



THE EFFECT OF ENVIRONMENTAL PERFORMANCE AND GREEN ACCOUNTING ON FINANCIAL PERFORMANCE WITH CORPORATE SOCIAL RESPONSIBILITY AS A MEDIATING VARIABLE

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Abstract

This research aims to determine the effect of environmental performance and green accounting on financial performance with corporate social responsibility as a mediating variable. The population in this study were energy and basic material sector companies listed on the Indonesia Stock Exchange (IDX) during the period 2019-2023. The sample was selected using purposive sampling, with the result 91 unbalanced data from 29 companies. Data were obtained from sustainability reports, annual reports, and financial statements accessed through the IDX or company websites. Hypothesis testing in this study using panel data regression analysis with STATA V.17, including descriptive statistical tests, model selection, classical assumption tests, coefficient determination, partial tests, and Sobel test. The results of this research show that environmental performance and green accounting have positive effects on corporate social responsibility. Meanwhile, environmental performance and green accounting have no effect on financial performance, whereas corporate social responsibility has a negative effect on financial performance. However, corporate social responsibility cannot mediate the relationship between environmental performance and green accounting on financial performance.

Keywords: Corporate Social Responsibility, Environmental Performance, Financial Performance, Green Accounting

INTRODUCTION

Economic growth is a key indicator in assessing a country's progress, which can be measured through Gross Domestic Product (GDP). An increase in a country's Gross Domestic Product (GDP) is supported by various economic actors, including companies. In 2023 the non-financial sector contributed 64.58% of GDP to the Indonesian economy, where this value decreased compared to 2022 of 65.58%. This gross domestic product value illustrates the ability of an entity to generate income through the production and sale of goods or services, so it is one of the parameters that can describe the financial performance of a company (Hakim, 2023).

The increase in the company's financial performance from year to year shows that the company's business processes are running smoothly, so that it can attract investors' interest in investing their capital (Meiyana & Aisyah, 2019). However, improving the company's financial performance sometimes makes the company ignore its responsibilities in both environmental and social aspects. In fact, one way to maintain stakeholder trust is by protecting the environment around the company.

In Indonesia, the Ministry of Environment encourages every entity to improve environmental management in a more responsible (Amarrulloh & Annisa, 2023). One of the strategies of the Ministry of Environment in improving the environmental performance of an entity is by holding a Public Disclosure Program for Environmental Compliance (PROPER). In the 2022-2023 period, 3,694 companies participated in the PROPER program. The ranking results show that only 2% of the 3,694 companies received a gold rating, meaning they consistently manage the environment in accordance with laws and regulations. A total of 1,077 companies are ranked red for not complying with environmental regulations. These results are expected to encourage companies with low ratings to increase their responsibility to reduce negative impacts on the environment.



Social responsibility activities provide a positive image that influences stakeholders' decision-making in favor of the company (Meiyana & Aisyah, 2019). The company's duty to carry out social responsibility is regulated in Law No. 40 of 2007 concerning limited liability companies. In addition, social responsibility activities are also discussed in Article 6 of Government Regulation No. 47 of 2012 which explains that “Corporate social and environmental responsibility has the aim of encouraging sustainable economic development so as to improve the quality of life and the environment of the surrounding community”.

Since 2019, sustainability reports in Indonesia have also been mandatory so that the presentation of a company's social and environmental information is separate from financial reports (Anugerah et al., 2023). Quoted in PwC, in 2022, as many as 80% of companies in Indonesia have used GRI standards in their sustainability reporting (Andy, 2023). Based on the sustainable development report, in 2023 Indonesia ranks 75th in the world committed to improving the performance of achieving sustainable development (Bappenas, 2023).

When implementing social responsibility and environmental performance, green accounting is required by entities in order to pay attention to the long-term impact of their operational activities. The application of this accounting system aims to support the improvement of the efficiency of managing the environmental aspects of the company, especially in terms of spending costs related to its activities (Ramadhani et al., 2022). Regulations related to green accounting are written in Law Number 32 of 2009 concerning environmental protection and management.

The Ministry of Environment and Forestry carries out strict supervision of any entity that causes pollution, such as companies in the energy and raw materials sectors. A manufacturing company in the raw material sector, which was proven to have polluted the environment quoted from CNN Indonesia (2024) was PT Pindo Deli. PT Pindo Deli, which operates in the Karawang area, caused 133 people to experience chlorine gas poisoning. As a result of the incident, the Karawang government stopped the company's operations due to repeated incidents (CNN Indonesia, 2024). Another company proven to pollute the environment quoted from Rmol SUMSEL (2024) is PT RMK Energy, which was sanctioned for violating environmental management rules. The impact of this incident, in 2023 PT RMK Energy experienced a decline in share price from Rp1,085 to Rp575 and was excluded from the Quality30 Index (Rmol Sumsel, 2024). The cases of PT Pindo Deli and PT RMK Energy show that shutdowns can be detrimental to companies, lowering financial performance and stock prices, emphasizing the importance of environmental performance, green accounting and social responsibility in improving financial performance.

Environmental performance has a positive effect on corporate social responsibility (Hanif et al., 2020; Kustina, 2020). Companies that manage environmental impacts effectively demonstrate a commitment to social responsibility for those affected. However, other research show that environmental performance has no impact on corporate social responsibility (Amarrulloh & Annisa, 2023).

Green accounting has a positive effect on corporate social responsibility (Cyhintia & Sofyan, 2023; Mustofa et al., 2020). Green accounting can increase transparency and accountability in managing environmental impact that encourages companies to commit to sustainable and responsible business practices (Cyhintia & Sofyan, 2023). This statement contradicts research which states that green accounting has no impact on corporate social responsibility (Saputri & Setyowati, 2024).

Environmental performance has a positive effect on financial performance (Cahyani & Puspitasari, 2023; Rahayudi & Apriwandi, 2023; Ramadhani et al., 2022; Wamba, 2022). This is because every company is responsible for preserving the environment in order to increase the company's value (Wamba, 2022). Other research states that environmental performance cannot



affect financial performance. (Anggara et al., 2021; Niandari & Handayani, 2023; Rintala et al., 2022).

The results of previous researches state that green accounting has a positive impact on a company's financial performance (Mondal et al., 2024; Niandari & Handayani, 2023; Ramadhani et al., 2022). Green accounting disclosures shows the company's dedication to managing the resulting environmental impacts, thus increasing public trust and potentially affecting the improvements of financial performance. (Ramadhani et al., 2022). However, some research show that green accounting has a negative impact on financial performance. (Riyadh et al., 2020). Beside that, there are research statements that reveal green accounting has no impact on financial performance. (Cahyani & Puspitasari, 2023; Rahayudi & Apriwandi, 2023).

