

# Application of Green Accounting and Material Flow Cost Accounting Towards Sustainable Development

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## Abstract

*This research aims to examine the application of green accounting and material flow cost accounting towards sustainable development. The population in this study are manufacturing companies listed on the Indonesia Stock Exchange for the 2018-2022 period. The sample selection in this study used a purposive sampling method, so that 45 companies were obtained. The analysis technique in this research uses multiple linear regression analysis. The results of this research partially prove that the implementation of green accounting has no effect on sustainable development. This happens because companies have not fully implemented green accounting practices consistently in their business operations so that it does not affect sustainable development. Apart from that, the results of this research also prove that the application of material flow cost accounting has an effect on sustainable development. This happens if the company carries out MFCA, the company can manage costs and achieve efficiency and reduce production waste so that company profits increase, thus influencing sustainable development.*

**Keywords:** *Green Accounting, MFCA, Sustainable Development.*

## INTRODUCTION

The industrial sector plays an important role in national economic growth. In Indonesia, the industrial sector is the sector that has the largest contribution to Gross Domestic Product (GDP), namely 50%. In the third quarter of 2023, BPS reported that the manufacturing industry managed to grow by 5.2% year on year and contributed 18.75% to GDP (AntaraNews.com). The growth of the industrial sector in Indonesia has had both positive and negative impacts. The positive impact is the creation of many new jobs, an increase in people's income, the provision of goods and services, a large contribution to GDP, etc. Meanwhile, the negative impact of the industrial sector is environmental damage such as air pollution, water and soil noise, toxic waste disposal, greenhouse gas emissions, etc. This happens because companies try to seek maximum profits but ignore environmental problems [Abdullah & Amiruddin, 2020].

Environmental problems are issues that can be easily accessed by society today. For this reason, the industrial sector must strive to reduce the negative impact of its business on the environment by implementing more environmentally friendly production processes [Damayanti & Yanti, 2023]. By reducing the negative impact of its business by preventing environmental damage, this is an important stage in achieving sustainable development.

Sustainable development is currently an increasingly important topic. Sustainable development is an effort to maintain development activities by ensuring the availability of resources in a sustainable manner where development must be able to meet current needs without reducing the needs of future generations [Loen, 2018]. The company will carry out development to improve community welfare in the long term.

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## **LITERATURE REVIEW**

### **Stakeholder Theory**

Phillips et al. (2003) shows that companies must not only increase company profits but also improve the welfare of stakeholders. This explains that companies must consider the welfare of stakeholders because their welfare affects the survival of the company [Trisnaningsih et al., 2020].

### **Legitimacy Theory**

Legitimacy Theory is a theory that explains the different values held by companies and the values of society. So companies must be sensitive to carrying out their company operations in accordance with the values that apply in society to gain the trust of stakeholders [Dowling & Pfeffer, 1975]. Companies will continue to exist if they implement norms or systems that are appropriate and acceptable to society. Companies have increasingly broader responsibilities by implementing green accounting as a form of corporate responsibility to shareholders, society and the company environment and implementing MFCA companies contribute to society by reducing waste that can be felt by the community.

### **Sustainable Development**

Sustainable Development means that companies must obtain increasing or stable profits every year in order to maintain the sustainability of the company and provide welfare to employees, investors and society from an economic, social, environmental and technological perspective. As well as implementing cost efficiencies so that the company can survive [Loen, 2018; Irhamsyah, 2019].

### **Green Accounting**

Green Accounting is the activity of identifying, analyzing and providing information about production activities and environmentally related costs that must be incurred by companies, especially for companies that have a negative impact on the economic, social and technological environment [Somantri & Sudrajat, 2023].

### **Material Flow Cost Accounting**

The company carries out cost efficiency by reducing waste resulting from the company's production activities. When implementing MFCA, profits will increase and productivity will continue so that the company can survive now and in the future. By reducing negative impacts calculated through positive output and negative output [Fakhroni, 2020].

