

Sustainability Indicators, CSR as a Mediator, and Firm Performance in Indonesia's Mining Industry

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Abstract

This study aims to examine the effect of environmental indicators and environmental costs on financial performance, with Corporate Social Responsibility (CSR) serving as an intervening variable, in 11 mining subsector companies in Indonesia. Data were analyzed using Partial Least Squares Structural Equation Modeling (PLS-SEM). The findings reveal that environmental indicators/Proper ratings ≥ 3 (gold and green) and environmental costs averaging 3% of net profit positively influence CSR. However, environmental indicators do not have a positive effect on financial performance. In contrast, environmental costs and CSR show a positive impact on financial performance. Furthermore, CSR successfully mediates the relationship between environmental indicators, environmental costs, and financial performance. These results highlight that CSR can be adopted by mining companies as a strategic approach to enhance financial performance while maintaining environmental responsibility.

Keywords: Environmental Indicators; Environmental Costs; Corporate Social Responsibility; Financial Performance; PLS-SEM

JEL Classification: M14; Q56; G32

1. Introduction

All organizations expect their companies to achieve strong financial performance each year, as it is one of the most important pieces of information for investors (Ningtyas & Triyanto, 2019). The better a company's financial performance and profitability, the more positive signals it sends to investors that they will earn profits (Ningtyas & Triyanto, 2019). High company performance encourages investors to assess the company's level of success, which is often correlated with stock prices. The higher a company's stock price, the more valuable the company is (Septinurika et al., 2020). This becomes a benchmark for investors in making investment decisions. If the company's financial performance is strong, investors will invest in it. Therefore, the company's financial performance is important. This research is important to conduct, as the company's financial performance can provide insight into its health. In addition, it is hoped that the high value will increase market confidence in the company's performance and prospects (Septinurika et al., 2020). There are several factors that affect the company's financial performance, including environmental

indicators and environmental costs.

The company's environmental problems really need to be a concern for the community and investors, because the impact of the company's lack of concern for the environment will affect financial performance and company value ([Meiyana & Aisyah, 2019](#)). Environmental problems in Indonesia are an important issue that must be followed up, given the real adverse impacts caused by poor environmental management ([Setiadi, 2021](#)). Companies must pay attention to several aspects that are created, so that a harmonious condition is created between the company and the community so that the company can bring improvements and increase the standard of living of the community ([Meiyana & Nur Aisyah, 2019](#)). Currently in Indonesia there are many cases related to environmental problems so that there are demands to realize good economic performance ([Widhiastuti et al., 2017](#)). In order to achieve good Environmental Indicators, companies need to allocate costs for environmental management or environmental costs ([Zainab & Burhany, 2020](#)).

The company's reputation can be enhanced by including environmental costs in financial reports. This can affect a company's competitive advantage and become a tactic to boost profits or sales turnover ([Pasaribu et al. 2023](#)). These environmental costs will arise and later be able to have an impact on the company's financial performance due to the swelling of the costs incurred. Environmental costs are indicated as a long-term investment for large companies. The level of disclosure of the environment and social issues cannot be ruled out, this has an effect on the good assessment of investors ([Setiadi, 2021](#)).

Corporate Social Responsibility as a new accounting concept is a form of accountability provided by companies in disclosing information about the social and environmental impacts caused by company activities, increasing attention around ethical and sustainable practices. Organizational practices have driven a huge spike in corporate disclosures related to corporate social responsibility (CSR) performance. ([Arian et al. 2023](#)). Corporate social responsibility refers to organizations that voluntarily incorporate social and environmental considerations into their business practices. This involves taking responsibility for the impact of their actions on society, the environment, and stakeholders ([Arian et al. 2023](#)). Companies tend to focus on their main goal, which is to maximize profits without thinking about environmental responsibility. Corporate social responsibility is the company's social responsibility to stakeholders, the community and the surrounding environment which is a form of organizational responsibility.

Many studies have examined the influence of Environmental Indicators and environmental costs that affect profitability, such as research conducted by [Ningtyas & Triyanto \(2019\)](#), which examined Environmental Indicators and environmental disclosure on profitability in the mining industry 2015 – 2017 in Indonesia. Research conducted by [Tambunan et al. \(2023\)](#) which examined the effect of environmental costs and corporate social responsibility on the company's financial performance. Research on the effect of CSR on financial performance represented by ROA such as research conducted by [Widhiastuti et al. \(2017\)](#); [Wulansari et al. \(2017\)](#); [Evita & Syafruddin \(2019\)](#). The results of research by [Putra & Utami \(2018\)](#) which show that Environmental Indicators have no effect on financial performance, Environmental Indicators have no impact on CSR disclosure, CSR disclosure has a positive and significant effect on financial performance. Research by [Septiadi \(2016\)](#), states that Environmental Indicators have a positive effect on the company's financial performance, environmental costs affect the company's financial performance, and the extent of CSR disclosure has a positive effect on the company's financial performance. The results of the study ([Siregar et al., 2019](#)), show that the variable environmental costs do not affect financial performance and Environmental Indicators affect financial performance.

Based on the results of previous studies, it shows that there are still studies that are not integrated, however, this study tries to combine research on Environmental Indicators and environmental costs on the company's financial performance. In addition, this study adds the mediation of Corporate social responsibility into this study by using a reference from [Baron \(2007\)](#) which explains the grand theory of the mediating effect of Corporate social responsibility ([Baron & Kenny, 1986](#)). In addition, this research was conducted in 2024 using mining companies listed on the Indonesia Stock Exchange for the period 2020-2022.

The purpose of this study is to identify and understand the relationship between Environmental Indicators and environmental costs on the financial performance of mining sub-sector manufacturing companies listed on the Indonesia Stock Exchange in 2020-2022, by involving the role of CSR as a factor that can mediate the factors that influence it. Furthermore, this study aims to analyze the extent to which Environmental Indicators have an impact on financial performance. This involves an analysis of environmental initiatives or practices carried out by mining sub-sector manufacturers and how they can shape their image and financial performance.

