainability, offering insights into investor behavior in developing markets. The study contributes to literature by providing a new perspective on signaling theory in the context of emerging economies and highlights the need for future research on the integration of environmental considerations into financial decision-making.

Keywords: Environmental Disclosure, Corporate Governance, ROA, Firm Value

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INTRODUCTION

Most stakeholders have switched their attention away from short-term earnings, which do not ensure a company's future, towards sustainability (Rahim et al., 2022). Sustainability reports encompass all significant issues concerning the firm and industry, providing an adequate amount of data from the business (Yu et al., 2022). Sustainable issues include social and environmental concerns. For stakeholders to participate and be aware of the steps taken to minimise the climate problem, the relevance of sustainability and global warming issues in the business model and reporting must be improved (Galeone et al., 2023). Therefore, apart from financial performance, environmental issues should be the company's main concern for operational sustainability.

Nowadays, shareholders are anticipated to have a strong voice in favour of corporate investment in sustainable and socially conscious projects (Xu et al., 2023). Over the last twenty years, investors and businesses have given growing attention to the themes of socially responsible investing (SRI), environmental, social, and corporate governance (ESG), and corporate social responsibility (CSR) (Rau & Yu, 2023). In that context, some prominent industries have improved their poor reputations by revealing their carbon emissions, and shareholders have shown interest in investing in these businesses (Hardiyansah et al., 2021). However, some shareholders take a different stance, contending that rational investors typically assess the long-term market value of companies (Xu et al., 2023b). Therefore, some researchers have been curious about whether environmental issues are related to firm value (Atasel et al., 2020; Deswanto & Siregar, 2018; Gerged et al., 2021; Plumlee et al., 2015; Wang et al., 2021).

Several scholars, including Deswanto and Siregar (2018), have examined environmental disclosure as measured by the Global Reporting Initiative (GRI) Index on firm market value. Furthermore, Tu et al. (2020) link environmental issues with market reactions proxied by cumulative abnormal returns. Additionally, Gerged et al. (2021) examined the impact of environmental concerns on firm value, as measured by Tobin's Q (TQ) and Return on Assets (ROA), across national boundaries.

Previous studies have offered several justifications for the significance of the connection between environmental issues and corporate performance. Due to weak environmental policies, a business may be subject to fines and legal action (Ahmad et al., 2023). Businesses enhance their environmental practices and increase their degree of environmental disclosure to boost their financial performance, (Atasel et al., 2020). Companies that perform poorly in terms of the environment try to justify their activities to the public by influencing public opinion through increased environmental disclosure (Wu & Shen, 2010). Companies that perform well in the environment are more likely to receive recognition from external organisations (Khanifah et al., 2020).

Nevertheless, prior studies on environmental disclosure and firm value did not test a moderating variable that may strengthen the relationship between environmental disclosure and firm value. The research was conducted to test other variables that may strengthen the relationship between environmental disclosure and firm value. Therefore, this data analysis examined the relationship between environmental disclosure and the firm value, proxied using Tobin's Q, with financial performance as a moderating variable. This research generally referred to the studies of Deswanto and Siregar (2018) and Gerged et al. (2021).

Environmental issues significantly impact a company's financial and market performance. Investors like Hedonova sold off shares in an Indonesian nickel mine due to poor ESG practices (Teja, 2023). Companies with weak ecological records may lose potential investments. Scholars like Ball and Brown (1968) and Kaplan and Roll (1972) have studied the relationship between company disclosures and market concern. As it encourages sustainable development and raises a company's share price (Bolognesi & Burchi, 2023), managers should set aside money for environmentally and socially conscious investments (Pulino et al., 2022; Yadav et al., 2016). Investors take these factors into account when making investment decisions (Suttipun & Yordudom, 2022). Therefore, this study revisited the relationship environmental disclosure and firm value, utilizing various analyses across different industries, while considering the role of financial performance.