Based on the result of previous research, corporate social responsibility has a positive impact on financial performance (Fitriaty et al., 2021; Gharbi & Jarboui, 2024). If the implementation of social responsibility activities goes well, it means that the company is considered capable of carrying out its operational activities so that there is an increase in company value. However, other researches show corporate social responsibility has a negative impact on financial performance (Febriyanti et al., 2024; Munzir et al., 2023). Meanwhile, other reseaches also reveal corporate social responsibility has no impact on financial performance (Ang et al., 2020; Sejati et al., 2020).

The implementation of environmental performance and green accounting requires disclosure of the entity's social responsibility as a mediating variable on its financial performance. Previous research tells that environmental performance has a positive impact on financial performance with the entity's social responsibility as a mediator (Meiyana & Aisyah, 2019). Another research statement tells that corporate social responsibility cannot be a mediator between environmental management and financial performance (Handoko & Santoso, 2023). Meanwhile, green accounting mediated by corporate social responsibility has a positive impact on performance (Handoko & Santoso, 2023; Wijaya et al., 2024). Another study found that green accounting has no impact on financial performance with corporate social responsibility as a mediator (Meiyana & Aisyah, 2019).

LITERATURE REVIEW

Stakeholders Theory

When carrying out operational activities, companies are not only concern with their management activities, but also the needs of stakeholders (Freeman, 1984). Stakeholder theory arises because of legal conditions that prioritize shareholders, but consumers, employees, suppliers and the communities are often ignored (Cahyani & Puspitasari, 2023). Stakeholder theory explains that the success of an entity depends on its ability to adjust the interests of the company with those of stakeholders (Ramadhani et al., 2022). Besides that, this theory explains that fulfilling the rights of stakeholders is not only doing the right thing from an ethical perspective, but also providing financial benefits for the company (Handoko & Santoso, 2023). One of the company's strategies in fulfilling stakeholders' interests is by disclosing social responsibility that has an impact on society and the environment. Companies that are in good relations with stakeholders prove their concern for the surrounding environment, so they are able to improve financial performance because it makes investors believe in investing.

Financial Performance

Financial performance is the entity's capability in evaluating financial conditions to generate profits and achieve stability in financial management (Cahyani & Puspitasari, 2023). Financial performance is also considered as a description of the entity's financial condition in achieving profit or gain (Fitriaty et al., 2021). Profit that reflects financial performance



functions as a parameter of the company's success in financial terms, thus enabling analysis of prospects in the future period and sustainable efforts (Meiyana & Aisyah, 2019). In Addition, the success of the entity reflected in financial performance will help investors in making investment decisions.

Environmental Performance

Environmental performance is the entity's capability in managing its management system from various aspects as a form of concern for the surrounding environment (Rahayudi & Apriwandi, 2023). Environmental performance is also known as the relationship between a company and the environment, where the company has implemented its management system in managing environmental aspects (Cahyani & Puspitasari, 2023). This environmental performance refers to the assessment made by the company on efforts and concerns in preserving the environment (Ramadhani et al., 2022).

Green Accounting

Green accounting is the process of identifying, recording and measuring in accounting for costs, related to a company's activities with the environment in financial statements. (Angelina & Nursasi, 2021). This green accounting practice is a strategy designed by companies to support sustainable development by optimizing the use of environmental resources, creating mutually beneficial relationships with the community, and increasing operational efficiency and effectiveness (Niandari & Handayani, 2023). Green accounting is a step for companies to consider the costs and benefits of environmental factors in making decisions (Febriyanti et al., 2024).

Corporate Social Responsibility

Corporate social responsibility is an activity carried out to achieve harmony between environmental, social and economic factors while prioritizing shareholders interest and expectations of profitability. (Fitriaty et al., 2021). An entity's social responsibility activities are also referred to as the entity's obligation to pay attention to the social and environmental effects surrounding its operational activities in order to improve its reputation (Ang et al., 2020). Besides that, social responsibility activities aim to avoid social inequality and negative impacts on the environment arising from the company's operational activities (Hidayat & Aris, 2023).

Firm Size

Firm size is an indicator that reflects the size of an entity, seen from various aspects such as total revenue, total assets, market capitalization, and total workforce (Khusnah & Kirana, 2023). The existence of high assets will provide credibility and maximize its value, thus indicating that the company has the ability to continue to develop and maintain its position in the market (Dewi, 2020).

Effect of environmental performance on corporate social responsibility

The greats environmental performance reflects a company that is active in managing the environmental impact of its operational activities. These environmental management efforts demonstrate the company's focus on paying attention to sustainability and social impacts, which are an important part of corporate social responsibility (Kustina, 2020). The existence of stakeholder theory emphasizes that environmentally conscious entities meet stakeholder expectations, not just their financial gain. The great environmental management shows that companies are responsible to stakeholders who have concerns about social and ecological issues. Thus, good environmental performance not only improves the achievement of social responsibility, but also shows awareness in paying attention to the needs of stakeholders widely and making this commitment real in their business strategy.

Previous research results disclose that environmental management can increase corporate social responsibility. The great environmental management makes companies expand and deepen their disclosure of corporate social responsibility (Hanif et al., 2020). This is to



demonstrate the company's commitment to sustainable efforts created so as to improve its reputation in the eyes of stakeholders. The PROPER program from KLHK encourages entities to be more open in reporting their corporate social responsibility because it is a strong basis in developing and implementing relevant and sustainable CSR activities (Kustina, 2020). Therefore, the hypothesis formulated is:

H1 : Environmental performance has a positive effect on corporate social responsibility

Effect of green accounting on corporate social responsibility

Green accounting is an approach that integrates environmental factors into a company's accounting and reporting systems in order to measure and report the ecological impact of its business activities (Mustofa et al., 2020). Stakeholder theory explains that a company's success is related to its capability to align stakeholder needs with its own interests (Ramadhani et al., 2022). The implementation of green accounting reflects the company's responsibility in considering the interests of various parties. The company is also considered to be actively able to manage environmental impacts and meet expectations for a more responsible business (Saputri & Setyowati, 2024). Therefore, the implementation of green accounting encourages companies to increase their social responsibility which is real evidence for stakeholders in building trust and creating better relationships.

