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Analysis of the Implementation Green Accounting and Material Flow Cost Accounting on Corporate Sustainability

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ABSTRACT

Corporate sustainability, or company sustainability, is a concept that adopts a long-term business orientation to meet the needs of present and future stakeholders while considering aspects of economic growth, environmental protection, and social justice. This research aims to determine the influence of the implementation of green accounting and material flow cost accounting on corporate sustainability in industrial companies listed on the Indonesia Stock Exchange (IDX) during the 2022 period. The difference between this research and previous research is that there is a mental flow cost accounting variable as an independent variable, which is used to determine its effect on corporate sustainability. This study is quantitative research with a sample selection technique using purposive sampling. The hypothesis testing conducted consists of multiple linear regression analysis, determination coefficient (R^2) test, and t-statistic test using Wrap-PLS version 8.0. The research results show that green mental flow cost accounting has an effect of 18.3% on corporate sustainability, while green accounting has no effect.

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1. INTRODUCTION

The rapidly growing business activities today have, directly or indirectly, become one of the causes of environmental damage issues. It cannot be denied that the industrial sector causes various environmental problems such as water, and air pollution, production waste, and social inequality (Yusnita, 2021). This is because many companies still focus on profit attainment without considering the adverse impacts of their activities on the environment and society. Furthermore, the industrial sector, which plays a leading role, can drive development in other sectors. Hence, there is a need for corporate awareness in environmental management and social well-being, apart from profit-driven activities, to achieve sustainability (Rakesa & Werastuti, 2022).

Environmental issues, whether directly or indirectly, have impacted companies' business activities. The issue of ecological damage caused by companies that can have an impact now or in the future has made the entire community aware of the importance of preserving the environment (Nilla et al., 2021). This prompts corporate business activities to adapt to environmental issues.

The law that regulates the environment is Law of the Republic of Indonesia No. 32 of 2009 concerning Environmental Protection and Management. This law contains systematic and integrated efforts to preserve and prevent environmental pollution or damage (Utami & Nuraini, 2020). One form of adjustment in corporate business activities to address environmental issues is green accounting, an effort to bridge the company's economic interests and ecological preservation. Kusumaningtias (2013) it is also an accounting concept that emphasizes the balance between business objectives, namely, to obtain profits, and environmental objectives, namely, to preserve the environment itself (Kholmi & Nafiza, 2022). Apart from that, green accounting or environmental accounting is a new paradigm in accounting science which explains that the company's focus is not only on profit alone but must also be responsible for environmental damage that occurs because of the company's activities by spending costs to improve the environment (Hartiah & Pratiwi, 2022).

Furthermore, green accounting is seen as an essential tool to comprehend the influential aspects of the environment on the economy (Farouk et al., 2012). Green accounting is also a part of environmental accounting that combines ecological benefits and costs into decision-making. Green accounting is influenced by and impacts the entities surrounding the company (Abdullah & Amiruddin, 2020). Additionally, companies require a tool, namely material flow cost accounting (MFCA), to manage corporate waste, thus having positive effects on both the company and the environment.

The theories that support the implementation of green accounting and MFCA towards corporate sustainability are stakeholder theory. The core idea of stakeholder theory is the necessity of managing the relationships between companies and stakeholders, both groups and individuals who can influence or be influenced in achieving objectives. Based on stakeholder

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theory, companies are not entities that operate solely for their interests; they are expected to provide benefits to stakeholders (Putri, 2017). Nowadays, stakeholders are becoming more aware of the importance of corporate sustainability, leading them to push companies to be responsible not only for profitability but also for environmental protection and social enhancement. Moreover, public awareness of environmental issues is compelling companies to address environmental management in the business world (Rakesa & Werastuti, 2022). To achieve corporate sustainability, companies need to recognize environmental and social issues and incorporate them into their strategic planning. Therefore, companies require a tool that can support their commitment to the environment and social aspects in attaining corporate sustainability.

One of the accounting tools that can support this corporate commitment is green accounting. Green accounting can have a positive impact on corporate sustainability. This is consistent with the research by Loen (2018) and Selpiyanti & Fakhroni (2020), which demonstrate that the implementation of green accounting has a significant positive effect on sustainable development.