Data was from companies listed on the Indonesia Stock Exchange (IDX) for the mining and manufacturing industries. Manufacturing companies are characterised as high-profile and low-profile industries (Newson & Deegan, 2002). This study only used high-profile manufacturers. The reason for choosing high-profile industries was because there was a perception that high-profile businesses were primarily responsible for environmental harm, thus giving them a negative perception by the public (Hardiyansah et al., 2021). Furthermore, compared to low-profile industries, high-profile companies provided much more environmental and social information (Milne & Hackston, 1996). In Indonesia, Law No. 40/2007 paragraph 74 mandates that companies operating in fields related to natural resources are required to carry out social and environmental responsibility.

Although there is evidence that the level of environmental disclosure for high-profile companies is higher than for low-profile companies (Milne & Hackston, 1996; Suttipun & Yordudom, 2022), the question remains whether environmental disclosure is related to firm value in high-profile companies. Therefore, it was essential to study the relationship within the context of high-profile companies. Furthermore, this research aimed to examine whether the role of financial performance strengthened the relationship between environmental disclosure and firm value. These issues were addressed in this research.

This research contributes to the existing literature in several ways: First, it tests the relationship between the level of environmental information and firm value for high-profile manufacturing and mining industries. Mining companies were included in this research because they extracted natural resources, thus significantly impacting the environment (Deswanto & Siregar, 2018). Additionally, mining operations affected land conversion and disrupted forest habitat, ecological systems, biodiversity, and natural vegetation (Khanifah et al., 2020). Second, our research provides evidence regarding the role of financial performance (ROA) in strengthening the relationship between environmental disclosure and firm value. Lastly, this research contributes to the Signalling Theory (ST), where signals in the form of financial and non-financial performance may influence investment decisions. By disclosing information, investors are more attracted to invest, raising the share price and thereby increasing market capitalisation.

LITERATURE REVIEW

The public's perspectives of companies with poor environmental performance are influenced by increased environmental disclosure, which helps these companies explain their behaviours (Wu & Shen, 2010). Research conducted by Suttipun and Yordudom (2022) examined the disclosure of non-financial information (ESG) on market reactions. Their research used the ST to link these issues to firm values. The findings showed that market reactions were positively impacted by social and environmental disclosure. Environmental, social, and governance disclosures were found to affect how shareholders make investment decisions (Suttipun & Yordudom, 2022). Companies that disclosed information regarding value creation, particularly ESG issues, offered encouraging signals to the market regarding both company performance and future potential, thus attracting more investment and raising firm value (Maama & Marimuthu, 2022).

Research has investigated the relationship between environmental issues and firm value (including firm and market performance) in emerging markets. Research conducted by Gerged et al. (2021) examined this correlation in Gulf Cooperation Council (GCC) Countries. The findings indicated a positive relationship between environmental disclosure and firm value through both Tobin's Q and ROA. Wang et al. (2021) provided evidence of a positive relationship between environmental disclosure and firm value in the Chinese mining and manufacturing industries. Other research also investigated this issue in China's high-polluting industries (Cai et al., 2023; Fan et al., 2020; Tu et al., 2020). While there is existing evidence linking environmental issues and firm performance in Southeast Asian countries, such as Malaysia (Iatridis, 2013) and Indonesia (Deswanto & Siregar, 2018; Mahmudah et al., 2023), the moderating role of financial performance in this relationship has not yet been thoroughly explored.

Signalling Theory

The signalling theory (ST) is used to explain the behaviour of two parties, both within communities and individuals who have different access to information (Connelly et al., 2011). In the signalling environment, receivers include external parties such as governments, investors, clients, suppliers, and the public (Carrasco & Vílchez, 2022)**.** For shareholders to

benefit from the signal, management strives to deliver pertinent information. The ST aims to influence shareholders' decisions and behaviours (Maama & Marimuthu, 2022). Various pieces of information that can serve as signals to receivers include corporate social responsibility (CSR) information (Carrasco & Vílchez, 2022), corporate brands (Nyagadza et al., 2021), climate change (Jung & Song, 2023), and even green products (Ki & Kim, 2022).