2. Literature review

2.1 Stakeholder Theory

The stakeholder approach emerged in the mid-1980s and was published by R. Edward Freeman in 1984. At that time the problem that arose was that managers were faced with environmental changes, this was the background to this theory until there was a determination to build a framework that was responsive to environmental changes ([Ortas et al., 2015](#)). Parties whose existence can influence or be influenced by the achievement of the organization's goals are the definition of stakeholders. There are two categories of stakeholders, namely primary stakeholders and secondary stakeholders. Stakeholder theory holds that companies must make social disclosures as one of their responsibilities to stakeholders ([Septinurika et al., 2020](#)). In addition to running for the needs of the company, this theory states that the company must also provide benefits to its stakeholders ([Hafidz & Deviyanti., 2022](#)). Therefore, it can be stated that stakeholders have a major influence on the existence of the company. In addition, the disclosure of information made by a company is because there are stakeholders who are the reason for the company to disclose its information. In order to increase the value of a company, management needs to pay attention to its stakeholders because stakeholders such as investors have the right to carry out activities carried out by management in a company. In terms of satisfying the interests of stakeholders, companies can satisfy their stakeholders by investing in CSR activities ([Septiadi, 2016](#)).

2.2 Signaling Theory

Signal theory was first put forward by [Spence \(1973\)](#) which explains that the sender (owner of information) provides a signal in the form of information that reflects the condition of a company that is useful for the recipient (investors). According to [Brigham & Houston, \(2020\)](#), signaling theory explains management's perception of the company's future growth, which will influence potential investors' response to the company. The signal is in the form of information that explains the management's efforts in realizing the owner's wishes. This information is considered an important indicator for investors and business actors in making investment decisions. Signaling Theory states that a company can send a positive signal when several important events occur, such as an increase in dividends or a repurchase of shares by investors. This signal indicates that the company has positive growth and development prospects and can provide increased profits for investors ([Gunawan and Hendrawaty, 2018](#)).

2.3 Environmental Indicators

Describes the company's performance indicators in showing concern for the environment by providing support for environmental conservation is the definition of environmental performance ([Handayani & Maharani, 2021](#)). According to [Mastilah \(2016\)](#) explains that the company's activities in the field of environmental conservation will bring a number of benefits, including the interest of shareholders and stakeholders in the company's profits due to responsible environmental management. Environmental Indicators are the achievements of a company in reducing and overcoming environmental damage caused by its operational activities. Environmental Indicators can be said to be accreditation-related indicators of the level of the company's concern for the environment ([Adyaksana & Pronosokodewo, 2020](#)). Environmental Indicators are measured using the PROPER rating indicators. Given a value of 5, if you get a gold rating, a value of 4 if you get a green rating, a value of 3 if you get a blue rating, a value of 2 if you get a red rating and a value of 1 if you get a black rating.

2.4 Environmental Cost

Environmental costs according to [Santoso \(2018\)](#) are costs incurred by the company related to environmental damage caused by operations. Companies prepare environmental costs in an effort to preserve and sustain the company. Environmental costs must be managed effectively and efficiently where good cost management is obtained from a systematic and planned process of identifying and measuring environmental costs. Environmental costs are costs incurred by the company due to poor environmental management systems as a result of the company's production processes. Environmental costs include costs associated with reducing production processes that have an impact on the environment (internal) and costs associated with repairing damage caused by waste (external) ([Setiadi, 2021](#)). According to [Adyaksana & Pronosokodewo \(2020\)](#), environmental costs are a number of funds that companies sacrifice to manage environmental impacts as a result of their operational activities. Then according to [Nwaiwu & Oluka \(2018\)](#) the environmental costs that arise are costs that arise because of poor environmental quality or may exist and this must be prevented, reduced or repaired. Various theories such as Stakeholder theory, political economy theory and corporate social responsibility theory have been found to be relevant to this work where it relates to the prevention, detection, repair of environmental degradation.

2.5 Financial Performance

[Fitriani \(2013\)](#) defines performance as a measure of how efficient and effective a manager or a company is, how well managers or companies achieve adequate goals. The company's financial performance is something that is difficult to measure exactly and is more like an art because it contains subjective and objective aspects of the appraiser. Financial performance is the success, achievement or work ability of the company in the context of creating value for the company or the owner of capital in effective and efficient ways ([Rahayu, 2020](#)). Despite this, there are several ways that must be taken so that the financial performance analysis carried out can be a reliable benchmark and used as a basis for making strategic decisions ([Mastilah, 2016](#)). Indicators for measuring the company's financial performance in this study use Return on Assets (ROA) ([Tarigan et al., 2023](#)). The ROA formula is as follows ([Prasinta, 2012](#)).

2.6 Corporate Social Responsibility (CSR)

Although there are many definitions of corporate social responsibility (CSR) offered by various experts, researchers, and practitioners, the general idea is that CSR is achieved when a business operates with a commitment to not only maximize profits but also holistically, institutionally, and institutionally and sustainable socio-economic development. The business is thought to be dedicated to three areas: environment, social justice, and economics ([Hafidz & Deviyanti, 2022](#)).

Corporate social responsibility is the company's social responsibility to stakeholders, the community and the surrounding environment ([Suganda & Wahyudi, 2023](#)). Social responsibility refers to one's obligation to consider the impact of one's decisions and actions on the social system as a whole ([Agustin & Rosdiana, 2022](#)).

3. Methodology

This research is a type of research that uses quantitative methods with ratio proxies used to assess financial performance is ROA (Return on Assets). ROA, which includes the profitability ratio, measures the extent to which the company's ability to generate profits from the assets used in the company. To assess this Environmental Indicator using the PROPER report measurement which is officially published by the Ministry of Environment. Assessment of Environmental Indicators through this PROPER by giving a score from the ranking represented by numbers 5-1. This PROPER ranking is grouped into 5 (five) color ratings, namely gold, green, blue, red, and black. The measurement of environmental costs in the study by comparing the costs incurred by the company for Corporate Social Responsibility activities with net income.

The population and sample data used in this study are secondary data from the financial statements of mining sub-sector companies listed on the Indonesia Stock Exchange during the 2020-2022 period. The sampling in this study used a purposive sampling method with the criteria of companies that submit financial reports as of December 31 consistently during the 2020 – 2022 period, companies that report Corporate Social Responsibility, companies that participate in the PROPER program for the 2020 – 2022 period, companies that inform costs related to CSR, companies that experience profit. There are 11 mining sub-sector companies that meet these criteria on the Indonesia Stock Exchange (IDX). So that the sample data used in this study were 33 data.

