

The Influence of Green Supply Chain Management and Green Innovation on Competitive Advantage

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Abstrak

Penelitian ini bertujuan untuk menguji dan menganalisis pengaruh *green supply chain management* dan *green innovation* terhadap *competitive advantage* pada perusahaan sektor *Consumer Non-Cyclicals* yang terdaftar di Bursa Efek Indonesia periode 2021–2024. Penelitian ini menggunakan pendekatan kuantitatif dengan teknik purposive sampling, menghasilkan 353 data observasi setelah proses outlier. Hasil regresi linier berganda menunjukkan bahwa *green supply chain management* berpengaruh terhadap *competitive advantage*, sedangkan *green innovation* tidak berpengaruh terhadap *competitive advantage*.

Kata kunci: *Green Supply Chain Management, Green innovation, Competitive advantage*

Abstract

This research aims to examine and analyze the influence of green supply chain management and green innovation on competitive advantage in Consumer Non-Cyclicals companies listed on the Indonesia Stock Exchange for the 2021–2024 period. This study used a quantitative approach with purposive sampling, resulting in 353 observational data after outlier processing. Multiple linear regression results indicate that green supply chain management influences competitive advantage, while green innovation does not.

Keywords: *Green supply chain management, Green innovation, Competitive advantage.*

A. INTRODUCTION

Competitive advantage is the key for companies to maintain their existence amid global market pressures. Competitive advantage comes from a strategy that utilizes the company's resources by improving the life of the environment (Millenia & Murwaningsari (2023)). The case in Indonesia's palm oil industry has received attention and criticism from the global community. Indonesia's palm oil commodity is blamed for being the main cause of deforestation, ecosystem damage, and high carbon emissions. In Indonesia palm products are considered not to meet sustainability and environmental ethics standards, so several countries impose import restrictions. Palm oil export companies face major challenges due to conditions that threaten national export competitiveness (Kontan, 2023).

Based on the case that occurred, Indonesian palm oil production will lose its reputation and position in the global market if environmental issues are not addressed. A factor that can face problems related to competitive advantage is the implementation of green supply chain management which is a cursory strategy. Previous research has shown that green supply chain management has an effect on competitive advantage (Arijanto, 2022). The findings are in contrast to research that found that Zahara et al. (2024) green supply chain management has no effect on competitive advantage because the role of distributor intermediaries and supplier selection are not considered in business operations.

Another factor that can face problems related to competitive advantage is green innovation. Green innovation which includes products, processes, systems, services, managerial innovation can reduce the use of natural resources and reduce environmental impact. Companies that support Atriksa & Murwaningsari, (2022) green innovation can achieve green performance and help increase competitive advantage. Laurencia & Alhazami, (2023) stating that green innovation has an effect on competitive advantage. Meanwhile, Atriksa & Murwaningsari, (2022) it states that green innovation has no effect on competitive advantage.

Based on the formulation of the problem, the purpose of this research is to test and analyze the influence of green supply chain management and green innovation on competitive advantage.

B. THEORETICAL STUDY AND HYPOTHESIS DEVELOPMENT

Natural Resource-Based View Theory

Natural Resource-Based View is a management strategy theory introduced by Hart (1995). Natural Resource-Based View aims to integrate emptiness in the Resource-Based View through three cadre concepts that understand the limits of the natural environment and corporate strategy. Natural Resource-Based View identifies three environmental strategies to achieve competitive advantage, namely, pollution prevention, product stewardship, and sustainable development (Almada et al., 2022).

Competitive Advantage

Competitive advantage is an advantage over competitors by providing greater consumer value, either at a lower price or by providing greater profits and services at a higher price (Alam & Tui, 2022). Competitive advantage is obtained when a company has better goods or services than its competitors (Raharja & Yamit, 2022). These advantages allow the company to maintain a strategic position in the market, increase customer loyalty, and achieve higher profitability.

Green Supply Chain Management

Green supply chain management is an approach used to integrate various companies more efficiently, including distributors, retailers, suppliers, manufacturers, and consumers (Alam & Tui, 2022). Green supply chain management allows companies to meet regulatory demands and market expectations that are increasingly environmentally conscious while creating added value for consumers who increasingly emphasize sustainability aspects. The

implementation of green supply chain management is very necessary in companies because it can increase competitive advantage in terms of company performance (Nuraini et al., 2021).

