

# Effect of Eco-Efficiency and Corporate Social Performance on Firm Value with Financial Performance as Intervening Variables

(Study on Mining and Manufacturing Companies Listed on the Indonesia Stock Exchange)

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**Abstract:-** This study aims to examine the effect of eco-efficiency and corporate social performance on firm value with financial performance as a mediating variable in mining and manufacturing companies listed on the Indonesia Stock Exchange for the period 2015-2019. This study uses a quantitative approach. The objects studied are companies that are included in the mining and manufacturing sector on the Indonesia Stock Exchange for the period 2015-2019. The sample in this study was 13 companies, obtained using the purposive sampling technique. The data were obtained by means of non-participant observation and analyzed using the method of path analysis and the Sobel test. The results showed that eco-efficiency and the social performance had a positive effect on financial performance. Furthermore, eco-efficiency, corporate social performance, and financial performance have a positive effect on firm value, financial performance is able to mediate the relationship between eco-efficiency on firm value, and financial performance is able to mediate the relationship between corporate social performance and firm value.

**Keywords:-** Eco-efficiency, Corporate Social Performance, Firm Value, Financial Performance.

## I. INTRODUCTION

The rapid development of economic activity in the free market has demanded business players to improve the performance of their respective companies. One of the firm's goals is to maximize the value of the firm as reflected in its share price (Husnan and Erny, 2016). Firm value is the investor's perception of the firm's success rate which is often associated with stock prices and profitability (Munawaroh, 2014). Firm value is something that should be considered in making decisions by investors to invest in a firm. So that in order to attract investors, the firm expects financial managers to take the best action for the firm by maximizing the value of the firm so that shareholder welfare can be achieved.

One of the factors that influence the increase in firm value is the disclosure of eco-efficiency applications. Eco-efficiency according to Aviyanti and Isbanah (2019) is a concept of environmental sustainability by companies to

reduce environmental impacts due to firm operational activities by minimizing firm operating costs. Companies that have adopted eco-efficiency in their firm's operational activities will be able to reduce production costs and compliance and have increased their profits, are likely to experience a higher value than companies that fail to adopt these policies (Osazuwa and Ayoib, 2016). Reduced operating costs and firm compliance costs as a result of implementing eco-efficiency will cause the firm's profitability to increase and will be accompanied by an increase in firm value.

The social performance disclosure factor is also one of the factors that influence firm value. Currently, stakeholders pay more attention to issues related to corporate social performance. According to Visser (2010), Corporate Social Performance (CSP) is defined as a configuration of business organization principles of social responsibility, social response processes, and observable results in relation to employees, stakeholders, and public relations.

Candrayanthi and Saputra (2013) explain that disclosure of corporate social performance is a form of firm siding with society and the environment. So that people are able to choose good products that are valued not only by the goods but also through corporate governance. Legitimacy theory states that companies will voluntarily report social and environmental activities, because management feels that these actions are expected by the communities where they operate. This theory emphasizes that the firm must be able to provide benefits to stakeholders. Benefits can be obtained by implementing social and environmental programs.

Signal theory holds that "good" corporate citizens issue sustainability reports to eliminate information asymmetries that could prevent them from reaping the benefits of their actions (Mahoney, 2007). The information provided by the firm will be used by investors for their judgment and decisions. Signal theory states that if the firm is good at conveying performance information, it will generate a positive signal to investors and have the potential to increase the firm's stock price (Utomo et al., 2020).

Apart from eco-efficiency and disclosure of corporate social performance, another factor that can affect firm value is the firm's financial performance. If the financial performance of a firm shows good prospects, then the firm's shares will be increasingly in demand by many investors and can affect the selling price of shares. Financial performance appraisal can be done using financial ratio analysis. One of the ratios that will be used to measure financial performance is profitability. Endri et al (2019) stated that the profitability ratio is all the strengths that are managed, both elements of product marketing and investment management in generating profits. This ratio is also used as an evaluation tool for better firm performance.

Research conducted by Sunaryo (2018), and Murnita and Putra (2018) shows that corporate social responsibility has a positive effect on firm value. Sinkin Research. (2008), Osazuwa and Ayoib (2016), and Amalia et al. (2017) stated that eco-efficiency has a positive effect on firm value. Furthermore, research by Muslichah (2020) shows that disclosure of environmental performance, disclosure of corporate social performance, and financial performance has a direct effect on firm value. In addition, financial performance also mediates the effect of environmental performance and disclosure of corporate social performance with firm value.

However, research conducted by Tiarasandy et al. (2018) stated that the disclosure of corporate social performance has no significant effect on the firm's financial performance. Research conducted by Wardhani (2013) suggests that financial performance cannot mediate the effect between disclosure of corporate social performance and firm value. Puspaningrum's (2017) research results suggest that corporate social responsibility has a negative effect on firm value.

This research is interesting to do because there are still many differences in the results of previous studies. Besides the reason this research was conducted is to find out how the market responds to the firm's internal performance. Where eco-efficiency and financial performance are the firm's internal performance that will be responded to by external parties by increasing firm value. So the aim of this study is to examine the effect of eco-efficiency and corporate social performance on firm value through financial performance.

## II. RESEARCH THEORY

### A. Legitimacy Theory

Legitimacy theory states that organizations are part of society so that they must pay attention to social norms because conformity with social norms can make companies more legitimate. Legitimacy theory, provides the view that the relationship between an organization and associated social expectations is only the reality of social life. Mousa and Naser (2015) explain that the sustainability of an organization's existence is founded both by market forces and social expectations, and therefore an understanding of the broader concerns of society which are articulated in

community expectations is an important prerequisite for the survival of an organization.