Quantitative methods and secondary data were used in this investigation ([Indrati & Handayani, 2022](#)). Data analysis in this study uses the Structural Equation Modeling (SEM) approach to analyze the relationship between variables and measure the direct effect on one variable on another. Furthermore, test the validity results using convergent validity and discriminant validity. Convergent validity uses the criteria for the loading factor value above 0.7, but the loading value of 0.6 to 0.7 is still acceptable and the Average Variance Ectraced (AVE) > 0.5 ([Hair et al., 2019](#)). Discriminant validity by using the cross loading value guideline, namely the value of the square root of the AVE for each construct must be higher than the correlation value between the construct and other constructs. Meanwhile, to test the reliability using Cronbach's Alpha criteria with a value above 0.7. For composite reliability values, it must be above 0.7 or a value between 0.6 – 0.7 is still acceptable for exploratory research ([Hair et al., 2019](#)). After that, the inner model test was conducted to test the relationship of the variable forming indicators. The measurements used include R-square, path coefficients, and Moderating Effects. The criteria for testing the R-square are a strong model if the value is at 0.75, a moderate or moderate model if the value is at 0.50 moderate and finally a weak model if the value is at 0.25 ([Hair et al., 2019](#)). The guideline for the path coefficient value is between -1 to 1, provided that if the value leads to 1 it indicates a positive relationship, whereas if the value leads to -1 it indicates a negative relationship ([Hair et al., 2019](#)). For the criteria on the significant direct effect, the t-statistic value is used above 1.96 and the probability value is below 0.05 ([Hair et al., 2019](#)).

4. Results and Discussion

4.1 Descriptive Statistic

Table 1. Descriptive Analysis

No	Variable	MIN			MAX			MEAN		
		2020	2021	2022	2020	2021	2022	2020	2021	2022
1	Environmental Indicators	3,000	3,000	3,000	5,000	5,000	5,000	3,455	3,909	3,909
2	Environmental Costs	0,017	0,006	0,019	0,315	0,066	0,189	0,073	0,030	0,067
3	CSR	0,410	0,410	0,410	0,816	0,816	0,816	0,662	0,641	0,659
4	ROA	0,023	0,056	0,064	0,580	0,498	0,643	0,174	0,263	0,438

Source: Data processed by the author, 2026

Descriptive Analysis Based on 34 data of mining companies listed on the Indonesia stock exchange, researchers only used 11 companies, because there were 23 companies that did not meet the criteria in this study, namely ROA was in a positive condition, registered with PROPER and had environmental costs. Based on the results of the 2020 analysis, it shows that there are 2 gold rated mining companies, 1 green-rated company and 8 blue-rated companies. In 2021-2022 there are 3 gold-rated mining companies, 4 green-rated companies and 4 blue-rated companies. The average value of environmental indicators in 2022 for mining companies is 3,909 which falls within the range of Proper Gold (very good) and Green (good) ratings.

For environmental costs in 2020, the lowest value was PT. Golden Energy Mines Tbk with a value of 0.017 and the highest was PT. Indo Tambangraya Megah Tbk 0.315, with an average value of 0.07. In 2021 the lowest value was PT. Golden Eagle Energy with a value of 0.006 and the highest was PT. Mitrabara Adiperdana Tbk 0.066, with an average value of 0.03. In 2022, the lowest value was PT. TBS Energi Utama Tbk with a value of 0.019 and the highest was PT Vale Indonesia Tbk 0.189, with an average value of 0.07. Based on the average Proper rating above 3.9 with a good allocation of environmental cost indicators, the average is 0.067 of net income.

For CSR disclosure in 2020, the lowest value was PT. Mitrabara Adiperdana Tbk with a value of 0.410 and the highest was PT. Bukit Asam Tbk at 0.816, with an average value of 0.66. In 2021, the lowest value was PT. Mitrabara Adiperdana Tbk with a value of 0.410 and the highest was PT. Bukit Asam Tbk of 0.816 with an average value of 0.64. In 2022, the lowest value was PT. Mitrabara Adiperdana Tbk with a value of 0.410 and the highest was PT. Bukit Asam Tbk 0.815, with an average value of 0.66. Based on the results of the average PROPER rating with an average environmental cost of 0.067, it has a good CSR indicator of at least an average of 0.659.

The ROA value in 2020 was the lowest PT. Adaro Energy Tbk with a value of 0.023 and the highest was PT. Vale Indonesia Tbk at 0.580, with an average value of 0.17. In 2021, the lowest value was PT. TBS Energi Utama Tbk with a value of 0.056 and the highest was PT. Bayan Resource Tbk 0.498, with an average value of 0.26. In 2022, the lowest value was PT. TBS Energi Utama Tbk with a value of 0.064 and the highest was PT. Aneka Tambang Tbk 0.643 and an average of 0.44. Mining companies have a large company size with a minimum net asset of more than 10 billion.

The outer model analysis stage is carried out to ensure that the measurement used is a valid and reliable measurement ([Hair et al., 2017](#)). This model analysis specifies the relationship between latent variables and their indicators or the outer model defines how each indicator relates to its latent variable ([Hussein, 2015](#)). Outer model analysis can be seen from the convergen validity value where if it correlates > 0.6 it is the loading factor value on the latent variable with its indicators, while the outer loading value between $0.5 - 0.6$ is considered sufficient. Discriminant validity, composite reliability, while cronbach's alpha is used to test whether a variable can be declared reliable if the cronbach's alpha value shows > 0.6 . Furthermore, the significance of

weights test for formative indicators with the weight value of the formative indicator with its construct must be significant. This study shows that all indicators have a value > 0.5 , which can be concluded that the indicators have met the outer loading test requirements. Based on the test results, it shows that all outer loading indicators are > 0.5 and then validity and reliability tests can be carried out.

Test The convergent validity test on the model is seen from its Ave value. A model is considered to have met convergent validity if it has a value > 0.5 . In this research model, the Average Variance Extracted (AVE) value shows that the Corporate Social Responsibility variable shows a value of 1,000, the Environmental Cost value is AVE of 1,000, the Environmental Performance AVE value is 1,000, Financial Performance AVE is 1,000, it can be concluded that this study has met the convergent validity requirements have a value > 0.5 and further tests can be carried out.

Test Fornell-Larcker is the approach used to assess discriminant validity. The way to read it is by reading diagonally between variables or constructs. In the Fornell-Larcker output, the diagonal inter-variable values appear larger than the off-diagonal values. This means that all research variables have passed the validity test and can proceed to the reliability test.

