Proceeding International Conference on Economic Business Management, and Accounting (ICOEMA)-2024
Program Studi Doktor Ilmu Ekonomi
Universitas 17 Agustus 1945 Surabaya-2024

The Impact of Green Innovation, Green Intellectual Capital, and Company Size To Financial Performance

Nikma Yucha
Economy and Business Faculty, Maarif Hasyim Latif University, Indonesia
E-mail: nikma@dosen.umaha.ac.id

Received: August, 2024; Accepted: August, 2024; Published: November, 2024
Permalink/DOI:

Abstract

This research aims to analyze green innovation, green intellectual capital, and company size on the financial performance of manufacturing companies in 2020-2023. The research method is quantitative research using multiple linear regression analysis tools. The sample used was 33 companies with purposive sampling techniques. The research results show that the variables green innovation and green intellectual capital do not have a significant effect on financial performance, while the variable company size has a significant positive effect on financial performance.

Keywords: *Green Innovation, Green Intellectual Capital, Company Size, financial performance.*

INTRODUCTION

In recent years, the concept of sustainability has received significant attention in various sectors. This is driven by increasing environmental awareness and regulatory pressure (Dyllick & Hockerts, 2002). These changes encourage companies to adopt green innovation and develop green intellectual capital as a strategic achievement. Green innovation refers to the development and implementation of new products, processes, or practices that reduce environmental impact. This is an important element for companies that want to improve their environmental performance to achieve economic benefits (Budi & Sundiman, 2021). The increasing awareness among the public about environmentally friendly products has a positive impact, not only encouraging changes in behavior in choosing products, but also stimulating innovation in industry, providing a better understanding of the environment, and encouraging awareness of the economic value of sustainable practices (Jannah & Hernawati, 2021).

Green innovations are an important element in modern business strategy, especially in the consumer goods manufacturing industry. The innovations carried out are creating packaging solutions, managing waste, and finding environmentally friendly substitutes for chemicals. With increasing awareness about the importance of protecting the environment, the cosmetics industry in Indonesia continues to strive to develop products that are more environmentally friendly. In the cosmetics sector, green innovation can include the use of natural raw materials, reducing harmful chemicals, and developing recyclable packaging. This includes choosing

suppliers with environmentally friendly practices using renewable energy and reducing the waste produced (Van Vo & Nguyen, 2023).

The application of green innovation in cosmetics companies not only contributes to environmental sustainability but also improves the company's reputation and meets the demands of increasingly environmentally conscious consumers (Primadhita et al., 2023).

Apart from green innovation, another element related to the sustainable concept is intellectual capital. Green intellectual capital refers to the knowledge, skills, and capabilities that a Company has in managing natural resources and the environment sustainably (Maulana Sahid & Henny I, 2023). The concept of green intellectual capital refers to knowledge, practices, and assets related to the desire and protection of the environment (Rumagit & Khomsiyah, 2024). Green intellectual capital plays an important role in creating added value for the Company. With strong intellectual capital, companies can more easily innovate, adopt sustainable business practices, and meet increasingly stringent environmental regulations (Golo & Astuti, 2023).

In the cosmetics industry, green intellectual capital can include research and development of cosmetic formulas made from natural ingredients, employee training on environmentally friendly practices, and patents or intellectual property rights related to green technology. development of environmentally friendly products made from organic materials or household items that can be decomposed naturally. It is through this that a company can be viewed better by consumers because it cares about the environment (Shah & Yakob, 2022).

In Indonesia, the concept of green innovation and green intellectual capital has been widely implemented in various industries, one of which is the manufacturing sector, which is the largest sector in Indonesia. This industry plays an important role in the economy and makes a significant contribution to the Gross Domestic Product (GDP), namely 5.63 percent, the basic industrial sector 1.23 percent, and the chemical sector 0.76 percent. The role of the consumer goods sector in economic development and growth can be presented in the following graph:

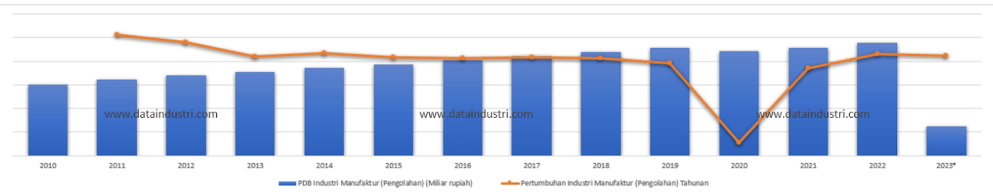

Figure 1. Manufacturing Industry Growth Data Trends for 2020-2023

The innovation aspect is also an important highlight in the consumer goods manufacturing industry. The high intensity of competition encourages companies to improve the quality of their products. The consumer products market covers various categories such as food, beverages, electronic goods, and textiles. Research in this industry can provide deep insight into consumer behavior, market trends, and marketing policies that are successfully implemented widely. Manufacturing

companies in the consumer goods sector that have been listed on the Indonesia Stock Exchange have implemented green innovation in their companies. Either through green marketing, environmentally friendly products, or others.