In order to maintain its survival, companies seek a kind of legitimacy or recognition from investors, creditors, consumers, government, and society. To gain legitimacy from investors, the firm always increases stock returns for investors. To gain legitimacy from creditors, the firm increases its ability to repay debt. To gain legitimacy from consumers, companies improve the quality of their products and services. To get legitimacy from the government, companies comply with all laws and regulations established by the government. Furthermore, to gain legitimacy from the community, the firm carries out social responsibility activities.

The sustainability report is one of the communication media that companies can use to gain legitimacy from the community as well as a tool to show the firm's performance and how much the firm cares about the environment. By publishing a firm sustainability report, it can prove to the surrounding community that the firm has empathy for the community and is able to provide benefits not only to shareholders, but to all elements of existing stakeholders.

### B. Stakeholder Theory

Stakeholders can be defined as stakeholders who are parties or groups that have an interest in the firm either directly or indirectly. Stakeholder theory states that a firm is not an entity that only operates for the interests of shareholders, but must also be able to provide benefits to all its stakeholders, namely shareholders, creditors, consumers, suppliers, government, the environment, and society (Harrison, 2015). Stakeholder theory and CSR emphasize the importance of incorporating community interests into business operations.

One of the reasons why the concept of Corporate Social Responsibility is based on the stakeholder theory that the existence of a firm is not only intended to serve the interests of shareholders (shareholders) but also the interests of other parties, including the community. Thus, it is quite clear that the community becomes an inseparable part of the firm and vice versa.

Stakeholder theory argues that by adjusting to the various stakeholder interests, it will lead to satisfaction for them. Stakeholder satisfaction can be achieved in a number of ways, one of which is the continuous improvement of social responsibility. Ruff. (2001) argued that "in the perspective of stakeholder theory, the social performance of a firm is assessed in terms of the firm meeting the demands of various stakeholders".

### C. Signal Theory

Signal theory is the theory that investors perceive dividend changes as a signal of management's earnings estimates. A signal or signal is an action taken by the firm's management that provides clues to investors about how the management's future prospects are. Signal theory explains that companies have the urge to provide financial statement

information to external parties to the firm. Signal theory underlies voluntary disclosure. This signal is in the form of information regarding the efforts made by management to realize the owner's wishes. Signals can be in the form of promotions or other information that can state that the firm is better than other companies. Management always tries to disclose private information which, in its opinion, is of great interest to investors and shareholders, especially if the information is good news. Management is also interested in providing information that can increase its credibility and the firm's success, even though this information is not required. Voluntary disclosure is a positive signal for the firm (Fatchan and Rina, 2016).

#### D. Eco-efficiency

Every firm is required to be responsible for the environment and the surrounding community. One form of this responsibility is to ensure that the production process carried out by the firm does not have too large a negative impact on the environment around the firm. Companies must be able to reduce sources of environmental pollution, whether in the form of water pollution, soil pollution, or air pollution. This concept is called eco-efficiency. "Eco-efficiency" stands for "ecological-economic efficiency," a construction that shows increased productivity and simultaneously reduced costs with improved environmental performance (Figge and Hahn, 2004). Guenster (2011) defines eco-efficiency as the economic value created by companies from products and services provided in connection with the waste produced.

Meanwhile, according to Osazuwa and Ayoib (2016) eco-efficiency is "maintaining that organizations can produce goods and services that are more useful while simultaneously reducing negative environmental impacts, resource consumption, and costs". Eco-efficiency functions as a management control mechanism to reduce the firm's impact on the environment and at the same time create more value for shareholders (Sinkin, 2008). Osazuwa and Ayoib (2015) state that the goal of eco-efficiency is to "reduce the consumption of natural resources such as minimizing the use of energy, water and land raw materials".

The concept of eco-efficiency can be a benchmark for companies in carrying out the concept of environmental management, where companies use the concept of eco-efficiency when the firm has ISO 14001 certification on environmental management (Amalia et al. 2017). ISO 14001 can also be used as a tool to fulfill internal and external goals such as convincing employees and stakeholders about environmental issues (Al-Najjar and Anfimiadou, 2012).

#### E. Corporate Social Performance

Corporate Social Performance was first put forward by Carrol (1979). According to Shahzad and Mark (2015), CSP is a collection of descriptive categories of business activities, with a focus on impacts and outcomes for society, stakeholders and the firm itself. Formally there is a difference between Corporate Social Responsibility (CSR) and Corporate Social Performance (CSP). CSR is a firm activity related to the obligations felt by the community or stakeholders, reflecting the firm's program and sustainability

investment. Meanwhile, CSP is the firm's overall performance in implementing CSR programs. The report is a source of stakeholder assessments of all the quality of programs and investments (Marwati and Yulianti, 2015).