4.2. Reliability Test

The minimum value for Cronbach alpha (0.6), Rho-A (0.6) and Composite Reliability (0.6) (Hair et al., 2017). The reliability test output value shows for the Environmental Performance variable with a Cronbach alpha value of 1,000, Rho-A of 1,000 and Composite Reliability of 1,000. Then the Environmental Cost variable with a Cronbach alpha value of 1,000 Rho-A of 1,000 and Composite Reliability of 1,000, then the Corporate Social Responsibility variable with a Cronbach alpha value of 1,000, Rho-A of 1,000 and Composite Reliability of 1,000 and Financial Performance variables with a Cronbach alpha value of 1,000 Rho-A of 1,000 and Composite Reliability of 1,000. Each variable has a value exceeding the threshold of the criteria (Cronbach's alpha, Rho-A, and Composite Reliability). This shows that the research model has met the validity and reliability test so that it can be continued in the next model estimation.

Inner model analysis describes the relationship between latent variables based on substantive theory. Inner model analysis can be evaluated using R-square for the dependent construct, the Stone-Geisser Q-square test for predictive relevance, and t-tests for the significance of the structural path parameter coefficients. In hypothesis testing, it can be seen from the t-statistical value and the probability value. To test the hypothesis, namely by using the statistical value, the t-statistic used is 1.96 for alpha 5%. So that the criteria for acceptance/rejection of the hypothesis is H_a is accepted and H_0 is rejected when the t-statistic > 1.96 . To reject/accept the hypothesis using probability, H_a is accepted if the p-value < 0.05 ([Hussein, 2015](#)).

4.3. Structural Model Evaluation (Inner Model)

4.3.1. Coefficient of Determination

The data analysis will first present the results of the structural model (inner model) test on the coefficient of determination (R^2). In determining the coefficient of determination / R-square (R^2) value, the value ranges from 0 to 1 and is divided into three assessment criteria, the first for the R-square (R^2) value (1 – 0.75) is included as substantial / strong, the second for the R-square (R^2) value (0.74 – 0.5) is included as moderate / medium, the third for the R-square (R^2) value (0.49 – 0.25) is included as weak. The R-Square value is 0.619, indicating that the corporate social responsibility variable is explained by 61.9% by the Environmental Performance variable, Cost Environment. While the remaining 38.1% is represented by other variables outside the research

model. Meanwhile, the Financial Performance variable can be represented by 69.5% by the Environmental Performance, Cost Environment and corporate social responsibility variables. While the remaining 38.5% is represented by other variables outside the research model. These results are categorized as "moderate".

4.3.2. Path Analysis

The path coefficient analysis, or inner model, can be assessed by the level of significance and p-values for each relationship in the hypothesis. A hypothesis is said to be significant if its t-statistic is greater than 1.96 and its p-value is less than 0.05. Furthermore, model evaluation is carried out by looking at the significance value by performing a bootstrapping procedure to determine the effect between variables. This procedure uses the entire original sample for re-sampling. In this study, 96 bootstrap samples were used. The expected t-value is > 1.96 with a significance level = 10%, t-value > 1.96 with a significance level result = 5% and t-value > 2.326 with a significance level = 1%. In this study, a t-value significance level of 5%, with a t-value > 1.65 . The t-value results from this study are as in the following table:

Table 2. Direct and Indirect Effect

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics	P Values
CSR → FP	0,499	0,456	0,210	2,379	0,018
CE → CSR	0,588	0,594	0,103	5,727	0,000
CE → FP	0,387	0,423	0,185	2,096	0,037
EP → CSR	0,465	0,455	0,122	3,801	0,000
EP → FP	0,094	0,107	0,120	0,780	0,436

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics	P Values
CE → CSR → FP	0,293	0,277	0,146	2,005	0,045
EP → CSR → FP	0,232	0,204	0,106	2,195	0,029

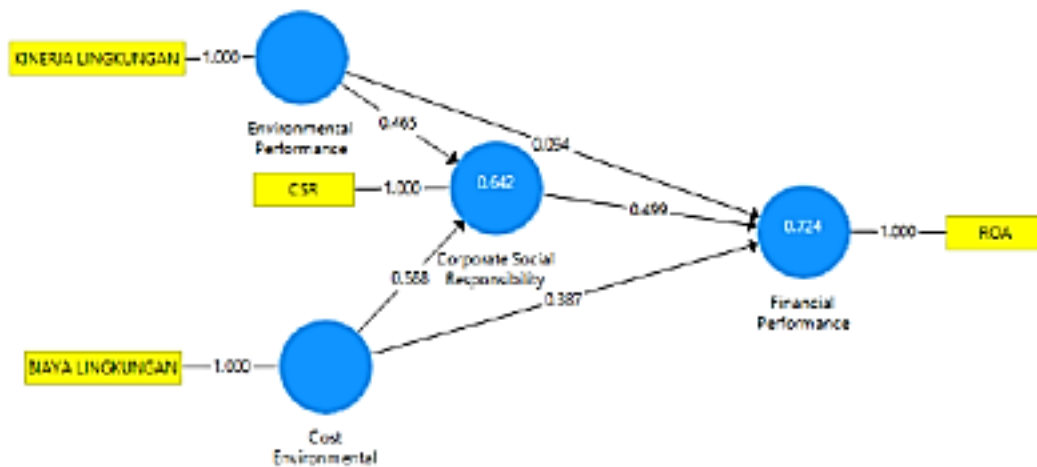
Source: Data processed by the author, 2026

Based on the output results, the results of a significant effect (p-values > 0.05) on the direct and indirect effects were obtained. For Environmental Performance and Cost Environmental on Corporate Social Responsibility with p-values < 0.05 . Cost Environmental on Corporate Social Responsibility and Financial Performance with p-values > 0.05 , Corporate Social Responsibility on Financial Performance with p-values > 0.05 . Mediation of Corporate Social Responsibility on the relationship between Environmental Performance and Cost Environmental on Financial Performance with p-values < 0.05 . As for Environmental Performance on Financial Performance with p-values > 0.05 . Based on the output, there are 6 accepted hypotheses because they have p values < 0.05 and t-statistics > 1.96 , and 1 rejected hypothesis.

