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## DOES GREEN PRODUCT INNOVATION BOST FIRM PERFORMANCE? MEDIATION MODEL OF COMPETITIVE ADVANTAGE

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### Abstract:

Directly test Green Product Innovation (GPI) of Firm Performance (FP) and indirect testing through Competitive Advantage (CA). Companies that are the population were all manufacturing companies listed on the IDX 2019-2021. Data were analyzed using PLS. GPI have no affects FP, GPI have no affects CA, CA have no affects FP, and CA does not mediate GPI and FP.

### Keywords:

Green Product Innovation, Competitive Advantage, Firm Performance

## Introduction

The increase in future uncertainty results in concerns about the environment that will affect the company's performance. Therefore, it is important for companies to consistently pay attention to the environment. Companies with a good level of concern for the environment will be a good signal to stakeholders. Consumers will prefer companies that in their operational processes care

about the environment. Investors will also catch good signals from companies that are environmentally responsible.

Environmental problems are also growing to affect the innovations made by the company. Companies can carry out various innovations related to the environment such as green product innovation. Companies can improve performance while ensuring the welfare of society and the environment. This practice is expected to encourage the achievement of long-term competitive advantage.

The increasing demand for natural resources will lead to a worsening of the condition of the natural environment and global climate change. The company cannot stand still by maintaining the previous techniques and methods that cannot solve these problems. Companies need to realize the importance of green product innovation in enhancing sustainable development (Qiu et al., 2020)

Companies that implement green product innovation will get higher profits than other companies. Customer demand for environmentally friendly products will increase which will result in the company achieving a CA. The application of GPI will also reduce systematic risk and increase firm value (Khan et al., 2021).

The key to business success is to have a sustainable competitive advantage. The company has a better performance than its competitors and does not quickly experience a decline in performance. The company in this condition will get a relatively higher profit than its competitors. The costs incurred to gain a competitive advantage will be covered by the magnitude of the profits achieved (Knudsen et al., 2021).

Companies can achieve competitive advantage by several factors. One of the factors that can encourage companies to achieve competitive advantage is the ability of company resources. If the company's resources or capabilities are difficult for competitors to imitate, then the competitive advantage will be sustainable in the long term (Knudsen et al., 2021).

Company performance is an analysis in observing the future prospects of the company which include the realization of company goals and increasing profits or wealth, especially shareholders and other stakeholders (Lee, 2022). FP reflects how good the company's prospects are for investors. The company's performance is related to the value of the company in the capital market. Investors not only see the financial information presented, but also see the value of the company's shares. The stock value can be a signal about the company's prospects in the future regarding the FP (Dwiastuti, 2022).

Research on green product innovation has not been widely carried out by companies in Indonesia. This study wants to test whether green product innovation affects the company's performance either directly or through competitive advantage. The objective is based on whether green product innovation will create value for the company that can be the basis for achieving the company's competitive advantage compared to other companies and will ultimately affect the company's performance improvement.

Several previous studies obtained contradictory research results from these theories, for example the research of (Purwanto & Mela, 2021) and (Persada & Kusumawardhani, 2021) obtained the results that competitive advantage had no effect on FP. The difference in the results of previous studies is also one of the motivations for conducting this research. This study wants to test whether if you include a green product innovation variable, will it affect the company's performance either directly or indirectly through competitive advantage.

## Literature Review

### *Effect of Green Product Innovation on Competitive Advantage*

Green Product Innovation has a significant effect on competitive advantage. The more innovation towards green products, the higher the competitive advantage of the company's products (Pemayun & Suprapti, 2016). According to (Al-Abdallah & Al-Salim, 2021) and (Qiu et al., 2020) green product innovation has a significant effect on competitive advantage.

H1: Green Product Innovation has a significant effect on Competitive Advantage.

### *The Effect of Green Program Innovation on Company Performance*

Green product innovation affects the company's performance. Green product innovation encourages increased product differentiation which will lead to increased company performance (Xie et al., 2019). GPI has a positive effect on FP (Hang et al., 2022).

H2: Green Product Innovation has a significant effect on Company Performance.

### *The Effect of Competitive Advantage on Company Performance*

CA has a significant effect on FP (Kurniawan & Raharjo, 2021). According to (Ofori & Appiah-Nimo, 2022) competitive advantage is the key to the survival of the company. This survival will be accompanied by good company performance. CA has a significant effect on FP.

H3: Competitive Advantage has a significant effect on Company Performance.

### *The Effect of Green Program Innovation on Company Performance through Competitive Advantage*

CA significantly mediates between GPI and FP. Companies that encourage green product innovation will have an impact on the company's core business and create value for customers in a competitive market (Hang et al., 2022).

