

The Role of Green Product Innovation and Environmental on the Relationship between Environmental Management Accounting and Financial Performance



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ARTIKEL INFO

Submitted:
February 15, 2024

Revision:
March 16, 2024

Accepted:
March 18, 2024

Keywords:

ROA, Green Inovation, ISO
14001

ABSTRACT

The purpose of this research is to examine the effect of environmental management accounting on company financial performance through green product innovation and environmental performance. The population was taken from the financial reports of manufacturing companies listed on the Indonesia Stock Exchange (BEI) for 2019-2022. The population in this study was 233 companies with a sample that met the requirements of 107 so the total sample was 428. The sample was selected using the purposive sampling method and Analysis uses e-views. Based on the results and discussion, it can be concluded that environmental performance can mediate the relationship between environmental management accounting and financial performance. Then the existence of green product innovation has no role in the relationship between environmental management accounting and financial performance. Environmental performance has an important role in improving a company's financial performance by paying attention to the presence of environmental management accountants.

1. INTRODUCTION

Commitment to society is part of a larger corporate plan that involves not only development and expansion but also concern for social responsibility. Environmental sustainability issues have recently become increasingly popular (Riaz et al., 2019) and this

is strongly emphasized in the 2030 Agenda and the Sustainable Development Goals (SDGs) Agenda 2063 (Martí-Ballester, 2017). Sustainability can be divided into three categories: economic, social, and environmental (Masocha & Fatoki, 2018).

Implementing environmental management accounting through ISO 14001 certification can actually have positive implications, because the company gives a signal to the environment that the products produced go through various stages that do not damage the environment. ISO 14001 certification which focuses on building a company's image of environmental responsibility has a good reputation in society, the implications of which are increasing profitability. Despite this, there is a difficult relationship between local government and business (Hussain et al., 2018). ISO 14001 is considered an international benchmark for assessing a company's environmental performance which highlights that the implementation of green practices is beneficial for small and medium enterprises (SMEs) both in terms of financial performance and environmental performance.

In addition, green innovation has been considered no less important in dealing with environmental problems (Xie et al., 2019). Green industry supports environmentally friendly industries, companies must prevent major environmental damage from production activities by creating environmentally based innovations called green innovations. The Ministry of Environment and Forestry pays attention and appreciation to 186 business actors included in the GREEN PROPER, namely business actors who have carried out environmental cleaning procedures that are more thorough than those required by law (*beyond compliance*) and according to the environment ministry effective use of daily supplies and effective social engagement.

Environmental issues that are currently hot in the world today have made PROPER begin to be looked at by other countries and receive appreciation. According to (Suasana & Ekawati, 2018) As an alternative structuring instrument, starting in 2012 PROPER has been praised by various parties including the World Bank, United Nations University Tokyo, and Harvard Institute for International Development. The World Bank, through its delegation from India, directly studied PROPER in Indonesia in 2015. PROPER use system based approach, which demands good program governance starting from policy, budgeting, organizational structure, planning, implementation, evaluation and publication.

According to the environment ministry company's environmental performance can be measured through the colors it obtains, starting from ratings in the compliant category, namely gold, green, blue, to ratings of companies that are not compliant, namely red or black, and then announced regularly to the public so that people can find out the level of environmental management in the company by just looking at the color. Gold, green and blue ratings indicate good environmental management and have exceeded government requirements. Meanwhile, red and black ratings indicate that there has not been good management according to what is required.

To accelerate high-value innovation practices, businesses must commit to a long-term vision. Implementation of Environmental Management Accounting is a commitment made by an organization to implement new environmental programs and strengthen its environmental strategy. According to (Suasana & Ekawati, 2018) The greater the company's commitment to environmental preservation, the greater the opportunities for innovation in processes and product development in the environment.

This research refers to research conducted by (Vu & Dang, 2020); and (Sari et al., 2020), which shows that environmental management accounting commitment influences the company's financial performance. Study conducted by (Hirunyawipada, 2018) previously linked a company's environmental management accounting commitment to financial performance with a negative effect. This means that there are inconsistencies in the research results which are of interest to the author in conducting further research. Apart from that, little research has been carried out in Indonesia. The author also added mediating variables for green product innovation and the role of environmental performance. Green product innovation is a variable that is able to link the relationship between environmental management accounting and company performance according to the study (Xie et al., 2019). The author added the latest data from 2019 to 2022 because during that year, Indonesia experienced a transition period where several Indonesian companies were still unstable after the Covid-19 disaster.

