

Analysis of the Effect of Disclosure of Environmental Costs and Environmental Performance on Financial Performance

Analisis Pengaruh Pengungkapan Biaya Lingkungan dan Kinerja Lingkungan Terhadap Kinerja Keuangan

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ABSTRACT

Allocation of costs to prevent and environmental improvement conditions is an incurred cost by the company that arises from the negative impact of the company's operations. The environmental costs incurred are expected to have a direct impact on environmental performance and financial performance. This research wants to see how much effect environmental costs and environmental performance have on the financial performance of mining companies listed on the Indonesia Stock Exchange (BEI). The population in this study came from 24 mining sector companies using purposive sampling techniques and for the five year observation period 2018 - 2022, 40 company data samples were obtained. Samples of data used come from annual reports, financial reports published on the Indonesian Stock Exchange and Sustainability Reports. To carry out data analysis and obtain regression results in this research, a statistical tool, namely Eviews 9, was used. The research results show that environmental costs have an effect on environmental performance, environmental performance has no effect on financial performance and simultaneously environmental costs and performance have an effect on financial performance.

Key words: Environmental Costs; Environmental Performance; Financial Performance

ABSTRAK

Alokasi biaya untuk mencegah dan memperbaiki kondisi lingkungan merupakan biaya yang dikeluarkan oleh perusahaan yang timbul dari dampak negatif operasional perusahaan. Biaya lingkungan yang dikeluarkan diharapkan dapat memberikan dampak secara langsung bagi kinerja lingkungan serta kinerja keuangan. Penelitian ini bertujuan untuk melihat seberapa besar pengaruh biaya lingkungan serta kinerja lingkungan terhadap kinerja keuangan pada perusahaan pertambangan yang terdaftar di Bursa Efek Indonesia (BEI). Populasi dalam penelitian ini berasal dari 24 perusahaan sektor pertambangan dengan menggunakan teknik purposive sampling dan lima tahun periode pengamatan 2018 – 2022 didapat 40 sampel data perusahaan. Sample data yang digunakan berasal dari annual report, laporan keuangan yang dipublikasi pada Bursa Efek Indonesia dan Laporan keberlanjutan. Untuk melakukan analisa data dan memperoleh hasil regresi pada penelitian ini digunakan alat bantu statistik yaitu Eviews 9. Hasil penelitian menunjukkan bahwa biaya lingkungan berpengaruh pada kinerja lingkungan, kinerja lingkungan tidak berpengaruh terhadap kinerja keuangan dan secara simultan biaya lingkungan dan kinerja berpengaruh terhadap kinerja keuangan.

Kata-kata kunci: Biaya Lingkungan; kinerja lingkungan; kinerja keuangan

1. Introduction

Industrial activities in Indonesia play a direct and important role in the country's development. The industrial sectors in Indonesia are quite diverse, all of these sectors can have positive and negative impacts. One of the negative impacts that is of concern is the impact on the environment. Several sectors are considered to have a negative impact on the environment, one of which is companies operating in the mining sector. The mining sector is one of the pillars of a country's economic development, because it has a role as a provider of energy resources that are very necessary for that country or other countries and can have an impact on a country's economic growth.

In Law of the Republic of Indonesia Number 32 of 2009 concerning Environmental Protection and Management in chapter 1 article 1 paragraph 2 states that "Environmental protection and management is a systematic and integrated effort carried out to preserve the function of the environment and prevent pollution and/or environmental damage which includes planning, utilization, control, maintenance, supervision and law enforcement" (Law of the Republic of Indonesia Number 32 of 2009, n.d.). Therefore, Indonesia's environment must be protected and managed well based on national principles and responsibilities, sustainability principles and justice principles. Furthermore, environmental management must be able to provide economic, social and cultural benefits, based on the principles of precaution, environmental democracy, centralization, as well as recognition and respect for local wisdom and the environment.

Environmental problems in Indonesia are increasingly diverse as evidenced by cases of climate change, ecosystem damage and natural disasters. There are many factors that cause disasters, but inappropriate human behavior in preserving nature is the biggest factor causing environmental damage. Environmental issues have received a lot of attention, giving rise to debates and divisions among companies. Some companies view environmental management as a moral obligation, thus motivating them to actively protect and limit the exploitation of nature. Companies have experienced a significant increase in environmental awareness (Al Daffa & Hasnawati, 2024).

