

# The relations among environmental performance, Profitability, Firm Size, Firm Value, and Environmental Disclosure: A Case Study of Basic Material Industry

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## ABSTRACT

Environmental Disclosure provides information related to the environmental effects of business activities. It is presented voluntarily in financial statements, following Financial Accounting Standards. Corporate behavior towards environmental disclosure is interesting to discuss because environmental disclosure is still voluntary. This study aims to examine the factors that determine environmental disclosure in Indonesia. This research uses quantitative research methods, using secondary data from annual reports and sustainability reports from companies listed on the Indonesia Stock Exchange, especially companies engaged in the Basic Material sector. The data collection of this study used purposive sampling method with several criteria. The Eviews program version 10 is the multiple regression analysis test tool. Environmental Disclosure uses GRI (Global Reporting Initiatives) standard indicators. Environmental Performance uses the performance ratings in PROPER. While profitability uses ROE (Return on Equity) indicators. Firm Size uses the Asset Growth indicator, and Firm Value uses the Tobin's q indicator. The results of this study partially show that the firm size variable influences the environmental disclosure variable. Environmental performance, profitability, or business value measures do not influence environmental disclosure. But simultaneously all independent variables, namely environmental performance, profitability, firm size, and firm value affect environmental disclosure.

Keywords:

Environmental Disclosure,  
Environmental performance,  
Return on Equity, Asset Growth,  
Firm Value

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## 1. Introduction

The growing public opinion today is that environmental disasters are caused by increasing business activities (García-Sánchez et al., 2021). Meanwhile, in increasingly high business competition, the company carries out various strategies to survive (Adomako et al., 2023; Pucheta-Martínez et al., 2022; G. Xie et al., 2021). The company takes into account many things, including relations with society and the environment (Gallego-Álvarez & Pucheta-Martínez, 2022), and

relationships with shareholders and investors (Aluchna & Roszkowska-menkes, 2022; Han et al., 2023). Corporate social responsibility and environmental reporting are becoming important in the modern business, given society's increasing concern for the environment. Therefore, environmental disclosure in the annual report is considered to provide a good company image. In addition, the strategy to attract the attention of investors is to obtain certification on environmental performance obtained from third parties (Zirek & Unsal, 2023).

Environmental disclosure is a medium used by organizations in disclosing data related to environmental risks, policies, strategies, cost targets, and accountability to stakeholders who are concerned about the environment (Z. Lu & Li, 2023)(Lapologang & Zhao, 2023)(Y. Lu & Abeyssekera, 2017). This involves various strategies including the company's program in empowering communities to utilize organic waste from livestock (Catapan, 2023). Although environmental disclosure is still voluntary (Passetti et al., 2018; Plumlee et al., 2015), environmental disclosure can add value to the company. The government regulates environmental disclosure in Indonesia by regulating the environmental business rating assessment mechanism (PROPER, Company Performance Rating Assessment for Environmental Program in Indonesia). The program requires certain companies to make environmental disclosures and to be rewarded for environmental disclosures based on criteria defined by law. The PROPER program has succeeded in becoming a driver of environmental innovation in Indonesia (Prabawani et al., 2023), as well as being a protection to protect biodiversity from the impact of development in Indonesia (Hadisusanto et al., 2022). This environmental performance assessment program from the government tends to be mandatory rather than voluntary (Yaya et al., 2018). The basic material sector is one of the industrial sectors whose business activities are considered to have a significant environmental impact (Li et al., 2022). Therefore, an in-depth analysis of the environmental performance of companies included in the basic materials sector becomes very interesting.

This study aimed to analyze the factors that influence environmental disclosure. Environmental performance, profitability, firm size, and value are independent variables. Environmental performance is the performance of a company in creating benefit for environment. The selection of environmental performance variables is based on legitimacy theory, which states that companies with good environmental performance are more likely to disclose environmental information because it can improve the company's image the community. Thus, it is suspected that environmental performance affects environmental disclosure.