The research results show that green accounting enables companies to make environmentally oriented decisions to support sustainable social responsibility strategies (Mustofa et al., 2020). The information generated by companies from green accounting can assess the extent to which operational activities impact the environment and design steps to reduce the negative impacts. Green accounting is an important factor in the disclosure of social responsibility because it encourages transparency in reporting environmental impacts that demonstrate the entity's determination to carry out business activities responsibly and sustainably (Cyhintia & Sofyan, 2023). Based on research on green accounting towards corporate social responsibility, the hypothesis that can be formulated is:

H2 : Green accounting has a positive impact on corporate social responsibility

Effect of environmental performance on financial performance

Environmental protection and management are structured steps to maintain the sustainability of environmental functions and avoid pollution (Hanif et al., 2020). Environmental performance refers to the effectiveness of an entity in managing the impact of its operational activities on the environment (Cahyani & Puspitasari, 2023). Stakeholder theory explains that every company that carries out business activities does not only focus on its own interests, but also pays attention to the needs of its stakeholders (Freeman, 1984). The application of community norms in company operational activities can minimize the imbalance between community values and company values (Rahayudi & Apriwandi, 2023). Companies that implement good environmental performance show that they have met the needs of stakeholders. In addition, the company is also considered committed to protecting the surrounding environment. The Good environmental performance also allows the smooth running of the company's operational activities to run in harmony and sustainably so that the company gets support from the surrounding community (Kustina, 2020).

Based on the research results, the company's financial performance is positively influenced by environmental performance. Environmental performance assessment will show that the company discloses its activities well so that it can increase public trust (Cahyani & Puspitasari, 2023). Public trust increases corporate profits and reflects good financial performance. Other research results reveal that environmental preservation is the basis for corporate accountability to increase its value while respecting environmental factors (Wamba, 2022). In addition, entities that have a good PROPER rating are considered to care about the environment and will provide useful information to stakeholders so that they can improve their



financial performance (Ramadhani et al., 2022). Thus, the hypothesis that can be formulated is:
H3 : Environmental performance has a positive effect on financial performance

Effect of green accounting on financial performance

Green accounting is an accounting system that combines accounting principles with environmental considerations (Febriyanti et al., 2024). The implementation of green accounting can encourage an entity's capabilities in managing, avoiding, and handling environmental issues (Handoko & Santoso, 2023). Stakeholder theory explains that the implementation of green accounting makes companies not only focus on increasing their financial value, but also participate in protecting their environment (Ramadhani et al., 2022). The implementation of green accounting is a way for companies to maintain relationships with stakeholders. This is because green accounting includes financial aspects, social aspects and environmental aspects (Handoko & Santoso, 2023). If companies view environmental management as a strategy to build a positive image in the eyes of stakeholders, they will consider the costs of environmental protection (Angelina & Nursasi, 2021).

The results of the study revealed that the implementation of green accounting has a positive impact on financial performance. The implementation of green accounting indicates the company's dedication to managing the resulting environmental impacts, thereby increasing public trust in the company and potentially positively influencing financial performance (Niandari & Handayani, 2023). Green accounting disclosure can increase sensitivity to environmental issues, resulting in an increase in the entity's environmental performance, which can strengthen the company's reputation in the eyes of stakeholders (Ramadhani et al., 2022). Therefore, the implementation of green accounting in companies supports environmental sustainability, as well as providing competitive advantages. Based on research on green accounting on financial performance, the hypotheses that can be formulated are:

H4 : Green accounting has a positive impact on financial performance

Effect of corporate social responsibility on financial performance

The implementation of social responsibility in an entity is a form of corporate concern for the community. When the implementation of social responsibility runs smoothly, it means that the company is considered good in carrying out its operational activities. The involvement of an entity in social responsibility activities can also help to build a reputation, gain validity, face challenges and threats, and maximize profits (Ang et al., 2020). Stakeholder theory explains that every interested party has the right to access information related to the company's activities in the surrounding environment (Angelina & Nursasi, 2021). Disclosure of social responsibility is used as a strategy to protect companies from potential stakeholder dissatisfaction with inadequate company performance (Ang et al., 2020). By providing transparent and relevant social responsibility information, an entity can build trust and good relationships with stakeholders. Good relationships between stakeholders and the company will contribute to the stability of the company's long-term sustainability.

The results of the study show that financial performance is positively influenced by corporate social responsibility. When an entity has provided social responsibility related to its operational activities to the surrounding environment, investors will be interested in investing, which can improve financial performance (Fitriaty et al., 2021). The more social responsibility programs, the greater the profits the company gets (Rusmaningsih & Setiadi, 2021). This has an impact on stakeholder trust so that it can improve the company's financial performance. Higher social responsibility disclosure results in an effective increase in capital compared to low social responsibility disclosure so that social responsibility is said to have a good effect on financial performance (Gharbi & Jarbou, 2024). The hypotheses that can be formulated are:

H5 : Corporate social responsibility has a positive effect on financial performance.



Effect of environmental performance on financial performance with corporate social responsibility as a mediating variable

Implementation of environmental performance with social responsibility reporting becomes an entity strategy in achieving long-term success (Meiyana & Aisyah, 2019). This approach generates sustainable value for stakeholders. Environmental management written in the corporate social responsibility report helps companies maintain their competitive advantage (Rusmaningsih & Setiadi, 2021). Stakeholder theory explains that every entity has an obligation not only to gain profits but also to pay attention to environmental performance through the implementation of corporate social responsibility (Handoko & Santoso, 2023).

Environmental performance is a component in the disclosure of an entity's social responsibility which is of concern to every interested party in decision making (Meiyana & Aisyah, 2019). When CSR disclosure gets a positive response from stakeholders, the company's financial performance will increase, either due to increased investment or company profits. This can happen if environmental management disclosure is carried out transparently. Based on the explanation of the entity's social responsibility acting as a link between environmental performance and financial performance, the hypothesis formulated as follows:

H6 : Environmental performance has a positive effect on financial performance through corporate social responsibility as a mediating variable.

Effect of green accounting on financial performance with corporate social responsibility as a mediating variable

The existence of green accounting in an entity aims to identify and measure the impact of business activities on the environment, both financially and non-financially (Handoko & Santoso, 2023). Meanwhile, social responsibility aims as a form of corporate concern in providing a positive influence on society or the surrounding environment. Integration of social responsibility and green accounting makes entities achieve sustainable development, as well as create long-term value for stakeholders and the surrounding environment (Wijaya et al., 2024). Stakeholder theory is a theory that supports statements related to the relationship between green accounting mediated by corporate social responsibility and financial performance. Stakeholder theory explains that information about the implementation of green accounting through disclosure of social responsibility indicates that the entity cares about stakeholders, not just the company (Handoko & Santoso, 2023).