H1 = Green supply chain management affects competitive advantage

Green Innovation

Green innovation is a company's strategy to gain long-term competitive advantage. In addition, green innovation can increase market share, attract consumer interest and enhance the company's competitiveness (Auliana & Alhazmi, 2023). Companies that implement green innovation can adapt to regulations, respond to green consumers, and find partnership opportunities. Green innovation also improves resource efficiency, reduces long-term costs, and benefits sustainability and financial performance.

H2 = Green innovation affects competitive advantage.

C. METHOD

This study uses a quantitative approach to analyze data in the form of numbers. The population in this study is *Cunsomer Non Cycliclas* sector companies listed on the Indonesia Stock Exchange in 2021-2024. The total population is 129 companies. Samples were obtained from annual reports and financial statements with a total of 516. The number of observations using the purposive sampling method for 4 years of observation was obtained 427 sample data and 74 outlier data so that the final data was obtained as many as 353 data.

Variable Measurement

Table 1.1 Variable Measurement

Variabel	Indicator	References
<i>Green Supply Chain Management (X1)</i>	$GSCM = \frac{\text{Total Items Disclosed}}{\text{Total indicators}}$	(Novitasari & Agustia, 2022)
<i>Green Innovation (X2)</i>	$GI = \frac{\text{Total Items Disclosed}}{\text{Total indicators}}$	(Agustia et al., 2019)
<i>Competitive Advantage (Y)</i>	$ATO = \frac{\text{Net Sales}}{\text{Total Aset}}$	(Ullah et al., 2020)

D. RESULTS AND DISCUSSIONS

1. Statistics Descriptive

The purpose of descriptive analysis is to explain the amount of data collected. This is achieved by calculating the average, median and spread of the data, calculating the mean, standard deviation and percentage.

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
GSCM	427	0.00	1.00	0.6272	0.21496
GI	427	0.00	1.00	0.5948	0.36227
CA	427	0,00	24,51	1.2500	1,52607
Valid N (listwise)	427				

Source: Data processed, 2025

The competitive advantage variable has a minimum value of 0.00 and has an average value of 1.2500 with a standard deviation of 1.52607. This means that the

mean value is smaller than the standard value of the deviation, so the distribution of the data is heterogeneous or varied.

The green supply chain management variable has a minimum value of 0.00 and has an average of 0.6272 with a standard deviation of 0.21496. This means that the average value is greater than the standard value of deviation, so the distribution of data is homogeneous or unvaried.

The green innovation variable has a minimum value of 0.00 on and has a maximum value of 1.00 on. The green innovation variable has an average value of 0.5948 with a standard deviation of 0.36227. This means that the average value is greater than the standard value of deviation, so the distribution of data is homogeneous or unvaried.

2. Classic Assumption Test

a. Normality Test

One-Sample Kolmogorov-Smirnov Test

		Unstandardized Residual
N		353
Normal Parameters ^{a,b}	Mean	0.0000000
	Hours of deviation	0.25501089
Most Extreme Differences	Absolute	0.029
	Positive	0.029
	Negative	-0.029
Test Statistic		0.029
Asymp. Sig. (2-tailed)		0.200c,d

Source: Data processed, 2025

From the table above asymp.sig. (2-tailed) indicates a value of $0.200 > 0.05$. i.e. greater than 0.05. So it can be concluded that the residual value or research data is distributed normally.

b. Multicollinearity Test

Coefficients^a

Model		Collinearity Statistics	
		Tolerance	VIF
1	(Constant)		
	GSCM	0.863	1.159
	GI	0.863	1.159

Source: Data processed, 2025

As seen from the table above, the tolerance value is greater than 0.10 and the VIF value of all independent variables is below 10. Thus, it can be concluded that there is no problem of multicollinearity between independent variables.

c. Heteroscedasticity Test

Coefficients ^a			
Model		t	Sig.
1	(Constant)	8.479	0.000
	GSCM	-1.684	0.093
	GI	-0.463	0.643

Source: Data processed, 2025

Based on the results of the glycer test above, the results show that the green supply chain management variable has a significant value of $0.093 > 0.05$. The Green Innovation variable has a significant value of $0.0643 > 0.05$ which means that heteroscedasticity does not occur.

d. Autocorrelation Test

Model Summary ^b	
Model	Durbin-Watson
1	1.852

Source: Data processed, 2025

The DW value obtained was 1.852 based on the autocorrelation test with the previously mentioned Durbin Watson test. The number of independent variables was

two ($k=2$) and the number of data points was 353 (n). The significance level is 5%. The calculation results show a dL of 1.7483, a dU of 1.7887, and a $4 - dU$ of 2.2113. Based on the dU equation $< DW < 4-dU$, which is $1.7887 < 1.852 < 2.2113$, it can be concluded that this regression model does not occur autocorrelation.

