

Green Intellectual Capital on Firm Performance Moderated by Green Business Strategy in Craftsmanship SME's

Eef Saifullah Doloan¹, Sabihaini², R Heru Kristanto HC³

^{1,2,3}Management Departement, Ecomonic and Business Faculty, Universtias Pembangunan Nasional "Veteran" Yogyakarta, Indonesia

Article Info

Article history:

Received May, 2024

Revised May, 2024

Accepted May, 2024

Keywords:

Green Intellectual Capital
Green Human Capital
Green Structural Capital
Green Relational Capital
Green Business Strategy
Firm Performance

ABSTRACT

This study shows how SME's performance is affected by the three components of green intellectual capital (GIC), namely green human capital (GHC), green structural capital (GSC), and green relational capital (GRC), and uses the moderating role of green business strategy (GBS) to explain the relationship. Data was collected from 92 SMEs in the craft industry in the Special Region of Yogyakarta. Primary data for the study was collected from respondents through closed-ended questionnaires distributed directly (offline) and google forms (online) to test the suggested model and analyzed using structural equation modeling with Smart PLS 3. The findings show that: 1) green intellectual capital has a negative influence on SME performance; 2) the three components of GIC have a positive influence on SME performance; 3) green business strategy weakens the influence of GIC on the performance of craft SMEs in Yogyakarta Special Region.

This is an open access article under the [CC BY-SA](https://creativecommons.org/licenses/by-sa/4.0/) license.



Corresponding Author:

Name: Sabihaini

Institution Address: Management Departement, Ecomonic and Business Faculty, Universtias Pembangunan Nasional "Veteran" Yogyakarta, Indonesia

e-mail: sabihaini@upnvyk.ac.id

1. INTRODUCTION

Global warming, air pollution, and deforestation are all results of fast economic expansion at the price of the environment. This has raised concerns about environmental degradation, as well as sustainable development [1], [2]. The most frequently discussed issue in recent times is the Sustainable Development Goals (SDGs). SDGs are being practiced in several provinces in Indonesia, one of which is the Special Region of Yogyakarta, which has developed a Regional Action Plan (RAD) for sustainable

development goals in Indonesia. In the development of SDGs, there are strategic development issues in the Special Region of Yogyakarta, including environmental pollution and degradation. Environmental pollution is related to drinking water supply and sustainable management and sanitation, including water pollution and ecosystem management. Indonesia's deforestation prevention plan and moratorium have not yet yielded maximum results [3]. In addition to water pollution and ecosystem management, the issue of waste management is an important concern for creating sustainability.

The Ministry of Environment and Forestry (2022) shows that households contribute 50.17% of waste production, followed by businesses with 28.78% of waste, and others. This shows that the largest contributor of waste is dominated by households with food waste. However, some industries contribute enough waste to be a concern that impacts the environment, raising concerns of limited resources. Limited resources generated from waste have an impact on environmental pollution, ecosystem damage, pollution of water sources, lack of clean water sources, and energy availability [4], [5]. Therefore, to overcome the problem of environmental pollution, stakeholders are required to manage waste and garbage.

Managing waste and garbage is a significant issue for industrial companies, especially for SMEs, which are sometimes perceived as more polluting than large companies. SMEs account for about 70% of industrial waste and pollution due to a higher percentage of emissions and a lack of concern for environmental preservation [6]. On the other hand, the government has set rules to encourage environmentally friendly products that emphasize the advantages of environmental issues, especially in SMEs [7].

Looking at the condition of SMEs in Indonesia, few understand the value of knowledge-based companies by optimizing their intellectual capital, whereas SMEs should be able to build the economy and have high competitiveness [8]. Increased competitiveness requires SMEs to integrate green innovation and implement environmental management into their business strategy [9]. Thus, SMEs face challenges in implementing environmentally-oriented business strategies to improve company performance.

Performance is the level of achievement of the company during a certain period of time [10]. To achieve better corporate performance, companies need to integrate environmental concerns into management practices and encourage environmentally friendly innovation [11].

Companies must comply with environmental laws and guidelines if they want to maintain legitimacy and access to green resources [12], [13]. The performance of sustainability-oriented firms can be influenced by several strategic approaches such as green intellectual capital (GIC) and green business strategy (GBS) [12], [14], [15], [16].

GIC is a knowledge-driven approach that enables businesses to enhance their sustainability by developing eco-friendly solutions [17]. GIC is comprised of three distinct components: green human capital (GHC), green structural capital (GSC), and green relational capital (GRC). Begum et al. (2023) found that companies need up-to-date environmental information to improve the company's knowledge base and develop a clear green business strategy. GBS refers to the integration of corporate environmental concerns at the business and functional level strategies [18].