Firms release information that sends out signals, both financial and non-financial (Hardiyansah et al., 2021). According to the ST, selecting unfavorable stakeholders may result in an undervaluation of businesses, especially those with strong environmental consciousness and a history of disclosing pertinent information to demonstrate their competitive edge (Cai et al., 2023). On the investor side, to close an information gap on their norms and practices, companies communicate to investors their commitment to environmental, social, and governance measures by releasing sustainability reports (Friske et al., 2023). Therefore, investors are more willing to invest in corporations with sustainable performance when they see a company's commitment to sustainability demonstrated by its reduction of greenhouse gas emissions, which also suggests better prospects relative to competitors (Sayuti et al., 2024).

In this study, the signals used were non-financial information (environmental disclosure) and financial performance. The ST helps explain why environmental disclosure may not yet be perceived as a powerful signal in Indonesia. Financial performance takes precedence in emerging markets where the integration of sustainability and financial analysis is still developing. Investors likely see financial strength as a more reliable indicator of a firm's success and longevity. At the same time, environmental factors remain secondary concerns until the market further evolves and more fully integrates ESG principles. Therefore, the moderating role of financial performance is critical to understanding how investors interpret ED in this context.

Hypothesis Development

Environmental Disclosure and Firm Value

Several studies have linked signals in the form of non-financial

performance to receivers (Anglin et al., 2018; Gerged et al., 2021; Mrkajic et al., 2019; Carrasco & Vílchez, 2022; Sadeh & Kacker, 2018). In this research, the signal was environmental disclosure (Deswanto & Siregar, 2018; Gerged et al., 2021; Plumlee et al., 2015; Tu et al., 2020; Wang et al., 2021), and the receiver was the investor (Goethner et al., 2021; Jelfs & Lawton Smith, 2021; Ragozzino & Blevins, 2021). The relationship between environmental disclosure and firm value is reflected in the ST, which examines the impact of investor behaviour (Maama & Marimuthu, 2022). Figure 1 illustrates the relationship between environmental disclosure and firm value within the framework of the ST.

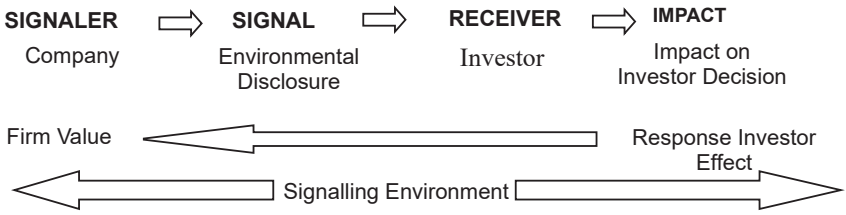

Figure 1: Mechanism of Signalling Theory
Source: Adapted by (Guest et al., 2020)

The company's environmental programme is one of the concerns of investors (Deswanto & Siregar, 2018). Furthermore, environmental disclosure supports environmentally friendly and green transformation of industries (Ding et al., 2022). Therefore, investors are increasingly confident about investing in such companies. Prior studies have also demonstrated that environmental information can enhance firm value (Forcadell et al., 2022; Fuadah et al., 2018). Based on the arguments above, Hypothesis 1 of this research was as follows:

H_1: Environmental disclosure is positively related to firm value.

Financial Performance and Firm Value

In this research, financial performance played an important role in increasing firm value. Several researchers have found that financial performance elicited market responses (Asa'd et al., 2023; Asni & Agustia, 2022; Fauzi, 2022; Yuniarti et al., 2022).

Even though classic research has examined the influence of financial performance on market reactions[1], it remains to be seen whether this association persists in the modern era. In recent times, some investors are paying attention to non-financial performance, such as environmental issues (Gerged et al., 2021; Toukabri & Youssef 2022; Xu et al., 2023). Moreover, this relationship was tested within high-profit industries. Given that certain industries, such as those contributing significantly to carbon emissions in Indonesia (Hardiyansah et al., 2021, see footnote 3), financial performance was predicted not to be the sole consideration in investment decisions. Therefore, it was interesting to examine the relationship between financial performance and firm value in the Indonesian market context.

H_2: Financial Performance is positively related to firm value.

