

GREEN PRODUCT INNOVATION AND FIRM PERFORMANCE: EVIDENCE FROM CONSUMER GOODS INDUSTRY

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Article	Abstract
<p>Article History</p> <p>Received : 28/11/2021 Reviewed : 12/09/2022 Accepted : 12/09/2022 Published : 20/03/2023</p> <hr/> <p>Volume : 24 No : 1 Month : March Year : 2023 Page : 190-197</p>	<p>The purpose of this study is to examine the effects of green product innovation on firm performance. This is a quantitative research method based on simple linear regression analysis. Secondary data sources include the financial statements of consumer goods industry companies that were publicly traded on the Indonesia Stock Exchange between 2019 and 2020. The regression analysis shows that green product innovation has an effect on firm performance. Based on the analysis, firms in Indonesia's consumer goods industry have met the success factors for developing green product innovations. Although the market believes that developing green products is an expensive endeavor.</p> <p><i>Keyword: consumer goods industry, green product innovation, firm performance.</i></p>

1. INTRODUCTION

Industrial activity that results in the production of goods benefits the economy. On the other hand, industrial activities have a negative impact on the environment. Waste is an unavoidable byproduct of both large and small businesses. Greenpeace (2018) estimates that the Fast Moving Consumer Goods (FMCG) industry generated 141 million tons of plastic waste following sales in 2015, with only 14% of that waste being recyclable. The growing interest is in reducing post-sale plastic waste in order to support the government's and global community's goal of achieving a sustainable

economy. Green innovation is one of the innovations on which one can rely as part of knowledge management and management strategies in order to compete in the market; green innovation is one of the innovations on which one can rely (Darroch 2005; Soewarno et al, 2019).

According to Chen et al (2006), green innovation is a method of product development that includes technological advancements that result in energy savings, pollution prevention, waste recycling, environmentally friendly product design, and corporate environmental management. Green innovation is concerned with the development of environmentally friendly products and processes. Green product innovation increases resource efficiency, reduces raw material costs, and has the potential to generate additional revenue by identifying new ways to convert waste into salable products (Porter and Van der Linde 1995). This means that, under the concept of green product innovation, businesses are required to develop products that are reusable, recyclable, and efficient in their use of environmentally harmful materials (Mariyamah and Handayani, 2019). Other benefits associated with green product innovation are the cost savings to consumers and businesses (Pujari, 2006).

The purpose of this study was to examine the effect of green product innovations on firm performance. The FMCG sector was chosen as the subject of this research because of its role as a source of production and after-sales waste. In addition, the FMCG sector is one sector where company performance can be improved through industry readiness to develop products that meet market demands.

2. LITERATURE REVIEW

Numerous factors come into play when developing a green product. Something green, such as green adaptive capability, green intellectual capital, green dynamic capabilities, and green transformational leadership, all impact the process of developing green product innovation (Chen and Chang, 2013; Chang, 2016). Additionally, organizational commitment to environmental protection is critical (Ar, 2012; Chang, 2016).

Additionally, previous research has examined the effect of green product innovation on firm performance. Lin et al (2013) discovered positive and significant results in their research on the effect of green product innovation on the performance of

motorcycle companies in Vietnam. Ar (2012) research also reveals positive and significant findings, concluding that a strategic and integrated approach to green product innovation is required. Agustia et al (2020), Chan et al (2016), Xie et al (2019), Cai and Li (2018), and Singh et al (2016). As a result, the following hypothesis is advanced in this study:

H1: Green product innovation has an effect on a firm performance.

3. RESEARCH METHOD

This study examines FMCG firms that are listed on the Indonesian Stock Exchange (IDX) in the period 2019-2020. Secondary data was used in this study, specifically statements of financial position, profit and loss statements, statement of changes in equity, and statements of cash flows that were published on www.idx.co.id. We collect data through non-probability sampling techniques or by selecting the entire population as a source of data. A total of 51 firms were chosen, with a total observation period of 102 years.

In this study, the independent variable is the firm's performance as measured by ROA. ROA is a ratio that indicates a business's efficiency in managing its assets in order to achieve a specified level of profit (Kieso et al 2017). ROA can be calculated in the following direction:

$$ROA = \frac{Net\ income}{Total\ assets}$$

Green product innovation is used as a mediating variable. Green product innovation is a term that refers to the firm's new product innovation that is environmentally friendly and does not have a negative impact on the environment (Peters, 2005). To develop new products, a firm's efforts to develop green products must take into account the cash availability capability of the firm. Green product innovation can be formulated in the following direction, according to Peters (2005):

$$GPI = \frac{Operating\ cash\ flow_{it} + Operating\ cash\ flow_{it-1}}{Sales_{it-1}}$$

In this study we use simple regression analysis which is modeled as follows:

$$FP = \alpha + \beta_1 GPI + \varepsilon$$

4. RESULT AND DISCUSSIONS

Table 1 summarizes the descriptive statistics for variables firm performance (FP), and green product innovation (GPI). FP has a mean of 0.1346 and a standard deviation of 0.7906; this indicates that the ROA of the sample firm used as a proxy has a greater degree of variation. The GPI has a mean of 0.0189 and a standard deviation of 0.1823, indicating that the sample firms' GPI has a higher level of variability in their operating cash flows.

