

THE IMPACT OF GREEN INNOVATION AND INTELLECTUAL CAPITAL ON FINANCIAL PERFORMANCE

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Abstrak

Penelitian ini bertujuan untuk menguji pengaruh green innovation dan intellectual capital terhadap kinerja keuangan. Penelitian ini dilakukan pada perusahaan sektor consumer non-cyclicals yang menerbitkan annual report, laporan keberlanjutan dan laporan keuangan di Bursa Efek Indonesia (BEI) pada periode tahun 2021-2024. Penelitian ini menggunakan pendekatan kuantitatif dimana data diolah dengan SPSS 25. Penentuan sampel menggunakan metode purposive sampling. Dalam penelitian ini terdapat 63 sampel perusahaan. Penelitian ini menggunakan analisis regresi linier berganda. Hasil penelitian menunjukkan bahwa green innovation berpengaruh positif terhadap kinerja keuangan, intellectual capital berpengaruh negatif terhadap kinerja keuangan.

Kata Kunci: green innovation, intellectual capital, kinerja keuangan

Abstrak

This study aims to examine the effects of green innovation and intellectual capital on financial performance. The study was conducted on companies in the non-cyclical consumer sector that published annual reports, sustainability reports, and financial statements on the Indonesia Stock Exchange (IDX) during the 2021–2024 period. This study employs a quantitative approach, with data analyzed using SPSS 25. The sample was selected using purposive sampling. The study included 63 companies. Multiple linear regression analysis was used. The results indicate that green innovation has a positive effect on financial performance, while intellectual capital has a negative effect on financial performance.

Keywords: green innovation, intellectual capital, financial performance

A. INTRODUCTION

Corporate financial performance serves as an important indicator for investors when assessing potential investment decisions (Polii et al., 2023). It demonstrates how effectively a company utilizes its resources to generate earnings and sustain its business operations over the long term (Mursidah et al., 2023). Strong financial performance boosts the confidence of investors and stakeholders, whereas a decline in performance may reflect a weakening of the company's efficiency and value creation; thus, financial performance is crucial to a company's value, competitiveness, and sustainability (Agusalim et al., 2025).

The non-cyclical consumer sector continues to face performance pressures, as evidenced by an 11.29% year-to-date decline in returns, as well as a 30.95% drop in UNVR shares and a 23.26% decline in HMSP shares (Kontan, 2021). This situation is also reflected in PT Unilever Indonesia Tbk, which experienced a 10.1% decline in sales and a 28.15% drop in net income for the January-September 2024 period (Kontan, 2024). These conditions indicate that companies need to improve their financial performance not only by optimizing assets but also by implementing green innovation and leveraging intellectual capital as a source of competitive advantage.

Green innovation is a new approach to the implementation of practices, systems, and production processes aimed at minimizing environmental damage (Wahyuni et al., 2024). The successful adoption of transformative green innovation relies on effective internal governance mechanisms that facilitate the consistent and efficient implementation of sustainability initiatives (Hamamah & Juanda, 2025). The implementation of green innovation has a significant impact on competitive advantage while supporting corporate sustainability (Ramadhan et al., 2023).

In addition to green innovation, companies need to optimize their internal resources to enhance competitive advantage and financial performance. Companies need to optimize intellectual capital as an intangible asset to create a competitive advantage and improve financial performance (Mahanani et al., 2023). Intellectual capital is an intangible asset that

plays a crucial role in creating added value and enhancing a company's competitiveness amid advancements in science and technology. The utilization and significant contribution of intellectual capital can create value and improve the performance of specific sectors, thereby potentially enhancing a company's financial condition (Kurniawati et al., 2020).

Theoretical Study and Hypothesis Development

Resource Based View Theory

According to Wernerfelt (1984), the Resource-Based View (RBV) theory views a company as a collection of tangible and intangible resources that can be used to create competitive advantage and improve corporate performance. The RBV theory regards green innovation as a strategic resource that can create competitive advantage and enhance corporate performance in the long term (Widoretno et al., 2025). Furthermore, effective management of intellectual capital can strengthen competitive advantage and support improvements in a company's financial performance (Ichsan et al., 2025).

Financial Performance

Financial performance is a measure that indicates how effectively a company utilizes its assets and business model to generate revenue. Financial performance encompasses various aspects such as comprehensive income, asset utilization, market position, and other factors that influence the organization (Novandalina et al., 2024). Financial performance information serves as the basis for management to evaluate the achievement of targets and assess the company's ability to manage and utilize its resources (Rahmaningtyas & Aryani, 2022).

