



THE INFLUENCE OF ENVIRONMENTAL MANAGEMENT ACCOUNTING AND CARBON EMISSION DISCLOSURE ON COMPANY VALUE WITH FINANCIAL PERFORMANCE AS MEDIATION IN ENERGY AND BASIC MATERIALS SECTOR COMPANIES LISTED ON THE INDONESIAN STOCK EXCHANGE

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Abstract

This study aims to analyze the influence of environmental management accounting and carbon emission disclosure on company value mediated by financial performance. This study is important because of increasing awareness of environmental issues and pressure from various stakeholders to be more transparent on environmental issues. The sample in this research is energy and basic materials sector companies listed on the Indonesia Stock Exchange (BEI) during the 2018-2022 period. The research method used is multiple regression analysis using panel data. The dependent variable in this research is company value. Meanwhile, the independent variables are environmental management accounting and carbon emission disclosure. Financial performance as a mediating variable is measured using the Return on Assets financial ratio. The research results show that environmental management accounting has a significant influence on company value, while carbon emission disclosure does not have a significant influence on company value. Apart from that, financial performance also does not act as a significant mediator in the relationship between environmental management accounting and carbon emission disclosure on company value. This finding may be caused by several factors, including the lack of direct relevance between environmental management accounting and carbon emission disclosure and financial performance, as well as the lack of real follow-up from companies to reduce carbon emissions.

Keywords: Firm Value, Environmental Management Accounting, Carbon Emission Disclosure, Financial Performance.

INTRODUCTION

This research was conducted with the aim of knowing and testing the influence of Environmental Management Accounting and Carbon Emission Disclosure on Company Value with Financial Performance as a mediating variable. Company value is the realized value of assets when the company is sold, or the value of the company's share price (Agustia, et. al., 2019). If the share price is higher, the company value will be better and the prosperity of shareholders will increase (Andari & Yuliandhari, 2020). The value of the company will decrease if the company is negligent about its environmental impact, on the other hand, investor response will increase if the company pays attention to the resulting environmental impact (Aviyanti & Isbanah, 2019).

Emissions are something that cannot be separated from companies, which have an impact on the environmental performance of companies, especially industrial companies. Environmental issues are currently a topic discussed throughout the world. One of these problems is global warming which is starting to spread and environmental damage in Indonesia is getting worse. The environmental situation in Indonesia is not in a good condition. The Air Quality of Life Index (AQLI) report names Indonesia as one of the six countries contributing to global pollution. Indonesia together with China,

India, Pakistan, Bangladesh and Nigeria accounts for 75% of the total global air pollution burden due to high levels of air pollution and large population (BBC News Indonesia, 2023).

A form of responsibility towards society and the environment can be carried out by companies by reducing environmental impacts, however, at the same time companies are one of the biggest sources of environmental pollution because their industrial activities can pollute water, land and air at dangerous levels (Panggau & Septiani, 2017). The increasing growth of a company's industrial activities is proportional to the increase in pollution produced, with increasing environmental pollution it will give rise to greenhouse gas emissions which have an impact on climate change (Damas et al., 2021). Since 2015, the earth's temperature has increased by up to 3 degrees Celsius and in 2030 it is estimated that the earth's temperature will increase beyond safe limits (IPCC, 2021). Apart from creating profits, companies must also be responsible for people and the planet so that the company can be sustainable and achieve the triple bottom line principle (Rusmana & Purnaman, 2020). The emergence of negative impacts resulting from company activities makes public awareness continue to increase. Environmental activists and NGOs (Non-Governmental Organizations) took part in massive protests against the environmental impacts caused by companies. This can cause the company to lose its trust and legitimacy in the eyes of the public (Aulia & Hadinata, 2019). These various pressures and pressures will affect the company's image and company performance in the future. Environmental disclosure information will be used by investors in making investment decisions. Then the company value will be affected due to the logical consequences of investors' decisions (Alfayerds & Setiawan, 2021).

LITERATURE REVIEW

Company Value

High company value is highly expected by all companies, good company value reflects the welfare of shareholders. Company value can be measured from the market value determined by shareholders. Companies that have gone public, the value of the company is determined by the demand and supply mechanism on the stock exchange which can be reflected in the share price (Franita, 2018).