4.3.3. Path Diagram

Based on the output results conducted by researchers using 180 samples, the path diagram image in this study looks like the image below:

Figure 1. Path Diagram



Source: Data processed by the author, 2026

4.3.4. Hypothesis Results

Based on the results of the path analysis, it can be concluded that all hypotheses are accepted because they have a P-values < 0.05. The results of the researcher's hypothesis can be seen in the table as follows:

Table 3. Hypothesis Results

HYPOTHESIS		T Statistics (>1.96 accepted)	P-values (<0.05 accepted)	Results
H1:	Environmental indicators positively affect corporate social responsibility.	3,801	0,000	Results Support the Hypothesis
H2:	Environmental costs positively affect corporate social responsibility.	5,727	0,000	Results Support the Hypothesis
H3:	Environmental indicators positively affect financial performance.	0.780	0.436	Results Do Not Support Hypothesis
H4:	Environmental costs have a positive effect on financial performance	2,096	0.037	Results Support the Hypothesis
H5:	Corporate Social Responsibility has a positive effect on financial performance.	2,379	0.018	Results Support the Hypothesis

H6:	Environmental performance influences financial performance, with Corporate Social Responsibility as the mediating factor.	2,005	0.045	Results Support the Hypothesis
H7:	Environmental costs influence financial performance mediated by Corporate Social Responsibility	2,195	0.029	Results Support the Hypothesis

Source: Data processed by the author, 2026

On hypothesis 1, with a p value of 0018 < 0.05, the results support the hypothesis; on hypothesis 2, with a p value of 0000 < 0.05, the results support the hypothesis. Hypothesis 3, with a p value of 0020 < 0.005, the results support the hypothesis; hypothesis 4, with a p value of 0.037 < 0.05, the results support the hypothesis. Hypothesis 5, with a p-value of 0.436 > 0.005, the results do not support the hypothesis. In hypothesis 6, with a p value of 0.0045 < 0.005, the results support the hypothesis; in hypothesis 7, with a p value of 0.029 < 0.005, the results also support the hypothesis.

4.4. Discussion

4.4.1 Effect of Environmental Indicators on Corporate Social Responsibility

The results of the first hypothesis indicate that the positive influence of Environmental Indicators, as measured by the Mining Company Performance Rating Assessment Program in Environmental Management (PROPER), on Corporate Social Responsibility (CSR) is significant in the context of sustainable development. The PROPER program provides incentives for mining companies to improve their Environmental Indicators by recognizing and awarding those that comply with environmental regulations and implement environmentally friendly practices. This encourages greater environmental awareness among mining companies and encourages their commitment to managing the environmental impacts of their operational activities. Mining companies that achieve good Environmental Indicators through PROPER tend to have a better reputation in the eyes of the public and stakeholders. This is because mining companies are considered socially responsible and care about the environment around them. This good reputation can enhance the company's image and strengthen consumer, investor and public trust. The results of this study are in line with research conducted by [Ortas et al. \(2015\)](#) and [Arian et al. \(2023\)](#) who found that Environmental Indicators affect corporate social responsibility.

4.4.2 Effect of Environmental Costs on Corporate Social Responsibility

In the results of the second hypothesis in this study, it is explained that the positive influence of environmental costs on Corporate Social Responsibility (CSR) in mining companies in Indonesia reflects a paradigm shift in this industry, from an exclusive focus on profits to greater social and environmental responsibility. Significant environmental costs incurred by mining companies are often due to the need to comply with increasingly stringent environmental regulations and minimize the environmental impact of mining activities. This creates greater environmental awareness among company management and employees, as well as promoting awareness of their social responsibility towards local communities and the surrounding environment. High environmental costs are often caused by lawsuits, fines, or reputational losses arising from environmental violations or environmental disasters. In facing these risks, mining companies tend to increase their efforts in managing environmental costs and strengthen their commitment to responsible CSR practices. The results of this study are in accordance with research conducted by

[Kinasih et al. \(2022\)](#) and [Pasaribu et al. \(2023\)](#) who found that environmental costs affect corporate social responsibility.

4.4.3 Effect of Environmental Indicators on Financial Performance

In the results of the third hypothesis, this study explains that the absence of a positive influence of Environmental Indicators based on the Company's Performance Rating Assessment Program in Environmental Management (PROPER) on financial performance based on Return on Assets (ROA) in mining companies in Indonesia reflects the challenges and complexities in linking environmental practices with financial performance. Although PROPER provides an indication of the company's Environmental Indicators, this measurement may not cover all relevant aspects of environmental practices or may not be able to describe its impact comprehensively. For example, PROPER may only focus on a company's compliance with environmental regulations and not on innovative practices that could actually bring long-term economic benefits. The implementation of environmental practices that comply with the rules can cause significant costs for mining companies. This may include the cost of investing in new technology, waste management, and intensive environmental monitoring. If these costs are not offset by significant economic benefits, there will be no increase in financial performance as reflected in ROA.

Setiadi, (2021) The benefits of good environmental practices may not be directly visible in the company's financial performance, especially in the short term. For example, land rehabilitation or waste reduction can take years before economic benefits can be realized. As a result, ROA may not be directly affected by current environmental practices. Mining companies are vulnerable to commodity price fluctuations, which can have a greater impact on ROA than environmental factors. Even if a company adopts good environmental practices, significant commodity price fluctuations can result in large fluctuations in ROA without taking into account Environmental Indicators. The integration of environmental data with financial data can be a challenge for companies, especially if their reporting systems are not well coordinated. These limitations can hamper a company's ability to accurately measure the impact of Environmental Indicators on ROA. The results of this study are not in line with research conducted by [Pujiasih \(2013\)](#); Sudaryanto (2011) and [Fitriyani & Mutmainah \(2012\)](#), who found that Environmental Indicators have a positive effect on financial performance.

4.4.4 Effect of Environmental Costs on Financial Performance

In the results of the fourth hypothesis, this study explains that environmental costs based on the Company Performance Rating Assessment Program in Environmental Management (PROPER) on financial performance based on Return on Assets (ROA) in mining companies in Indonesia involves a positive relationship between environmental practices and financial performance. The implementation of good environmental practices, such as the use of more environmentally friendly technology or increased efficiency in waste management, can lead to increased operational efficiency. Environmental costs incurred for these investments can result in benefits in the form of reduced production and operating costs, which in turn increases the company's ROA. Mining companies that comply with environmental regulations and have good Environmental Indicators tend to face lower legal risks and have a better reputation in the eyes of stakeholders. Environmental costs incurred to comply with regulations and implement good environmental practices can reduce legal risks and negative impacts on reputation, which in turn can increase the company's ROA. The results of this study are not in line with research conducted by [Kinasih et al. \(2022\)](#) and [Pasaribu et al. \(2023\)](#) who found that environmental costs affect financial performance.