Company size is often considered a factor that influences financial performance. Large-scale companies, including those in the cosmetics industry, usually have greater resources to implement green innovation and green intellectual capital (Tonay & Murwaningsari, 2022). In addition, large-scale companies have better capabilities in facing environmental challenges and market competition. On the other hand, small-scale companies may have greater flexibility and adaptability but often face limitations in terms of funding and resources. (Elizabeth Sugiarto Dermawan, 2019).

Measuring financial performance in the consumer goods sector involves the use of some crucial metrics to assess the financial stability and achievements of a company in the industry (Tamtama & Rahmawati Riantisari, 2023) Various financial performance indicators that are commonly used in the cosmetics industry sector are net income, gross profit margin, net profit margin, inventory turnover, debt to capital ratio, earnings per share, dividend payout ratio, sales growth rate. This performance measurement indicator can help assess the company's financial performance. Financial ratio analysis involves two types of comparisons. First, analysis can compare current financial ratios with the ratios recorded in the previous period and those expected in the future period. Second, the company's financial ratios can be compared with the financial ratios of similar companies. Through this comparison, we can assess the development of a company's financial performance from one period to the next or compare it with the performance of its competitors (Intang et al., 2020).

Manufacturing companies in the consumer goods sector listed on the Indonesia Stock Exchange have applied green innovation, both through green marketing and environmentally friendly products (Meilani & Sukmawati, 2023). Green innovation and green intellectual capital can interact and strengthen each other in creating competitive advantages. Meanwhile, company size can influence the extent to which these two factors can be implemented and have a positive impact on financial performance.

In the context of the cosmetics industry, understanding this relationship is critical given the increasing pressure from consumers and regulators to adopt sustainable business practices. Green intellectual capital has a positive effect on performance (Solihin et al., 2023). Environmentally friendly process innovation has a positive effect on financial performance. Green innovation has a positive effect on company value. Green intellectual capital has a positive effect on financial performance (Tonay & Murwaningsari, 2022).

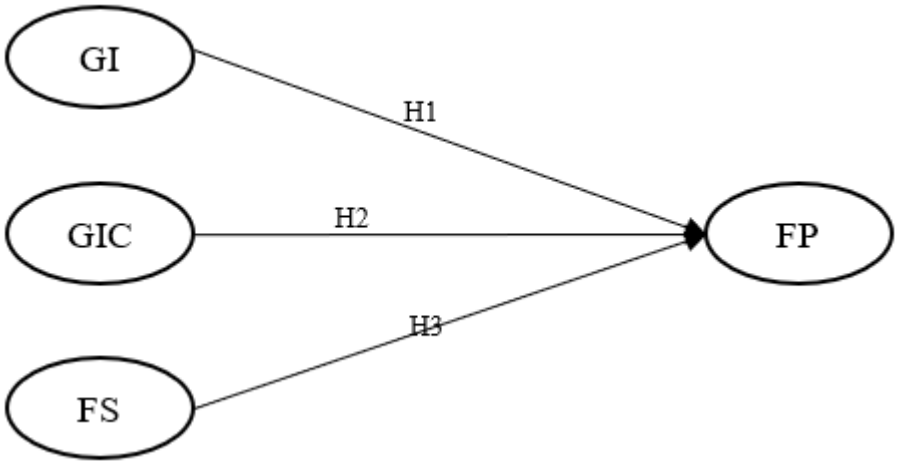

Figure 2. Conceptual Framework

METHOD

This research uses systematic, planned, and structured quantitative research methods. This research is causal associative research which shows the cause-and-effect relationship between independent and dependent variables. Data was collected through secondary data, such as literature studies and documentation. The research population includes all manufacturing companies listed on the Indonesia Stock Exchange (BEI), totaling 229 companies. The samples taken were 32 companies in the consumer goods sector using a non-probability sampling method with a purposive sampling technique. The sampling criteria are:

1. Consumer goods sector manufacturing companies listed on the IDX for the 2020-2023 period.
2. Manufacturing companies in the consumer goods sector that have complete financial reports for the 2020-2023 period.
3. Companies that have total sales of more than 50 billion in the 2020-2023 period.