2. LITERATURE REVIEW AND HYPOTHESIS

Institutional Theory

According to (Fields et al., 2012) Institutional Theory is illustrated based on the assumption that the environment requires business in two different ways. Initially, the topics were technical or economic. Institutional Theory has emerged as a recognized explanation that can be applied to individual and organizational actions caused by exogenous, extrinsic, societal, societal, and environmental factors. The elements in this case work together to support goals and daily work to provide stability and meaning to social life. For the purpose of increasing stability in this situation, groups or organizations must understand basic concepts such as law, custom, cultural superiority, and material power. This is something that can motivate organizational teams to work together to provide stability using all available resources and programs. Institutional theory describes the relationship between an organization and its environment.

Legitimacy theory emphasizes that every business always has a social relationship with the surrounding environment, be it the natural environment or the social environment. *“Legitimacy theory as the idea that in order for an organization to continue operating successfully, it must act in a manner that society deems socially acceptable”* which means that company management must be able to ensure that the operations carried out are always acceptable to the surrounding community, especially in relation to norms that are trusted and believed in by that community, therefore all of the company's activities will be legitimized (accepted and permitted) by the community. Legitimacy theory states that companies can expect society on an ongoing basis that the activities carried out are in accordance with the norms and values that apply in the social environment in which the company operates.

Puspita (2015) argue that organizational legitimacy can be understood as something that the general public provides to business, as well as something that the general public wants or demands from business. " The degree to which a company integrates ecological issues into its business strategy to reduce the harmful effects of related business activities on the natural environment," is how commitment to the environment is defined (Hirunyawipada, 2018). Environmental Management Accounting has a very important role for the success of business operations. In recent years, commitment to the environment has

become the main focus of governments, policy makers, the general public and the business world.

According to (Suasana & Ekawati, 2018) businesses are becoming more committed to protecting the environment as part of their sustainability initiatives, which is better for their financial operations. Previous research has established that environmental accounting can increase short-term profitability and future value for companies with strong marketing capabilities (Hirunyawipada, 2018) and environmental management accounting can improve environmental performance and financial performance (Deb & Rahman, 2022). Using the previous description, the author proposes the following hypothesis:

H1: Environmental Management Accounting influences Financial Performance

Business actors must develop environmental management accounting to encourage other business actors to innovate. The application of green product innovation is carried out by designing products to be environmentally friendly, modifying product components and intervening after the sales process to reduce the amount of waste and packaging for customers which is called green innovation. Based on research from (Suasana & Ekawati, 2018) and (Burki & Dahlstrom, 2017) every company can innovate high-quality products with community support. Based on the above evidence, the following is a summary of the hypothesis:

H2: Environmental Management Accounting influences Green Product Innovation

Study results Mohamed (2018) revealed that physical and monetary environmental management accounting has a significant effect on environmental performance. Environmental Management Accounting is considered a successful idea to reduce the ecological burden in the form of energy dependence and carbon footprint. In addition to the company's highest emphasis on Environmental Management Accounting, the organization's environmental strategy is articulated and implemented with an ecological role. The role of environmental organizational strategy strengthens the organization's internal awareness to improve environmental conditions and thereby helps reduce negative environmental pressures. In addition, with increasing environmental regulations, the need for sound corporate environmental policies and strategies is essential to protect future growth and market image (Eko Cahyo Mayndarto & Yvonne Agustine, 2021). Study (Fuzi et al., 2020)

confirm the findings that environmental performance outcomes benefit organizations through environmental management accounting practices. Based on the description above, the author is interested in making a hypothesis;

H3: Environmental Management Accounting influences environmental performance

Green product innovation has an important role in improving company financial performance. Therefore, innovative green processes are essential in addressing the impact of community commitment on business operations. This is in accordance with research done by (Ryszko, 2016) and (Burki & Dahlstrom, 2017) both state that new green processes are possible. Therefore, the proposed hypothesis promotes innovation in green products as a specific tool for marketing projects with a continuous increase in market share. In addition, there is a cost leadership strategy. This has an impact on the company's lab quality standards. The importance of product innovation for businesses pursuing a differentiation strategy. Businesses that innovate high-quality products can face competitive pressures, allowing them to sell high-quality goods, improve their reputation, and create new markets. Based on the description above, the author's hypothesis is as follows:

H4: Green Product Innovation has a positive effect on Financial Performance

Eco-efficiency usually measures a company's environmental accounting performance in a relative scope. According to (Galindo-manrique & Esteban, 2021) eco-efficiency which is a reflection of environmental management accounting can increase the volatility of company share prices in the market. In the literature review, the relationship between environmental performance and financial performance has varying complexity of results, but most of them reveal significant results. Environmental performance, a signal of efficient and effective use of resources, can improve a company's environmental reputation and, in turn, employee commitment. Study results (Shen et al., 2019) revealed that the relationship between environmental performance and financial performance plays an indispensable role in exploring the internalization of corporate environmental responsibility. Based on this description, it can be concluded that.

H5: Environmental performance influences financial performance.