Sukarno (2008) states that corporate social performance is a set of results achieved and refers to the level of achievement and implementation of a social responsibility expected of the firm. Another opinion is expressed by Igalens and Gond (2005), which states that corporate social performance is a construct that is described in different ways. Decock-Good (2001) suggests that there are five approaches to measuring CSP, namely

1. Measurement based on content analysis in annual reports
2. Pollution index
3. The perception measurement comes from a questionnaire based survey
4. Firm reputation indicator
5. Data generated by organizational measurements

#### F. Financial Performance

The main attraction for firm owners (shareholders) in a firm is profitability. In this context profitability means the results obtained through management efforts on funds invested by firm owners. The definition of profitability according to Hanafi and Abdul (2012: 81) is a "ratio that measures the firm's ability to generate profits (profitability) at a certain level of sales, assets and share capital. There are three ratios that are often discussed, namely profit margin, return on assets (ROA), and return on equity (ROE). "

The profitability ratio is used to determine the firm's ability to earn a profit, through this ratio investors can find out the rate of return on their investment. This study will use the ratio Return on Equity (ROE) and the ratio of Return on Assets (ROA). ROE is the result of an increase in the income available to firm owners on the capital they invest in the firm or the net profit earned by investors and creditors (Harahap., 2020). Meanwhile, ROA serves to measure the effectiveness of a firm in generating profits by utilizing its assets. The greater the ROA of a firm, the more efficient the users of its assets will be so that it will increase profits.

#### G. Firm Value

According to Ernawati and Widawati (2015) one of the reasons that investors consider when investing is the value of the firm in which the investor will invest. Firm value according to Noerirawan and Abdul (2012) is a condition that has been achieved by a firm as an illustration of public trust in a firm that has gone through a process of activity for several years, since the firm was founded until now.

According to Andriyani (2017) firm value is also an important concept for investors because it can be an indicator for the market to assess the firm as a whole which is reflected in the stock price, if the firm value is high it will increase investors' confidence in the firm because of investors' assessment of the firm's prospects in the future. that will come from a high stock price. Husnan and Eny (2016) state that the firm value is the price a prospective buyer is willing to pay if the firm is sold. The higher the firm value, the

greater the prosperity received by the firm owner. Firm value according to Muliani et al. (2014) is a value to measure the quality level of a firm and a value that explains how much importance a firm is in the eyes of its customers.

### III. CONCEPTUAL FRAMEWORK AND HYPOTHESIS

The main objective of the firm is to increase the value of the firm and increase the prosperity of shareholders. Investors consider that when the firm's stock price increases, the profits the firm gets will be hit by fish. Ghozali and Chariri, (2016) explain that firm value is the price that prospective buyers are willing to pay if the firm is sold. The firm value becomes the benchmark for investors to choose which firm stock decisions to invest in.

One of the factors that can affect the increase in firm value is the application of eco-efficiency. Eco-efficiency according to Matarazzo. (2013) is how companies create value more or less environmental resources by using or reducing environmental impacts (for example, less pollution or depletion of natural resources). Because the advantages that the firm has over the application of eco-efficiency, will cause the firm to have more added value in the eyes of investors so that it will increase firm value.

The next factor that can affect firm value is the disclosure of the firm's social performance. Marwati and Yulianti (2015) suggest that CSP shows how a firm performs on its social responsibility. How companies can optimize every opportunity related to their business on social relations, and the ways companies carry out social responsibility towards their stakeholders.

The next factor that can affect firm value is the disclosure of the firm's financial performance. If the financial performance of a firm shows good prospects, then the firm's shares will be increasingly in demand by many investors and can affect the selling price of shares (Luthfiah and Suherman, 2018). Financial performance appraisal can be done using financial ratio analysis. One of the ratios that will be used to measure financial performance is the firm's profitability. Muslichah (2020) argues that profitability is the ability of a firm to generate profits for a certain period. The firm must maintain the profits it has earned. If not, the firm will have difficulty attracting capital from outside parties. High profits indicate good firm prospects, which in turn can trigger an increase in firm value.

Based on this, the conceptual framework in this study can be described as follows:

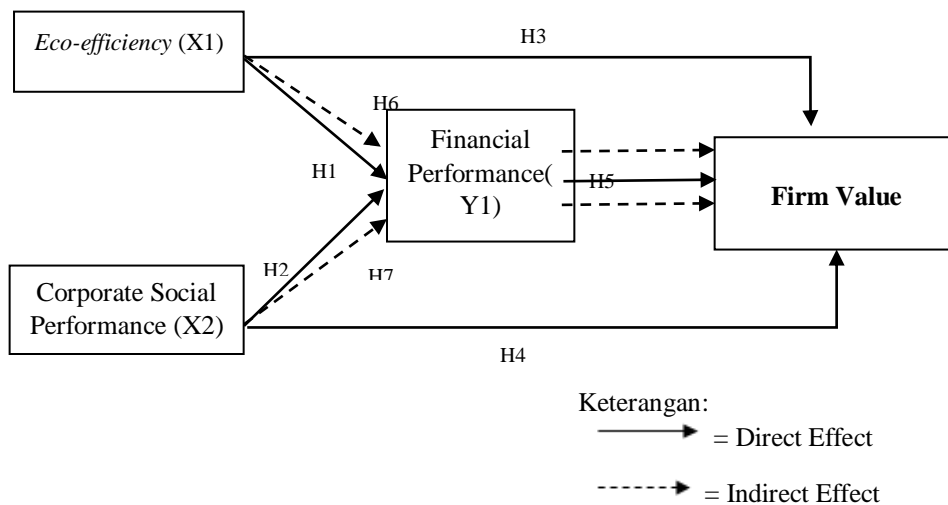


Fig 1. Konseptual Framework

#### A. Effect of Eco-Efficiency on Financial Performance

The application of the eco-efficiency concept in the firm's operational activities is one form of innovation that can be an advantage in competition. Because the eco-efficiency concept is able to produce high-value products with not much use of resources (Meiryani, 2020). In addition, companies that implement eco-efficiency have a higher advantage than those that do not, because of lower compliance and regulatory costs (Matarazzo., 2013). The decrease in costs due to economic and environmental efficiency in the application of eco-efficiency will increase firm profits and will be accompanied by an increase in the firm's financial performance.