Independent Variable (X)

1) Green Innovation, refers to the development of solutions, technology, products, or business practices that aim to reduce negative impacts on the environment and increase sustainability (Tonay & Murwaningsari, 2022). The green innovation variable indicators are:

a. Friendly product innovation,
b. Environmentally friendly process innovation,
c. Environmentally friendly organizational innovation.

2) Green Intellectual Capital, refers to the integration of intellectual thinking related to capital issues and the organizational environment by utilizing all assets that are considered intangible (Yusliza et al., 2020). The variable indicators of green intellectual capital are:

a. Green human capital (GHC),
b. Green structural capital (GSC),

c. Green relational capital (GRC).

3) Company Size, is the total funds consisting of all assets owned by the Company which includes the resources needed to meet the Company's operational needs and funding (Prasetia et al., 2014). The variable indicators for company size are total assets, total sales, added value, and number of employees.

Dependent Variable (Y)

whether a company has implemented financial policies and procedures following applicable standards (Dewi et al., 2024) Variable indicators of company performance are liquidity ratios, solvency ratios, profitability ratios, and activity ratios.

The data analysis technique in this research uses descriptive statistical analysis which aims to describe or describe the data that has been collected and draw conclusions (Sugiyono, 2017:147). The data analysis tool used is multiple linear regression with SPSS 26 with the following formula:

$$FP = \alpha + \beta1GI + \beta2\ GIC + \beta3\ FS + e$$

FP = Financial Performance
α = constanta
β1 – β3 = Regression Coefficient
GI = Green Innovation
GIC = Green Intelectual Capital
FS = Company Size
e = *error* item

Hypothesis testing in multiple linear regression is carried out in two stages, namely the t-test (partial) and the F-test (simultaneous). The t-test is used to measure how much influence each independent variable partially has on the variation in the dependent variable. If the t-test results show a significance of 5% or <0.05, then there is a significant influence between the independent and dependent variables. The F test is used to assess whether the independent variables jointly influence the dependent variable, with a significance level α of 5%. The F test also evaluates the suitability of the regression model for further analysis.

The coefficient of determination (R2) is used to measure the percentage of the total variance of variable Y explained by variable X in the regression model. The R2 value has an interval between 0 and 1 ($0 < R2 < 1$). The greater the R2 value (closer to 1), the better the regression model. On the other hand, an R2 value that is close to 0 indicates that the independent variables as a whole cannot explain the dependent variable.

RESULTS AND DISCUSSION

Research result

This research uses secondary data obtained from financial reports downloaded from the Indonesian Stock Exchange. The research sample includes 33

companies that meet the criteria, with an observation period of 4 years, namely from 2020 to 2023.

Multiple Linear Regression Test

The results of the multiple linear regression test provide a comprehensive picture of the influence of each independent variable on the dependent variable. The results of the regression test can be seen in the table below:

Table 1. Multiple Linier Regression

Unstandardized Coefficients			Standardized Coefficients Beta	t	Sig
Model	B	Std. Error			
Constant	1.403	0.386		3.632	0.000
Green Innovation (X1)	-0.011	0.791	-0.001	-0.014	0.989
Green Intellectual Capital (X2)	2.450	1.416	0.177	1.730	0.087
Company Size (X3)	0.001	0.000	0.450	4.983	0.000

a. Dependent Variable: Financial Performance (Y)
b.Source: SPSS data processing, 2024

The multiple linear regression equation from this research is:
Y = 1.403 – 0.011X1 + 2.450X2 + 0.001X3

Based on the regression equation, it is known that:

1. A constant coefficient of 1.403 means that if the variables green innovation, green intellectual capital, and company size are considered constant, then financial performance is worth 1.403.
2. The green innovation regression coefficient of -0.011 indicates that if green innovation increases by one unit, financial performance will decrease by 0.011 with other variables constant.
3. The green intellectual capital regression coefficient of 2,450 shows that if the green intellectual capital variable increases by one unit, financial performance increases by 2,450 with other variables constant.
4. The company size coefficient is 0.001, meaning that if the company size variable increases by one unit, financial performance increases by 0.001 with other variables constant.