H4: Competitive Advantage significantly mediates between Green Product Innovation and Firm Performance

## Method

The data used is in the form of financial and non-financial data from the company's annual report. The company's Annual Report can be accessed on the official website of the IDX. The population of this study is the consumer goods industrial manufacturing companies listed on the IDX in 2019 as many as 51 companies. The population selection is because the variable used in this study is green product innovation. Consumer goods industrial manufacturing companies are suitable for use in this study. The sample was selected using criteria of providing the information needed in the research during 2019 and experiencing profits during the year of observation. 31 companies selected as samples.

The independent variable in this study is GPI. Green product innovation in this study is measured by a value of 1 if it is carried out by the company and 0 if it is not. The items that become measurements in this variable have been used by the research of (Chiou et al., 2011). The intervening variable in this study is CA. CA is measured using the cost of sales formula by comparing COGS and net sales. This measurement has been used by research by (Romadhani et al., 2022).

$$\text{Cost Of Sales} = \text{COGS/Net Sales}$$

FP is also the independent variable in this study. FP in this study was measured using ROA. ROA is calculated by the formula (Brigham & Houston, 2010):

$$\text{ROA} = (\text{Net Profit})/(\text{Total Assets})$$

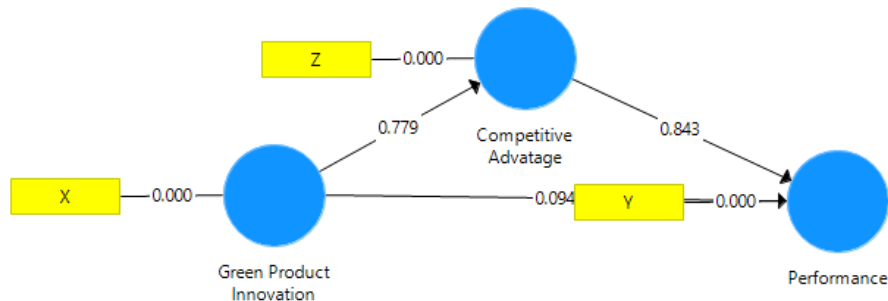
## Result and Discussion

**Table 3. Direct Test Results**

Keterangan	Original Sampel	Sampel Mean	Standard Deviasi	T Statistics	P Values
<i>Green Product Innovation -&gt; Competitive Advantage</i>	-0,186	-0,126	0,239	0,779	0,436
<i>Green Product Innovation -&gt; Performance</i>	-0,012	-0,038	0,127	0,094	0,925
<i>Competitive Advantage -&gt; Performance</i>	-0,134	-0,177	0,159	0,843	0,400

**Table 4. Indirect Test Result**

Keterangan	Original Sampel	Sampel Mean	Standard Deviasi	T Statistics	P Values
<i>Green Product Innovation -&gt; Competitive Advantage -&gt; Performance</i>	0,025	0,016	0,058	0,432	0,666



**Picture 1. Hypothesis Testing Result**

The test results show that the effect of GPI on CA is not significant, namely the P Value of 0.436. The value is above 0.05 so that in the first test it was found that GPI has no significant effect on CA. The second test in this research is green product innovation on company performance. The results obtained are the P Value of 0.925 which means that there is no significant effect of GPI on FP.

The test results show that the P Value is 0.400, which means that CA has no significant effect on FP. The last hypothesis testing is an indirect test between GPI and FP through CA. The test shows a P Value of 0.666. The results above are 0.05 which means that CA cannot mediate the relationship between GPI and FP.

The first result of this research is that GPI has no significant effect on CA. The results of this study are in line with research (Chen & Chang, 2013) research which states that companies do not necessarily get a competitive advantage through green product innovation. Several consumer goods manufacturing companies have not implemented green product innovations. There are almost 40% of companies that make up the population in this study have not implemented green product innovation. The level of application of green product innovation between companies also varies which causes the impact on competitive advantage to also differ.

The results of these two studies are that GPI has no significant effect on FP. The results of this study are in line with research (Tjhin, 2018) and (Tay & Sundiman, 2021), namely GPI has no significant effect on FP. The influence of GPI by paying attention to the environment can have an impact on the FP in the future. The impact is sometimes not immediately felt in the short term.

### Conclusions

GPI had no significant effect on CA and FP, CA had no significant effect on FP, and CA could not mediate the effect of GPI on FP. The results of the study can be caused by the lack of maximum green product innovation carried out by the company. The limitation of this research is the limited number of companies that have innovated green products. Future research can include more samples and a more recent observation period in which the possibility of implementing green product innovation for companies in Indonesia can be more optimal.

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