### **The Influence of Green Accounting on Sustainability Development**

Green accounting is a part of accounting that describes parts of the company related to the health level of a business [Hamidi, 2019]. This is in accordance with legitimacy theory, pollution caused an impact on society. The existence of green accounting is expected to reduce environmental costs and environmental pollution carried out by companies. Previous research [Marota, 2017]; [Loen, 2018]; [Fakhroni, 2020]; [Dura et al., 2022]. The greater the implementation, the greater the attention to the environmental conditions around the company. Companies must apply sustainable development principles to balance economic growth, the environment and social welfare. Within the industrial sector there are sub-sectors of basic industry and chemicals which have a target to achieve company profits. The bigger the target, the more the company will grow in a positive direction, in this case one way for the company to carry out sustainable development (Sustainable Development).

The implementation of sustainable development in the basic industry and chemical subsectors is very important because this industry has a huge influence on the environment, employee welfare, society and other stakeholders. In making investment decisions, capital owners not only consider the company's performance in gaining profits but also realize the importance of companies paying attention to environmental, social and corporate governance factors [Rakesa & Werastuti, 2023]. Good investment includes financing environmentally friendly projects, green technology innovation, and sustainable infrastructure development. So this encourages companies to have an important role in spurring the transformation towards a low-carbon and globally sustainable economy.

H1: The implementation of Green Accounting has a positive effect on sustainable development

**Material Flow Cost Accounting (MFCA) Influences Sustainability Development**

MFCA aims to reduce environmental impacts and costs incurred at the same time. This is very beneficial for the company by minimizing material and waste, providing an impact from financial and community aspects on the company. Integrated operational and financial information in an accounting system. This is the real material cost in accordance with the system related to company operational costs, namely depreciation, transportation and maintenance as well as waste costs, namely costs that arise due to company activities, especially waste [Loen, 2018]. MFCA according to research [Loen, 2018] ; [Fakhroni, 2020] that the MFCA has a positive effect on sustainable development. The company's goals are to gain profits, streamline costs and optimize sustainable development. Meanwhile, according to [Rachmawati & Karim, 2021] Material Flow Cost Accounting [MFCA] has a negative effect. The legitimacy theory that underlies management's relationship with society where the company operates using economic resources [Ghozali & Chariri, 2007]. The impact of implementing MFCA is not only that companies gain prosperity, but also the welfare of the government, private sector and society. Because with MFCA the flow of materials and energy use becomes clearer and can determine the cost of material losses. MFCA increases exploitation of natural resources will be reduced. Research [Loen, 2018] proves that MFCA improves Sustainable Development. In line with research [Selpiyanti & Fakhroni, 2020] which proves that MFCA is able to optimize sustainable development. So the greater the implementation of MFCA will help in realizing sustainable development.

H2 : Material Flow Cost Accounting influences Sustainability Development

**RESEARCH METHODS**

This type of quantitative research with secondary data in the form of annual reports and sustainability reports is available on the company website. Purposive sampling technique for a population of 43 basic industrial and chemical sub-sectors over a 5 year period from 2018-2022. The sample obtained consisted of 45 data (9 x 5 years) from 9 companies. This research aims to test the hypothesis using the multiple linear regression method. As for sustainable development, the independent variables are green accounting and material flow cost accounting (MFCA).

**RESULTS AND DISCUSSION**

**RESULTS**

**Results of Normality Analysis**

**Table 1. Normality Test Results**

<b>.One-Sample Kolmogorov-Smirnov Test</b>		
		Unstandardized Residual
N		45
Normal Parameters <sup>a,b</sup>	Mean	0,0000000
	Std. Deviation	0,06936204
Most Extreme Differences	Absolute	0,128
	Positive	0,128
	Negative	-0,091
Test Statistic		0,128
Asymp. Sig. (2-tailed)		.064 <sup>c</sup>

Source: Output SPSS 26

Data is normal if the significance is > 0.05 with the One-Sample Kolmogorov-Smirnov Test. The significance value obtained was 0.064, indicating that the research data was normally distributed [Ghozali, 2018].

**Results of Multiple Linear Regression Analysis**

**Table 2. Mu**

Coefficients <sup>a</sup>								
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	0,436	0,130		3,358	0,002		
	Green Accounting	0,583	0,049	0,089	0,436	0,755	0,681	1,469
	MFCA	0,566	0,051	0,109	0,578	0,029	0,574	1,741

Sumber: Output SPSS 26

The results of the multiple linear regression analysis in table 2 show the following regression equation:

$$Y = 0,436 + 0,583X_1 + 0,566X_2 + e$$

From the results above, the following conclusions are drawn:

The constant value is 0.436, meaning all independent variables have a value of 0, Sustainability Development is 0.436.