The results of research conducted by Matarazzo., (2013) and Meutia. (2019) stated that eco-efficiency has a positive effect on the firm's financial performance. This is because eco-efficiency will be able to streamline production costs and firm compliance costs so as to increase firm profitability. Research conducted by suggested that performance. Based on the description above, the hypothesis in this study are as follows:

*H1 = Eco-Efficiency has a positive effect on financial performance*



### *B. Effect of Corporate Social Performance on Financial Performance*

Signal theory explains that management is able to provide signals of success or failure that will be conveyed to the owner (Weichieh et al., 2014). Disclosure of corporate social performance is good news that is captured by investors so that it can be one of the considerations for investors when investing in a firm. In addition, disclosure of social performance is good news for employees, where companies that disclose their social performance, in this case policies related to employees, will provide a sense of security and trust for their employees, when employees feel safe and comfortable at work, of course, will increase firm productivity and will have a positive impact on the firm's financial performance.

Results of research conducted by Sadeghi. (2016) and Andi. (2019) show that the firm's social performance has a positive effect on financial performance, which is proxied by profitability. Based on the description above, the hypothesis in this study are as follows:

*H2: Corporate social performance has a positive effect on financial performance*

### *C. Effect of Eco-Efficiency on Firm Value*

The application of eco-efficiency is a form of corporate responsibility to the environment and other stakeholders. The application of eco-efficiency in the firm's operational activities will enhance the firm's good image in the eyes of investors which will also have a good impact on firm value (Aviyanti and Isbanah, 2019). Feldman. (1997) stated that companies that apply the eco-efficiency concept effectively appear to have added value for shareholders through the risk of their firm profile.

Research conducted by Osazuwa and Ayoib (2016) explains that eco-efficiency has a positive effect on firm value. The results of research by Osazuwa and Ayoib (2016) state that firm management and potential investors tend to choose investments in the eco-efficiency concept that leads to high firm value. This is in line with research conducted by Amalia et al. (2017) that the positive effect on the application of eco-efficiency is marked by ISO 14001 certification with firm value. Based on the description above, the hypothesis of this study is as follows:

*H3: Eco-efficiency has a positive effect on firm value*

### *D. The Effect of Corporate Social Performance on Firm Value*

Corporate social performance is a form of corporate social responsibility. By implementing corporate social responsibility, it is hoped that the firm will gain social legitimacy and maximize its financial strength in the long term. Socially responsible companies have a positive brand image and reputation among consumers, they also have the ability to attract more employees and outstanding business partners (Matarazzo., 2013). This indicates that companies that implement corporate social responsibility expect a positive response from market players.

Research conducted by Muslichah (2020) shows that there is a positive effect of disclosure of corporate social performance on firm value. Sunaryo et al. (2018) stated that corporate social responsibility has a positive and significant effect on firm value. Where, so that the higher the social responsibility of the firm, the value of the firm in the pharmaceutical companies listed on the IDX also increases. Based on the explanation above, the hypothesis in this study is as follows:

*H4: Corporate Social Performance has a positive effect on Firm Value.*

### *E. Effect of Financial Performance on Firm Value*

In general, firm value can be influenced by financial factors. This factor is the main factor that can affect firm value (Muliani et al, 2014). Financial factors can show how a firm obtains funds and how the firm allocates these funds, so that the use of these funds can be profitable for the firm. Financial performance describes the firm's performance achieved by a firm in a certain period. If the financial performance of a firm shows good prospects, then the firm's shares will be increasingly in demand by many investors and can affect the selling price of shares.

Research conducted by Haryono and Iskandar (2015) and Dewa. (2014) stated that profitability has a positive effect on firm value. This is because profitability is a signal indicating that the firm is able to provide certainty about the firm's future prospects so as to increase the firm's value.

*H5: The firm's financial performance has a positive effect on Firm Value.*

### *F. Effect of Eco-Efficiency on Firm Value through Financial Performance*

The application of eco-efficiency in the firm's mechanism is a good signal for investors. Where companies that can reduce production costs will be able to improve financial performance. Improved financial performance will have an impact on increasing the value of a firm. This good firm value will attract investors to invest in the firm with the hope that they will get dividends.

Research conducted by Khasanah and Teddy (2018) suggests that financial performance mediates the influence between environmental performance and firm value. This is because companies with good environmental performance and high efficiency levels can reduce costs which can increase firm profitability. In addition, companies that implement good environmental performance will also have a good reputation in the eyes of their stakeholders. A firm that has a good reputation and a good financial position will be responded to positively by investors and potential investors, which will increase the firm's value. Based on the explanation above, the hypothesis in this study is as follows:

*H6: Eco-Efficiency Affects Firm Value Through Firm Financial Performance*

**IV. RESEARCH METHODOLOGY**

*A. Type of Research*

This type of research is a causal research which is a type of research with the characteristics of the problem in the form of a causal relationship between two or more variables. Researchers can identify these facts or events as influenced variables (dependent variables) and carry out investigations into variables that affect the independent variables (Indriantoro and Supomo, 2014: 27).