The effect of GIC on technological innovation and economic performance in high-tech corporations has been studied by Wang & Juo [12] who identified it as a crucial factor. However, conflicting findings have emerged from other studies. Rehman et al. [19] discovered that GIC does not have any effect on performance. On the other hand, Asiaei et al. [20] conducted a study on Iranian public companies and found that GHC and GSC have an impact on performance, while GRC influences performance when mediated by environmental performance measurement. In contrast, Yusoff et al. [21] concluded that GRC and GSC contribute to business sustainability, while GHC does not. Also, Suki et al. [22] conducted a research study in Malaysian manufacturing industry and documented a significant, positive effect of GIC on the performance of the company.

There are still contradictory findings between empirical and theoretical studies that need to be researched. The research gap in this study is that previous studies focused on the characteristics of GIC on company performance and obtained inconsistent results. Previous studies examined the relationship between performance and GIC in

various sectors including large industries and high-tech industries, which already have waste treatment regulated by regulations and laws. However, this does not rule out the possibility that SMEs are also involved in simple waste treatment. SMEs are relatively easy to develop products through technological innovation, human relations, flexibility, and adaptability to the environment [23].

Green business strategies prioritize the association between GIC and business success. Several studies that have been conducted have demonstrated that GBS has an indirect effect on the performance of the company. Since GBS is a systemic aspect, it can significantly improve the environmental safety and sustainability of all actions within and outside the company [14], [15]. On the other hand, GIC affects GBS [17]. These results suggest that companies need new, up-to-date environmental information to improve their knowledge base and develop clear GBS. GIC enables companies to leverage their strengths to develop and implement environmentally friendly business strategies [17]. Implementing Green Business Strategies (GBS) in decision-making processes is an effective solution to mitigate the adverse environmental consequences associated with industrial production [24]. Therefore, in order to fill the research gap, this study examines the impact of green intellectual capital on the performance of SMEs by considering green business strategy as a moderating variable.

2. LITERATURE REVIEW

2.1 Natural Resource-Based Value Theory

This study assumes that green intellectual capital is a strategic resource. This perspective is a knowledge-based mechanism that helps develop environmentally friendly strategies to improve the sustainability of company operations [17]. Environmental strategies that integrate companies with the natural environment are characterized by dynamic capabilities that enable companies to respond to environmental changes and achieve benefits [14]. NRBV emphasizes a company's ability to effectively develop and

utilize natural resources [25]. Additionally, NRBV is a resource-based theory that primarily focuses on the conservation of natural resources and environmental protection. [26], [27].

2.2 Green Human Capital and Firm Performance

Wang & Juo [12] state that green intellectual capital is an important factor in economic performance and environmental performance. Companies require GIC in order to respond to external and internal threats and opportunities. GIC plays an important role in improving company performance [28]. Wang & Juo [12] found that GHC has an effect on green and economic performance. However, Asiaei et al. [20] found that GHC has no effect on environmental performance. Also, Yusoff et al. [21] found that GHC has no relationship with business sustainability. Therefore, the researcher made a hypothesis:

H1: Green human capital has a positive and significant effect on firm performance

2.3 Green Structural Capital and Firm Performance

Asiaei et al [29] proposed that green intellectual capital is environmental knowledge that alters the way organizations are structured in order to become more aware of the ecological effects. GIC is widely recognized as an exceptional asset that can be effectively employed to cultivate and bolster a sustainable strategy focused on diminishing energy usage and regulating the utilization of natural resources [17]. Green structural capital is an intangible resource that is composed of commitments, data, policies, strategies, and regulations that are based on environmental concerns and that encourage companies to behave sustainably [22]. They discovered that green intellectual capital has an effect on business sustainability. Therefore, the researcher made a hypothesis:

H2: Green structural capital has a positive and significant effect on firm performance

2.4 Green Relational Capital and Firm Performance

Asiaei et al. [17] the enhancement of green relational capital plays a crucial role in

bolstering a company's reputation and image. This is achieved through the establishment of collaborative partnerships with external entities that prioritize environmental preservation. Additionally, fostering close and intensive relationships with partners who are actively engaged in environmental issues is an effective strategy for promoting the exchange of high-quality green knowledge and transparent information. This approach not only contributes to gaining a competitive edge but also fosters mutual trust between companies, as highlighted by Zahoor & Gerged [30]. Wang & Juo [12] further support these findings by demonstrating the significant impact of GRC on both economic and green performance. However, contrary to these findings, Asiaei et al. [20] discovered that GRC does not have a significant effect on environmental performance. Therefore, the researcher made a hypothesis:

H3: Green relational capital has a positive and significant effect on firm performance

2.5 Green Intellectual Capital and Firm Performance

The concept of GIC has been explored by Begum et al. [17] who argue that it is a reflective construct with two levels. This is because the three components of GIC share a common meaning and exhibit a strong correlation, while also displaying notable differences. Asiaei et al. [31] further emphasize the importance of GIC, stating that it not only contributes to economic value but also plays a crucial role in addressing environmental challenges. GIC is defined as "the total stocks of all kinds of intangible assets, knowledge, capabilities, and relationships, etc., about environmental protection or at the individual level and the organization level within a company" [32].