Environmental Disclosure, Financial Performance, and Firm Value

A higher firm value can influence the market favourably and stimulate shareholders to have faith in both the present and future prospects of the firm (Hardiyansah et al., 2021). Several researchers have linked environmental issues with corporate value, as conducted by Deswanto and Siregar (2018) and Gerged et al. (2021). Gerged et al. (2021) proved that environmental disclosure had a positive and significant effect on firm value, as measured using Tobin's Q. Furthermore, firm value was affected by environmental quality, which moderated the cost of capital and cash flow elements (Plumlee et al., 2015).

In its implementation, environmental issues incur costs that can affect company profits, as demonstrated by companies in Indonesia, such as Bumi Resource Tbk, Tambangnya Megah Tbk, and Vale Indonesia Tbk, which spent over $10,000,000.00 on environmental costs in 2021. High actual costs were also associated with environmental disclosure, including system development and the identification, measurement, and disclosure of information (Deswanto & Siregar, 2018). Given these added expenses,

1 For instance:

1. Ball, R., & Brown, P. (1968). An Empirical Evaluation of Accounting Income Numbers. *Journal of Accounting*
2. Beaver, W. H. (1968). The Information Content of Annual Earnings Announcements. *Journal of Accounting Research*, *6*, 67.
3. Collins, D. W., & Kothari, S. P. (1989). An analysis of intertemporal and cross-sectional determinants of earnings response coefficients. *Journal of Accounting and Economics*, *11*(2–3), 143–181

businesses must continue to perform efficiently financially. According to the ST, companies convey their intentions through the information they provide, such as financial performance (Prasad et al., 2022). Therefore, in this study, financial performance was predicted to strengthen the relationship between environmental disclosure and firm value. This strengthening was due to the high costs of managing environmental issues, which reduced company profits.

H_3: Financial performance strengthens the relationship between environmental disclosure and firm value.

METHODOLOGY

Sample

The sample in this study consisted of mining and high-profile manufacturing companies listed on the Indonesia Stock Exchange (IDX) for the 2020-2021 period. There were several reasons for using high-profile industries. Firstly, high-profile industries in 2020 were predicted to contribute around 40% to total carbon emissions in Indonesia (Hardiyansah et al., 2021)[2]. Secondly, these industries typically received various kinds of pressure from stakeholders such as regulators, media, and non-governmental organisations (Zhong et al., 2022). Thirdly, the disclosure of environmental and social issues in these industries was higher than in low-profile industries (Milne & Hackston, 1996). High-profile industries in this research included sectors such as chemicals, plastic and packaging, pulp and paper, machinery and heavy equipment, automotive and components, other basic industries and chemicals, food and beverages, tobacco manufacturing, pharmaceuticals, cosmetics, and household goods, as adapted from Milne and Hackston (1996) and Newson and Deegan (2002).

The total population for the 2020 and 2021 periods consisted of 298 data points. The selected sample used the criterion that the company's environmental disclosure value was not zero. Consequently, 38 companies did not meet the criterion. Therefore, the total sample, after excluding these 38 companies, was 260.

2 The data based on the Deforestation and Forest Degradation Management Agency of Indonesia

Table 1: Sample Selection

Information	Data
Total number of companies	149
Years for analysis	2
Total	298
Less: Zero value of environmental data	(38)
Number of observations (Total – Zero value of environmental disclosure)	260

Variables and Measurement

This study examined the impact of environmental disclosure on firm value, with financial performance serving as a moderating variable. Environmental disclosure data was collected using the content analysis method (hand-collected) (Gerged et al., 2021; Plumlee et al., 2015; Wang et al., 2021). The content analysis of a company's annual report and sustainability report involved identifying the environmental performance's position in the table of contents and sub-theme. The initial step in the annual report was to search the table of contents for environmental performance sub-themes, if none exist, look for in a sub-theme for sustainability performance or CSR. The second stage was the analysis. The analysis was carried out referring to sustainability issues using the GRI Standards 2016. The details came from sustainability and annual reports. Panel issue data from the relevant year was evaluated, and companies that provided the GRI Standards Reference Index Table were reviewed. If the firm did not have this table, then the manual content analysis was performed on the report. Each item was coded with a value of 1 if it was disclosed and 0 otherwise (Gerged et al., 2021). The total number of items disclosed was then divided by the total number of possible items and multiplied by 100% to get the disclosure percentage (Deswanto & Siregar, 2018; Fuadah et al., 2018).