*B. Types and Sources of Data*

In this study, the type of data used is secondary data, namely in the form of time series data for all variables. Data can be obtained from the official website of each firm for eco-efficiency data and firm social performance data in the form of an annual sustainability report and the Indonesia Stock Exchange (IDX), namely <https://www.idx.co.id/> for financial performance data and firm value used in this study is the firm's annual report for the period 2015-2019.

*C. Population and Sample*

The population in this study are mining and manufacturing companies listed on the Indonesia Stock Exchange consisting of 165 manufacturing companies and 23 mining companies. The method of determining the sample in this research is using purposive sampling method. So that based on the specified sample criteria obtained by 13 companies.

*D. Variable Measurement*

*1. Eco-efficiency*

In GRI G4 there are 26 criteria covering dimensions of environmental performance. Measurements are made by calculating the proportion between the total number of disclosure criteria made by the firm against the total disclosure criteria in GRI G4. Measurement of variables can be formulated as follows (Eduardus and Juniarti, 2016)

$$CSRI = \frac{\text{Number of Corporate Disclosure Criteria}}{\text{Number of Disclosure Criteria According to GRI G4}}$$

*2. Corporate Social Performance*

In GRI G4 there are 48 criteria covering the dimensions of social performance. Measurements are made by calculating the proportion between the total number of disclosure criteria made by the firm against the total disclosure criteria in GRI G4. Measuring of variables can be formulated as follows (Eduardus and Juniarti, 2016).

$$CSRI = \frac{\text{Number of Corporate Disclosure Criteria}}{\text{Number of Disclosure Criteria According to GRI G4}}$$

*3. Financial Performance*

Financial performance is measured by profitability ratios using the Return on Assets and Return on Equity ratios. According to Kasmir (2015: 204) The formula for measuring Return on Equity (ROE) can be used as follows:

$$\text{Return On Equity} = \frac{\text{Earning After Tax}}{\text{Equity}}$$

According to Kasmir (2015: 203) The formula for measuring Return on Assets (ROA) can be used as follows:

$$\text{Return On Asset} = \frac{\text{Earning After Tax}}{\text{Total Asset}}$$

*4. Firm Value*

The measurement of firm value according to Husnan and Eny (2016) is as follows:

$$\text{TobinsQ} = \frac{\text{Market value of equity} + \text{Book value of liability}}{\text{NBook Value of Asset}}$$

*E. Hypothesis Testing*

*1. Determination Coefficient Test*

The coefficient of determination test is used to test the Goodness of Fit of the regression model. Or in other words, the coefficient of determination test is used to determine whether the independent variable used in a regression model of a study dominantly affects the dependent variable.

*2. T test*

To test the first to the fourth hypotheses, the t-test will be used. The t-test was conducted to test, whether or not there was a significant effect of each independent variable on the dependent variable. This t-test is carried out by assessing the significance level of t count, where if the significance level is smaller than  $\alpha$ , it means that there is a significant influence between the independent variable on the dependent variable, so that the hypothesis is accepted.

*3. Path Analysis*

The analytical method used in this paper is the path analysis method or path analysis. This method is to show the direct and indirect effect between the independent and dependent variables. This study uses 2 research models, namely.

- Model of the Influence of Eco-Efficiency and Social Performance on Financial Performance

$$Y_1 = \alpha_0 + \alpha_1 X_1 + \alpha_2 X_2 + \mu_1 \quad (6)$$

- Influence Model of Eco-Efficiency and Corporate Social Performance on Firm Value through Financial Performance

$$Y_2 = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 Y_1 + \mu_2 \quad (7)$$

Testing the mediation hypothesis can be done using a procedure developed by Sobel and is known as the Sobel test (Sobel test). The sobel test is carried out by testing the strength of the indirect effect of the independent variable on the independent variable through the mediating variable (Ghozali, 2011: 248). The sobel test formula is as follows:

$$sab = \sqrt{b^2 sa^2 + a^2 sb^2 + sa^2 sb^2}$$

**V. RESULTS**

*A. Hypothesis Testing Model 1*

The magnitude of the simultaneous influence of these two variables can be seen from the coefficient of determination. the following:

Table 1. Determination (Model Summary) Model 1  
**Model Summary<sup>b</sup>**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.458 <sup>a</sup>	0.210	0.184	52.17050	1.870

a. Predictors: (Constant), Corporate Social Performance, Eco-Efficiency

b. Dependent Variable: Financial Performance

Source: SPSS output, data processed, 2020

Based on the results of Table 1, the coefficient of determination of the influence of the eco-efficiency variable and corporate social performance on financial performance is 0.210 or 21%, which means that changes based on financial performance can be explained by changes in eco-efficiency variables and corporate social performance, while the remaining 79% is explained by other factors beyond the variable eco-efficiency and social performance of the firm.