Business profitability allegedly related to environmental disclosures (Clarkson et al., 2011; Qiu et al., 2016; J. Xie et al., 2019). The profitability of a business can be used as an indicator of how well its assets are managed (Pucheta-Martínez & Gallego-álvarez, 2021). Total assets, sales, revenue, and tax expenses are indicators of the company's size. For investors, a company's value is reflected by share price. Environmental disclosure allegedly can reduce profitability because it is not followed by changes in organizational behavior (Chen et al., 2018; Turzo et al., 2022; Zheng et al., 2023). However, some environmental disclosures are considered strategic policies that sacrifice short-term gains for long-term gains (Christensen et al., 2021; Jackson et al., 2020).

Research on the effect of environmental performance (Yang et al., 2020), profitability, firm size (Yang et al., 2022), and firm value (Gao et al., 2023)(Cai et al., 2023) on environmental disclosures from previous study showed mixed results (Yang et al., 2020). Based on these inconsistent results, this study intends to re-examine the variables affecting environmental disclosure to obtain uniform results using a sample of companies from 2016 to 2020. The novelty in this study is from the object of research in the basic material sector. In previous research, research on environmental disclosure was more dominant in the energy and mining sectors. Therefore, research in the basic material sector aims to see its influence in other sectors on the Indonesia Stock Exchange.

### **Stakeholder theory and Legitimacy theory**

Stakeholder theory is a framework for understanding how a business affects many constituents. The company's negative image on environmental performance has a worse impact than a decreased image on financial performance (Bellucci et al., 2021; Khan et al., 2023; Saputra et al., 2021). Stakeholders provide better value for companies that make organic environmental disclosures than cosmetics. Organic disclosure has more of a real impact on organizational change, and ultimately increases organizational legitimacy (Chi et al., 2013). According to this idea, a

company cannot function without the support of its stakeholders (Afolabi et al., 2023; Huang et al., 2023).

While according to legitimacy theory, businesses should care more than just the interests of shareholders (Deegan et al., 2002). The public has the right to know how the company's activities can affect the environment, both positively and negatively. The company's reputation may increase, as it will appear more trusted by locals. The capacity of firms to keep their relationships with government, other businesses, and society in line with accepted standards is at the core of this theory and the variables chosen by the researchers.

### **The Triple Bottom Line Concept**

The Triple Bottom Line concept measures the output of corporate actions that encompasses the fuller meaning of sustainability. The concept is gaining popularity because it encourages companies to pay attention to financial, environmental, and social performance simultaneously (Sahu et al., 2023). Companies are encouraged to strive for a balance between corporate, community, and environmental interests (Niu et al., 2022; Sánchez-Chaparro et al., 2022). Meaning that the company cares about the quality of life (Barykin et al., 2023) of the community around the business location. Companies should not only focus on making a profit but also contributing to the greater good of society and preserving the environment (planet). It is impossible to prioritize one factor at the expense of another in the interaction between profit, people (society), and the earth (environment).

## **2. Methods**

This study aims to determine the influence of the independent variable on the dependent variable. This research used descriptive verification techniques with a quantitative approach. The independent variables are environmental performance, profitability, firm size, and firm value. While the dependent variable is environmental disclosure. The source of this research data is secondary data in the form of annual reports and sustainability reports of basic material sector companies recorded for the 2016-2020 period. Data was obtained from the Indonesia Stock Exchange website, namely [www.idx.co.id](http://www.idx.co.id) and the official website of the company concerned.