3. RESEARCH METHOD

The population in the research is manufacturing companies registered on the IDX 2019-2022. The sample is part of the size and characteristics of the population. If there is a large population that does not fully understand the characteristics of the population (such as handling time, money, and other resources), the data can use samples taken from that population (Sugiyono, 2020). The population in this study was 233 companies with a sample that met the requirements of 107 so the total sample was 428 (107 x 4 years).

Table 1. Sample Total

Keterangan	Jumlah
Manufacturing Companies listed on the IDX 2019-2022	233
Companies that do not meet the criteria	126
Sample	107
Sample Total x 4	428

(Source; Data processed, 2023)

Environmental management accounting measurements refer to ISO 140001 as a proxy variable for environmental management accounting practices in companies with dummy variables. Financial performance measures use the ROA (Return on Assets) proxy, namely by dividing the company's net profit by total assets. Green product innovation emphasizes the use of environmentally friendly products and uses three indices and is scored using the content analysis method described in the company report. while environmental performance is measured using PROPER Test.

The data in this research was processed with the help of E-Views 11. To estimate the regression model using panel data, it can be done using three approaches, namely *Common Effect Model* (CEM), *Fixed Effect Model* (FEM), dan *Random Effect Model* (REM). The estimation model selection is carried out to determine the most appropriate regression model to use. This model selection can be done using the Chow test, Hausman test and Lagrange multiplier test.

4. RESULTS AND DISCUSSIONS

The results of the descriptive statistical test in this research are presented in Table 2

Table 2. Descriptive statistics

	Environmental Management Accounting	Environmental Performance	Innovation Green Products	ROA
Mean	0.558411	1.700935	2.815421	0.080343
Median	1.000000	1.000000	3.000000	0.050000
Maximum	1.000000	5.000000	6.000000	0.640000
Minimum	0.000000	1.000000	1.000000	0.000000
Std. Dev.	0.497158	1.026259	1.431020	0.091536
Skewness	-0.235256	0.986867	0.403162	2.759191
Kurtosis	1.055345	2.580641	2.190800	13.31499
Jarque-Bera	71.38796	72.60819	23.27183	2440.519
Probability	0.000000	0.000000	0.000009	0.000000
Sum	239.0000	728.0000	1205.000	34.38700
Sum Sq. Dev.	105.5397	449.7196	874.4182	3.577777
Observations	428	428	428	428

Source: Data processed, 2023

Hypothesis testing

Relationship between environmental management accounting and financial performance (ROA)

Table 3. hypothesis testing

Dependent Variable: Return on Asset

Variable	Coefficien	t	Std. Error	t-Statistic	Prob.
Env. Man Acc	-0.004336	0.011140	-0.389191	0.6973	
Env. Performance	0.016898	0.007027	2.404589	0.0166	
Product in	0.002490	0.003784	0.658164	0.5108	
C	0.076133	0.022159	3.435792	0.0006	

Source; data processed, 2023

Based on the results of the hypothesis test in table 3, the t-statistic value is -0.389191 with a probability of $0.05 < 0.6973$. It can be said that environmental management accounting has no effect on financial performance and hypothesis 1 is rejected.

The relationship between environmental management accounting and green product innovation.

Table 4. Hypothesis test

Dependent Variable: PRODUCT

Variable	Coefficien t	Std. Error	t-Statistic	Prob.
Env.Man.Acc	-0.349115	0.145740	-2.395456	0.0170
C	3.017453	0.152322	19.80973	0.0000

Source; data processed, 2023

Based on the results of the hypothesis test in table 4, the t-statistic value is -2.395 with a probability of $0.017 < 0.05$. It can be said that environmental management accounting has an effect on green product innovation and hypothesis 2 is accepted.

The relationship between environmental management accounting and environmental performance (ROA)

Table 5. Hypothesis test

Dependent Variable: envirnmental performance

Variable	Coefficien t	Std. Error	t-Statistic	Prob.
Env. Manag. Acc	5.69E-14	3.20E-15	17.80905	0.0000
C	1.709220	1.86E-15	9.18E+14	0.0000

(Source: data processed,2023)

Based on the results of the hypothesis test in table 5, the t-statistic value is 17.80905 with a probability of $0.000 < 0.05$. It can be said that environmental management accounting has an effect on environmental performance and hypothesis 3 is accepted.

The relationship between green product innovation and financial performance (ROA)

Based on the results of the hypothesis test in table 3, the t-statistic value is 0.658164 with a probability of $0.05 < 0.5108$. It can be said that green product innovation has no effect on financial performance and hypothesis 4 is rejected.

The relationship between environmental performance and financial performance (ROA)

Based on the results of the hypothesis test in table 3, the t-statistic value is 2.404589 with a probability of $0.016 < 0.05$. It can be said that environmental performance influences financial performance and hypothesis 5 is accepted.