Green Innovation

Green innovation encompasses the development and adoption of environmentally oriented product and process innovations, including technologies designed to minimize energy, water, and waste consumption, the use of eco-friendly materials and packaging, as well as the incorporation of recyclable resources (Agustia et al., 2019). Such implementation can also serve as a strategy for companies to support sustainability and improve financial performance (Rustiarini et al., 2022).

H1: Green innovation has a positive effect on financial performance

Intellectual Capital

Intellectual capital refers to the collection of intangible assets within a company, including knowledge, expertise, experience, innovation capabilities, and organizational processes that contribute to value creation and help establish a sustainable competitive advantage (Molthar & Indarti, 2021). Intellectual capital can be regarded as a key organizational resource that supports the development of competitive advantages while contributing to enhanced corporate performance and value creation (Rismayanti et al., 2023).

H2: Intellectual capital has a positive effect on financial performance

B. METHOD

This study adopted a quantitative research design to examine the relationship among the variables under investigation. The research population comprised 133 Consumer Non-Cyclicals companies listed on the Indonesia Stock Exchange (IDX). Based on predetermined sampling criteria, 83 companies were selected through purposive sampling, resulting in a total of 332 observations over the 2021–2024 period. The study focused on Green Innovation, Intellectual Capital, and Financial Performance as its research variables. The analysis utilized secondary information obtained from companies' annual reports and sustainability reports. The required data were collected through the IDX and the respective companies' official websites. To examine the relationships between the independent and dependent variables, multiple linear regression analysis was performed using IBM SPSS Statistics 25.

Table 1. Variable Measurement

Variable	Formula	Scale
Green Innovation (X1)	$GI = \frac{\text{Total disclosed items}}{\text{Total indicators}}$ (Novitasari & Agustia, 2022)	Ratio
Intellectual Capital (X2)	$VAIC = VACA + VAHU + STVA$ (Gani, 2022)	Ratio
Financial Performance (Y)	$\text{Tobins's Q} = \frac{\text{Market Value of Equity} + \text{Total Debt}}{\text{Total Asset}}$ (Rahmadini & Hartanti, 2025)	Ratio

C. RESULTS AND DISCUSSIONS

Descriptive Statistics

Table 2. Descriptive Statistics

Descriptive Statistics					
	N	Minimum	Maximum	Mean	Std. Deviation
GI (X1)	230	0,00	1,00	0,7272	0,21482
IC (X2)	230	2,30	87,25	29,0952	16,87545
KK (Y)	230	0,44	1,88	1,0339	0,33214
Valid N (listwise)	230				

Source: Data processed using SPSS 25

Normality Test

Table 3. Normality Test

One-Sample Kolmogorov-Smirnov Test			
			Unstandardized Residual
N			230
Normal Parameters ^{a,b}	Mean		0,0000000
	Std. Deviation		0,31988617
Most Extreme Differences	Absolute		0,071
	Positive		0,071
	Negative		-0,046
Test Statistic			0,071
Asymp. Sig. (2-tailed)			0,007 ^c
Monte Carlo Sig. (2-tailed)	Sig.		0,191 ^d
	99%	Lower	0,180
	Confidence	Bound	
	Interval	Upper	0,201
		Bound	

Source: Data processed using SPSS 25

Based on Table 3 above, the Kolmogorov Smirnov and Monte Carlo Sig. (2-tailed) values are $0,191 > 0,05$. Based on these findings, the residual values are considered to be normally distributed, indicating that the normality requirement for this research has been fulfilled.

Multicollinearity Test

Table 4. Multicollinearity Test

Coefficients ^a		
Model	Collinearity Statistics	
	Tolerance	VIF
1	(Constant)	
	Green Innovation (X1)	0,992
	Intellectual Capital (X2)	0,992

Source: Data processed using SPSS 25

The tolerance value for all independent variables is 0,992, while the VIF value is 1,008. Since the tolerance value is greater than 0,10 and the VIF is less than 10, it can be concluded that the regression model does not suffer from multicollinearity.

Heteroscedasticity Test

Table 5. Heteroscedasticity Test

Coefficients ^a		
Model	t	Sig.
1	(Constant)	
	Green Innovation (X1)	1,735
	Intellectual Capital (X2)	-0,702

Source: Data processed using SPSS 25

Based on these results, the Sig. values for Green Innovation and Intellectual Capital are 0,084 and 0,484, respectively, both of which are greater than 0,05. The findings suggest that the regression model satisfies the homoscedasticity assumption, as no indication of heteroscedasticity is identified in the model.