Apart from that, one of the management instruments that can increase the efficiency of material used to reduce the impact of production waste is MFCA which has a positive influence on company sustainability. This is in line with research by Loen (2018), Selpiyanti & Fakhroni (2020), Marota (2017), and Putri (2017), which shows that MFCA significantly affects company sustainability. In contrast, the study by Abdullah & Amiruddin (2020) indicates that MFCA (factory area) does not affect company sustainability, with the moderating variable of green accounting not influencing the relationship between MFCA (production costs and factory area) and company sustainability.

2. RESEARCH METHODOLOGY

Stakeholder theory is one of the primary theories extensively utilized to underpin research on sustainability development. Stakeholders are divided into two categories: internal stakeholders, comprising owners, management, and employees; and external stakeholders, including government, society, the environment, and future stakeholders (Hernádi, 2012). Secondary stakeholders include media and parties interested in broader contexts (Holder-Webb et al., 2009). The emergence of the stakeholder theory as a dominant paradigm further solidifies the concept that companies are responsible to shareholders and stakeholders (Maulida & Adam, 2013). The relationship between companies and stakeholders is built on the concept of mutual benefit, fostering collaboration to achieve the company's sustainability. Stakeholders hold various expectations towards the company, and to pursue these expectations, they can exert pressure on the company directly or indirectly in terms of environmental disclosure (Borghei-Ghomi & Leung, 2013).

Environmental accounting serves as an environmental management tool and a means of communication with stakeholders to enhance the quantity of relevant information generated for those interested (Idris, 2012). Green accounting identifies measures, evaluates, and discloses

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costs associated with company activities related to the environment. Green accounting involves integrating environmental benefits and cost information into various accounting practices and environmental costs into business decisions (Abdullah & Amiruddin, 2020).

Along with the increasing ethical demands from investors, driving consumers to purchase green products, entities have a more competitive marketing edge compared to those that do not disclose. This demonstrates the entity's commitment to environmental improvement efforts, and prevents negative public opinions, given that companies operating in environmentally unfriendly areas typically face challenges from the public (Abdullah & Amiruddin, 2020). According to Lako as quoted by Nur'ainum & Lestari (2017), Green accounting disclosure encompasses 3 dimensions of information, with a total of 13 indicators as follows:

Table 1. Dimensions and Indicators of Environmental Disclosure

No.	Dimension	Indicator
1.	Contribution to the natural environment, energy, human resources (employees), and society	1. Implementation of environmental management system 2. Efforts for energy efficiency 3. Efforts to reduce emissions. 4. Implementation of Reduce, Reuse, Recycle, hazardous and non-hazardous waste. 5. Water conservation and reduction of water pollution loads 6. Protection of biodiversity
2.	Positive economic, social, and ecological impacts	1. Positive impact 2. Negative impact
3.	Company's contribution to addressing ecological issues	1. Water pollution control 2. Air pollution control 3. Hazardous waste management 4. Marine water pollution control 5. Potential environmental damage

Source: Nur'ainum & Lestari (2017)

Green Accounting benefits internal company operations by providing reports on internal management, including management decisions related to pricing, overhead cost control, capital budgeting, and production costs. Beneficial production activities that reduce environmental impact can save resource consumption and costs simultaneously (Setiawan, 2016). Furthermore, green accounting strongly depends on a company's characteristics in understanding environmental issues that will guide the company's policies, especially concerning environmental sustainability (Astuti, 2012). Setiawan (2016) reveals that environmental concerns serve as a business elevator for long-term profitability. Green accounting can effectively serve as a tool for companies to fulfill their environmental responsibilities and accountability to stakeholders and indirectly as a means for accurate evaluation of environmental conservation activities. Loen

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(2018) research findings indicate that green accounting has a positive impact on sustainable development. This is aligned withSelpiyanti & Fakhroni (2020), who demonstrate that the implementation of green accounting has a positive and significant effect on sustainable development. Additionally, the research results from Chasbiandani et al., (2019) show that green accounting and environmental performance positively impact company profitability.

Corporate sustainability is about how long a company can endure in the rapidly evolving industrial landscape. Sustainable industrial areas involve development planning that adheres to the concept of sustainable development, which integrates economic, social, and environmental aspects (Agustia, 2010). Corporate sustainability becomes a developmental factor to meet present needs without sacrificing future capacity to fulfill its own requirements (Lynch, 2011). The survival of a company depends on the profits it generates. These profits then become the primary goal for establishing a company.