The population used in this study consists of all basic material sector companies listed on the Indonesia Stock Exchange (IDX) from 2016 to 2020. The population in this study amounted to 95 companies with a sample of 18 companies with a total of 85 in the five years of the study period. In this study, sampling was carried out using purposive sampling method. Sampling using this method is based on the suitability of certain characteristics and criteria. The sampling criteria are as follows:

- Companies listed on the IDX in the basic materials sector that have released consecutive annual reports for 2016-2020.
- Companies listed in the basic material industry who participated in the PROPER program from 2016 to 2020.
- Companies that disclose environmental details consistently follow GRI standards

### **Variables of the research**

#### **a. Environmental Disclosure**

The Ministry of Environment defines "Environmental Disclosure as providing information to stakeholders with interest in the reporting organization intended to strengthen the value relationship between the reporting organization and stakeholders" ([menlh.go.id](http://menlh.go.id)). Meanwhile, the Global Reporting Initiative (GRI) also sets standard guidelines for businesses to report environmental impacts (environmental disclosure). GRI is a global non-profit organization to standardizes sustainability reporting. The GRI reporting framework has become one of the most frequently recognized options for reporting an organization's economic, social, and environmental performance.

GRI standards consist of universal standards and topic-specific standards. The universal standard has a serial number of 100 consisting of a grounding, general disclosure and management approach for 60 disclosure items. While the specific topic standard consists of 3 series, namely

economic topic serial number 200 (17 disclosure items), environmental topic serial number 300 (32 disclosure items), and social topic serial number 400 (40 disclosure items). The total standard disclosure items of specific topics are 89. This series reports on organizational impacts related to economic, environmental, and social topics.

#### **b. Environmental Performance**

Environmental performance is the company's performance in creating a better environment. The most important aspect of environmental performance is the environmental management system's mechanism in measuring company performance. Environmental management system is a company information instrument in environmental management. Environmental disclosure is management's effort to gain and maintain an organization's competitive advantage (Sánchez-Alegría et al., 2022).

The company's environmental impact is measured through an evaluation of environmental performance using a set of performance measurement indicators. The PROPER indicator was used in this study to measure the company's environmental performance. The performance measurement instrument consists of a group of indicators with the following ratings:

- 1) Black PROPER, Indicators for companies that deliberately commit negligence, resulting in pollution or environmental damage, as well as violating applicable laws and regulations and not implementing administrative sanctions that have been set.
- 2) Red PROPER, Indicators for companies undertaking environmental management efforts but not meeting all legal criteria.
- 3) Blue PROPOER, Indicators for companies that have made environmental management efforts and meet the standards outlined in related laws and regulations.
- 4) Green PROPER, Indicators for companies that have exceeded regulatory requirements for environmental management (*beyond compliance*) by implementing environmental management systems, utilizing resources effectively, and engaging in significant community empowerment initiatives.
- 5) Gold PROPER, Indicators for companies that have consistently demonstrated environmental excellence in production and service processes and conduct ethical and responsible business to society.

#### **c. Profitability**

One way to evaluate management performance is by knowing how well the company's profits are maintained. Companies with large profit margins are more likely to make environmental disclosures. It aims to gain good credibility from its stakeholder community. The company's financial success underpins management's capacity to make environmental disclosures. Conversely, low-profit companies are more likely to consider disclosing environmental data to maintain business as usual. The use of profitability ratios is adjusted to the state of the company. This study uses the Return on Equity ratio to measure a company's profitability. Return On Equity (ROE) is a profitability ratio to assess a company's ability to generate profits from the company's shareholder investments. The ratio (ROE) is appropriate for this study because the object of research comes from companies listed on the IDX, where the company uses money obtained from investors' investment results. The ROE ratio can measure how efficiently a company manages investments and provides added value to investors. ROE can also be an indicator in assessing the effectiveness of management applied to conduct equity financing or grow the company's progress.

#### **d. Firm Size**

Firm Size can be measured through several factors, including total assets, sales, revenue, and tax expenses. Disclosure of information is more important to larger organizations than to smaller ones. Larger companies implement environmental innovation strategies to survive in business competition (Marín-Vinuesa et al., 2020). Asset Growth is used as an indicator for total firm size in this analysis. This study calculates Asset Growth (AG) by comparing the total assets of the current period (t) with the total assets of the previous period (t-1).