Companies in the mining sector are often accused of causing environmental damage because their activities often involve exploitation of the environment. Increasingly stringent environmental regulations and demands from stakeholders, such as government, society, and *financial specialist*, encouraging companies to allocate greater resources to environmental costs. In Indonesia, the Indonesian Stock Exchange (BEI) created regulations that encourage listed companies, including mining companies, to aim to be more open in reporting environmental impacts and efforts to manage the environment.

Environmental risks posed by companies must be considered in every aspect of their activities. The importance of preserving the environment, without realizing it, environmental damage is starting to be felt. Increasingly tight industrial competition makes industrial players try to improve their performance in order to maintain survival and achieve company goals, namely obtaining maximum profits and sometimes ignoring the environmental impacts caused by these business activities. Environmental conflicts are increasingly coming into the public spotlight, both by the government and *stakeholder*. Foreign investors have issues regarding the supply of raw materials and processes. Good environmental performance can reduce the company's risks in the long term.

Financial performance is one of the indicators used as a reference for evaluating company performance. By evaluating how the company generates profits during its operations. To determine the success of a business based on financial performance, one of the parameters is financial profit (Cahyaning Budi & Zuhrohtun, 2023). To maintain business continuity and evaluate future business opportunities, companies must evaluate these profitability parameters. Evaluating financial performance is an important thing for investors to analyze when making investment decisions by comparing current and past financial performance. If the company's financial performance improves, investors will be interested in providing capital, but to achieve profits and *capital gain* optimally, companies often pay less attention and do not pay much attention to environmental damage resulting from their operations.

Environmental performance is a form of corporate social responsibility towards the environment in its relationship with stakeholders (Cahyaning Budi & Zuhrohtun, 2023). To build a good image in the eyes of stakeholders and potential investors, companies must pay costs related to environmental aspects to obtain *feedback* which is good as well as a form of corporate social responsibility towards the environment. In conducting assessments related to government business management performance, this assessment is assessed using the Ministry of the Environment's Business Performance Evaluation (PROPER) program. According to (Hidayat & Aris, 2023) Environmental performance refers to the amount of environmental damage caused by business activities. If the environmental damage caused is small then the company's environmental performance is good and vice versa if the environmental damage is large. As a result of environmental performance, there are many negative impacts that cause the company's environmental performance to be poor.

Environmental costs are costs incurred by a company to prevent possible poor environmental quality and repair environmental damage resulting from company activities (Sinosi et al., 2022). According to (Dewi & Ardianingsih, n.d.) Environmental costs are costs incurred by companies for environmental improvement programs that are damaged due to environmental pollution caused by the company, whether intentionally or unintentionally. Expenditure on the environment is a form of long-term corporate investment because the company will gain economic and social benefits.

The Company will allocate environmental costs when implementing environmental controls to overcome the impacts that arise. However, companies argue that environmental costs are part of the money spent and reduce company profits. It can even increase public confidence in the company's responsibility for the surrounding social life and can increase the consistency of the company's concern for the environment. Environmental costs can bring a good reputation to the company, so it can be considered a long-term investment and is expected to increase stakeholder trust in the company.

According to (Saputra, 2020) the company assesses the role *stakeholder* interests have a large influence on the company so that they can influence and be taken into consideration in disclosing information in its financial reports. Interest *stakeholder* become the main concern of the business world because they have a strong position in the company. In essence, *stakeholder* Interests can influence the use of various economic resources used in company operations. Hence, theory *stakeholder* interests often relate to the methods used by companies to control the influence of these stakeholders.

Companies that have the responsibility to consider the interests of all *stakeholder*, not just shareholders. Interested parties have the right to receive information about company activities that may influence their decisions. Basically, when a company discloses environmental information transparently, it can increase stakeholder accountability and trust in the company. Companies that demonstrate good environmental performance and provide transparent environmental disclosures tend to have better financial performance. In this research theory *stakeholder* shows that environmental information disclosure can influence the relationship between environmental performance and financial performance. This shows that the company considers stakeholder interests and disclosing information transparently can improve its financial performance.