This research did not separate the environmental issue to hard or soft (Plumlee et al., 2015). Although hard disclosure was thought to be more applicable for market stakeholders (Cormier & Beauchamp, 2021), but Indonesia's regulatory framework for environmental disclosure was still in developmental phase, and firms were likely to adopt varying approaches to meet these requirements. In such a context, distinguishing between hard and soft disclosure may not yield meaningful results because firms may not yet consistently differentiate between these categories in their reporting. Instead, aggregating environmental disclosure offered a better reflection of how investors in Indonesia currently perceived these disclosure as a whole.

This research employed the Global Reporting Initiative (GRI) index to measure environmental disclosure for several reasons. First, the GRI standard provided a more comprehensive sustainability report (Pereira et al., 2021), making it a suitable guide for measuring environmental disclosure. Second, the GRI standard offers investors sufficient information to make informed decisions (Suttipun & Yordudom, 2022). Therefore, using the GRI index in this research was predicted to be appropriate for analysing the relationship between environmental disclosure and firm value. Table 2 presents the variables employed in this study along with their respective measurement proxies and operational definitions:

Table 2: Measurement of Variables

Variables	Measurement	Resource
Dependent Variable Firm Value (FV)	Tobin's Q	(Gerged et al., 2021; Wahidahwati and Ardini, 2021; Wu and Shen, 2010)
Independent Variable Environmental Disclosure (ED)	Global Reporting Initiative (GRI) index	(Fuadah et al., 2018; Plumlee et al., 2015)
Moderating Variables		
Financial Performance (ROA)	ROA	(Pamungkas et al., 2023)

Analysis of Data

The data analysis procedure began with testing the normality of the data, followed by robust tests involving heteroscedasticity and serial correlation tests. Then, static panel data analysis was conducted, which involved several stages: (1) Breusch and Pagan Lagrange Multiplier tests to compare the Pooled Ordinary Least Square vs Random Effect Model, and (2) the Hausman test to compare Fixed Effect Models vs Random Effect Models. These stages were tested first to determine the preferred model. Nevertheless, these models may have some issues such as endogeneity or omitted variable bias, as a result to ensure the robustness of the analysis, we employed the Generalized Least Square (GLS) to investigate the main model, and Two-Stage Least Squares (2SLS) for the robustness test. This combination of method strengthened the reliability and validity of the findings.

Static panel data analysis was used to test the effect of ED on FV through ROA to prove the hypothesis. The significance level was determined as follows: if the significance value was less than the significance level (α), then reject H_0; otherwise, if the significance value was greater than the significance level (α), then accept H_0 (Yusoff et al., 2022). The regression model of this research was as follows:

$$FV = \beta_{0+}\beta_1 ED\,it + \beta_2 ROA\,it + \beta_3 (ROA*ED)\,it + \beta_4 SIZE\,it + \beta_5 Lev\,it + \beta_6 MTB\,it + \varepsilon it$$

Where:

it = observed variable (industry i at time t)
i = 1,2,3,4,5….260 industries
t = 2020,2021 (2 years total)

FINDING AND DISCUSSION

Descriptive Statistics

Table 3 shows the average, standard deviation, minimum, and maximum values of the environmental disclosure (ED), firm value (FV), ROA, and environmental disclosure moderated by ROA. This data indicated that the entire sample consisted of 260 companies, including mining companies and high-profile manufacturers.

The statistical data in Table 3 revealed that the minimum values for firm value, environmental disclosure (ED), return on assets (ROA), and environmental disclosure moderated by ROA (ROAED) were 0.05, 0.03, -1.12, and -0.11, respectively. There were 49 data points where the ROA value was negative. Meanwhile, the maximum and mean values for firm value were 84.09 and 1.619, for ED were 0.77 and 0.25, for ROA were 8.3 and 0.078, and for ROAED were 0.28 and 0.167, respectively. Additionally, the descriptive data also presented control variables, namely SIZE, LEVERAGE, and MTB.