Green Accounting shows a value of 0.583, there is a unidirectional relationship between Green Accounting and Sustainability Development. A positive regression value indicates that with an increase in Green Accounting by one unit, Sustainability Development has increased by 0.583 assuming all other independent variables remain constant.

Material Flow Cost Accounting shows a value of 0.566, there is a unidirectional relationship between MFCA and Sustainability Development. A positive regression value indicates that if the MFCA variable increases by one unit, then Sustainability Development will increase by 0.566 assuming the other independent variables remain constant.

**Results of F (Simultaneous) Analysis**

**Table 3. F Test Results (Simultaneous)**

ANOVA <sup>a</sup>						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	0,053	2	0,011	1,802	.035 <sup>b</sup>
	Residual	0,230	42	0,006		
	Total	0,284	44			

Source: Output SPSS 26

The results of the model suitability test are said to be appropriate if the significance value is <0.05. Table 3 shows that there is a simultaneous influence with an F count of 1.802 and a significance level of 0.035 which is smaller than 0.05. It is concluded that in this equation simultaneously or together the Green Accounting and MFCA variables influence the Sustainability Development variable.

The results of the t test (partial) in Table 2 are said to have an effect on the dependent variable if the significance value is <0.05. Green Accounting shows a significance value of 0.755 > 0.05, partially the Green Accounting variable has no effect on Sustainability Development, so it can be concluded that H1 is rejected. Material Flow Cost Accounting has a significance value of 0.029 < 0.05, partially the MFCA variable has an effect on Sustainability Development, the conclusion is that H2 is accepted.

## **DISCUSSION**

### **The influence of Green Accounting on Sustainable Development.**

Statistics using the partial t test obtained a calculated t value of  $0.436 < t$  table value of 1.993 and a significant value of  $0.755 > 0.05$  so that H1 was rejected. The research results explain that green accounting variables cannot influence Sustainability Development. This happens because the company has not fully provided information related to Green Accounting in production, economic, environmental, social and technological activities in its sustainability report so that green accounting has no impact on sustainable development. Stakeholders have not yet made the Green Accounting concept a factor that must be considered when making their investment decisions. The results of this research support the findings of [Damayanti & Yanti, 2023] ; [May et al., 2023] stated that the implementation of Green Accounting does not affect sustainable development. However, the research results are different from the research of [Loen, 2018], [Selpiyanti & Fakhroni, 2020]; [Lestari & Alim, 2021] ; [Khotimah et al., 2023] stated that the application of green accounting has a significant influence on sustainable development.

### **The Influence of Material Flow Cost Accounting on Sustainability Development**

Based on the results of partial statistical tests, the calculated t value was  $0.578 < t$  table value 1.993 and the significant value was  $0.029 < 0.05$  so that H2 was accepted. Thus, the implementation of Material Flow Cost Accounting (MFCA) carried out by companies has a significant effect on sustainable development. This shows that by implementing MFCA companies can reduce environmental costs by minimizing the negative impact of production activities. By reducing or making environmental cost efficient, company profits will increase because the company will remain sustainable and stable and contribute to sustainable development. When reducing costs, the direction will be negative, with Sustainable Development heading in a positive direction so that the company can survive in a more positive direction. This research supports the findings of previous research [Selpiyanti & Fakhroni, 2020], [Ketut et al., 2020]; [Lestari & Alim, 2021] ; [Khotimah et al., 2021]; [May et al., 2023] that the application of material flow cost accounting in the basic industry and chemical subsectors has an impact on sustainable development.

## **CONCLUSION**

Green accounting has no effect on sustainable development in the basic industry and chemical subsectors. It still does not disclose environmental conservation activities in its annual report, because this disclosure is voluntary and not coercive so it has no impact on sustainable development. By implementing MFCA, companies can reduce environmental costs by minimizing the negative impacts of their production activities. By reducing or making environmental cost efficient, company profits will increase because the company will remain sustainable and stable and contribute to sustainable development. Green Accounting and MFCA have a significant influence on sustainable development. Has a positive impact on sustainable development.

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