4.4.5 Effect of Corporate Social Responsibility on Financial Performance

In the results of the fifth hypothesis, this study explains that the positive influence of corporate social responsibility (CSR) on the CSR Katadata Corporate Sustainability Index report based on GRI standards on financial performance based on Return on Assets (ROA) in mining companies in Indonesia reflects the importance of CSR reporting for mining companies in increasing their transparency and accountability to various social, environmental, and economic aspects of their operations. This can strengthen the company's reputation and image in the eyes of stakeholders, including investors, customers, and the public. Mining companies that are considered socially responsible tend to get more support and trust, which can have a positive impact on ROA. CSR allows mining companies to identify, measure and manage social, environmental and governance risks associated with their operations. By proactively reducing these risks, companies can avoid legal sanctions, fines, or sales declines. This can improve the company's operational and financial stability, which in turn can increase ROA. Investors and financial institutions are increasingly paying attention to ESG (Environmental, Social, and Governance) factors in their investment decisions. The results of this study are in line with research conducted by [Pustikaningsih \(2011\)](#); [Angela & Yudianti \(2015\)](#) and Rahmawati (2012) who found that corporate social responsibility has a positive effect on financial performance.

4.4.6 Effect of Environmental Indicators on Financial Performance Mediated by Corporate Social Responsibility

In the results of the sixth hypothesis, this study explains that the positive influence of PROPER based Environmental Indicators on financial performance based on Return on Assets (ROA) mediated by Corporate Social Responsibility (CSR) highlights the complexity of the relationship between environmental practices, social responsibility, and corporate financial performance. CSR acts as a mediator or intermediary between PROPER-based Environmental Indicators and ROA based financial performance. Good environmental practices, as reflected in PROPER, can improve a company's CSR performance, which in turn can positively affect ROA. CSR can contribute to long-term value creation for a company by building strong relationships with stakeholders, improving its reputation, and enhancing investor appeal. Good Environmental Indicators, as reflected in PROPER, can enhance a company's reputation and credibility in the eyes of the public, investors, and government. By building a strong reputation for social and environmental responsibility, companies tend to receive greater stakeholder support, which in turn can contribute to financial growth and stability, including ROA. Overall, the positive influence of PROPER-based Environmental Indicators on ROA-based financial performance mediated by CSR shows that good environmental practices can have a significant impact on a company's financial performance through various mechanisms, including reputation enhancement, risk reduction, efficiency improvement, and building strong relationships with stakeholders. By understanding and effectively managing these relationships, companies can achieve sustainable growth and provide added value to all stakeholders, including shareholders through increased ROA.

4.4.7 Effect of Environmental Costs on Financial Performance Mediated by Corporate Social Responsibility

The results of the seventh hypothesis indicate that Corporate Social Responsibility can serve as an intermediary between Environmental Indicators and the value of mining companies. Through comprehensive CSR reporting, companies can strengthen relationships with stakeholders and increase trust, which can ultimately positively influence ROA. PROPER-based mining companies tend to have better risk management related to environmental issues. This includes compliance with strict laws and regulations, which can reduce the risk of legal sanctions and adverse reputational damage. By reducing operational risk, companies can maintain their financial

stability, which, in turn, positively impacts ROA. CSR plays a role in mediating the relationship between Environmental Indicators and risk management, by providing a framework for identifying, assessing and mitigating risks. Investors and financial institutions are increasingly paying attention to environmental, social and corporate governance factors in their investment decisions. Mining companies with good Environmental Indicators and transparent CSR reporting tend to be more attractive to environmentally and socially conscious investors. This can open the door to additional capital or investment, which can be used to increase the company's productivity and ROA.

5. Conclusion

This study finds that the direct influence of Environmental Indicators, as reflected through PROPER, and environmental costs incurred by mining companies have a significant influence on the CSR of mining companies represented by Return on Assets (ROA). The Environmental Indicators of mining companies do not have a significant positive effect on the financial performance of mining companies, while environmental costs incurred by mining companies have a significant positive effect on the financial performance of mining companies. Good environmental practices and investment in environmental protection can improve operational efficiency, reduce legal and reputational risks, and create added value for the company. Furthermore, CSR has a significant positive effect on the financial performance of mining companies. Research shows that CSR has a significant role as an intervening variable in the relationship between Environmental Indicators and environmental costs on the company's financial performance. CSR acts as a mechanism that connects environmental practices and financial performance by mediating the effect of environmental practices on ROA. This shows that companies that implement CSR well can obtain economic benefits from responsible environmental practices.

The limitations in this study are the number of mining companies included in Proper and contained in the Katadata Corporate Sustainability Index CSR report based on GRI standards. In addition, the pandemic factor has resulted in the financial statements of mining companies in a negative position. This study may not take into account all the factors that might influence the relationship between Environmental Indicators, environmental costs, CSR, and financial performance. There is potential for unmeasured variables that affect the research results but are not identified or included in the analysis.

Suggestions for further research regarding the influence of Environmental Indicators and environmental costs on financial performance with Corporate Social Responsibility (CSR) as an intervening variable by using a longitudinal approach that involves collecting data from several time periods will allow researchers to track changes in Environmental Indicators, environmental costs, CSR, and financial performance of mining companies. This can provide deeper insights into the causal relationships between these variables. Expanding the scope of measurement of Environmental Indicators, environmental costs, CSR, and financial performance to include broader and more in-depth aspects. This may include measurements of air and water quality, direct and indirect social impacts, internal and external environmental costs, and more specific financial performance indicators. The need to research other industries with a time span of more than 3 years and other variables that affect financial performance.

This study has significant managerial implications for mining companies in Indonesia. Company management needs to pay attention to the importance of Environmental Indicators and environmental costs in planning their business strategy. They must also understand the important role of CSR in mediating the relationship between environmental practices and financial

performance. This means that investment in responsible environmental practices not only yields social and environmental benefits, but can also increase the company's financial value.