Legitimacy theory emphasizes the idea that businesses must maintain their social function by meeting social needs and providing a better image to society (Hidayat & Aris, 2023). The basic principle of this theory is that an organization or business will continue to exist if society views that the organization operates based on a value system that is commensurate with society's own value system. Legitimacy theory recommends that the business world ensures that its activities and performance are socially acceptable. Companies use their annual reports to convey the impression of responsibility towards the environment, so that the company can be accepted by society. Actualizing legitimacy in the business world can take the form of reporting on a company's environmental activities. By posting good environmental performance, it is hoped that the company will gain social legitimacy and maximize its long-term financial strength.

In this research, stakeholder theory and legitimacy theory plays an important role in understanding how environmental costs and environmental performance affect the financial performance of mining companies. Thus, this research explores how mining companies can maintain legitimacy by meeting stakeholder expectations and building good relationships with stakeholders, as well as how costs and environmental performance impact the company's financial performance.

This research aims to see how much influence environmental costs and environmental performance have on the financial performance of mining companies on the IDX. In research that is still relevant to do, this is important because it can provide a deeper understanding of how environmental costs and environmental performance affect the financial performance of mining companies in Indonesia. This research can provide empirical evidence that helps companies and other stakeholders to understand the long-term benefits of investing in good environmental management. Apart from that, the results of this research can also be used by policy makers to formulate regulations that encourage sustainable business practices.

2. Methods

2.1. Research Objects and Subjects

The objects of this research are environmental costs, environmental performance and financial performance. What will be measured is the influence of environmental costs and environmental performance on the company's financial performance. Meanwhile, the subjects of this research are mining companies listed on the Indonesia Stock Exchange in 2018-2022.

2.2. Methods Used

This study uses a quantitative approach. Quantitative research, namely research that focuses on analyzing numerical data (numbers) which are processed using statistical methods. Basically, inference research (hypothesis testing) takes a quantitative approach and is based on concluding results regarding possible errors in rejecting the null hypothesis. Quantitative methods are used to determine the significance of differences between groups or the significance of relationships between the variables studied. Quantitative research is generally research that involves large samples. Quantitative research is based on the philosophy of positivism and can therefore be interpreted as a positivist method. This method is a scientific/scientific method because it adheres to scientific principles: concrete/empirical, objective, measurable, rational, systematic. (Sudaryana & Ricky Agusiady, 2022)

2.3. Data Types and Sources

Based on its nature, the type of data used in this research is secondary data, namely in the form of financial report data from mining companies listed on the Indonesia Stock Exchange for 2018-2022 and the sustainability reports of each sampling company.

The data sources used in this research come from Annual Reports, Financial Reports and Sustainability Reports on mining sector companies listed on the Indonesia Stock Exchange with an observation period of five years from 2018-2022.

2.4. Data Collection Techniques

Documents used to obtain supporting data in research:

1. This research data is in the form of *annual report* and *sustainability report* companies in the mining sector listed on the Indonesia Stock Exchange (BEI) during the 2018-2022 period.
2. As for data *annual report* mining sector companies acquired <https://www.idx.co.id>.
3. As for the data *sustainability report* Mining sector companies were obtained from the websites of each sampling company.

Literature study refers to all efforts made by a researcher to collect information related to the topic or problem that is being or will be researched. This information can be obtained from

scientific books, research reports, scientific articles, theses, regulations, regulations, yearbooks, encyclopedias and other documentary sources in both printed and electronic formats.

2.5. Population and Sample

Population and Sample The population of this study includes all financial reports from manufacturing sector companies listed on the Indonesia Stock Exchange from 2018 to 2022. The population in this study is based on BEI data from manufacturing companies from 2018 to 2022. The sampling technique used in this research is purposive sampling. The basis for selecting a sampling target is to narrow and limit the number of samples according to predetermined criteria so that it can meet the research objectives.

Purposive sampling is a non-random sampling method that ensures quotations of figures through a method where the researcher determines certain people who are in accordance with the research objectives and are expected to be responsive to the research case responses. (Lenaini, 2021).