Previous research results state that green accounting has the ability to improve financial performance by utilizing corporate social responsibility intermediaries. The greater the allocation of environmental costs of an entity to carry out social responsibility activities will increase financial performance if the entity gets a positive response from stakeholders regarding these social responsibility activities (Handoko & Santoso, 2023). Companies with high green accounting distribution scores tend to disclose their responsibilities and demonstrate greater environmental awareness (Wijaya et al., 2024). Therefore, high green accounting values require good corporate social responsibility because environmental concerns can improve financial performance. Based on the explanation related to corporate social responsibility as an intermediary between green accounting and financial performance, the formulated hypothesis is:

H7 : Green accounting has a positive effect on financial performance through corporate social responsibility as a mediating variable.

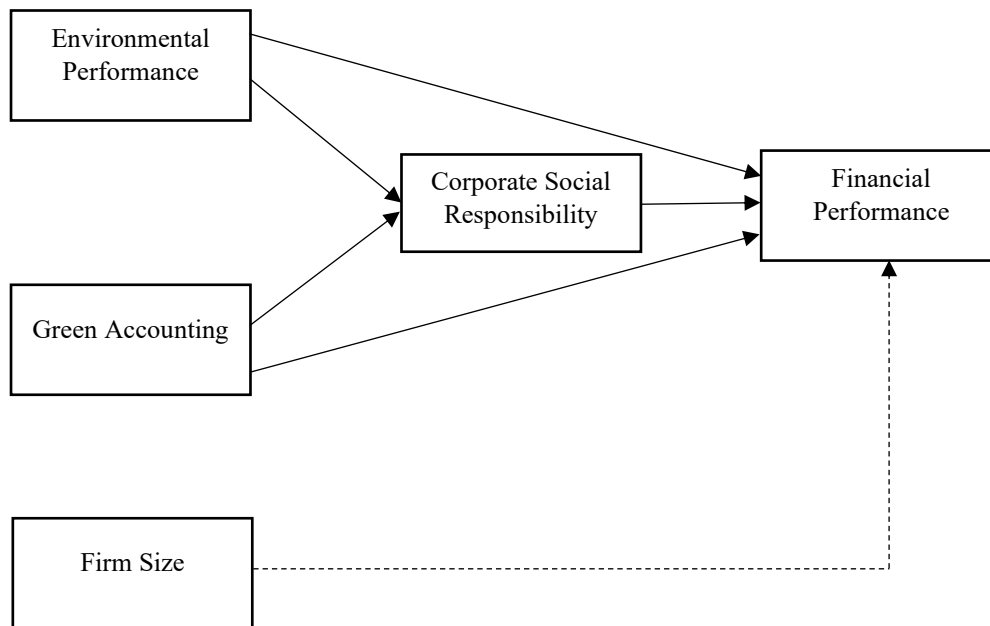


Figure 1. Research Model

METHODS

This research is a quantitative research that uses secondary data. The data is obtained from sources that have been collected and published by certain parties or institutions (Sugiyono, 2019). This research use panel data analysis with energy sector companies and basic materials sector companies listed on the Indonesia Stock Exchange (IDX) for the 2019-2023 period as the population. The data collection technique uses a purposive sampling method which is analyzed from financial reports, annual reports, and sustainability reports announced publicly on the Indonesia Stock Exchange (IDX) with the following criteria:

Table 1 Sampling Criteria

No	Sample Criteria	2019	2020	2021	2022	2023
1.	Energy and basic material sector companies listed on the Indonesia Stock Exchange (IDX) in 2019-2023.	146	151	164	171	182
2.	Energy and basic material sector companies in 2019-2023 that are not PROPER participants from the Ministry of Environment	(116)	(121)	(127)	(128)	(134)
3.	Energy and basic materials sector companies in 2019-2023 that did not publish annual financial reports	-	-	-	-	-
4.	Energy and basic materials sector companies in 2019-2023 that did not publish sustainability reports and did not include GRI standard indicators.	(21)	(20)	(18)	(18)	(20)
Number of Companies		9	10	19	25	28
Total Sample Overall		91				

Source : Dara processed (2024)



Based on table 1, this study use unbalanced sample data, namely the amount of data per criterion each year is not evenly distributed. Thus, the total research sample is 91 observation data consisting of 29 companies in the energy and basic material sectors.

Financial Performance

Financial performance is the dependent variable in this study. Financial performance is the company's ability to assess its financial condition so that it can achieve profit and provide an overview of ongoing business activities that are important for investors in decision making. Financial performance is proxied through Tobin's Q with the formula:

$$Tobin's\ Q = \frac{market\ capitalization + Debt}{Total\ Asset}$$

Tobin's Q value is used to assess a company's market in terms of its long-term effects (Wang & Ahmad, 2024). If Tobin's Q ratio > 1, it means the market value is greater than the replacement cost of its assets. This indicates good growth potential. If Tobin's Q ratio = 1, the company is considered fair in the market. If Tobin's Q ratio < 1, it means the company is facing financial problems or poor growth prospects (Ang et al., 2020).

Environmental Performance

This study uses environmental performance as an independent variable. Environmental performance can be interpreted as the company's ability to manage the environmental impacts of operations as a form of concern for the surrounding environment. Environmental performance is proxied through the PROPER assessment from the Ministry of Environment and Forestry. PROPER assessment criteria, namely:

Table 2 PROPER Assesment Criteria

Criteria	Scor
Gold	5
Green	4
Blue	3
Red	2
Black	1
Suspended Rating	0

Sources : Kementerian Lingkungan Hidup

Green Accounting

In addition, the independent variable used in this study is green accounting. Green accounting is the process of identifying, recording, and measuring in calculating costs related to company activities with the environment in financial statements. Green accounting can be proxied by comparing environmental costs and the company's net profit. Simply put, green accounting is expressed by the formula:

$$Green\ Accounting = \frac{Environmental\ Cost}{Net\ Income\ After\ Tax}$$

Corporate Social Responsibility

Corporate social responsibility is a mediating variable in this study. Corporate social responsibility serves as a link between green accounting and environmental performance to financial performance. Corporate social responsibility is an entity's activity in achieving harmony between economic, environmental, and social factors (Fitriaty et al., 2021). Corporate social responsibility variables are measured using the Global Reporting Initiative (GRI) Standard 2021 indicators. The GRI Standard 2021 has 117 indicators with three categories, namely economic, social, and environmental. If each indicator is disclosed, it is valued at 1, indicators that are not disclosed are given a value of 0. The formula for measuring corporate social responsibility:



$$CSR = \frac{\sum XYi}{ni}$$

Description :

CSR = Corporate Social Responsibility

$\sum XYi$ = Number of items disclosed

Ni = Total of all items.