References

- Adyaksana, R. I., & Pronosokodewo, B. G. (2020). Apakah Kinerja Lingkungan dan Biaya Lingkungan Berpengaruh Terhadap Pengungkapan Informasi Lingkungan? *InFestasi*, 16(2), 157–165. <https://doi.org/10.21107/infestasi.v16i2.8544>
- Agustin, D. M., & Rosdiana, Y. (2022). Pengungkapan Corporate Social Responsibility (CSR) dan Kinerja Lingkungan terhadap Kinerja Keuangan. *Jurnal Riset Akuntansi*, 83–90. <https://doi.org/10.29313/jra.v2i2.1149>
- Angela, & Yudianti, F. N. (2015). Pengaruh kinerja lingkungan terhadap kinerja finansial dengan pengungkapan Corporate Social Responsibility (CSR) sebagai variabel intervening. Simposium Nasional Akuntansi XVIII, Universitas Sumatera Utara.
- Arian, A., Sands, J., & Tooley, S. (2023). Industry and Stakeholder Impacts on Corporate Social Responsibility (CSR) and Financial Performance: Consumer vs. Industrial Sectors. *Sustainability (Switzerland)*, 15(16). <https://doi.org/10.3390/su151612254>
- Baron, D. P. (2007). Corporate Social Responsibility and Social Entrepreneurship. *Journal of Economics & Management Strategy*, 16(3), 683–717. <https://doi.org/10.1111/j.1530-9134.2007.00154.x>
- Baron, R. M., & Kenny, D. A. (1986). The moderator–mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. *Journal of Personality and Social Psychology*, 51(6), 1173–1182. <https://doi.org/10.1037/0022-3514.51.6.1173>
- Brigham, E. F., & Houston, J. F. (2020). *Brigham, Eugene F., Houston, Joel F. - Fundamentals of financial management-Cocise, 10th Edition* (10th Editi). Cengage.
- Evita, M., & Syafruddin, S. (2019). Pengaruh Biaya Lingkungan, Kinerja Lingkungan, Dan Iso 14001 Terhadap Kinerja Keuangan Perusahaan Pertambangan Studi Kasus Pada Bursa Efek Indonesia Tahun 2014-2017. *Measurement: Jurnal Akuntansi*, 13(1), 27. <https://doi.org/10.33373/mja.v13i1.1829>
- Fitriani, A. (2013). Pengaruh kinerja lingkungan dan biaya lingkungan terhadap kinerja keuangan pada BUMN. *Jurnal Ilmu Manajemen (JIM)*, 1(1), 137–148. <https://ejournal.unesa.ac.id/index.php/jim/article/view/1501>
- Fitriyani, & Mutmainah, S. (2012). Keterkaitan Kinerja Lingkungan , Pengungkapan Corporate Social Responsibility CSR dan Kinerja Finansial. *Diponegoro Journal of Accounting*, 1–28. <http://eprints.undip.ac.id/35522/1/Jurnal.Fitriyani.Akt.Regii.C2C607063.pdf>
- Gunawan, & Hendrawaty, D. E. (2018). Stock Liquidity and Market Capitalization: Investment Challenges in Indonesian Capital Markets. *SSRG International Journal of Economics and Management Studies (SSRG-IJEMS)*, 5(11), 11–20. <https://doi.org/10.14445/23939125/ijems-v5i11p103>
- Handayani, P., & Maharani, N. K. (2021). Effect of Environmental Performance, Company Size, and Profitability on Corporate Social Responsibility Disclosures. *PAPATUNG: Jurnal Ilmu Administrasi Publik, Pemerintahan Dan Politik*, 4(1), 121–133.

<https://doi.org/10.54783/japp.v4i1.446>

- Hafidz, S. A., & Deviyanti, D. R. (2022). Pengaruh kinerja lingkungan terhadap nilai perusahaan dengan pengungkapan CSR sebagai variabel intervening The effect of e. *Jurnal Akuntansi Dan Keuangan*, 19(2), 366–374. <https://doi.org/10.29264/jakt.v19i2.11123>
- Hair, et al. (2017). A Primer on Partial Least Squares Structural Equation Modeling (PLS-SEM). *Sage Publications*, 2nd Editio.
- Hair, J. F., Jr., Black, W. C., Babin, B. J., & Anderson, R. E. (2019). *Multivariate data analysis* (8th ed.). Cengage Learning.
- Hussein, A. S. (2015). Penelitian Bisnis dan Manajemen Menggunakan Partial Least Squares dengan SmartPLS 3.0. *Universitas Brawijaya*, 1, 1–19. <https://doi.org/10.1023/A:1023202519395>
- Indrati, M., & Handayani, R. (2022). The effect of good corporate governance on financial distress. *Fair Value: Jurnal Ilmiah Akuntansi Dan Keuangan*, 4(10), 4726–4732. <https://doi.org/10.32670/fairvalue.v4i10.1745>
- Kinasih, S., Mas'ud, M., Abduh, M., Pramukti, A., & Muslim, M. (2022). Pengaruh Kinerja Lingkungan, Biaya Lingkungan dan Pengungkapan Corporate Social Responsibility Terhadap Kinerja Keuangan. *Center of Economic Students Journal*, 5(3), 242–257. <https://doi.org/10.56750/csej.v5i3.542>
- Mastilah. (2016). Pengaruh kinerja lingkungan terhadap kinerja keuangan pada perusahaan manufaktur yang terdaftar di Bursa Efek Indonesia tahun 2011–2014 [Undergraduate thesis, Universitas Islam Negeri Maulana Malik Ibrahim Malang]
- Meiyana, A., & Aisyah, M. N. (2019). Pengaruh Kinerja Lingkungan, Biaya Lingkungan, Dan Ukuran Perusahaan Terhadap Kinerja Keuangan Dengan Corporate Social Responsibility Sebagai Variabel Intervening. *Nominal: Barometer Riset Akuntansi Dan Manajemen*, 8(1), 1–18. <https://doi.org/10.21831/nominal.v8i1.24495>
- Ningtyas, A. A., & Triyanto, D. N. (2019). Pengaruh Kinerja Lingkungan Dan Pengungkapan Lingkungan Terhadap Profitabilitas Perusahaan: (Studi Empiris Pada Perusahaan Pertambangan yang Terdaftar di BEI Tahun 2015-2017). *JASa (Jurnal Akuntansi, Audit Dan Sistem Informasi Akuntansi)*, 3(1), 14–26. <https://doi.org/10.36555/jasa.v3i1.532>
- Nwaiwu, N.J., & Oluka, N.O. (2018) Environmental Cost Disclosure and Financial Performance of Oil and Gas Companies in Nigeria. *International Journal of Advanced Academic Research Financial Management*, 4, 1-23. <https://www.ijaar.org/articles/Volume4-Number2/Financial-Management/ijaar-fm-v4n2-feb18-p20.pdf>
- Ortas, E., Álvarez, I., & Garayar, A. (2015). The environmental, social, governance, and financial performance effects on companies that adopt the United Nations Global Compact. *Sustainability (Switzerland)*, 7(2), 1932–1956. <https://doi.org/10.3390/su7021932>
- Pasaribu, A., Simamora, L., & Diarsyad, M. I. (2023). Pengaruh Biaya Lingkungan Terhadap Nilai Perusahaan Dengan Kinerja Lingkungan Sebagai Variabel Moderasi-Sub Sektor Pertambangan di Bursa Efek Indonesia Tahun 2019-2021. *JEMBA: Jurnal Ekonomi Pembangunan, Manajemen dan Bisnis, Akuntansi*, 3(1), 69–77. <https://doi.org/10.52300/jemba.v3i1.8776>
- Prasinta, D. (2012). Pengaruh good corporate governance terhadap kinerja keuangan. *Accounting*