Tabel 1. Sample Criteria

No	Criteria	Amount
1	Mining companies listed on the IDX in 2018-2022	24
2	Mining companies that do not publish Annual reports & Sustainability reports during 2018-2022	(1)
3	Mining companies that disclose environmental costs and environmental performance but experience losses during 2018-2022	(2)
4	Mining Companies that do not disclose environmental performance through proper & do not disclose environmental costs during 2018-2022	(4)
5	Mining companies that do not disclose environmental performance through proper during 2018-2022	(7)
6	Mining companies that do not disclose environmental costs through CSR during 2018-2022	(2)
7	Companies that meet the criteria	8
8	Number of sample companies during 2018-2022 (multiplied by 5 years)	40
Number of samples used in research		40

(Data processed, 2024)

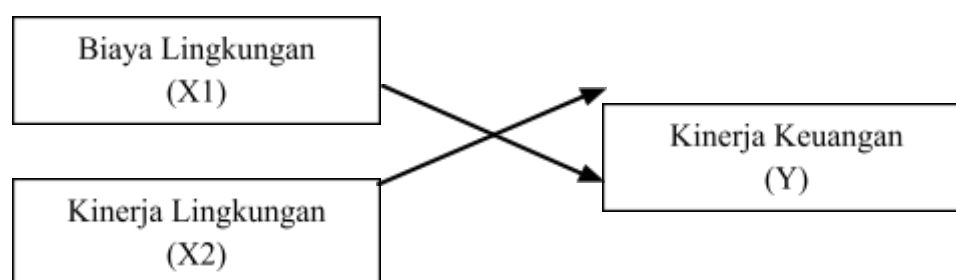


Figure. 1

Hypothesis

H1: Environmental Costs have a positive effect on Financial Performance

H2: Environmental Performance has a positive effect on Financial Performance

H3: Environmental costs and environmental performance together have a positive effect on financial performance

2.6. Variable Operationalization

Environmental costs (X1) include all expenses related to environmental damage and protection, divided into two internal (prevention, detection and waste processing) and external (damage recovery). Ideal management emphasizes prevention and detection to minimize the costs of failure. Investments in environmentally friendly technology, employee education, and effective environmental management systems are key. Ignoring this can result in cost overruns, environmental damage, and a tarnished company image. Therefore, effective management of environmental costs is the key to achieving a balance between profits and environmental sustainability. (Zainab & Burhany, 2020)

$$\text{Environmental Costs} = \text{CSR costs allocated to environmental costs}$$

Environmental Performance (X2) Mastilah (in Setiadi, 2021) explained that company activities in the field of environmental protection bring many benefits, including the interests of shareholders and company stakeholders through responsible environmental management. Environmental performance can be measured using the PROPER indicator, given a value of 5 if you receive a gold rating, a value of 4 if you receive a green rating, a value of 3 if you receive a blue rating, a value of 2 if you receive a red rating and a value of 1 if you receive a black rating. (Setiadi, 2021)

Financial Performance (Y) can be measured using calculations *Return on Asset* (LONG). Fitriani (in Setiadi, 2021) define performance as a measure of how efficient and effective a manager or company is and how well the manager or company achieves appropriate goals. The financial performance of a company is difficult to measure accurately and is more of an art because it involves subjective and objective aspects of the assessor. (Setiadi, 2021).

$$LENGTH = \frac{\text{Net Profit After Tax}}{\text{Total Assets}} \times 100\%$$

3. Results and Discussions

3.1. Panel Data Regression Analysis

Panel data is data from the same number of individuals observed over a certain period of time. If T is the time period ($t=1,2,3,\dots,T$) and N is the number of individuals ($n=1,2,3,\dots,N$), then panel data has a total of NT observation units. If each individual has the same amount of time, then

the data is called a balanced *panel*. Meanwhile, if each individual has a different time, then it is called an unbalanced *panel*. (Ahmaddien & Susanto, 2020)

$$y_{it} = \alpha + \beta_1 X_{1it} + \beta_2 X_{2it} + \dots + \beta_n X_{nit} + \varepsilon_{it} \dots \dots \text{(Ahmaddien \& Susanto, 2020)}$$

This research was carried out with statistical tools assisted by the Eviews 9 program. EViews9 is a powerful and easy-to-use statistical software that is ideal for processing research data using quantitative methods. The software offers a wide range of data analysis tools, ease of use, data integration capabilities, support for various research methods, and an active user community. The stages or steps are as follows:

3.2. Method of Determining Estimates

Method *Pooled Least Square (PLS)* or *Common Effect Model (CEM)* is the simplest method because this method or approach only requires a combination of data *cross section* and *time series*. This method or approach is not influenced by time or individual units, thus leading to the assumption that the behavior of company data does not change over a certain period of time. (Ahmaddien & Susanto, 2020)