Material Flow Cost Accounting (MFCA) as flow management is a key tool in management approach aimed specifically at managing manufacturing processes related to material, energy, and data flows, thus making manufacturing processes more efficient and aligned with set targets. MFCA also serves as a management tool designed to evaluate the cost of losses resulting from material production, facilitating decision-making to help companies manage their waste (Selpiyanti & Fakhroni, 2020). The measurement of MFCA refers to the research conducted by (Marota, 2017) as follows:

Table 2 MFCA Measurement

Variable	Dimensi	Size	Scale
MFCA	Production Cost	Monetary Units	Interval
	Factory Area Size	Unit Area	
	Production Output	Monetary Units	
Cost Accounting			

The research by Marota et al., (2017) shows that MFCA can drive the company's strategy towards future resource efficiency. The study by Marota et al., (2017) focuses on implementing MFCA to enhance company sustainability. Their research findings indicate that MFCA significantly affects company sustainability. Another study by Tran & Herzig (2020) presents a detection model of MFCA with environmental accounting, demonstrating that MFCA can be employed as a model to detect production and business aspects of a company. The advantages of using the MFCA model include the potential to increase profit and productivity (internally) and reduce negative environmental impacts (externally), contributing to the development of corporate sustainability. This aligns with the research of Tran & Herzig (2020), stating that MFCA has proven to provide the best waste information to enable company managers to make waste management decisions, ultimately achieving corporate sustainability. Based on the description above, the research framework is depicted in Figure 1 below:

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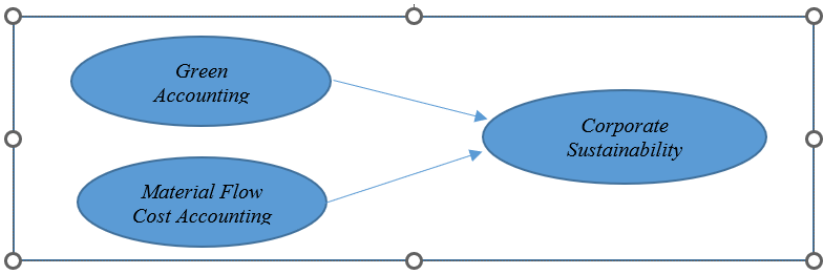

Figure 1. Research Framework

A quantitative approach was employed to achieve the research objectives involving various variables that are derivations of relevant concepts. Therefore, the method used in this study is explanatory research, which aims to explain relationships between variables through statistical testing to obtain an explanation about the relationship between the two variables (Saunders et al., 2007). The data analysis technique used is Structural Equation Modelling - Partial Least Squares (SEM-PLS) using Wrap-PLS software version 8.0.

3. RESULTS AND DISCUSSION

To analyze the influence of green accounting and mental flow cost accounting on corporate sustainability, Warp-PLS path analysis is used. Empirical research models are tested individually using the t-test or by testing the resulting p-value. From the results of path analysis calculations using WRAP-PLS, the following visualization of the path analysis calculation results is presented as shown in the picture:

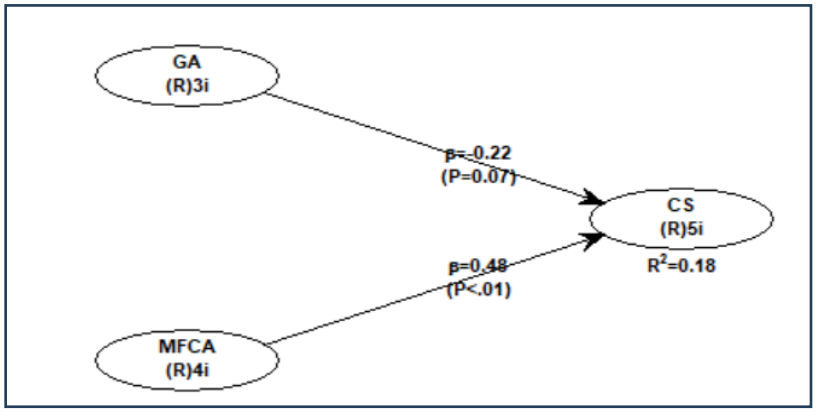

Figure 2. Image of Path Model Estimation Results Based on Wrap PLS 8.0
(Source: *output* Warp PLS 8.0, 2023)

Based on this image, an overview can be obtained regarding the calculation results of Warp-PLS version 8.0 for hypothesis testing. From this picture, it can be seen that the P-value value for the green accounting variable towards the corporate sustainability variable is 0.07, and the P-value for the mental flow cost accounting variable towards corporate sustainability is 0.01, with an R2 value of 0.18. To provide an explanation regarding the test results of the variables studied, they are presented in the following table:

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Relationship among Variables	Estimate	P-Value	R^2
GA → CS	-0.218	0.074	
MFCA → CS	0.480	0.001	0.183

Source: Indonesia Stock Exchange (2022)

Based on this table it can be concluded that:

1. The probability value of GA against CS is greater than the alpha level of 5%. This shows that the Green Accounting variable has no effect on Corporate Sustainability.
2. The MFCA probability value for CS is smaller than the alpha level of 5%. This shows that the Material Flow Cost Accounting variable influences Corporate Sustainability.