Coefficient of determination test (R2 test)

The coefficient of determination test is used to measure the extent to which the model can explain variations in the dependent variable. The results of the coefficient of determination test in this research are as follows:

Table.2 Coefficient of Determination Test Results (R2)

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	0.496	0.246	0.222	1.26353	2.077

Based on the results of the determination efficiency test, the adjusted R Square value obtained was 0.222. This shows that the variables green innovation, green intellectual capital, and company size together influence financial performance by 22.2%.

Model Feasibility Test (F Test)

The F test is used to evaluate whether the independent variables in the regression have a joint influence on the dependent variable. The results of the F Test in this research are as follows:

Table 3 Model Feasibility Test (F Test)

Model	Sum of Square		df	Mean Square	F	Sig
1	Regression	56.914	3	18.971	10.600	<.001[b]
	Residual	166.453	93	1.790		
	Total	223.367	96			

The results of the model feasibility test show a significance level of 0.001, which is lower than the threshold of 0.05. This confirms that the regression model used in this study meets the requirements and can be used to explain the dependent variable. Therefore, all independent variables, such as green innovation, green intellectual capital, and company size, jointly influence financial performance.

Individual Parameter Significance Test (T-Test)

This test helps determine whether each independent variable significantly influences the dependent variable, to understand the specific contribution of each variable in the regression model.

Table.4 Individual Parameter Significance Test Results (t-Test)

Unstandardized Coefficients				Standardized Coefficients Beta	t	Sig
Model		B	Std. Error			
1	Constant	1.403	0.386		3.632	0.000
	Inovasi Hijau (X1)	-0.011	0.791	-0.001	-0.014	0.989
	Modal Intelektual Hijau (X2)	2.450	1.416	0.177	1.730	0.087
	Ukuran Perusahaan	0.001	0.000	0.450	4.983	0.000

Based on the results of the individual parameter significance test (t-test), the Green Innovation variable is 0.989 ≥ 0.05, indicating that the Green Innovation variable does not affect financial performance. Likewise, the Green Intellectual Capital variable has a significant value of 0.087 ≥ 0.05, which means the Green Intellectual Capital variable indicates that this variable does not influence financial performance. However, the company size variable has a significant value of 0.000 ≤ 0.05, providing a positive and significant influence on financial performance. So, the test results show that green innovation and green intellectual capital do not affect financial performance, while company size affects financial performance.

Analysis Of Research Results

Green Innovation on Financial Performance

Green innovation in this research is measured through green products, green processes, and green organizations which are recorded in the company's annual report. The significance test (t-test) shows a significance value of 0.989 > 0.05 and a regression coefficient of -0.011. These results indicate that green innovation does not affect financial performance. This is caused by the application of green innovation more as a matter of compliance with regulations, rather than as the main assessment factor for investors to make investments, apart from that it is also influenced by differences in implementation and effectiveness of resource requirements between companies.

If green innovation does not affect the company's financial performance, then the environmentally friendly production process is considered unable to increase profits. Companies need to consider other factors to support green vision, such as improving reputation, employee satisfaction, or reducing environmental risks that can be seen in the long term. The results of this research are in line with research conducted by (Saudi et al., 2019). which shows that green innovation does not affect financial performance because the environmental costs imposed on the Company's products and operations have not been able to provide confidence to consumers, so it does not affect the level of sales which has an impact on the Company's profits. However, it is different from research (Tonay & Murwaningsari, 2022)which shows that green innovation has a positive influence on financial performance.

Green Intellectual Capital on financial performance

Green intellectual capital in this research is measured by green human capital, green structural capital, and green relational capital. The results of the significance test (t-test) show a significance value of 0.087 > 0.05 and a regression coefficient of 2,450. The test results show that green intellectual capital has no effect on financial performance. Companies have not implemented green human capital because of the high initial investment costs. In addition, special training is required for employees which requires high costs to obtain certification, such as ISO 14001 for environmental management systems, audit costs, documentation, and standard maintenance. Developing environmentally friendly products and services also requires intensive research and development and takes a long time. As

a result of these high costs and initial investments, many companies, especially small ones, face budget constraints and may not be able to allocate significant funds to green initiatives without sacrificing other areas of their business.

Many companies focus more on short-term profits and financial targets. Efforts to build Green Relational Capital (GRC) may be considered less of a priority compared to strategies that directly increase profits. Many manufacturing companies may be reluctant to switch to more environmentally friendly raw material suppliers due to higher costs, although in the long term, this step can improve the company's image and competitiveness. Additionally, companies need to make significant adjustments in their supply chains and logistics to ensure sustainability, which can require additional time and costs. This is also because green intellectual capital requires a longer period to be able to boost the company's financial performance. Companies must continue to maintain the implementation of green intellectual capital if they want to get maximum results for financial performance. The results of this research are different from the research conducted by (Tonay & Murwaningsari, 2022) However, this research is in line with research conducted by (Bangun et al., 2024).