Table 3: Descriptive Statistics

Variables	N	Mean	Standard Deviation	Min.	Max.
FV	260	1.619	5.374	0.05	84.09
ED	260	0.25	0.162	0.03	0.77
ROA	260	0.078	0.531	-1.12	8.3
ROAED	260	0.167	0.039	-0.11	0.28
SIZE	260	12.514	0.819	8.78	14.57
LEVERAGE	260	0.812	5.448	0.08	87.91
MTB	260	2.427	4.909	-7.98	56.79

Table 4 shows a correlation matrix, where the variables ED, ROA, and ROAED had a negative relationship with the dependent variable FV.

Table 4: Correlation Matrix

	FV	ED	ROA	ROAD	SIZE	LEVERAGE	MTB
FV	1						
ED	-0.035	1					
ROA	-0.034	-0.028	1				
ROAED	-0.061	0.365**	0.582**	1			
SIZE	-.282	0.416	-0.122	0.161	1		
LEVERAGE	0.956	-0.07	-0.051	-0.175	-0.297	1	
MTB	0.201	0.076	0.032	0.226	0.102	-0.044	1

Static Panel Data

Table 5 shows the results of the static panel data analysis from the overall sample, which included mining companies and high-profile manufacturers. This research conducted three test models: pooled ordinary least square (POLS), random effects model (REM), and fixed effects model (FEM). To choose the best model for concluding the research hypothesis, the first step was to carry out a Breusch and Pagan Lagrangian Multiplier test (BP-LM test) to choose between POLS and REM. The results showed prob > 0.05 (0.002 < 0.05), so REM was chosen. Second, a Hausman test was conducted to choose between REM and FEM. The results indicated that the Hausman test's asymptotic assumptions were not met by the model fitted to these data, so the chi^2 of the Hausman test was -253.02 < 0.05. Therefore, REM was chosen.

The table shows that ED did not significantly influence firm value. Meanwhile, ROA strengthened the relationship between ED and FV, with a value of 0.000 and a coefficient of -9.087. This model did not have a multicollinearity issue. However, Table 5 indicates that the REM model had a heteroscedasticity issue, as the probability value from the Modified Wald Test is 0.00 < 0.05. Meanwhile, the Breush Godfrey LM Test produced a p-value of 0.0000 < 0.05, indicating that the model had an autocorrelation problem.

We overcame these issues following Bui et al. (2023) by conducting the generalised least squares (GLS) method. The results showed that ED did not significantly affect FV. Apart from that, the effect of ED on FV moderated by ROA showed significant results. Furthermore, all of the control variables, namely SIZE, LEVERAGE, and MTB, significantly influenced firm value with a significance level of < 0.01.

Table 5: Static Panel Data Analysis

	POLS	REM	FEM	GLS
ED	0.734	0.930	0.896	0.730
	(-0.126)	(-0.027)	(0.045)	(-0.126)
ROA	0.000***	0.020**	0.299	0.000***
	(-0.519)	(-0.257)	(0.445)	(-0.519)
ROAED	0.000***	0.000***	0.069	0.000***
	(12.99)	(5.404)	(2.943)	(12.997)
SIZE	0.000***	0.004***	0.000***	0.000***
	(-0.251)	(-0.269)	(-1.786)	(-0.251)
LEVERAGE	0.000***	0.000***	0.000***	0.000***
	(0.955)	(0.953)	(1.005)	(0.955)
MTB	0.000***	0.000***	0.000***	0.000***
	(0.249)	(0.274)	(0.303)	(0.249)
_cons	0.000	0.002	0.000	0.000
	(3.237)	(3.483)	(22.324)	(3.237)
N	260	260	260	260
R-sq			0.976	
Breush and Pagan Lagrangian		Chibar2 = 8.31		
		Prob > chibar2 = 0.002		
Hausman Test			-253.02	
		The model does not satisfy the Hausman test's asymptotic assumptions		

	POLS	REM	FEM	GLS
Multicollinearity Test		1.49		
Modified Wald Test		Prob>chi2 = 0.0000		
Breush-Godfrey LM Test		Prob>chi2 = 0.0000		
	t statistics in brackets *** p < 0,01 and **p<0,05			