Firm Size

This study also uses the company size variable as a control variable. Company size is an indicator that reflects the size of an entity seen from various aspects such as total revenue, total assets, market capitalization, and total workforce. (Khusnah & Kirana, 2023). The company size variable is used as a control variable that is measured using total assets. This aims to reflect the company's overall resources so as to provide an overview of its operational and investment capacity. This variable is assessed using the formula:

$$Firm\ Size = Ln(Total\ Asset)$$

Panel data regression analysis is a data analysis test by combining time series data and cross section data (Gujarati, 2009). The equation of panel data regression is:

Model I

$$CSR_{it} = \alpha + \beta_1 EP_{it} + \beta_2 GA_{it} + e$$

Model II

$$FP_{it} = \alpha + \beta_1 EP_{it} + \beta_2 GA_{it} + \beta_3 CSR_{it} + \beta_4 FS_{it} + e$$

Description :

α = Constanta

$\beta_1, \beta_2, \beta_3$ = Regression coefficient

e = Random error

FP = Financial performance

EP = Environmental Performance

GA = Green accounting

CSR = Corporate Social Responsibility

FS = Firm Size

i = Company Data

t = Time Period

RESULTS AND DISCUSSION

Descriptive statistical analysis testing is used to explain the research data consisting of mean, min, max, and standard deviation of each variable. The following are the results of descriptive statistical data processing of each dependent, independent, and mediating variable in this research:

Table 3 Descriptive Statistics

Variabel	Obs	Mean	Std. Dev.	Min	Max
FP	91	1.226132	0.6911877	0.374	5.404
EP	91	3.406593	1.021742	0	5
GA	91	0.1688374	0.7608125	-0.163	6.145
CSR	91	0.6178022	0.2071513	0.034	1
FS	91	30.54712	1.345833	26.87289	32.7578

FP = *Tobin's Q* = Financial Performance, EP = Environmental Performance, GA = Green Accounting, CSR = Corporate Social Responsibility, FS = Firm Size

Based on table 3, it is known that financial performance has a mean of 1.226132 which shows a value of more than one, indicating that on average companies have succeeded in



utilizing their assets or resources well, so that they are able to maintain investment opportunities. Meanwhile, the standard deviation value of the financial performance variable is 0.6911877. The maximum value of financial performance comes from PT Avia Avian Tbk in 2021 of 5.404 and the minimum value comes from PT Polychem Indonesia Tbk in 2022 of 0.374. The environmental performance variable has an average of 3.406593, indicating that the majority of companies in the energy and basic material sectors have carried out their operational activities in accordance with the required environmental regulations, both based on compliance and beyond compliance criteria issued by the Ministry of Environment and Forestry. The standard deviation of environmental performance is 1.021742. The highest environmental performance score was obtained by PT Adaro Energy Indonesia Tbk from 2019-2023 at 5 and the minimum score came from PT Petrosea Tbk (2023) with a score of 0 indicating a suspended rating.

Based on descriptive statistical analysis, the mean green accounting is 0.1688374, meaning that on average the company has allocated 16% of environmental costs from its profits. Green accounting also has a standard deviation of 0.7608125. The highest green accounting score was obtained by PT Perusahaan Gas Negara Tbk in 2022 which had an environmental cost ratio of 6.145 (Rp38 billion) and the lowest green accounting score came from PT Timah Tbk which had an environmental cost ratio of -0.163. The average entity has a CSR score of 0.6178022 or 61.8% with a standard deviation of 0.2071513. The average is considered good because the entity has disclosed 61.8% of the total 117 GRI indicators, indicating that more than half of the standards have been met. The highest value came from PT Vale Indonesia Tbk in 2023 at one or 100% and the lowest value came from PT Aneka Tambang Tbk in 2019 at 0.034. The average company size variable is 30.54712 with a standard deviation of 1.345833, which means that the company sample data is included in large companies. The lowest company size was obtained by PT Asiaplast Industries Tbk in 2022 at 26.87 and the highest value was achieved by PT Adaro Energy Indonesia Tbk in 2022 at 32.75.

Model Specification Test

Three types of tests that can be performed include the Chow test, the Lagrange Multiplier (LM) test, and the Hausman test. The results of these tests will help determine the appropriate panel data regression model, namely Partial Least Squares (PLS), Fixed Effect Model (FEM), and Random Effect Model (REM).

Chow Test

Chow Test is a type of test conducted to analyze the relevant model between Partial Least Squares (PLS) or Fixed Effect Model (FEM). If the Prob value > F is greater than alpha (0.05 or 5%), the appropriate model is Partial Least Squares (PLS). If the Prob value > F is smaller than alpha (0.05 or 5%), the appropriate model is Fixed Effect Model (FEM).

Table 4 Chow Test Result

	Model I	Model II
Prob > F	0.0121	0.0000
<i>a</i>	0.05	0.05

Sources : STATA V.17 (2024)

Based on the results of the chow test that has been conducted, it can be interpreted that in model I the Prob> F value is recorded at 0.0121 and model II has a prob> F value of 0.0000. This figure shows that Prob> F is smaller than the significance level of 0.05 so that the most appropriate model is the Fixed Effect Model.

Lagrange Multiplier Test

The Lagrange Multiplier (LM) test is used to determine a more appropriate model between Partial Least Squares (PLS) and Random Effect Model (REM). The results of the Lagrange Multiplier (LM) test in this study are as follows:



Table 5 Lagrange Multiplier Test Result

	Model I	Model II
Prob > chibar2	0.0323	0.0000
<i>a</i>	0.05	0.05

Sources : STATA V.17 (2024)

Based on the results of the Lagrange multiplier test above, it can be interpreted that the value of prob > F in model one is 0.0323 and model two is 0.0000. This value indicates that Prob > F is smaller than its significance value of 0.05 so that the most appropriate model is the Random Effect Model.