Company size on financial performance

Company size in this study is measured by the natural logarithm of total assets and total income, the added value stated in the company's financial statements, and the number of employees listed in the company's annual report. Based on the results of the individual parameter significant test (t-test), a significance value of 0.000 ≤ 0.05 was obtained and the regression coefficient was 0.001. These results show that statistically the company size variable influences the financial performance of manufacturing companies in the consumer goods sector listed on the IDX in 2020 - 2023. The average value of company size in descriptive statistical values is 654.60. This shows that the average company size in manufacturing companies in the consumer goods sector listed on the IDX in 2020 - 2023 is a medium company.

Mid-sized companies typically have more financial resources that can be allocated to developing new products, improving existing products, and improving production processes. They are also better able to bear the high risks often associated with R&D because they can diversify their project portfolio and have large financial reserves to cover losses in the event of failure. Medium and large companies can produce in larger quantities, allowing them to reduce production costs per unit. This happens because they can buy raw materials in large quantities at volume discounts and use more efficient technology. With lower production costs, companies can increase their profit margins. Additionally, the ability to spread fixed costs, such as administrative and marketing costs, over more product units also contributes to lower unit costs. This cost reduction directly has a positive impact on the company's overall profitability and financial performance. This research is in line with research conducted by (Elizabeth Sugiarto Dermawan, 2019).

CONCLUSION

Based on the results of research testing on green innovation, green intellectual capital and company size on financial performance, the following conclusions can be drawn:

1. Green innovation has no effect on financial performance because green technology is implemented by the Company only as a matter of compliance.
2. Green intellectual capital has no effect on financial performance because green training and certification costs are too high
3. Company size has a positive and significant effect on financial performance, because larger companies with more assets and production can provide higher profits.

The limitation of this research is that the use of research data is limited to companies in the consumer goods sector. Further research can expand and increase the number of samples in different sectors and add other variables such as good corporate governance.

REFERENCES

Bangun, A. M., Astuti, T., & Satria, I. (2024). Pengaruh Green Intellectual Capital, Green Accounting, Dan Company Size Terhadap Kinerja Keuangan Dengan Good Corporate Governance Sebagai Variabel Moderasi. *Jurnal Riset Bisnis*, *7*(2), 314–335.

Budi, & Sundiman, D. (2021). Pengaruh Inovasi Hijau Terhadap Kinerja Berkelanjutan: Peran Moderasi Dari Kepedulian Lingkungan Manajerial (Studi pada UMKM di Batam). *DeReMa (Development Research of Management): Jurnal Manajemen*, *16*(1), 96. https://www.academia.edu/73052412/PENGARUH_INOVASI_HIJAU_TERHADAP_KINERJA_BERKELANJUTAN_PERAN_MODERASI_DARI_KEPEDULIAN_LINGKUNGAN_MANEJERIAL_Studi_Pada_UMKM_di_Batam_THE_EFFECT_OF_GREEN_INNOVATION_ON_SUSTAINABLE_PERFORMANCE_THE_ROLE_OF_MODERATION_OF_MANEJ

Dewi, A. T. K., Endah Dewi Purnamasari, & Shafiera Lazuarni. (2024). Analisis Komparatif Kinerja Keuangan Perusahaan Subsektor Otomotif Di Bursa Efek Indonesia Sebelum Dan Saat Kebijakan Ppnbm Pada Masa Covid-19. *JEMSI (Jurnal Ekonomi, Manajemen, Dan Akuntansi)*, *10*(2), 1271–1281. https://doi.org/10.35870/jemsi.v10i2.2306

Dyllick, T., & Hockerts, K. (2002). Beyond the business case for corporate sustainability. *Business Strategy and the Environment*, *11*(2), 130–141. https://doi.org/10.1002/bse.323

Elizabeth Sugiarto Dermawan, A. M. (2019). Pengaruh Ukuran Perusahaan, Financial Leverage, Dan Liquidity Terhadap Kinerja Keuangan. *Jurnal Paradigma Akuntansi*, *1*(3), 572. https://doi.org/10.24912/jpa.v1i3.5560