Autocorrelation Test

Table 6. Autocorrelation Test
Model Summary^b

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	0,269 ^a	0,072	0,064	0,32129	2,090

Source: Data processed using SPSS 25

The Durbin-Watson (DW) statistic is 2,090. With a sample size of 230 (n=230) and 3 independent variables (k=3), the value of dU is 1,80154 and the value of 4 – dU is 2,19846. Since the DW value of 2,090 falls between dU (1,80154) and 4 – dU (2,19846), it can be concluded that the regression model does not exhibit autocorrelation.

Multiple Linear Analysis Test

Table 7. Multiple Linear Analysis Test
Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	0,963	0,081		11,909	0,000
	GI	0,270	0,099	0,175	2,726	0,007
	IC	-0,004	0,001	-0,220	-3,432	0,001

a. Dependent Variable: KK

Source: Data processed using SPSS 25

$$Y = \beta_1 X_1 + \beta_2 X_2 + \varepsilon$$

$$Y = 0,963 + 0,270 + 0,226$$

This equation indicates that the constant is 0,963, meaning that if green innovation and intellectual capital are held constant, financial performance is 0,963. The green innovation (GI) coefficient of 0,270 indicates that a one-unit increase in green innovation will increase financial

performance by 0,270. Meanwhile, the intellectual capital (IC) coefficient of -0,004 indicates that a one-unit increase in intellectual capital will decrease financial performance by 0,004.

F Test

**Table 8. F Test
ANOVA^a**

		Sum of		Mean		
Model		Square	df	Square	F	Sig.
1	Regression	1,829	2	0,914	8,859	0,000 ^b
	Residual	23,433	227	0,103		
	Total	25,262	229			
a. Dependent Variable: KK						
b. Predictors: (Constant), GI, IC						
Source: Data processed using SPSS 25						

Based on the F-test results above, it is evident that the significance level is $F = 0,000 < 0,05$. Therefore, it can be concluded that the independent variables, when tested simultaneously, have an effect on the dependent variable.

t Test

**Table 9. t Test
Coefficients^a**

	Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	0,963	0,081		11,909	0,000
	GI	0,270	0,099	0,175	2,726	0,007
	IC	-0,004	0,001	-0,220	-3,432	0,001

a. Dependent Variable: KK

Source: Data processed using SPSS 25

$$T_{\text{tabel}} = 1,970$$

Green innovation has a calculated t-value of 2,726 > table t-value of 1,970, with a significance level of 0,007 < 0.05. This means that GI has a positive and significant effect on financial performance this, **H1 is accepted**. The findings are consistent with Fitriana et al., (2025), which found that green innovation contributes positively to a company's financial performance. Adopting environmentally sustainable products and production methods can promote more efficient resource utilization, lower operational expenses, and strengthen the company's competitive position and corporate image. Based on the Resource-Based View, the effective implementation of green innovation can improve operational efficiency, create added value, reduce resource consumption, and generate sustainable economic benefits.

Intellectual capital has a t-value of -3,432. In terms of absolute value, -3,432 = 3,432 > 1,970, with a significance level (Sig.) of 0,001 < 0,05. This means that IC has a negative and significant effect on financial performance therefore, **H2 is rejected**. The results support the findings of Suriadi, (2025), which indicate a significant negative relationship between intellectual capital and financial performance. This may suggest that investments in human

resources, technological infrastructure, and organizational systems have not yet generated sufficient economic returns to offset their costs during the observation period. Based on the Resource-Based View, the mere possession of intellectual capital does not guarantee an improvement in financial performance. Companies need to effectively leverage their knowledge, capabilities, and technological resources to create greater value and achieve long-term economic benefits.

R² Test

Table 10. R² Test

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0,269 ^a	0,072	0,064	0,32129
a. Predictors: (Constant), IC, GI				

Source: Data processed using SPSS 25

The coefficient of determination test shows an Adjusted R-Square value of 0,064. This result indicates that Green Innovation and Intellectual Capital jointly explain 6,4% of the changes in Financial Performance, whereas the remaining 93,6% is influenced by other factors that are not included in the research model.

D. CONCLUSIONS

Green innovation has a positive and significant effect on financial performance, indicating that the implementation of environmentally friendly innovations through more efficient products and production processes can reduce resource consumption, lower operating costs, and enhance a company's competitiveness. Meanwhile, intellectual capital has a negative and significant effect on financial performance, indicating that investments in human resources, technology, and organizational systems still entail relatively high costs, so the economic benefits were not yet optimal during the study period.

E. SUGGESTIONS

Future studies could consider applying alternative measurement approaches and extending the research period to provide broader insights into how green innovation and intellectual capital contribute to companies' financial performance. Further research could also examine different research subjects or sectors and include other relevant variables to determine whether the findings remain consistent and provide broader empirical evidence.

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