Robustness Test

Previous tests confirmed that environmental disclosure did not significantly affect firm value. Meanwhile, ROA strengthened the relationship between environmental disclosure and firm value, while ROA significantly affected firm value. This section describes additional analyses performed to confirm the robustness of the results in the previous tests. This investigated how environmental concerns and firm performance affected the firm value in three different industries: mining, low-profile, and high-profile manufacturing. It placed a focus on sustainable development by classifying enterprises into high-profile and low-profile groups. The goal of the research was to comprehend the factors that influenced business value while taking manufacturing and mining distinctions into account. Furthermore, market-to-book was used as a substitute metric of company value. In this section we utilized 2SLS to mitigate any endogeneity concerns (Elmarzouky et al., 2023; Issa & Zaid, 2021; Sun et al., 2023).

Table 6: Robustness Test

Variables Code	Mining Industry				High-Profile Manufactures				Low-Profile Manufactures			
	Tobin's Q		MTB		Tobin's Q		MTB		Tobin's Q		MTB	
	Coef.	Sig.	Coef.	Sig.	Coef.	Sig.	Coef.	Sig.	Coef.	Sig.	Coef.	Sig.
Constant	8.173	.002	-3.003	.559	-1.094	.542	-5.915	.368	6.921	.113	11.752	.220
ED	-.341	.681	-2.588	.128	1.335	.136	.162	.960	.916	.576	1.612	.654
ED_ROA	5.567	.049	5.570	.329	21.788	.000	45.616	.001	6.368	.339	12.351	.398
SIZE	-.436	.038	.662	.119	.079	.594	.485	.373	-.426	.257	-.710	.389
LEV	-1.445	.004	-4.230	.000	.975	.000	.035	.609	-.198	.770	.229	.878
AGE	-.025	.006	-.033	.076	.010	.095	.049	.026	-.022	.183	-.044	.220
R^2	0.327		0.292		0.947		0.116		0.045		0.029	
F	7.928		6.175		636.238		4.688		1.095		0.698	
Samples	81		81		185		185		122		122	

ROA Return on Asset, **ED** Environmental Disclosure, **SIZE** Firm Size, **MTB** Market to Book, **LEV** leverage, **AGE** Firm Age

DISCUSSION

In this study, we examined the influence of environmental disclosure on firm value as moderated by ROA. We tested four models: POLS, REM, FEM, and GLS. The GLS method was employed to address issues of heteroscedasticity and autocorrelation. Additional analysis was conducted using robustness tests and FEM models for high-profile industries. The GLS model produced consistent robustness test results (refer to Table 5). Therefore, the results of this study are based on the GLS test results.

Hypothesis 1 stated that environmental disclosure affects firm value. The results showed that environmental disclosure did not significantly influence the value of Indonesian firms. Hypothesis 1 was rejected; this result is in line with Deswanto and Siregar (2018) and contrary to Atasel et al. (2020) and Gerged et al. (2021). This discrepancy could be due to several reason. Firstly, new regulations regarding "Form and Issues of Annual Reports for Issuers or Public Companies" No. 16/SEOJK.04/2021. The regulation mandates annual reports to include social and environmental responsibility issues, potentially influencing companies' presentation of environmental data and panel data analysis for 2020-2021. However, this regulation may not be fully enforced, leading to limited investor confidence in ED. Secondly, cultural factor, investors in Indonesia may prioritize short-term profits over long-term sustainability, causing a lag in the impact of ED on FV. Thirdly, market maturity, as Indonesia's market is still developing, ED may not yet be a major factor in investor decision.

The conclusion is that ED had no influence on firm value in the Indonesian context. This finding is consistent with Deswanto & Siregar (2018), who argue that this may indicate that investors have not considered environmental issues when making investment decisions.

Hypothesis 2 stated that financial performance was positively related to firm value. The results proved that ROA significantly influenced firm value. This indicated that investors responded to the company's financial performance. These results are consistent with research conducted by Asa'd et al. (2023), Ball and Brown (1968), Beaver (1968), and Fauzi (2022). Even though companies are currently facing an era of sustainability, and investors are paying attention to environmental issues (Gerged et al., 2021;

Toukabri & Youssef 2022; Xu et al., 2023), financial performance remains a key consideration for investors when making investment decisions. This is in line with the ST, which posits that companies provide positive signals to the market regarding their performance (Maama & Marimuthu, 2022). The conclusion is that financial performance was consistently taken into consideration by investors when making investment decisions, even though companies also send signals in the form of non-financial performance.