Environmental Management Accounting

Environmental management accounting is a complete approach to management accounting that focuses on costs associated with environmental issues and wasted raw materials. One of the objectives of environmental management accounting is to influence provisions that impact an organization's environmental and financial performance. Useful for carrying out proactive and preventive environmental activities (Asiaei et. al., 2022). The International Federation of Accountants explains

that Environmental management accounting (EMA) covers all aspects of environmental management and company financial performance which is useful for creating good environmental relationships between the system and accounting implementation (Chikmatin, 2019).

Carbon Emission Disclosure

Carbon Emission Disclosure (CED) is a gas released from the combustion of carbon-containing compounds, such as CO₂, diesel, LPJ, and other fuels. In simple terms, carbon emissions are the release of carbon into the atmosphere. Carbon emissions are a contributor to climate change along with greenhouse gas emissions. Excessive gas emissions can cause global warming or the greenhouse effect. The purpose of carbon emissions disclosure is to provide information to stakeholders regarding the amount of carbon emissions produced by a company. This aims to increase transparency and accountability of companies regarding the environmental impact of their operational activities.

Financial Performance

Financial performance is a description of the company's financial condition which shows the company's achievements in a certain period (Syahri, 2023). Mowen et al., (2019) explained that financial performance can be analyzed using financial ratios to assess a company's financial health which is generally classified into three categories, namely:

- a. The liquidity ratio shows the company's ability to pay off its current liabilities and is an appropriate first step for evaluating the company's financial capability in the short term.
- b. The leverage ratio shows the company's ability to meet non-current (long-term) obligations and provides a measure of the level of protection for the company's creditors.
- c. Profitability ratios provide information about how efficiently a company uses assets and manages its operations to generate profits

RESEARCH MODEL AND HYPOTHESIS

The hypothesis proposed in this research is a statement concluded from a literature review and is a temporary description of the problems that need to be re-submitted, so the development of this research hypothesis is as follows.

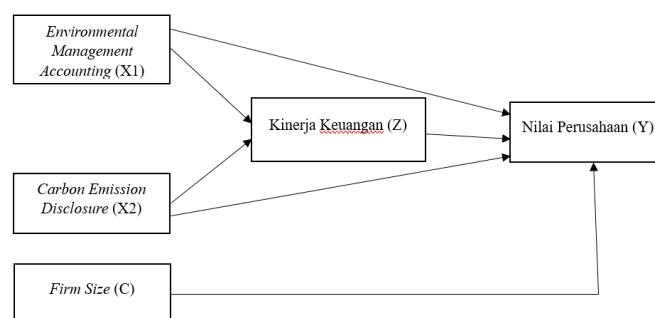


Figure 1. Research Model

The Influence of Environmental Management Accounting on Company Value

Companies that are greener or more environmentally conscious will be easier for investors to choose because they are considered more sustainable and more responsible for the surrounding environment, as well as achieving better financial performance. An eco-efficient company will get support and trust from the community, a positive response from the market, an increase in share prices and an increase in company value in the future (Aviyanti & Isbanah, 2019; Satrio & Kunto, 2020). So the author assumes that environmental management accounting has a positive effect on company value. This is in line with research conducted by Agustia (2020) which concluded that environmental management accounting has a positive effect on company value, so the hypothesis is formulated as follows.

H₁: Environmental management accounting has a positive effect on company value

The Effect of Carbon Emission Disclosure on Company Value

Based on research conducted by several researchers, including Hardianti and Mulyani (2023), there is evidence to show that Carbon Emission Disclosure has a positive influence on company value. The results of this research show that disclosure of carbon emissions in financial reports and sustainability reports can provide positive signals that influence investors, creditors and other interested parties to invest. Thus, carbon emissions disclosure can be considered a factor that influences company value, by providing useful information to stakeholders regarding how the resources entrusted to the company are well managed through its operations. So the author assumes that carbon emission disclosure has a positive effect on company value. This is in line with research conducted by Zuhrufiyah & Anggraeni (2019) which concluded that carbon emission disclosure has a positive effect on company value, so the hypothesis is formulated as follows.

H₂: Carbon Emission Disclosure has a positive effect on Company Value

The Influence of Environmental Management Accounting on Financial Performance

Stakeholders not only look at the financial sector but also look at the company's responsibility in the social and environmental fields. Environmental costs are costs that arise due to low environmental quality resulting from production activities carried out by the company. Implementing EMA provides a mutually beneficial solution for companies and stakeholders. If stakeholders feel interested in the company's products and use them, it will increase company profits. The increase in company profits is expected to have an impact on improving company performance both in the environmental and financial fields. So, the author assumes that environmental management accounting has a positive effect on financial performance. This is in line with research conducted by Agustia (2020) which concluded that eco-efficiency has a positive effect on financial performance, so

the hypothesis is formulated as follows.