3. Multiple Linear Regression Test

Model		Coefficients ^a				
		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.021	0.061		16.730	0.000
	GSCM	0.196	0.095	0.118	2.058	0.040
	GI	-0.036	0.049	-0.041	-0.720	0.472

Source: Data processed, 2025

Based on the table above, the regression equations obtained are as follows:

$$CA = 1.021 + 0.196GSCM - 0.036GI + e$$

Based on the regression equation above, the following definitions are obtained:

1. The constant of the regression equation above is 1.021, which means that if the two independent variables, namely green supply chain management and green innovation, are valued at 0, then the company's value drops by 1.021.
2. The green supply chain management (X_1) variable has a coefficient value of 0.196, this shows that every one year of increase in the green supply chain management variable and other variables is fixed, it will be followed by an increase in competitive advantage of 0.196.
3. The green innovation variable (X_2) has a coefficient value of -0.036, this shows that every one year of increase in the green innovation variable and other variables is fixed, it will be followed by a decrease in competitive advantage

of -0.036.

4. Test F

ANOVA^a

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1.148	2	0.574	6.930	0.001 ^b
	Residual	28.984	350	0.083		
	Total	30.131	352			

Source: Data processed, 2025

Based on the table above, it shows that the value of the test F is 6.930 and the significance is $0.001 < 0.05$, which means that it shows that the significant value is less than 0.05, so it can be concluded that all independent variables affect the dependent variables simultaneously and significantly. So it is concluded that this regression model is feasible to use.

5. R2 Determination Test

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.370a	0.137	0.132	00.14388

Source: Data processed, 2025

Based on the test results in the table above, it is known that the value of the Adjusted R Square determination coefficient is 0.132, this means that the influence of the variable simultaneously on the dependents is 13.2%, the remaining 86.8% percent is influenced by other variables that are not studied in this study.

6. Partial Test (t-test)

Coefficients^a

Model		t	Sig.
1	(Constant)	16.730	0.000
	GSCM	2.058	0.040
	GI	-0.720	0.472

Source: Data processed, 2025

Based on the table above, the influence of the hypothesis can be seen as follows:

The *green supply chain management* variable shows a t-calculation result of 2.058 with a significant value of 0.040 which means $<$ of 0.05 so that the audit committee does not have a significant effect on the company's value, with the **H1 conclusion accepted**. The results of the study can be interpreted that the more effective the implementation of *green supply chain management*, the more competitive advantage the company can be. These results support research Alam & Tui, (2022) that states that *green supply chain management* has a positive effect on *competitive advantage*. This study shows that the higher the level of implementation of *green supply chain management* in a company, the company will be superior to other companies.

The *green innovation variable* shows a t-calculated result of -0.720 with a significant value of 0.472 which means $>$ of 0.05 so that the audit quality has a significant effect on the company's value, with the **H2 conclusion rejected**. The test results state that *green innovation* has a negative effect on *competitive advantage*. Atriksa & Murwaningsari (2022) stated that the development of *green innovation* is considered to only increase the company's operational costs. Investing in environmentally friendly products and processes often entails high start-up costs and operational costs that if not managed properly will reduce *the company's competitive advantage*.

E. CONCLUSIONS

The conclusions of the research on the influence of green supply chain management and green innovation on competitive advantage in non-cyclical consumer sector companies in 2021-2024 are as follows:

1. Green supply chain management affects competitive advantage. The application of green supply chain management in the supply chain is able to increase the company's efficiency, reputation, and strategic value in the face of market competition.
2. Green innovation has no effect on competitive advantage. This indicates that the company's green innovation is not strong enough to provide competitive added value, either because it has not been optimally implemented, is not known by consumers, or has not created differentiation that has a real impact on the company's competitive performance.

F. SUGGESTIONS

Furthermore, it is recommended that the data is not only sourced from the annual report, but also equipped with primary data such as interviews, surveys, or internal company documents so that information about green supply chain management, green innovation, and competitive advantage is more comprehensive.

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