Regression analysis model 1 is used to determine the strength of the relationship between the independent variables and the intervening variables. The results of the calculation of regression model 1 are shown in table 2 below:

Table 2 t-test results (coefficients) Model 1

Model		Standardized Coefficients		t	Sig.
		Std. Error	Beta		
1	(Constant)	12.429		5.894	0.000
	Eco-Efficiency	7.836	0.302	2.495	0.015
	Social Performance	7.036	0.253	2.092	0.041

a. Dependent Variable: Financial Performance

Source: SPSS output, data processed, 2020

Based on table 2 above, the regression equation in model 1 is as follows:

$$Y_1 = 73,251 + 19,553X_1 + 14,719X_2 + 0,790\mu_1$$

The t model 1 statistical test was conducted to determine the effect of each independent variable on the intervening variable partially. Based on table 4.13 above, the following results are obtained: Based on the results of table 1 and the above equation can be explained:

1. Effect of Eco-Efficiency on Financial Performance

Obtained a comparison of t count = 2.495 > t table 1.999 or a significance value = 0.015 < alpha = 5%, then H1 is accepted, which means that the regression coefficient value predictor eco-efficiency has a direct effect on financial performance. The magnitude of the influence of eco-efficiency on financial performance can be seen in the standardized coefficient (beta) of 0.302. This shows that if there is an increase in eco-efficiency, it will increase financial performance with the assumption that the other independent variables are considered constant.

2. The Effect of Corporate Social Performance on Financial Performance

Obtained a comparison of t count = 2.092 > t table 1.999 or a significance value = 0.041 < alpha = 5%, then H2 is accepted, which means that the regression coefficient value predictor of corporate social performance has a direct effect on financial performance. The magnitude of the influence of corporate social performance on financial performance is seen in the standardized coefficient (beta) of 0.253. This shows that if there is an increase in the firm's social performance, it will improve financial performance with the assumption that the other independent variables are considered constant.

*B. Hypothesis Testing Model 2*

The magnitude of the influence simultaneously of these three variables can be seen from the following coefficient of determination:

Table 3 Model Summary Model 2  
**Model Summary<sup>b</sup>**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.827 <sup>a</sup>	0.684	0.668	0.56980	<b>2.307</b>

a. Predictors: (Constant), Financial Performance, Corporate Social Performance, Eco-Efficiency

b. Dependent Variable: Firm Value

Source: SPSS output, data processed, 2020

Based on the results of Table 3, the coefficient of determination of the influence of the Eco-efficiency variable and Corporate Social Performance on Financial Performance is 0.684 or 68.4%, meaning that changes based on Firm Value can be explained by changes in the Eco-Efficiency variable, Corporate Social Performance and Financial Performance while the rest 31.6% is explained by other factors outside the variable Eco-efficiency, Corporate Social Performance and Financial Performance.

Regression analysis model 2 is used to determine the strength of the relationship between the independent variable and the intervening variable on the dependent variable. The results of the calculation of regression model 2 are shown in table 4 below:

Table 4 t-test results (coefficients) Model 2

		Standardized Coefficients		t	Sig.
		Std. Error	Beta		
1	(Constant)	0.170		4.280	0.000
	Eco-Efficiency	0.090	0.228	2.819	0.006
	Social Performance	0.080	0.196	2.118	0.038
	Financial Performance	0.001	0.623	7.693	0.000

a. Dependent Variable: Firm Value

Source: SPSS output, data processed, 2020

Based on the results of table 5.10, the above can be explained:

1. The Effect of Eco-Efficiency on Firm Value

Obtained a comparison of t count = 2.819 > t table = 1.999 or a significance value = 0.006 < alpha = 5%, then H3 is accepted, which means that the value of the Eco-efficiency predictor regression coefficient has a direct effect on firm value. The magnitude of the effect of Eco-efficiency on Firm Value is seen in the standardized coefficient (beta) of 0.253. This shows that if there is an increase in eco-efficiency, it will increase the firm's value, assuming that the other independent variables are considered constant.

2. The Effect of Corporate Social Performance on Firm Value

Obtained a comparison of t count = 2.118 > t table = 1.999 or a significance value = 0.038 < alpha = 5%, then H4 is accepted, meaning that the regression coefficient value predictor of Corporate Social Performance has a direct effect on Firm Value. The magnitude of the influence of Corporate Social Performance on Firm Value is seen in the standardized coefficient (beta) of 0.168. This shows that if there is an increase in the firm's social performance, it will increase the value of the firm with the assumption that the other independent variables are considered constant.

3. The Effect of Firm Financial Performance on Firm Value

Obtained a comparison of t count = 7,693 > t table = 1,999 or a significance value = 0.018 < alpha = 5%, then H5 is accepted, which means that the regression coefficient value predictor of corporate financial performance directly affects firm value. The magnitude of the influence of the Firm's Financial Performance on Firm Value is seen in the standardized coefficient (beta) of 0.011. This shows that if there is an increase in the social performance of the firm, it will increase the value of the firm with the assumption that the other independent variables are considered constant.

C. Path Analysis

Path analysis is used to examine the effect of intervening variables. Path analysis is an extension of multiple regression analysis. Path analysis is used to estimate the causal relationship between variables (causal model). Based on the regression results in Table 2 and Table 4, the path analysis model is described as follows:

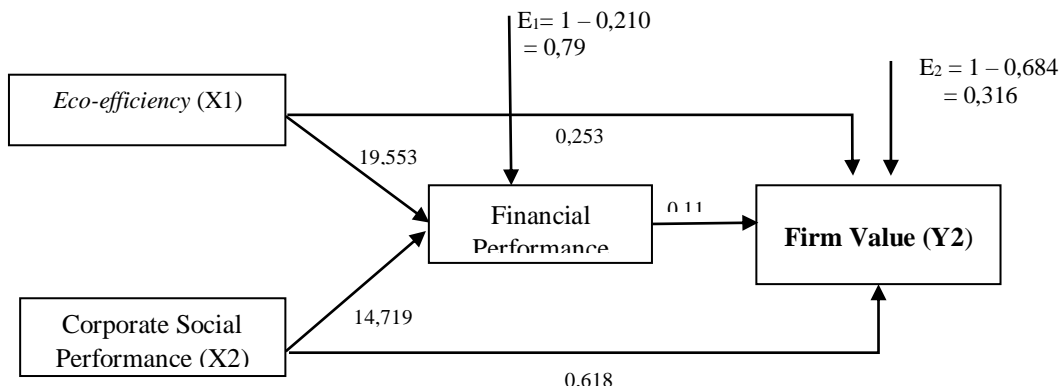


Fig 2. Path Analysis

Based on Figure 2 above, the effect of the independent variable on the dependent variable is summarized in table 5 below:

Table 5. Direct effect and indirect effect of the independent variable on the dependent variable

Effect between variables	Direct Effect	Indirect Effect Through $Y_1$	Total Effect
X1, → Y1	19,553	-	19,553
X2 → Y1	14,719	-	14,719
X1 → Y2	0,253	0,215	0,468
X2 → Y2	0,168	0,162	0,330
Y1 → Y2	0,011	-	0,011

Source: SPSS output, data processed, 2020



From the path analysis model in Figure 2 and the effect value in Table 5, the calculation of the effect of mediation is tested by the Sobel test as follows:

#### 1. Effect of Eco-efficiency on Firm Value through Financial Performance

- Indirect Effect

$$IE = 19,553 \times 0,011 = 0,215083$$

Sobel Test

ST =

$$ST = \frac{\sqrt{(0,011)^2(7,836)^2 + (19,553)^2(0,001)^2 + (7,836)^2(0,001)^2}}{ST}$$

$$= \sqrt{(0,007429750416) + (0,000382319809) + (0,000061402896)}$$

$$ST = \sqrt{0,007873473121}$$

$$ST = 0,088732$$

- Effect of mediation

The mediation effect is obtained from the distribution of the indirect effect and the sobel test value

$$t \text{ count} = \frac{PTL}{ST}$$

$$t \text{ count} = \frac{0,215083}{0,088732} = 2,42396$$

$$t \text{ table} = 1,999$$

Based on the results of the above calculations, the t value of 2.42396 is greater than the t table value of 1.999, so it can be concluded that there is a mediation effect. With this mediating effect, it can be concluded that H6 is accepted, which means that there is a positive influence between eco-efficiency and firm value through financial performance.

#### 2. Effect of Corporate Social Performance on Firm Value through Financial Performance

- Indirect Effect

$$IE = 14,719 \times 0,011 = 0,161909$$

Sobel Test

ST =

$$ST = \frac{\sqrt{(0,011)^2(7,036)^2 + (14,719)^2(0,001)^2 + (7,036)^2(0,001)^2}}{ST}$$

$$= \sqrt{(0,005990140816) + (0,000216648961) + (0,000049505296)}$$

$$ST = \sqrt{0,006256295073}$$

$$ST = 0,079097$$

- Effect of mediation

The mediation effect is obtained from the distribution of the indirect effect and the sobel test value

$$t \text{ count} = \frac{PTL}{ST}$$

$$t \text{ count} = \frac{0,161909}{0,079097} = 2,046968$$

$$t \text{ table} = 1,99962$$

Based on the results of the above calculations, the t value of 2.046968 is greater than the t table value of 1.999, it can be concluded that there is a mediation effect. With this mediation effect, it can be concluded that H6 is accepted,

which means that there is a positive influence between corporate social performance and firm value through financial performance.

## VI. DISCUSSION

### A. Effect of Eco-efficiency on Financial Performance

From table 2 it can be seen that eco-efficiency has a positive effect on and is related to financial performance. This explains that if eco-efficiency has increased in value, financial performance will also increase for companies in the mining and manufacturing sectors for the 2015-2019 period, and vice versa. In line with research conducted by Matarazzo. (2013) and Meutia (2019) which state that eco-efficiency has a positive effect on financial performance as measured by the profitability ratio. This is because better pollution control through the application of eco-efficiency can reduce production costs and compliance costs. Decreasing costs can increase firm profits so that the firm can have a higher profitability figure. According to the theory, high profitability signals are "good news" that can attract investors to invest in a firm (Caiado, 2017).

### B. The Effect of Corporate Social Performance on Firm Financial Performance

From table 2 it can be seen that the firm's social performance has an effect and is positively related to the firm's financial performance. This explains that if the firm's social performance has increased in value, then the financial performance will also increase for companies in the mining and manufacturing sector for the 2015-2019 period, and vice versa. Research conducted by Sadeghi. (2016) and Andi. (2019) show the same thing, namely social performance has a positive effect on the firm's financial performance with profitability as a performance measurement. This is because companies that carry out their social obligations to customers and society will gain customer trust to buy firm products so as to increase the firm's profitability. In addition, from the employee's perspective, companies that fulfill their social obligations to their employees will be able to provide a sense of security for their employees so that firm productivity will increase (Feng and Mei, 2013).

### C. Effect of Eco-efficiency on Firm Value

From table 4 it can be seen that eco-efficiency has an effect and is positively related to firm value. This explains that if eco-efficiency increases in value, then firm value will also increase for companies in the mining and manufacturing sectors for the 2015-2019 period, and vice versa. In line with research conducted by Osazuwa and Ayoib (2016) and Amalia et al. (2017) who stated that eco-efficiency has a positive effect on firm value. This is because the application of eco-efficiency, which is an environmentally friendly production process, will reduce the cost of compliance risk so that it will provide a good image in the eyes of the public and investors through the firm's good track record.