#### **e. Firm Value**

From an investor's perspective, the value of a company increases if the company properly discloses environmental information. Good environmental disclosure is attractive in terms of financial and environmental responsibility. The indicator used in measuring company value is Tobin's Q. Tobin's Q is one of the company's performance indicators that focuses on company value, which describes management's performance in managing company wealth from an investment perspective. This study uses Tobin's Q as a company value measurement instrument. When Tobin's Q is less than 1, a company is considered undervalued because its book value is higher than its market value, and when it is more than 1, the company's stock is too expensive.

**Data analysis**

The analysis method is panel data regression analysis. The equation can be written as follows:

$$ED_{it} = \alpha + \beta_1 EP_{it} + \beta_2 P_{it} + \beta_3 FS_{it} + \beta_4 FV_{it} + e$$

Description:

- ED = Environmental Disclosure
- $\alpha$  = Constant
- $\beta_{1,2,3,4}$  = Regression coefficient
- $EP_{i,t}$  = Environmental Performance in company *i* in period *t*
- $P_{i,t}$  = Profitability in the company *i* in the period *t*
- $FS_{i,t}$  = Firm Size in company *i* in period *t*
- $FV_{i,t}$  = Firm Value (Tobin's Q) in company *i* in period *t*
- e = Error

**3. Results**

**a. Descriptive Data Analysis**

Descriptive statistical tests aim to obtain an overall picture of the research subject. This procedure is used as the first step in collecting data for further analysis of the problem. The following table details the findings of the study's descriptive statistical test.

**Table 1. Descriptive Statistics**

	ED	EP	PROF	FS	FV
Mean	0.336765	3.188235	-0.002990	0.017238	1.470488
Median	0.125000	3.000000	0.032120	0.009190	1.019740
Maximum	0.937500	5.000000	1.061680	0.571510	7.998390
Minimum	0.031250	2.000000	-1.455450	-0.559300	0.389520
Std. Dev	0.308696	0.449712	0.269166	0.147754	1.379240
Skewness	0.633237	1.558937	-2.988267	-0.001746	3.219747
Kurtosis	1.691718	5.704085	23.03705	6.956192	14.20229
Jarque-Bera	11.74260	60.32596	1548.425	55.43227	591.3107
Probability	0.002819	0.000000	0.000000	0.000000	0.000000
Sum	28.62500	271.0000	-0.254160	1.465190	124.9915
Sum Sq. Dev	8.004642	16.98824	6.085820	1.833815	159.7935
Observations	85	85	85	85	85

Source: Output of Eviews 10

Table 1. shows the findings of descriptive analysis for the study sample size of 85 observations. The measurement of Environmental Disclosure (ED) variables as dependent variables in this study uses environmental disclosure criteria recommended by the *Global Reporting Initiative* (GRI). Environmental disclosure variables range in value from 0.031250 to 0.937500, with 0.336765 as the mean and 0.308696 as the standard deviation, from a total of 85 environmental disclosure observations.

**b. Data analysis**

There are three models used in the panel data estimation method, namely *Common Effect Model (CEM)*, *Fixed Effect Model (FEM)*, and *Random Effect Model (REM)*. Tests are performed to determine the panel data estimation model used for panel data management. The *Chow*, *Hausman*, and *Multipplier Lagrange Test* are some of the tests performed. The *Chow* test is used to choose between the *Common Effect Model (CEM)* and *Fixed Effect Model (FEM)*. The *Hausman* test is used to better distinguish between *REM* and *FEM* models. The *Lagrange Multiplier Test* is used to choose between the *Common Effect Model (CEM)* and the *Random Effect Model (REM)*. The *Fixed Effect (FEM)* model was selected as the most suitable based on the *Chow Test* and *Hausman Test* results.