Discussion

Relationship between environmental management accounting and financial performance (ROA)

Based on statistical results, environmental management accounting cannot influence financial performance. Implementing environmental management accounting through ISO 14001 certification can actually have positive implications, because the company gives a signal to the environment that the products produced go through various stages that do not damage the environment. ISO 14001 certification which focuses on building a company's image of environmental responsibility has a good reputation in society, the implications of which are increasing profitability. Despite this, there is a difficult relationship between local government and business (Hussain et al., 2018). According to (Handayani, 2020) The implementation of Environmental Management Accounting is expected to be the right solution for companies to achieve better environmental performance but it turns out to be different with what happened to the company. Companies that have implemented environmental management accounting or have obtained ISO 14001 certificates for consecutive years actually produce poor environmental performance (GRI index below average).

The relationship between environmental management accounting and green product innovation

Implementation of Environmental Management Accounting is a commitment made by an organization to implement new environmental programs and strengthen its environmental strategy. According to (Suasana & Ekawati, 2018) The greater the company's commitment to environmental preservation, the greater the opportunities for innovation in processes and product development in the environment. According to (Febrianty & Rosdiana, 2017)

Environmental management accounting can increase product innovation. The phenomenon that occurs in textile companies in Indonesia shows that there is still a lack of product innovation in companies by forgetting about responsibility towards the surrounding environment. The application of environmental management accounting can provide industrial managers with ideas for innovating products from industrial waste (Rahmah et al., 2022).

The relationship between environmental management accounting and environmental performance

Based on statistical results, environmental management accounting influences environmental performance. (Burhany, 2012) revealed that accounting plays a role in managing the relationship between the company and the environment. Achieving good environmental performance is not the ultimate goal of a Company. However, if you want to improve environmental performance, companies must carry out environmental management (environmental management). Environmental management accounting exists to overcome the limitations of traditional management accounting by highlighting environmental aspects in the company's management accounting system. In line with the findings (Dewi, Nurleli, 2017) that the application of environmental management accounting in industry makes environmental performance better.

The relationship between green product innovation and financial performance (ROA)

Green product innovation is the introduction of a service work product including the characteristics of its useful function, technical characteristics, structure formation, and materials used, including the software used, user friendly, and other special characteristics oriented to the environment. Product innovation or production output can use or utilize basic knowledge or new technology, custom is based on the use of existing knowledge and new technology. Green product innovation is a new idea or product development designed with the aim of reducing the impact on the environment through the use of environmentally friendly and recyclable materials (Febrianty & Rosdiana, 2017). The large number of companies that still focus on financial performance means they do not strengthen green product innovation. Apart from that, there is also a lack of support from the company's resources and low levels of disclosure regarding the implementation of environmentally

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friendly green innovations. The results of this study are in line with the findings (Millenia, 2023).

The relationship between environmental performance and financial performance (ROA)

The findings of this study reveal that environmental performance influences financial performance. Environmental performance receives special attention because it reflects the company's concern for the environment around which the company operates. Environmental performance can be seen through the color rating obtained by the company in PROPER (Company Performance Rating Assessment Program) which is implemented by the government through the Ministry of the Environment. Companies that have a good level of environmental performance will provide a good image and gain the trust of the public. This can increase product sales and have a good impact on financial performance. By disclosing PROPER in the company's annual report, the company can be assessed as better than companies that do not disclose PROPER. Because, PROPER can be a promotional tool for environmentally friendly companies and can be used as benchmark (Rahayudi, 2023).

5. CONCLUSIONS

Based on the results and discussion, it can be concluded that there is no direct influence on the relationship between environmental management accounting and the Company's financial performance. However, environmental performance can mediate the relationship between environmental management accounting and financial performance by looking at the influence on the relationship between environmental management accounting and environmental performance, and environmental performance on financial performance. Meanwhile, product innovation is a very risky innovation because it requires adequate resource readiness so that it does not have an impact on performance, even though the existence of management accounting can be a driving force for green process innovation.

6. IMPLICATIONS, LIMITATIONS AND SUGGESTIONS

The results of this study cannot yet be generalized because there are several limitations, including; does not yet involve intellectual capital aspects in the Company and is still in the manufacturing company area. The suggestions in this research are, Adding research objects by comparing with service companies, Considering intellectual capital aspects, Adding data for more than 5 years so that it can be generalized, and Looking at samples that actually apply environmental management accounting followed by good environmental performance too.

The results of this research strengthen the literature on the use of environmental management accounting variables in implementing green innovation as a means of improving company performance. Practically, it can be used as a reference for decision makers, especially management accountants who will consider environmental aspects in managing organizational operations.

ACKNOWLEDGMENTS

Thank you to Universitas Sriwijaya for supporting fund this research activity

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