H₃: Environmental Management Accounting has a positive effect on Financial Performance

The Effect of Carbon Emission Disclosure on Financial Performance

Companies belonging to carbon-intensive industries will be more likely to disclose carbon information to show that they are responsible for the information and to attract the attention of stakeholders so they will invest in the company. The size of a company's Return on Assets (ROA) can also encourage the company to disclose its environmental disclosures, one of which is the disclosure of greenhouse gas emissions. The practice of disclosing carbon emissions in Indonesia is still voluntary. Healy and Palepu (2001) in Soewarno et al., (2018) stated that voluntary disclosures made by companies are able to improve the quality of their financial reports so that potential investors are willing to invest. Research by Liu et al. (2016) states that carbon emissions have a small, but statistically significant, negative impact on company financial performance. This is due to low carbon emissions which can increase shareholder wealth and obtain higher profits compared to the return on the tangible assets they own. Reducing carbon emissions allows companies to lower operational costs, improve reputation, increase stakeholder loyalty and improve financial performance. So, the author assumes that carbon emission disclosure has a positive effect on financial performance. This is in line with research conducted by Soewarno et al., (2018) which concluded that carbon emission disclosure has a positive effect on financial performance, so the hypothesis is formulated as follows.

H₄: Carbon Emission Disclosure has a positive effect on Financial Performance

The Influence of Financial Performance on Company Value

In general, company value can be influenced by financial factors. This factor is the main factor that can influence company value (Muliani et al, 2014). Financial factors can show how a company obtains funds and how the company allocates these funds, so that the use of these funds can be profitable for the company. Financial performance describes the company performance achieved by a company in a certain period. If a company's financial performance shows good prospects, then the company's shares will be increasingly sought after by many investors and can influence the selling price of shares. Research conducted by Rais & Usman (2020) states that profitability has a positive effect on company value. This is because profitability is a signal that shows that the company is able to provide certainty regarding the company's future prospects so that it can increase the company's value. So, the author assumes that financial performance has a positive effect on company value. This is in line with research conducted by Rais & Usman (2020) which concluded that financial performance has a positive effect on company value, so the hypothesis is formulated as follows.

H₅: Financial performance has a positive effect on company value

Financial Performance is able to Mediate the Relationship between Environmental Management Accounting and Company Value

Companies that can reduce production costs will be able to improve their financial performance. Improving financial performance will have an impact on increasing the value of a company. This good company value will attract investors to invest in the company in the hope of receiving dividends. Various environmental problems that occur in Indonesia can lead to claims from the public because company production activities disrupt or even damage the environment and have an impact on society (Lingga and Suaryana 2017). The company's concern for the environment will provide added value because several aspects will influence the company's goals, namely financial performance and company value. Companies with good environmental management accounting and a high level of efficiency can reduce costs so that they can increase company profitability. Apart from that, companies that implement good environmental management accounting will also have a good reputation in the eyes of their stakeholders. Companies that have a good reputation and good financial position will be responded positively by investors and potential investors, thereby increasing the value of the company. So, the author assumes that financial performance can mediate the influence of environmental management accounting on company value, so the hypothesis is formulated as follows.
H₆: Financial performance can significantly mediate the influence of environmental management accounting on company value

Financial Performance is able to Mediate the Relationship between Carbon Emission Disclosure and Company Value

Disclosure of carbon emissions is part of corporate social responsibility. Because investors have concerns about environmental issues, such as global warming, companies tend to disclose more extensive carbon emissions information. This is expected to be a signal of higher reputation. Companies with high profitability are expected to contribute to reducing carbon emissions and disclose this in annual reports or sustainability reports. Higher disclosure of carbon emissions results in a good reputation and higher revenues with environmentally friendly products. Higher financial performance from implementing carbon emission disclosure will increase company value. Disclosure of carbon emissions can increase company value if there is also an increase in financial performance. Higher disclosure of carbon emissions without improving financial performance will not provide any benefit to company value because investors' interests are also focused on profits when they make investment decisions. Ardiyanto and Haryanto (2017) found that return on equity mediates the influence of corporate social responsibility on company value.
H₇: Financial performance can significantly mediate the effect of carbon emission disclosure on company value

METHOD

The research characteristic based on the method in this research is that it uses a quantitative approach, because the data obtained from this research is secondary data. Quantitative research methods are research methods based on the philosophy of positivism, used to research certain populations or samples, collect data using research instruments, analyze quantitative or statistical data with the aim of testing predetermined hypotheses (Sugiyono, 2017).