**Table 2. FEM Model**

Variables	Coefficient	Std. Error	t-Statistic	Prob	
C	0.364112	0.076124	4.783159	0.0000	
EP	-0.006830	0.023402	-0.291853	0.7713	
PROF	0.013301	0.026548	0.501026	0.6181	
FS	-0.154235	0.052763	-2.923188	0.0048	
FV	-0.001954	0.007516	-0.259952	0.7957	
Effects Specification					
Cross-section fixed (dummy variables)					
R-squared		0.972053	Mean dependent var		0.336765
Adjusted R-squared		0.963320	S.D. dependent var		0.308696
S.E. of regression		0.059122	Akaike info criterion		-2.608090
Sum squared resid		0.223704	Schwarz criterion		-2.004612
Log likelihood		131.8438	Hannan-Quinn criteria		-2.365354
F-statistic		111.3036	Durbin-Watson stat		1.789750
Prob(F-statistic)		0.000000			

Sources: Eviews 10

This study has conducted multicollinearity and heterokedasticity tests on the analyzed data. The results showed no correlation between independent variables in the regression model, and no heterokedasticity problems. Table 2 of the FEM model shows the results of the panel data regression equation from the following equation:

$$\text{Environmental Disclosure} = 0.364112 - 0.006830 \text{ EP} + 0.013301 \text{ PROF} - 0.154235 \text{ FS} - 0.001954$$

**c. Test of Significant**

1) Test coefficient of determination

The coefficient of determination test aims to measure how much the independent variable can explain the change in its dependent variable. Based on the results of the *Fixed Effect Model (FEM)* in Table 2, it can be seen that the *Adjusted R-squared* value of 0.963320. It means that ability of the independent variable to explain the dependent variable is 96.33% and the remaining 3.67% is influenced by other variables not analyzed in this study. This means that the variables EP, PROF, FS, and FV can explain environmental disclosure variables by 96.33%.

2) F Test

The F test aims to see the feasibility of a model that compares *Fstatistical* and *Ftable* values, or probability values of 0.05, to see if it is statistically significant.  $F_{\text{statistics}} > F_{\text{table}} = (111.3036 > 2.49)$ , and  $F_{\text{statistics prob}} = 0.000000 < 0.05$ , as shown in table 2. The F-table is calculated using  $k = 5$  (number of variables),  $n = 85$  (number of observations),  $df1 = k - 1 = 4$ , and  $df2 = n - k = 80$ . Based on the distribution of t at the significance level of 5%, the *Ftable* value is 2.49. Based on the fit model results, we can conclude that *H1* is true and *H0* is false.

Meaning that, environmental transparency is significantly affected by EP, PROF, FS, and FV simultaneously.

3) T test

Based on the result in table 2, this test is conducted to determine whether there is an influence between the independent and partially dependent variables.

a) Variable of Environmental Performance (X1)

The probability value of the EP variable of 0.7713 is greater than the significance threshold (0.05) indicating that environmental performance does not affect environmental disclosure.

b) Variable of Profitability (X2)

Compared with a significance level of 0.05, the value of the PROF variable of 0.6181 is significantly higher. Thus, it can be concluded that PROF does not affect environmental disclosure.

c) Variable of Firm Size (X3)

The FS variable has a probability of 0.0048, which is less than the threshold of 0.05 for statistical significance. Therefore, it is reasonable to conclude that there is a correlation between company size and environmental disclosures.

d) Variable of Firm Value (X4)

Firm Value (FV) value showed in table 2. is 0.7957 and  $0.7957 > 0.05$ , the FV is statistically greater in significance. This means there is no correlation / influence between FV and environmental disclosure.