From the results of individual hypothesis testing, mathematically the research model can be stated as follows:

$CS = rGA + rMFCA + e_1$ ..... (1)

Where:

CS = Corporate Sustainability
GA = Green Accounting
MFCA = Mental Flow Cost Accounting

Equation 1 explains that the simultaneous influence of exogenous variables, including Green Accounting and Material Flow Cost Accounting, on the endogenous variable of Corporate Sustainability is 18.3%. In other words, corporate sustainability is influenced by other variables that have not been studied, namely 81.7%.

The research findings provide clear implications regarding factors that can influence corporate sustainability, where Material Flow Cost Accounting (MFCA) is a factor that can influence corporate sustainability. In other words, MFCA is a powerful tool for companies in their efforts to achieve corporate sustainability. By analyzing material flows and associated costs in a production process or operation, MFCA can make a significant contribution to a company's sustainability goals. These findings strengthen the opinion of Marota et al., (2017), Tran & Herzig, (2020), who explain that Material Flow Cost Accounting (MFCA) is the main tool in a management approach aimed specifically at managing manufacturing processes related to the flow of materials, energy, and data so that the manufacturing process becomes more efficient. efficient and in line with predetermined targets. Apart from that, the research findings strengthen the opinion of Selpiyanti & Fakhroni (2020) who state that MFCA also functions as a management tool designed to evaluate the cost of losses due to material production, as well as facilitate decision-making to help companies manage their waste to support corporate sustainability.

The research results are also in line with the concept of sustainability accounting which explains that sustainability accounting includes measuring and reporting the economic, environmental, and social impacts of a company. In this context, MFCA contributes to

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sustainability accounting by focusing on environmental impacts and related costs in the context of a company's operations.

This study was conducted with the aim of obtaining an overview of the influence of the implementation of Green Accounting and Material Flow Cost Accounting (MFCA) on Corporate Sustainability. A pictographic representation of the research stages to obtain empirical results on the research variables is presented in Figure 3 below:

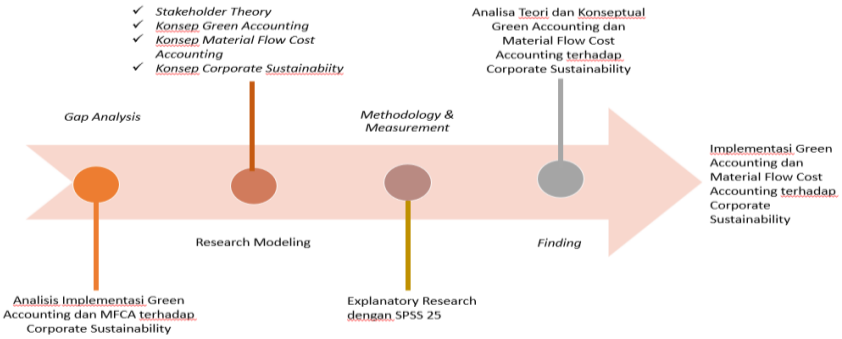

Figure 3. Research Procedure

4. CONCLUSION

From the results of the statistical tests that have been carried out, it can be concluded that one of the company's sustainability can be influenced by Material Flow Cost Accounting (MFCA), where MFCA is a management tool designed for the purpose of evaluating the cost of losses that may arise due to material production and to facilitate company management in waste management to support corporate sustainability. Thus, MFCA can contribute to the company's sustainability goals. This is in line with the concept of sustainability, which explains that sustainability accounting includes measuring and reporting a company's economic, environmental, and social impacts. In this context, MFCA can contribute to sustainability accounting that focuses on environmental impacts as well as costs related to a company's operational activities. The limitation of this research is that the period used only covers one period for industrial companies listed on the IDX. For further research, it is better if the research period used can cover more than one period so that the research results can be broader.

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