Hausman Test

The Hausman test aims to compare the Random Effect Model (REM) and the Fixed Effect Model (FEM) so that a more relevant panel data regression model can be selected. The results of the Hausman test in this study are as follows:

Table 6 Hausman Test Result

	Model I	Model II
Prob > chibar2	0.2018	0.1620
<i>a</i>	0.05	0.05

Sources : STATA V.17 (2024)

Based on the results of the Hausman test, it can be interpreted that in model I and model II the prob>chibar2 value is greater than the significance value of 0.05. This shows that the best regression model for model I and model II is the Random Effect Model (REM).

Normality Test

The normality test aims to identify whether the research data used is normally distributed or not. This study uses the Shapiro-Wilk method for the normality test because the number of research samples is in the range of $4 \leq n \leq 2000$. If the Prob> z value is greater than 0.05, the data is considered normally distributed. Conversely, if the prob> z value is less than 0.05, the data is said to be not normally distributed.

Table 7 Normality Test Result After Winsorizing Process

	Model I	Model II
Prob > chibar2	0.15699	0.30714
<i>a</i>	0.05	0.05

Sources : STATA V.17 (2024)

Based on the results of the normality test, in model I the prob>z value of 0.000 is smaller than the significance value of 0.05. This indicates that the data in model I is not normally distributed. Data abnormality is overcome by the winsorizing process on the environmental performance and green accounting variables. After the winsorizing process, the prob>z value increased to 0.15699, which is greater than the significance value of 0.05, so the data is declared normally distributed. Meanwhile, model II has a prob>z value of 0.30714, which is greater than the significance value of 0.05. Model II has normally distributed data.

Multicollinearity Test

The multicollinearity test is a data testing method to assess the extent to which variables in a regression model are related or correlated with each other. The multicollinearity testing process in the Fixed Effect Model (FEM) and Random Effect Model (REM) involves assessing the variation inflation factor (VIF). If the VIF value exceeds 10 and the tolerance value is below 0.10, it means that there is multicollinearity in the independent variables.

Table 8 Multicollinearity Test Result Model I

Variable	VIF	1/VIF
Winsor_EP	3,12	0,320318
Winsor_GA	3,12	0,320318



<i>Mean VIF</i>	3,12
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Sources : STATA V.17 (2024)

Based on table 8, it is known that the VIF value of environmental performance is 3.12. Meanwhile, the VIF value of green accounting is 3.12. From the results of the multicollinearity test of model I, it is known that the average VIF value is 3.12, which is smaller than 10 so that the data is said to be not affected by multicollinearity.

Table 9 Multicollinearity Test Result Model II

Variabel	VIF	1/VIF
FS	19,36	0,051663
EP	14,47	0,069099
CSR	11,66	0,085788
GA	1,08	0,921788
Mean VIF	11,64	

Sources : STATA V.17 (2024)

Based on table 9, the results of the multicollinearity test of model II have an average VIF value of 11.64, which is greater than 10, so the data is said to have a multicollinearity problem. Therefore, the multicollinearity problem is overcome by using the centering method to create new variables that are more linearly free.

Table 10 Multicollinearity Test Result Model II After Centering

Variabel	VIF	1/VIF
FS C	1,36	0,734615
EP C	1,29	0,778085
CSR C	1,18	0,846119
GA	1,08	0,927687
Mean VIF	1,23	

Sources : STATA V.17 (2024)

Table 10 shows the results of the multicollinearity test of model II after data centering. The results show an average VIF value of 1.23 with a tolerance value above 0.10 so that all variables have met the requirements. Therefore, the data no longer experiences multicollinearity problems between independent variables.

Heteroscedastisity & Autocorelation Test

Results of selecting models I and II show the Random Effect Model so that the data is said to be free from heteroscedasticity and autocorrelation. This is because the REM model already uses General Least Square (GLS) which is able to handle the problem of heteroscedasticity of data (Bagus & Prawono, 2016).

Panel Data

Panel data regression analysis model test is conducted to prove and review the research that has been previously described. This test uses Random Effect Model (REM) for model I and model II.

Table 11 Panel Data Regression Test Results

	Model I		Model II	
	<i>Random Effect Model</i>		<i>Random Effect Model</i>	
	<i>Coef.</i>	<i>Prob</i>	<i>Coef.</i>	<i>Prob</i>
Cons	0,3319018	0,000	1,205244	0,000
EP C	0,0741128	0,006	-0,610182	0,308
GA	1,779718	0,150	-0,568627	0,521
CSR C			-0,5822609	0,006
FS C			0,0763632	0,366



Sources : STATA V.17 (2024)

Based on the testing carried out with the Random Effect Model, the regression equations for model I and model II are as follows:

$$CSR_{it} = 0,3319018 + 0,0741128KL_{it} + 1,779718AH_{it} + e$$

$$FP_{it} = 1,205244 - 0,610182EP_{it} - 0,568627GA_{it} - 0,5822609 CSR_{it} + 0,0763632FS_{it} + e$$

The constant coefficient value of the equation model I of 0.3319018 indicates that if the value of the independent variables, namely environmental performance and green accounting is 0, then corporate social responsibility will increase by 33%. The environmental performance coefficient of 0.0741128 indicates that when the variable value increases by 1 unit and other variables are constant, corporate social responsibility will increase by 7.41%. Meanwhile, the green accounting coefficient value of 1.7797 means that when the green accounting value increases by 1 unit and other variables are constant, corporate social responsibility will increase by 1.77.

Equation model II shows that the coefficient value of 1.205244 means that if the independent variables, namely environmental performance, green accounting, social responsibility, and company size are 0, financial performance will increase by 1.205244. The environmental performance coefficient of -0.610182 indicates that every 1 unit increase assuming other variables remain constant will decrease financial performance by 61%. The green accounting coefficient value of -0.568627 indicates that every 1 unit increase with other variables being constant, financial performance will decrease by 56%. Corporate social responsibility has a coefficient value of -0.5822609. This indicates that every 1 unit increase with other variables will still decrease financial performance by 58%. Meanwhile, the company size variable of 0.076632 indicates that every 1 unit increase with other variables being constant, financial performance will increase by 7.6%.