Fixed Effect Model (FIVE) This model suggests that differences that might be found between subjects can be overcome by looking at differences in intercepts. The difference in intercept can be seen by applying the variable technique *dummy*. (Ahmaddien & Susanto, 2020) *Random Effect Model (REM)* or random model is a type that can be applied to panel data. REM allows for the connection of disturbance variables between times and between individuals. (Ahmaddien & Susanto, 2020)

3.3. Selection of Panel Data Regression Models

Test *Chow* It is useful to find out whether the FEM model is better than the CEM model by looking at the significance of the FEM model which can be done using the F statistical test. The null hypothesis used is that the intercept and slope are the same. Test *hausman* used to find out which model is more accurate to use among the models' fixed *effect* and models' random *effect*. Test *Lagrange Multiplier* used to find out which model is more accurate to use among the models' common *effect* and models' random *effect*.

3.4. Classic assumption test

The normality test is a test to see whether the distribution of the independent variable and the dependent variable is normal or not. This normality test is carried out in two ways, namely histogram measurement and Jarque-bera test. In the Jarque-bera test type, test and see the differences in skewness and kurtosis of the data and then make a comparison with the data if it is normal. Jarque-bera score <2: data has a normal distribution and probability score >5: data has a normal distribution. (Ahmaddien & Susanto, 2020)

The multicollinearity test aims to ensure that between two independent variables in a study there is no strong relationship that is dual in nature. If the R² score is high, accompanied by a low t ratio score, this is a sign that multicollinearity is found. If a pairwise correlation score between two regressors is found to be large or high (above 0.8), then multicollinearity is a problem. (Ahmaddien & Susanto, 2020) Heteroscedasticity is a technique for determining differences in residual types from one study to another. The null hypothesis (H₀) is rejected if an Obs*R-Square probability score < 0.05 is found, meaning heteroscedasticity is found in the model. Meanwhile, the null hypothesis (H₀) is accepted if the Obs* R-Square probability score is > 0.05, meaning no heteroscedasticity is found in the model. (Ahmaddien & Susanto, 2020)

Autocorrelation test to determine possible relationships that exist from a series of observation activities at a certain time and space. The form of testing to determine autocorrelation uses the Durbin Watson test. If the Durbin Watson (DW) score > Durbin Lower (DL) or DW score > (4DL) it means that the observations were found to be autocorrelated. If the DW score is between

the Durbin Upper (DU) and (4DU) ranges, it means that no autocorrelation was found in the observations, but if the DW score is between the DL and DU scores or even between (4DL) and (4DU), it means that it cannot be concluded whether there is autocorrelation or not. (Ahmaddien & Susanto, 2020)

3.5. Hypothesis testing

The F statistical test is the accuracy of the sample regression function in estimating the actual value. If the significant value of $F < 0.05$, then the regression model can be used to predict the independent variable. The F statistical test also shows whether all the independent variables included in the model jointly influence the dependent variable. The F statistical test has a significance of 0.05. (Ghozali, 2018) The t statistical test is used to test the significance level of influence between the independent and dependent variables. These test criteria are set based on probability. (Ghozali, 2018)

The coefficient of determination test is shown (R^2). This value shows the proportion of the overall variation in the value of the dependent variable that can be explained or caused by a linear relationship with the independent variable, while the remainder is explained by other variables. The formula for analysis of the coefficient of determination is:

$$Kd = (r)^2 \times 100\% \dots\dots\dots \text{Sugiyono S(in Wiji P et al., 2022)}$$

Panel Data Regression Estimation Results

Dependent Variable: Y
 Method: Panel Least Squares
 Date: 05/29/24 Time: 14:42
 Sample: 2018 2022
 Periods included: 5
 Cross-sections included: 8
 Total panel (balanced) observations: 40

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.010093	0.120608	-0.083681	0.9338
X1	4.56E-13	1.84E-13	2.476966	0.0179
X2	0.026862	0.030375	0.884355	0.3822

Figure 2: Regression *Common Effect Model*

Source: Data processing results *Eviews 9*, 2024

Dependent Variable: Y
 Method: Panel Least Squares
 Date: 05/29/24 Time: 14:44
 Sample: 2018 2022
 Periods included: 5
 Cross-sections included: 8
 Total panel (balanced) observations: 40

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.100535	0.202370	-0.496789	0.6230
X1	6.82E-13	2.64E-13	2.583956	0.0149
X2	0.045350	0.051640	0.878187	0.3868