Golo, A. K. T., & Astuti, C. D. (2023). Pengaruh Pengungkapan Green Intellectual Capital dan Sustainabillity Reporting Disclosure Terhadap Kinerja

Perusahaan. *Jurnal Ilmiah Wahana Pendidikan, Mei*, *9*(9), 45–61. https://doi.org/10.5281/zenodo.7938896

Intang, M., Radjab, E., & Amin, A. R. (2020). Analisis Rasio Keuangan Untuk Memprediksi Pertumbuhan Laba Pada Perusahaan Perbankan. *Competitiveness*, *9*(2), 174–189. http://digilib.uinsgd.ac.id/id/eprint/31845

Jannah, L., & Hernawati, E. (2021). Konsep Green Marketing Dan Dampaknya Terhadap Perilaku Konsumen Indonesia. *Jurnal Bina Manajemen*, *9*(2), 92–112. https://doi.org/10.52859/jbm.v9i2.157

Maulana Sahid, I., & Henny I, D. (2023). Pengaruh Green Intellectual Capital Index, Biaya Corporate Social Responsibility, Ukuran Perusahaan, Struktur Modal Dan Keputusan Investasi Terhadap Kinerja Keuangan. *Jurnal Akuntansi Trisakti*, *10*(2), 273–290. https://doi.org/10.25105/jat.v10i2.17683

Meilani, S. E. R., & Sukmawati, R. A. (2023). Jurnal riset akuntansi dan keuangan. *Jurnal Riset Akuntansi Dan Keuangan*, *11*(3), 605–620. http://ejournal.upi.edu/index.php/JRAK/article/view/6693/4557

Prasetia, T. E., Tommy, P., & Saerang, I. S. (2014). Capital Structure, Company Size, and Company Risk of the Value of Automotive Companies Listed on the IDX. *EMBA Journal*, *2*(2), 879–889.

Primadhita, Y., Budiningsih, S., Wicaksana, I., & Melani, A. (2023). Pengaruh Pemasaran Digital, Kualitas Produk, Dan Inovasi Hijau Terhadap Kinerja UMKM Makanan Dan Minuman. *Jurnal Manajemen Dan Bisnis Digital*, *2*(1), 49–61.

Rumagit, V. Z., & Khomsiyah. (2024). Green Accounting, Green Intellectual Capital Dan Pengungkapan Corporate Sosial Responbility (Csr) Meningkatkan Firm Value Pada Industri Food & Baverage. *Jurnal Ekonomi Trisakti*, *4*(1), 443–452. https://doi.org/10.25105/jet.v4i1.19398

Saudi, M. H. M., Sinaga, O., Gusni, & Zainudin, Z. (2019). The effect of green innovation in influencing sustainable performance: Moderating role of managerial environmental concern. *International Journal of Supply Chain Management*, *8*(1), 303–310.

Shah, N. S. B., & Yakob, N. A. (2022). Measuring the Value Added Intellectual Capital on Financial Performance: A Case of Malaysia Green Technology Companies. *Voice of Academia (Academic Series of Univercity Teknologi MARA Kedah)*, *18*(1), 142–157.

Solihin, Harnovinsah, Tugiantoro, & Karsam. (2023). Green Intellectual Capital And Sustained Competitive Advantages In The Industrial Sector Of Indonesia. *Jurnal Reviu Akuntansi Dan Keuangan*, *13*(1), 134–156. https://doi.org/10.22219/jrak.v13i1.23865

Tamtama, N. N., & Rahmawati Riantisari. (2023). Analisis Rasio Keuangan Dalam Menilai Kinerja Keuangan Pada Industri Kosmetik Terdaftar BEI Periode 2022. *ECo-Buss*, *6*(2), 797–809. https://doi.org/10.32877/eb.v6i2.1008

Tonay, C., & Murwaningsari, E. (2022). Pengaruh Green Innovation Dan Green Intellectual Capital. *Jurnal Bisnis Dan Akuntansi*, *24*(2), 283–294.

Van Vo, H., & Nguyen, N. P. (2023). Greening the Vietnamese supply chain: The influence of green logistics knowledge and intellectual capital. *Heliyon*, *9*(5), e15953. https://doi.org/10.1016/j.heliyon.2023.e15953

Yusliza, M. Y., Yong, J. Y., Tanveer, M. I., Ramayah, T., Noor Faezah, J., & Muhammad, Z. (2020). A structural model of the impact of green intellectual capital on sustainable performance. *Journal of Cleaner Production*, *249*, 119334. https://doi.org/10.1016/j.jclepro.2019.119334