### D. The Effect of Corporate Social Performance on Firm Value

From table 4 it can be seen that corporate social performance has an effect and is positively related to firm value. This explains that if the social performance of the firm has increased in value, then the value of the firm will also increase in companies in the mining and manufacturing sector for the 2015-2019 period, and vice versa. In line with research conducted by Sunaryo dk (2018) and Muslichah (2020) which states that corporate social responsibility has a positive effect on firm value. Because based on the theory of corporate stakeholders who disclose environmental and social information will benefit from their actions, which then positively affects the perceptions of stakeholders and consequently increases the value of the firm.

#### *E. The Effect of Firm Financial Performance on Firm Value*

From table 4 it can be seen that the firm's financial performance has an effect and is positively related to firm value. This explains that if the firm's financial performance has increased in value, then the firm's value will also increase in companies in the mining and manufacturing sector for the 2015-2019 period, and vice versa. In line with research conducted by Dewa (2014), Ayu and Suarjaya (2017) and Lubis. (2017) that an increase in the firm's financial performance will affect the increase in firm value. This is in accordance with the signal theory states how a firm should provide signals to users of financial statements. The importance of the signal given by the internal firm is to convince external parties, namely investors, in making decisions to invest.

#### *F. Effect of Eco-efficiency on Firm Value through Financial Performance*

From table 4 it can be seen that eco-efficiency has an effect on firm value through financial performance. This means that financial performance is able to mediate the relationship between eco-efficiency and firm value. This is in line with research conducted by Khasanah and Teddy (2018), which suggests that financial performance mediates the influence between environmental performance and firm value. This is because eco-efficiency, which is the efficiency of the environment and economy, will lead to lower production costs and compliance costs. The reduction in costs will increase the firm's profitability and with the increase in the firm's profitability it will attract investors to invest in the firm.

#### *G. The Influence of Corporate Social Performance on Firm Value through Financial Performance*

From the table it can be seen that the firm's social performance has an effect on firm value through financial performance. This means that financial performance is able to mediate the relationship between corporate social performance and firm value. In line with research conducted by Muslichah (2020) and Masitoh et al. (2018) which shows that disclosure of corporate social and environmental performance has a positive effect on firm value through financial performance. This is because one of the important objectives of firm management is to maximize financial and operational performance because it will affect share prices,

market value, owner's wealth, and the number of investors. Profitability has an important meaning in maintaining long-term survival. Profitability shows that a business entity has good prospects in the future. Investors see profitability as a good signal. This profitability can attract investors to invest their money to fund operational activities and even develop their business, which in turn results in an increase in firm value.

## VII. CONCLUSION

### *A. Conclusion*

1. The increase in the value of the eco-efficiency variable causes the variable value of the firm's financial performance to also increase in mining and manufacturing companies listed on the Indonesia Stock Exchange for the period 2015-2019, and vice versa.
2. The increase in the value of the firm's social performance variable makes the value of the firm's financial performance variable also increase in mining and manufacturing companies listed on the Indonesia Stock Exchange for the 2015-2019 period, and vice versa.
3. The increase in the value of the eco-efficiency variable causes the variable value of the firm value to also increase in mining and manufacturing companies listed on the Indonesia Stock Exchange for the period 2015-2019, and vice versa.
4. The increase in the value of the firm's social performance variables makes the value of the variable value of the firm also increase in mining and manufacturing companies listed on the Indonesia Stock Exchange for the 2015-2019 period, and vice versa.
5. The increase in the value of the firm's financial performance variables makes the variable value of the firm value also increase in mining and manufacturing companies listed on the Indonesia Stock Exchange for the 2015-2019 period, and vice versa.
6. Financial performance variables are able to mediate the effect of eco-efficiency on firm value at mining and manufacturing companies listed on the Indonesia Stock Exchange for the period 2015-2019.
7. Financial performance variables are able to mediate the influence of corporate social performance on firm value at mining and manufacturing companies listed on the Indonesia Stock Exchange for the period 2015-2019.

### *B. Research Limitations*

1. Limited samples because only 13 samples met the requirements, causing the coefficient of determination ( $R^2$ ) to be small. The coefficient of determination of the influence of the eco-efficiency variable and corporate social performance on financial performance is only 0.210 or 21%, meaning that changes based on financial performance can be explained by changes in the eco-efficiency variables and corporate social performance. The difference in R square value of 79% is influenced by other variables outside the independent variables studied in this study. So that it can be used as material for consideration for further research.
2. This study has limited subjectivity in determining the disclosure index. This is because there are no standard

provisions that can be used as a reference, so that the determination of the index for indicators in the same category can be different for each researcher.

### C. Suggestions

Based on the results of the research that has been done and also the conclusions above, the suggestions that the authors can give include the following:

1. Further research needs to expand the object of research and a longer observation period so that the number of samples and data that can be used in the research is increasing to find out the real conditions of the capital market. Thus, it is expected that the research results can represent all companies listed on the Indonesia Stock Exchange (IDX).
2. Further research is suggested to use other measures in measuring the application of eco-efficiency and corporate social performance such as pollution index, perception measurement derived from questionnaire-based surveys, firm reputation indicators, and data generated by organizational measurements.

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