Analysis Journal, 1(2), 1–7.

- Pujiasih. (2013). Pengaruh kinerja lingkungan terhadap kinerja keuangan dengan Corporate Social Responsibility (CSR) sebagai variabel intervening (Studi empiris pada perusahaan manufaktur yang terdaftar di Bursa Efek Indonesia (BEI) tahun 2009–2011) [Undergraduate thesis, Universitas Negeri Semarang].
- Pustikaningsih, A. (2011). Analisis hubungan Corporate Social Responsibility (CSR) terhadap kinerja keuangan pada perusahaan jasa (studi kasus perusahaan jasa di D.I. Yogyakarta). *Jurnal Pendidikan Akuntansi Indonesia*, 9(2), 32–39. <https://doi.org/10.21831/jpai.v9i2.964>
- Putra, D., & Utami, I. L. (2018). Pengaruh Environmental Performance Terhadap Environmental Disclosure dan Economic Performance (Studi Empiris pada Perusahaan Pertambangan yang Terdaftar Di BEI). *Jurnal Akuntansi Maranatha*, 9(1), 1–11. <https://doi.org/10.28932/jam.v9i1.487>
- RahayuSE, D. (2020). Kinerja Keuangan Perusahaan. In *Angewandte Chemie International Edition*, 6(11), 951–952.
- Santoso, A. D. (2018). Penerapan biaya lingkungan dalam perlindungan sumberdaya alam dan kelestarian lingkungan. *Jurnal Rekayasa Lingkungan*, 11(1), 1–6. DOI: <http://doi.org/10.29122/jrl.v11i1.2999>
- Septiadi, N. L. E. I. (2016). Pengaruh Kinerja Lingkungan, Biaya Lingkungan, dan Luas Pengungkapan Corporate Social Responsibility Terhadap Kinerja Keuangan Perusahaan. *Jurnal Akuntansi Profesi*, 6(1), 21–25. <https://doi.org/10.23887/jap.v6i1.21080>
- Septinurika, H., Tanjung, A. R., & Basri, Y. M. (2020). Pengaruh kinerja keuangan dan kinerja lingkungan terhadap nilai perusahaan dengan corporate social responsibility sebagai variabel moderasi. *Jurnal Akuntansi*, 9(1), 26–37.
- Setiadi, I. (2021). Pengaruh kinerja lingkungan, biaya lingkungan dan ukuran perusahaan terhadap kinerja keuangan. *Inovasi*, 17(4), 669–679. <https://doi.org/10.30872/jinv.v17i4.10054>
- Siregar, I. F., Rasyad, R., & Zaharman. (2019). Pengaruh Implikasi Biaya lingkungan dan Kinerja Lingkungan Terhadap Kinerja Keuangan Perusahaan Pertambangan Umum Kategori PROPER. *Jurnal Ekonomi Dan Bisnis Dharma Andalas*, 21(2), 198–209
- Spence, M. (1973). Job market signaling. *The Quarterly Journal of Economics*, 87(3), 355–374. <https://doi.org/10.2307/1882010>
- Suganda, R., & Wahyudi, I. (2023). Peran Tata Kelola Dan Tanggung Jawab Sosial Dalam Meningkatkan Nilai Perusahaan Dengan Ukuran Perusahaan Sebagai Mediasi. *Jurnal Ekonomi Bisnis Dan Akuntansi*, 3(1), 179–191. <https://doi.org/10.55606/jebaku.v3i1.1405>
- Tambunan, A. L., Aristi, M. D., & Azmi, Z. (2023). Pengaruh Biaya Lingkungan dan Corporate Social Responsibility Terhadap Kinerja Keuangan. *Jurnal Wira Ekonomi Mikroskil*, 13(1), 1–9. <https://doi.org/10.55601/jwem.v13i1.936>
- Tarigan, F. A. B., Wahyudi, I., & Ramdani, M. (2023). Pengaruh Struktur Modal, Ukuran Perusahaan dan Profitabilitas terhadap Nilai Perusahaan Sektor Food & Beverage Bei Tahun 2019-2022. *JIIIP - Jurnal Ilmiah Ilmu Pendidikan*, 6(11), 9538–9546. <https://doi.org/10.54371/jiip.v6i11.2824>

- Widhiastuti, N. L. P., Suputra, I. D. G. D., & Budiasih, I. G. A. N. (2017). Pengaruh Kinerja Lingkungan Pada Kinerja Keuangan Dengan Corporate Social Responsibility Sebagai Variabel Intervening. *E-Jurnal Ekonomi Dan Bisnis Universitas Udayana* 6.2, 2, 819–846.
- Wulansari, P., Damanik, A. H., & Prasetyo, A. P. (2017). Pengaruh Kompensasi Terhadap Motivasi Karyawan Di Departemen Sumberdaya Manusia Pln Kantor Distribusi Jawa Barat Dan Banten. *Jurnal Manajemen Indonesia*, 14(2), 163.
<https://doi.org/10.25124/jmi.v14i2.360>
- Zainab, A., & Burhany, D. I. (2020). Biaya Lingkungan, Kinerja Lingkungan, dan Kinerja Keuangan pada Perusahaan Manufaktur. *Industrial Research Workshop and National Seminar*, 26–27.

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