Coefficient of Determinan (R2)

The determination coefficient test is conducted to determine the size of the independent variable's capability in explaining the variation of the dependent variable. The following are the results of the determination coefficient values of model I and model II:

Table 12 Coefficient Determination Test Result

	Model I	Model II
<i>Number of Obs</i>	91	91
<i>R-Squared</i>	0,1460	0,0024

Sources : STATA V.17 (2024)

Based on Table 12, it is known that the R-square value of model I, namely corporate social responsibility is 0.1460. This means that environmental performance and green accounting are able to explain its influence on corporate social responsibility by 14.60%, the rest is explained by other factors or variables outside the study by 85.40%. On the other hand, the R-square value of financial performance is 0.02%, meaning that environmental performance, green accounting, and corporate social responsibility are only able to explain its influence on financial performance by 0.02%, the rest is explained by other factors or variables outside the study by 99.98%.

Partial Test

Based on table 11, environmental performance has a probability value of 0.006 which is lower than 0.05 with a coefficient value of 0.0741128. This shows that environmental performance has a positive influence on corporate social responsibility, meaning that the first hypothesis in this study is accepted. Meanwhile, green accounting has a probability value of 0.150 which is more than or equal to a significance level of 0.15 with a coefficient value of 1.779718. This indicates that green accounting has a positive effect on corporate social responsibility, meaning that the second hypothesis in this study is accepted.



Based on table 11, the results show that the environmental performance variable has a coefficient value of -0.610182 and a probability value of 0.308 which is higher than the significance level of 0.05 so that the results of the study illustrate that environmental performance has no effect on financial performance. The results of the study indicate that the third hypothesis in this study is rejected. Meanwhile, green accounting has a coefficient of -0.568627 which indicates that the results of the study are negative with a probability value of 0.521 which is higher than the significance level of 0.05 ($0.521 > 0.05$), so that the results of the study indicate that green accounting has no effect on financial performance. Therefore, the fourth hypothesis in this study is rejected. Then, corporate social responsibility has a coefficient value of -0.5822609 which indicates that the research results are negative with a probability value of social responsibility of 0.006 smaller than its significance value of 0.05 ($0.0006 \leq 0.05$), so the research results indicate that social responsibility has a negative effect on financial performance. The results of this study indicate that the fifth hypothesis in this study is rejected.

Firm size is a control variable in this study that has a probability value of 0.366 with a positive coefficient, meaning it is greater than its significance value of 0.05. Thus, company size has no effect on the dependent variable of financial performance.

Sobel Test

This test aims to evaluate the indirect effect of independent variables on dependent variables through the role of mediating variables. If the p-value of the Sobel test is less than 0.05, it means that the mediating variable can be a mediator of the relationship

Table 11 Sobel Test Result

	Coeff	Standard Error	p-value of
	X	X	Sobel Test
	Z	Z	
EP -> CSR->FP	0.07411 (a)	0.0271 (Sa)	0.9521
	-0.5822 (b)	0.2132 (Sb)	
GA -> CSR->FP	1.7797 (a)	1.2355 (Sa)	0.2026
	-0.5822 (b)	0.2132 (Sb)	

a = unstandardized coefficient of independent variable; Sa= standard error a; b= unstandardized coefficient of mediation variable; Sb= standard error of b.

Sources : STATA V.17 (2024)

Based on table 12 shows the indirect effect of environmental performance on financial performance through the mediation of corporate social responsibility which has a p-value of the Sobel test of 0.9521 greater than the significance level of 0.05. Thus, corporate social responsibility cannot mediate the relationship between environmental performance and financial performance. This result indicates that the sixth hypothesis is rejected. Meanwhile, the indirect effect of green accounting on financial performance through the mediation of corporate social responsibility has a p-value of the Sobel test of 0.2026 greater than the significance level of 0.05. Thus, corporate social responsibility cannot mediate the relationship between green accounting and financial performance. This result indicates that the seventh hypothesis is rejected.

Effect of Environmental Performance on Corporate Social Responsibility

The results of the study indicate that environmental performance has a positive effect on corporate social responsibility. The results of this study are in line with stakeholder theory where entities are obliged to consider the needs of various parties affected by their activities. Good environmental management shows that companies meet stakeholder expectations and are responsible for environmental and social issues. Companies that disclose and improve



environmental performance according to GRI standards demonstrate a commitment to sustainability and social responsibility.

The environmental performance assessment by the Ministry of Environment and Forestry (KLHK) through the PROPER program is an important evaluation tool that reflects the extent to which companies meet environmental standards. Companies with high ratings, such as gold or green, often use these results as a communication tool to stakeholders to demonstrate their environmental responsibility. This PROPER rating will be included in their sustainability or annual reports. Therefore, companies can expand social disclosure to stakeholders so as to strengthen their reputation, attract investors, and increase their social value in the eyes of the public.

The results of this study are also supported by research from Hanif et al. (2020) which reveals that effective environmental management encourages companies to increase the scope and depth of their social responsibility disclosures. In addition, this study is supported by statements from Kustina (2020) which states that the PROPER program from KLHK encourages companies to be more transparent in disclosing social responsibility, thus becoming an important foundation in designing and implementing relevant and sustainable activities (Kustina, 2020). The results of this study are not in line with research which states that environmental management cannot increase corporate social responsibility (Amarrulloh & Annisa, 2023).

Effect of Green Accounting on Corporate Social Responsibility

The results of the study explain that green accounting has a positive effect on corporate social responsibility. The measurement of green accounting using the environmental cost ratio reflects the extent to which a company is committed to maintaining sustainability through managing its environmental impact. With the implementation of green accounting, companies can increase their transparency and responsibility in reporting environmental impacts while supporting sustainable operations. When the environmental cost ratio increases, companies demonstrate a greater commitment to environmental compliance and sustainability, thereby contributing to improving the quality of their social responsibility reporting.

The relationship between green accounting and corporate social responsibility is in line with stakeholder theory which emphasizes that a company's success is not only measured by financial profits, but also by its commitment to meeting the needs of various parties. By increasing the environmental cost ratio, the company meets stakeholders' expectations for responsible environmental impact management. This strengthens the company's relationship with stakeholders and maintains long-term sustainability.

The results of this study are in line with research from (Cyhintia & Sofyan (2023) dan Mustofa et al (2020) which states that the implementation of green accounting helps companies make decisions that pay more attention to environmental aspects while supporting sustainable social responsibility strategies. This study contradicts the research of Saputri & Setyowati (2024) which states that green accounting is only limited to companies' efforts to report environmental information without real implementation that supports sustainability or pays attention to stakeholder needs.