Table 1
Descriptive Statistics

	Mean	Std. Dev.
FP	.1346	.7906
GPI	.0189	.1823

Source: Data processed, 2020.

According to the F-test results (Table 2), the simple linear regression demonstrates that the independent variable has a significant effect on the dependent variable. The calculated F-value is 19.135 with a 0.000 level of significance. The calculation indicates that the significance level is less than the threshold, indicating that the independent variables GPI have a significant effect on FP.

Table 2
Simple Linear Regression

Model	F	Sig.
Regression	19.135	0.000

Source: Data processed, 2020.

The results of hypothesis testing indicate that green product innovation has an effect on firm performance. In order for the proposed hypothesis to be accepted. In addition, the results of the test are in line with the research conducted by Chan et al. (2015), Agustia et al. (2020), Lin et al (2013), Ar (2012), Xie et al (2019) and Ma et al (2018).

Lee and Kim (2011) outlined two critical components of green product innovation: collaboration and alignment with project teams, and effective

communication with suppliers. Coordination among team members is critical to meeting market and regulatory requirements for green new products, as these products require multifunctional development. Effective communication between the final manufacturer and key suppliers is critical for the success of green product innovation. Lee and Kim (2011) findings also align with Dangelico (2015) and Chang (2016) conceptualizations of the success factor for green product innovation. This study discovered that critical components of the fast moving consumer goods sector may still be met. As mentioned previously, the FMCG sector contributes significantly to plastic waste on land and sea due to the widespread use, accessibility, and affordability of its products. Given market demand, the FMCG sector's ability to develop environmentally friendly green product innovations is extremely challenging.

When we consider the consumer side, it is difficult for green product innovators to gain market acceptance during the early stages of market launch, due to consumers' limited professional abilities and lifestyles, among other factors (Ma et al, 2018; Tandon and Sethi, 2017). Consumers believe that green products are prohibitively expensive and perform inadequately, rendering them unpurchaseable. Overemphasizing a product's green performance at the expense of consumer preferences is one of the reasons that many green products do not perform as well as the manufacturer anticipates. To successfully capture a niche market, green product innovators must prioritize non-green values such as convenience, identity and status symbols, health, and safety. However, the success of a firm's green product innovation is contingent upon its understanding of market demand and its commitment to sustainable business practices.

Green product innovation enables businesses to create new ventures, capitalize on green opportunities, and achieve market leadership positions (Chang 2016; Soewarno et al, 2019). However, not all markets are equally receptive to green product innovation. To sustain economic growth, firms in developed countries place a premium on mitigating climate change and significant environmental externalities associated with their business processes (Singh et al, 2017; Tolliver et al, 2021). Environmental sensitivity does not develop spontaneously as a result of environmental activists' protests, but is facilitated by a competitive market environment favorable to investor attraction and sufficient knowledge among market participants. Technical and

fundamental understanding of business performance is no longer sufficient; innovation must be initiated by investors or shareholders who understand the green living concept.

4. CONCLUSION

Industrial activities that generate goods benefit the economy but harm the environment. As a result of sustainable development, which requires innovation, a sustainable economy is expected. Green innovation is one type of innovation that can be used to help businesses compete in the market as part of their knowledge management and management strategies. Green product innovation is the process of creating products that contribute to energy conservation, pollution prevention, waste recycling, environmentally friendly product design, and corporate environmental management. Green product innovation improves resource efficiency, lowers raw material costs, and has the potential to generate additional revenue by identifying new ways to recycle waste. The purpose of this study was to examine the effect of green product innovations on firm performance.

The hypothesis testing results indicate that green product innovation has an effect on firm performance. This demonstrates that businesses are beginning to recognize that their activities have resulted in environmental degradation. Innovation in the development of environmentally friendly products accelerates with the aid of technology. Companies in the consumer goods industry in Indonesia have met the success criteria for developing green product innovations. Although the market, particularly consumers, views green product innovation as an expensive endeavor. Having green product innovations, on the other hand, can become a competitive advantage for a business.

Theoretically, this study contributes to the body of knowledge in the field of green product innovation. Green product innovation connects accounting practices, environmental concerns, and corporate strategy according to this study's findings. In practice, management can use this study to implement or develop green product innovation as a means of increasing the firm's competitive advantage. Businesses must strengthen their competitive advantage in order to increase sales and maintain a positive social image. Green products can help businesses compete more effectively while also benefiting the environment. Businesses may be concerned about environmental issues,

as they contribute to the generation of industrial waste. However, businesses must consider the challenges associated with implementing green products in addition to the benefits. Governments and regulators must investigate specific incentives or provisions for businesses that engage in green innovation, to ensure that businesses receive ongoing support and are motivated to produce environmentally friendly products.

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