Figure 3: Regression *Fixed Effect Model*

Source: Data processing results *Eviews 9*, 2024

Dependent Variable: Y
 Method: Panel EGLS (Cross-section random effects)
 Date: 05/29/24 Time: 14:45
 Sample: 2018 2022
 Periods included: 5
 Cross-sections included: 8
 Total panel (balanced) observations: 40
 Swamy and Arora estimator of component variances

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.058570	0.164124	-0.356867	0.7232
X1	5.95E-13	2.24E-13	2.659023	0.0115
X2	0.036427	0.040662	0.895856	0.3761

Figure 4: Regression *Random Effect Model*

Source: Data processing results *Eviews 9*, 2024

Panel Data Regression Selection Results

Redundant Fixed Effects Tests
Equation: MODEL_FEM
Test cross-section fixed effects

Effects Test	Statistic	d.f.	Prob.
Cross-section F	4.850306	(7,30)	0.0010
Cross-section Chi-square	30.277504	7	0.0001

Figure 5: Chow Test

Source: Data processing results Eviews 9, 2024

Based on the test results from the chow test, a value was obtained *Cross-section Chi-square* $0.0001 < 0.05$ then H_0 is rejected and H_1 is accepted and the model chosen is *Fixed Effect Model* so it must proceed to Test *Hausman*.

Correlated Random Effects - Hausman Test
Equation: MODEL_REM
Test cross-section random effects

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	0.544259	2	0.7618

Figure 6: Hausman test

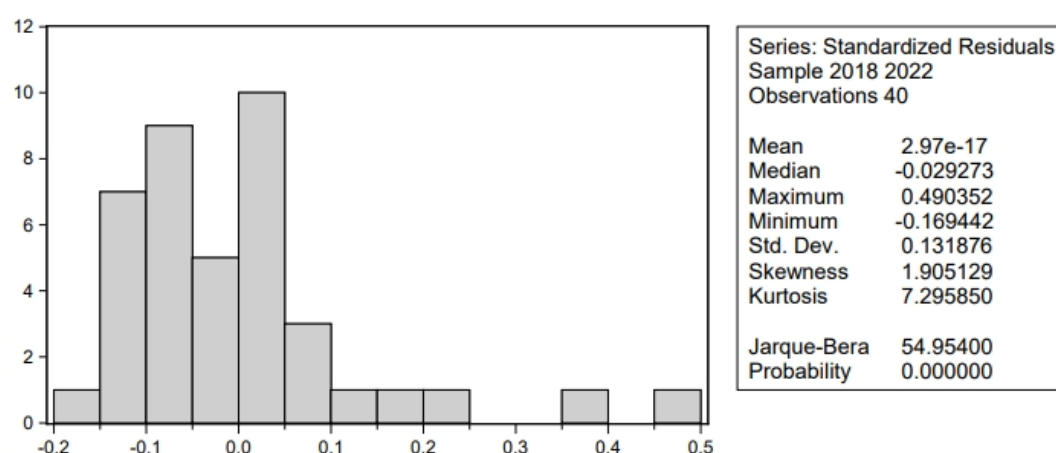
Source: Data processing results Eviews 9, 2024

Based on the test results from the Hausman test, a value was obtained *Cross-section random* $0.7618 > 0.05$ then H_1 is rejected and H_0 is accepted and the model selected is *Random Effect model* so it must proceed to testing *Lagrange Multiplier*.

Lagrange Multiplier Tests for Random Effects			
Null hypotheses: No effects			
Alternative hypotheses: Two-sided (Breusch-Pagan) and one-sided (all others) alternatives			
	Test Hypothesis		
	Cross-section	Time	Both
Breusch-Pagan	12.44142 (0.0004)	1.644019 (0.1998)	14.08544 (0.0002)
Honda	3.527239 (0.0002)	1.282193 (0.0999)	3.400782 (0.0003)
King-Wu	3.527239 (0.0002)	1.282193 (0.0999)	3.149841 (0.0008)
Standardized Honda	4.753730 (0.0000)	1.644361 (0.0501)	1.452344 (0.0732)
Standardized King-Wu	4.753730 (0.0000)	1.644361 (0.0501)	1.184647 (0.1181)
Gourierieux, et al. *	--	--	14.08544 (< 0.01)
*Mixed chi-square asymptotic critical values:			
	1%	7.289	
	5%	4.321	
	10%	2.952	

Figure 7: Lagrange Multiplier TestSource: Data processing results *Eviews 9*, 2024

Based on the test results from the Hausman test, a value was obtained *Breuch-Pagan* 0.0002 < 0.05 then H0 is rejected and H1 is accepted and the model chosen is *Random Effect model* so the test is declared complete.