The population taken by researchers came from one of the trusted Indonesian stock trading sites that buys and sells shares of companies that have been listed or listed on the Indonesian Stock Exchange. Of all the various company sectors listed, researchers chose the energy and basic materials sectors. Based on predetermined criteria, 13 companies from 195 companies in the energy sector and basic materials sector were obtained as research samples.

RESULTS AND DISCUSSION

Correlation Coefficient Analysis

Table 1 Path Analysis

Jalur	Pengaruh Langsung	Pengaruh TidakLangsung	Pengaruh Total
EMA → KK	-0,0647486		
CED → KK	0,0087611		
EMA → NP	1,351825		
CED → NP	-0,0255188		
KK → NP	1,763129		
EMA → KK → NP		-0,114160	1,237665
CED → KK → NP		0,015447	-0,010072

From the table above, it can be seen that the forms of equation model 1 and equation model 2 are as follows.

$$KK_{it} = 0,0448154 - 0,0647486 \text{ EMA}_{it} + 0,0087611 \text{ CED}_{it} + e$$

$$NP_{it} = -0,5406497 + 1,351825 \text{ EMA}_{it} - 0,0255188 \text{ CED}_{it} + 1,763129 \text{ KK}_{it} + 0,0694167 \text{ FS}_{it} + e$$

Table 1 above can be explained as follows:

1. The direct effect of Environmental Management Accounting (EMA) on Financial Performance (KK) is -0.0647486.
2. The direct effect of Carbon Emission Disclosure (CED) on Financial Performance (KK) is 0.0087611.
3. The direct effect of Environmental Management Accounting (EMA) on Company Value (NP) is 1.351825.
4. The direct effect of Carbon Emission Disclosure (CED) on Company Value (NP) is -0.0255188.

5. The direct effect of Financial Performance (KK) on Company Value (NP) is 1.763129.
6. The indirect effect of Environmental Management Accounting (EMA) on Company Value (NP) through Financial Performance (KK) is -0.114160 with a total effect of 1.237665.
7. The indirect effect of Carbon Emission Disclosure (CED) on Company Value (NP) through Financial Performance (KK) is 0.015447 with a total effect of -0.010072.

Analysis of the coefficient of determination

Table 2 Coefficient of Determination Test (R²) Equation 1

Random-effects GLS regression	Number of obs	=	65
Group variable: ID	Number of groups	=	13
R-squared:	Obs per group:		
Within = 0.1629	min =		5
Between = 0.1608	avg =		5.0
Overall = 0.1468	max =		5
corr(u_i, X) = 0 (assumed)	Wald chi2(2)	=	11.45
	Prob > chi2	=	0.0033

The R Square value is 0.1468 or 14.68%. The coefficient of determination value shows that the independent variables consisting of Environmental Management Accounting (EMA) and Carbon Emission Disclosure (CED), are able to explain the Financial Performance (KK) variable by 14.68%, while the remaining 85.32% (100 - R Square value) is explained by other variables not included in this research model.

Table 3 Coefficient of Determination Test (R²) Equation 2

Random-effects GLS regression	Number of obs	=	65
Group variable: ID	Number of groups	=	13
R-squared:	Obs per group:		
Within = 0.2326	min =		5
Between = 0.1695	avg =		5.0
Overall = 0.1916	max =		5
corr(u_i, X) = 0 (assumed)	Wald chi2(4)	=	17.30
	Prob > chi2	=	0.0017

The R Square value is 0.1916 or 19.16%. The coefficient of determination value shows that the independent variables consisting of Environmental Management Accounting (EMA), Carbon Emission Disclosure (CED) and Financial Performance (KK), are able to explain the Company Value (NP) variable of 19.16%, while the remaining is 80.84% (100 – R Square value) is explained by other variables not included in this research model.