Effect of Environmental Performance on Financial Performance

The results of the study indicate that environmental performance has no effect on financial performance. This statement is not in line with stakeholder theory which argues that the success of an entity is determined by its capability in meeting the needs and expectations of all stakeholders. The PROPER rating achieved by the company is not a benchmark for investing. There are still stakeholders who do not know the environmental performance assessment which is the cause of the lack of influence on the entity's financial performance (Niandari & Handayani, 2023). In addition, stakeholders tend to judge a company's performance from its



financial indicators, such as stock price, profits, competitive advantages, industry trends, and financial stability.

The research results are in line with the statement that investors in Indonesia likely consider environmental issues as only temporary sentiments that do not impact financial performance (Anggara et al., 2021). In addition, the results of this study are also supported by Niandari & Handayani (2023) which states that there is no difference in the profits obtained by the entity after the PROPER assessment information is announced. Research from Rintala et al. (2022) also stated that the benefits of environmental management are long-term, while investors focus more on short-term financial results. This study contradicts previous studies that stated that environmental performance has a positive impact on a company's financial performance (Cahyani & Puspitasari, 2023; Rahayudi & Apriwandi, 2023; Ramadhani et al., 2022; Wamba, 2022).

Effect of Green Accounting on Financial Performance

The results of the study indicate that green accounting cannot affect financial performance. The implementation of green accounting is also indirect and takes a long time, as a result it is difficult to measure in the short term so that it is not reflected in financial performance directly. In addition, the benefits of green accounting are less appreciated in investment decision making because they tend to reduce company profits. This statement contradicts stakeholder theory which emphasizes the importance of meeting stakeholder needs. In this theory, green accounting is considered a strategy in building positive relationships with stakeholders. The reduction in profits caused by the implementation of green accounting puts companies at risk of losing parties that contribute to the sustainability of their business.

The results of this study are in line with research which states that green accounting requires direct allocation of costs without any guarantee of direct impact on company profits (Cahyani & Puspitasari, 2023). Research from Rahayudi & Apriwandi (2023) also stated that environmental costs do not improve the financial performance of an entity or affect the investment decisions of investors. Green accounting is only a support in environmental management decisions without directly affecting the company's financial figures. This is contrary to the results of research which states that green accounting has a good effect on the company's financial performance (Mondal et al., 2024; Niandari & Handayani, 2023; Ramadhani et al., 2022).

Effect of Corporate Social Responsibility on Financial Performance

The results of the study explain that corporate social responsibility has a negative impact on financial performance. This study is not in line with stakeholder theory which emphasizes that the needs of the parties are aligned to create long-term benefits. Corporate social responsibility is considered inconsistent with its main objectives, causing an imbalance in resource allocation. Expenditures from implementing social responsibility require large funds. When costs are not offset by increased revenue, it will have a negative impact on financial performance in the short term. Social responsibility programs designed only to meet external pressures without any added value can weaken the company's competitive position in the market.

This research is supported by the statement that reveals that spending on social responsibility activities is considered an obstacle to business success because it reduces company profits (Febriyanti et al., 2024). Social responsibility activities do not always get the attention of external parties of the company, if the quality of financial performance is considered poor. In addition, this research is also supported by research from (Munzir et al., 2023) which states that corporate social responsibility has a negative impact on its financial performance. The results of this study are not in line with research that states that social responsibility can improve a company's financial performance (Fitriaty et al., 2021; Gharbi &



Jarboui, 2024). Researches from Ang et al. (2020) & Sejati et al. (2020) also revealed that social responsibility cannot affect the company's financial performance.

Effect of Environmental Performance on Financial Performance with Corporate Social Responsibility as a Mediating Variable.

The results of the study explain that corporate social responsibility is not able to mediate environmental performance on financial performance. This study contradicts the stakeholder theory which states that entities must consider the interests of all parties to create long-term value. However, the fact is that corporate social responsibility has not been able to be a link in environmental performance with its financial performance. This is because good environmental performance does not necessarily produce direct financial benefits. Corporate social responsibility is sometimes only carried out to meet external pressures without a good business strategy. As a result, the market and investors often ignore these activities because they are considered to have no added value. Investors look more at financial indicators as a reflection of the company's good financial performance.

This research is in line with the statement from Handoko & Santoso (2023) which states that corporate social responsibility is not able to mediate the relationship between environmental performance and the company's financial performance. The better environmental management reflected in the PROPER rating can encourage entities to carry out their social responsibility activities. However, these activities do not get a response from interested parties so that the increase or decrease in the company's financial performance is not affected. The results of this study differ from the research Meiyana & Aisyah (2019) which states that corporate social responsibility is able to link environmental performance and financial performance.

Effect of Green Accounting on Financial Performance with Corporate Social Responsibility as a Mediating Variable

The results of the study explain that corporate social responsibility is unable to mediate green accounting on financial performance. The results of this study contradict the stakeholder theory which emphasizes that companies must consider the interests of all related parties in carrying out their social responsibility activities. Green accounting is referred to as one of the supporting factors for the implementation of social responsibility, but the direct impact of its implementation on company profits takes longer. The cost of implementing a green accounting strategy is considered not to have provided direct financial results even though it strengthens social commitment. In addition, sometimes social responsibility programs are not well designed, only improving reputation without making a real contribution to sustainability strategies. This causes a lack of influence of social responsibility on the relationship between green accounting and company financial performance.

This study is in line with the statement from Meiyana & Aisyah (2019) which states that corporate social responsibility cannot mediate green accounting on its financial performance. The large allocation of environmental costs does not reflect the large number of corporate social responsibility activities that can be good news for investors in investing their capital. Corporate social responsibility also often focuses on social aspects in general, without integrating the environmental benefits of green accounting into strategies that support improving its financial performance. The results of this study contradict the statement from Handoko & Santoso (2023) which states that social responsibility can mediate green accounting on the company's financial performance.

CONCLUSION

Based on the results of research and analysis that have been carried out related to "The Effect of Environmental Performance and Green Accounting on Financial Performance through



Corporate Social Responsibility as a Mediating Variable" in energy and basic material sector companies with the period 2019-2023, it can be concluded that environmental performance has a positive effect on corporate social responsibility, green accounting has a positive effect on corporate social responsibility, environmental performance does not affect financial performance, green accounting does not affect financial performance, corporate social responsibility has a negative effect on financial performance, environmental performance mediated through corporate social responsibility does not affect financial performance, green accounting mediated through corporate social responsibility does not affect financial performance. Further researchers are expected to use newer measurements and variables, so that more interesting differences in research results are found.

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