#### 4. Discussion

##### a. The Effect of Environmental Performance (EP) on Environmental Disclosure

The first hypothesis states that *environmental performance* (EP) affects *environmental disclosure*. From the research that has been done, it was found that this hypothesis was rejected and accepted H0, meaning that *environmental performance* (EP) does not affect *environmental disclosure*. This result can be explained that when the level of *environmental performance* (EP) changes to increase or decrease, then no change in *environmental disclosure* follows. A high proper rating does not fully trigger companies to maximize environmental disclosure. This may be due to the high cost of environmental disclosure, which may not be proportional to the benefits expected by the company, resulting in the lack of management awareness and motivation for environmental disclosure. Descriptive statistics show this, with the company's average environmental disclosure still below 50%.

##### b. The Effect of Profitability (PROF) on Environmental Disclosure

The second hypothesis rejects that profitability affects environmental disclosure, and accepts H0 which implies that profitability does not affect environmental disclosure. Based on the results of this hypothesis, we can understand why environmental disclosure remains constant regardless of the level of profitability. Businesses are not obligated to disclose as much as possible about their environmental impact when profits are high. Company management should still see environmental disclosures as optional, not mandatory, reporting. Descriptive data shows that the average variable profitability of the company has a low value (-0.002990) and the company with the KRAS code 2019 has the lowest value (-1.545450). To date, not all environmental obligations required by companies have been made public.

##### c. The Effect of Firm Size (FS) on Environmental Disclosure

The third hypothesis states that firm size (FS) affects environmental disclosure. The partial test results show that the firm size (FS) variable affects the company's environmental disclosure in the basic material sector. Thus, it can be concluded that the third hypothesis proved acceptable. The firm size variable is expressed in the total assets of the company. The test results show that the firm size variable affects environmental disclosure. This implies that the size of a company's assets is appropriate in discussions about environmental responsibility. The larger the corporation, the greater its negative effect on nature. These results support the legitimacy theory, which states that large companies will tend to disclose more information because they have large resources compared to small companies, so they can finance the provision of more complete information to gain legitimacy from stakeholders.

#### **d. The Effect of Firm Value (FV) on Environmental Disclosure**

The fourth hypothesis states that a company's market value influences environmental disclosure. Evidence suggests that FV value do not differ in how they disclose environmental information. Therefore, the fourth hypothesis was rejected. The firm value variable is measured by using Tobin's Q indicator in measuring company performance, especially about company value from an investment perspective. The test results show that the firm value variable does not affect environmental disclosure. The results explain that changes in firm value do not cause changes in environmental disclosure indicators. A high or low Tobin's Q score does not affect environmental disclosure. Environmental disclosures is seen by company management as optional reporting rather than mandatory reporting.

#### **5. Conclusion**

This study analyzes how the influence of environmental performance (EP), profitability (PROF), firm size (FS), and firm value (FV) on environmental disclosure. This research was conducted on basic material sector companies in Indonesia's stock market. The study found that; *First*, Environmental Performance (EP) does not affect environmental disclosure, even if Environmental Performance (EP) increases or decreases, environmental disclosure does not change. A high PROPER rating does not fully force a company to maximize its environmental disclosures. This may be because management's awareness and motivation for environmental information disclosure decreased because the cost of environmental information disclosure was high and did not match the effect that the company expected. *Second*, Profitabilitas (PROF) does not affect environmental disclosure indicators. Even if profitability increases or decreases, there is no change in environmental reporting. High corporate profits do not motivate companies to maximize their environmental disclosures. Environmental disclosures are still considered part of optional disclosures, rather than mandatory disclosures by company management. *Third*, Firm Size (FS) affects environmental disclosure. Companies valued at large asset levels indicate that companies are taking more responsibility for the environment. The larger the company, the greater its environmental impact. *Fourth*, Firm Value (FV) does not affect environmental disclosure. The high and low value of Tobin Q does not affect environmental disclosure. Some of the company's upper echelons may still see environment-related disclosures as optional rather than mandatory reporting information. Future researchers may need to consider exploring environmental disclosures in sectors other than the basic materials industry.

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