Classic Assumption Test Results**Figure 8: Normality Test**Source: Data processing results *Eviews 9*, 2024

Based on test results *Hausman* In Figure 8 the values are obtained *Jarque-Bera* $54.95400 > 2$ as well as value *Probability* $0.00 < 0.05$. If you look at the normality test results in Figure 8, there is data that is distributed abnormally because the value of the test results shows a significance that is smaller than alpha 5%. According to Dielman, Terry (in Wiji P et al., 2022) states that if the number of research samples is more than 30 ($n > 30$) then the data is declared to have normal distribution properties. Even though the results of the normality test state that the data is not normally distributed, this is strengthened by the central limit theory. In this study, the number of research samples was 8 with 40 observation data, so if we refer to this theory, the conclusion can be drawn that it can be said that this research data is normally distributed.

	X1	X2
X1	1.000000	0.146850
X2	0.146850	1.000000

Figure 9: Multicollinearity TestSource: Data processing results *Eviews 9*, 2024

Based on the results of the multicollinearity test in Figure 9, the correlation value between X1 and

Heteroskedasticity Test: White			
F-statistic	0.083767	Prob. F(2,37)	0.9198
Obs*R-squared	0.180301	Prob. Chi-Square(2)	0.9138
Scaled explained SS	0.468810	Prob. Chi-Square(2)	0.7910

Figure 10: Heteroscedasticity TestSource: Data processing results *Eviews 9*, 2024

Based on test results *White* In Figure 10, the Chi-square (Obs*-squared) value is $0.9138 > 0.05$, so it can be concluded that there is no Heteroscedasticity problem.

Breusch-Godfrey Serial Correlation LM Test:

F-statistic	5.579896	Prob. F(2,35)	0.0079
Obs*R-squared	9.670574	Prob. Chi-Square(2)	0.0079

Test Equation:

Dependent Variable: RESID

Method: Least Squares

Date: 05/29/24 Time: 15:36

Sample: 1 40

Included observations: 40

Presample missing value lagged residuals set to zero.

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.019036	0.108571	0.175332	0.8618
X1	-5.00E-14	1.70E-13	-0.294569	0.7701
X2	-0.003842	0.027407	-0.140190	0.8893
RESID(-1)	0.548969	0.164370	3.339839	0.0020
RESID(-2)	-0.257328	0.168625	-1.526038	0.1360

R-squared	0.241764	Mean dependent var	-1.18E-17
Adjusted R-squared	0.155109	S.D. dependent var	0.130551
S.E. of regression	0.120000	Akaike info criterion	-1.286181
Sum squared resid	0.504000	Schwarz criterion	-1.075071
Log likelihood	30.72362	Hannan-Quinn criter.	-1.209850
F-statistic	2.789948	Durbin-Watson stat	1.949136
Prob(F-statistic)	0.041224		

Figure 11: Autocorrelation Test

Source: Data processing results Eviews 9, 2024

Based on the results of the Autocorrelation test in Figure 11, the values obtained *Durbin-Watson stat* amounting to 1.949136 so that this value will then be tested *Durbin Watson*