Hypothesis 3 examined the relationship between environmental disclosure and firm value, moderated by financial performance. The test results demonstrated that financial performance strengthened the influence of environmental disclosure on firm value in mining and high-profile industries.

Emerging economies have their own institutional contexts, with cultural distinctions in power distance and individuality, political complications involving corruption and rivalry, and unique labor and education systems (Deswanto & Siregar, 2018). In emerging economies like Indonesia, cultural factors like individualism and power distance influenced investors' and corporations' perceptions of sustainability and financial performance. High power distance may lead to centralized decisions and a focus on financial stability. Furthermore, corruption and political instability in emerging markets lead to investors prioritizing financial metrics over environmental disclosure due to perceived lack of transparency and enforcement, implying that financial performance is the primary signal. The environmental cost was another significant factor to consider. Mining companies like Bumi Resource and Vale Indonesia faced high environmental costs, impacting profits and raising investor concerns (Khanifah et al., 2020) due to environmental risks, reclamation efforts, and disclosure expenses (Deswanto & Siregar, 2018).

Hypothesis 3 confirmed that environmental disclosure did not directly correlate with firm value, but when moderated by firm performance, it can effectively indicate firm value. Therefore, companies that disclosed environmental issues may not attract more investment, but increasing financial performance will encourage companies to produce more sustainable disclosure, ultimately increasing firm value (Diantimala, 2018). These findings align with previous research conducted by Gerged et al. (2021), Plumlee et al. (2015), and Wang et al. (2021).

According to the findings, not all Indonesian mining and manufacturing enterprises had a considerably higher company value as a result of environmental disclosure (ED). This implied that environmental disclosures were not given much weight by investors, maybe as a result of sustainability integration's early stages. The robustness test verified that ED was small in all industries, suggesting that investors did not give environmental factors a lot of weight. The study also discovered that, especially in well-known manufacturing sectors, good financial performance amplified the beneficial effect of ED on firm value. The financial moderating effect was more industry-specific, the robustness test revealed.

CONCLUSION

This study confirmed three main hypotheses. First, environmental disclosure did not directly affect firm value. These results confirmed the research findings of Deswanto and Siregar (2018)**.** New regulations in 2021 mandate companies to include environmental issues in their reports, but the relationship between environmental disclosure and firm value remained inconclusive, compared to 2020.

Second, financial performance significantly affected firm value, consistent with Asa'd et al. (2023) findings**.** Financial performance served as a crucial indicator for investors, with strong performance expected to provide healthy returns. Third, financial performance strengthened the relationship between environmental disclosure and firm value. These results reinforced the findings of Plumlee et al. (2015). Indonesia's unique institutional contexts, cultural differences, political complications, and labor systems influenced investors' perceptions of sustainability, while corruption and political instability prioritized financial metrics over environmental disclosure. This is in line with the ST, where companies communicate environmental issues alongside strong performance. The market tends to respond optimistically to this information, viewing it as indicative of sustainable prospects and performance (Maama & Marimuthu, 2022).

The research suggests Indonesian regulators should better supervise companies with high environmental risks and call for companies to disclose renewable material use and supplier environmental assessments, which are

often overlooked by mining industries. Companies, especially in mining and manufacturing, should not rely solely on environmental disclosure but also focus on improving financial performance to signal value to investors. Moreover, investors might benefit from a more nuanced approach to incorporating environmental disclosure into their decision-making frameworks, as it becomes more significant in the long term.

We identified several limitations in this study. The study's short time frame (2020-2021) may not have fully captured long-term trends in environmental disclosure, financial performance, and firm value. The study's focus on Indonesia present limitations in generalizability. Future research should extend the study period to observe long-term impacts of environmental disclosure, explore high vs low profile industries beyond mining and manufacturing, and include cross-country comparative studies to determine consistency in patterns observed in Indonesia and whether institutional settings alter the dynamics of environmental disclosure's impact on firm value.

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