Hypothesis test (T Test)

Decision making criteria (Suyono, 2015:71) (Nuryadi et al., 2017:76):

- If $t_{count} > t_{table}$ or $Prob. < \alpha$, then H_a is accepted
- If $t_{count} < t_{table}$ or $Prob. > \alpha$, then H_0 is accepted

Table 4 T Test Results Equation 1

KK	Coefficient	Std. err.	z	P> z	[95% conf. interval]	
EMA	-.0647486	.0438927	-1.48	0.140	-.1507768	.0212795
CED	.0087611	.0034395	2.55	0.011	.0020197	.0155024
_cons	.0448154	.0184782	2.43	0.015	.0085988	.0810319

The influence of the independent variable on the dependent variable partially is as follows:

1. The calculated t value for the Environmental Management Accounting (EMA) variable is $1.48 < t_{table}$ value, namely 1.999 or the Prob value. equal to $0.140 > 0.05$, then H_3 is rejected, meaning that Environmental Management Accounting has no positive effect on Financial Performance.
2. The calculated t value of the Carbon Emission Disclosure (CED) variable is $2.55 > t_{table}$ value, namely 1.999 or the Prob value. is $0.011 < 0.05$ and the coefficient value is positive, then H_4 is accepted, meaning that Carbon Emission Disclosure has a positive effect on Financial Performance.

Table 5 T Test Results Equation 2

NP	Coefficient	Std. err.	z	P> z	[95% conf. interval]	
EMA	1.351825	.3639426	3.71	0.000	.6385103	2.065139
CED	-.0255188	.0299134	-0.85	0.394	-.084148	.0331103
KK	1.763129	1.089727	1.62	0.106	-.3726959	3.898955
FS	.0694167	.0452429	1.53	0.125	-.0192578	.1580911
_cons	-.5406497	1.314445	-0.41	0.681	-3.116914	2.035614

The influence of the independent variable on the dependent variable partially is as follows:

1. The calculated t value for the Environmental Management Accounting (EMA) variable is $3.71 > t_{table}$ value, namely 2.00 or the Prob value. equal to $0.000 < 0.05$ and the coefficient value is positive, then H_1 is accepted, meaning that Environmental Management Accounting has a positive effect on Company Value.
2. The calculated t value of the Carbon Emission Disclosure (CED) variable is $0.85 < t_{table}$ value, namely 2.00 or the Prob value. is $0.394 > 0.05$, then H_2 is rejected, meaning that Carbon Emission Disclosure has no positive effect on Company Value.
3. The calculated t value of the Financial Performance (KK) variable is $1.62 < t_{table}$ value, namely 2.00 or the Prob value. amounting to $0.106 > 0.05$, then H_5 is rejected, meaning that Financial Performance has no positive effect on Company Value.

Sobel Test

Input:		Test statistic:	Std. Error:	p-value:
a	-0.0647486	Sobel test: -1.0900881	0.1047256	0.27567434
b	1.763129	Aroian test: -0.99156298	0.1151315	0.32141076
s _a	0.0438927	Goodman test: -1.22535964	0.0931646	0.22043975
s _b	1.089727	Reset all	Calculate	

Figure 2 Sobel Test Calculation 1

If the Sobel test value is > 1.958 , then there is an indirect influence (Napitupulu et al., 2021: 137). The EMA → KK → NP path obtained a Sobel test value of $1.090 < 1.958$, then H6 is rejected, meaning that Financial Performance cannot mediate the influence of Environmental Management Accounting on Company Value.

Input:		Test statistic:	Std. Error:	p-value:
a	0.0087611	Sobel test: 1.3657322	0.01131038	0.17202303
b	1.763129	Aroian test: 1.2964022	0.01191524	0.19483695
s _a	0.0034395	Goodman test: 1.44752486	0.01067128	0.14774998
s _b	1.089727	Reset all	Calculate	

Figure 2 Sobel Test Calculation 2

The CED → KK → NP path obtained a Sobel test value of $1.366 < 1.958$, then H7 is rejected, meaning that Financial Performance cannot mediate the effect of Carbon Emission Disclosure on Company Value.

CONCLUSION

The research results show that environmental management accounting has a significant influence on company value, while carbon emission disclosure does not have a significant influence on company value. Apart from that, financial performance also does not act as a significant mediator in the relationship between environmental management accounting and carbon emission disclosure on company value. This finding may be caused by several factors, including the lack of direct relevance between environmental management accounting and carbon emission disclosure with financial performance, as well as the lack of real follow-up from companies to reduce carbon emissions.

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