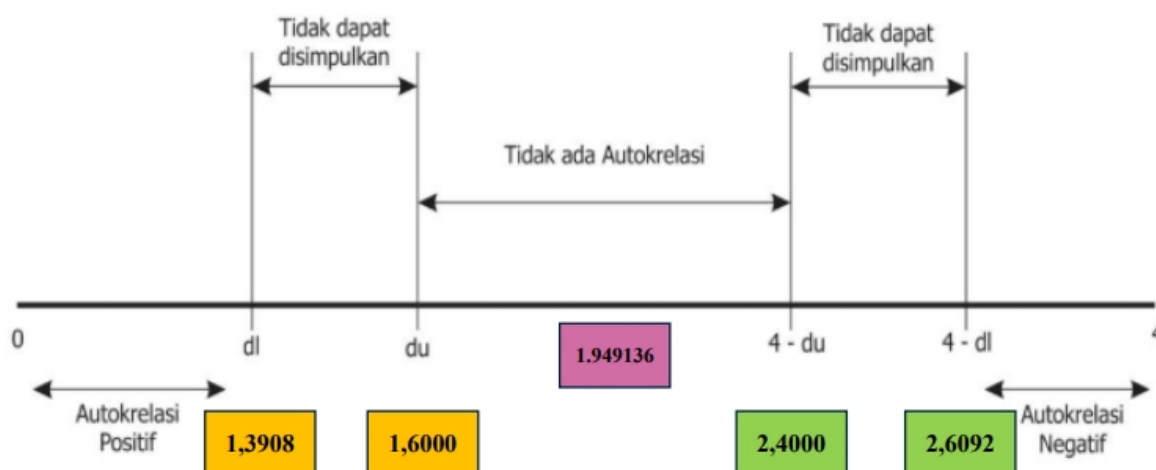


Figure 11: Durbin-Watson test

Source: Data processing results Eviews 9, 2024

Based on test results *Durbin Watson* in Figure 11 it is concluded that the value *Durbin Watson* 1.949136 is between the ranges *Durbin Upper* (DU) and (4-DU) means that in this study no autocorrelation was found.

Hypothesis Test Results

Dependent Variable: Y Method: Panel EGLS (Cross-section random effects) Date: 05/29/24 Time: 14:45 Sample: 2018 2022 Periods included: 5 Cross-sections included: 8 Total panel (balanced) observations: 40 Swamy and Arora estimator of component variances				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.058570	0.164124	-0.356867	0.7232
X1	5.95E-13	2.24E-13	2.659023	0.0115
X2	0.036427	0.040662	0.895856	0.3761
Effects Specification				
			S.D.	Rho
Cross-section random			0.107120	0.5247
Idiosyncratic random			0.101950	0.4753
Weighted Statistics				
R-squared	0.198702	Mean dependent var		0.051352
Adjusted R-squared	0.155389	S.D. dependent var		0.108728
S.E. of regression	0.099924	Sum squared resid		0.369437
F-statistic	4.587541	Durbin-Watson stat		1.135555
Prob(F-statistic)	0.016603			
Unweighted Statistics				
R-squared	0.155891	Mean dependent var		0.131123
Sum squared resid	0.678262	Durbin-Watson stat		0.618517

Figure 11: Random Effect Model Test

Source: Data processing results Eviews 9, 2024

The Prob value (F-statistic) is $0.016603 < 0.05$, so it can be said that simultaneously (simultaneously) the variables X1 & Prob value. X1 $0.0115 < 0.05$, then the variable X1 partially influences Y, so it can be concluded that environmental costs partially have a positive influence on financial performance. This is in line with research conducted by (Al Daffa & Hasnawati, 2024) "The first hypothesis has a value of $0.003 < 0.05$, which shows that the hypothesis is supported. This shows that environmental costs have a positive effect on financial performance." This is in accordance with legitimacy theory which states that with a sense of corporate responsibility towards the environment and disclosure of environmental costs the company will gain social legitimacy and strengthen long-term financial aspects.

Prob value. X2 $0.3761 > 0.05$, then partially the variable X2 has no effect on Y, so it can be concluded that environmental performance has no effect on the company's financial performance. The results of this study are in line with the research results (Kaat & Sofian, 2023) "..... the significance value of the environmental performance variable does not affect financial performance because environmental performance is > 0.05 so the hypothesis is rejected." Financial performance can be said to be good in a company, which can not only be measured by environmental performance indicators, but there are other factors such as cost management and tax management carried out by the company.

Mark *Adjusted R-squared* 0.155389, in other words, if the value is converted into a percentage, it is 15.5%. So it can be interpreted that financial performance can be influenced by environmental cost variables and environmental performance by 15.5%, while the remaining 74.5%

can be influenced by other variables outside of the variables studied, such as *firm size*, *sales growth*, *green accounting*, *good corporate governance*, and others. Future researchers should be able to conduct research by considering other variables as mentioned.

4. Conclusions

Based on the test results, environmental costs and environmental performance simultaneously influence financial performance. Partially environmental costs have an effect on environmental performance, while partially environmental performance has no effect on financial performance. In addition, financial performance is influenced by environmental costs and environmental performance by 15.5% while the remaining 74.5% is influenced by other variables outside the variables studied such as *firm size*, *sales growth*, *green accounting*, *good corporate governance*.

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