Building on this, Wang & Juo [12] have demonstrated that GIC has an impact on both green and economic performance. Therefore, the researcher made a hypothesis:

H4: Green intellectual capital has a positive and significant effect on firm performance

2.6 Green Intellectual Capital and Firm Performance Moderated by Green Business Strategy

The incorporation of environmental considerations into different aspects of an organization is the central idea behind GBS, as discussed by Begum et al. [17]. This concept extends to various functional areas. The primary objective of GBS is to promote economic efficiency while simultaneously minimizing environmental degradation through the implementation of initiatives and procedures that reduce pollution and the excessive use of natural resources. Interestingly, Begum et al. [17] discovered a positive correlation between GIC and GBS. Furthermore, several research have suggested that GBS improves overall performance. For instance, Rodriguez-Gonzalez et al. [15] found that GBS positively influences sustainable performance and financial performance. Similarly, Yahya et al. [16] revealed that GBS has an effect on green process and product innovation. Additionally, Sabihaini et al. [33] discovered that green enterprises play a mediating role in the relationship between entrepreneurs' personal characteristics and SMEs performance. Therefore, the researcher made a hypothesis:

H5: Green business strategy strengthens the influence of green intellectual capital on firm performance.

Based on theoretical analysis and past research results, an empirical model was built and is displayed in Figure 1.

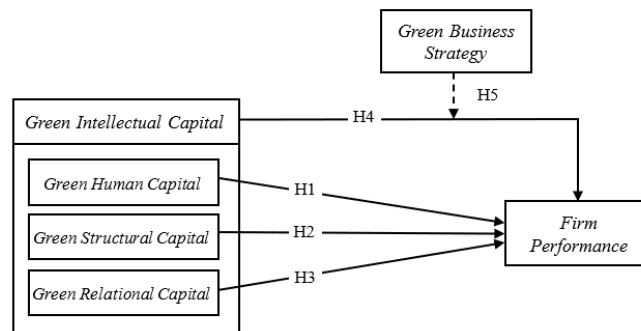


Figure 1. Conceptual Framework

3. METHODS

This research uses quantitative research methods with survey methods to test the hypothesis that has been set, survey research is known as practical research that aims to improve something. This research technique focuses on GIC and its components that impact on firm performance and are influenced by green business strategies. The population of this study includes SMEs in the handicraft industry sector in the Special Region of Yogyakarta registered with the Department of Industry and Trade of the Special Region of Yogyakarta in 2022. The estimated number or sample size uses the Slovin formula to calculate the number of sampling clusters, so that a sample of 92 SMEs is obtained and the owner or manager is used as a representative who represents SMEs.

Primary data were collected from respondents through closed-ended questionnaires distributed directly (offline) and through Google Forms (online). The measurement of GIC utilizes a reflective structure of the second order, as the three components of GIC share a common meaning and demonstrate significant correlations among themselves [17]. GIC components are measured by 16 factors, namely green human capital (5 factors), green structural capital (6 factors), green relational capital (5 factors)[21], green business strategy is measured by 7 factors measured [17] and firm performance using 4 items [34]. 5-point Likert scale was used in this study.

Instrument testing uses validity tests with convergent validity tests, discriminant validity, and a predicted Average Variance

Extracted (AVE) of more than 0.50. Meanwhile, the reliability test was carried out using composite reliability and Cronbach alpha. Furthermore, this study uses PLS-SEM to conduct path analysis using latent variables

4. RESULTS AND DISCUSSION

4.1 Descriptive Analysis of Respondents

The questionnaire return rate is 100% and is suitable for testing. So that it provides findings that male respondents are more dominant than women, namely 69 respondents or equivalent to 75% of the total respondents. Respondents who have a level of education are dominated at the high school level with 79 respondents (86%). The position of respondents representing SMEs as owners is 74 respondents and managers as many as 18 respondents. The types of craft SMEs come from different craft industries (e.g. leather craft = 6, bamboo craft = 61, pottery craft = 3, ceramic craft = 10, and natural fiber = 12). The length of business is grouped into three categories: 3-6 years, 5 respondents, 7-9 years, 18 respondents, and more than 10 years, 69 respondents. Furthermore, SMEs are located in Yogyakarta City with 6 respondents (7%), Sleman with 12 respondents (13%), Bantul with 23 (25%), Kulonprogo with 8 respondents (9%), and Gunung Kidul with 43 respondents (47%). This finding shows that bamboo handicraft SMEs, operating for more than 10 years and located in Gunung Kidul are the most dominant. Respondent characteristics are presented in Table 1.

Table 1. Respondent Characteristics

Characteristics	Classification	Total	Percentage
Gender	Male	69	75%
	Female	23	25%
Education Level	Elementary School	2	2%
	Junior High School	4	4%
	Senior High School	79	86%
	Bachelors	7	8%
Respondent's position	Owner	74	80%
	Manager	18	20%
Business Type	Leather Craft	6	7%
	Bamboo Crafts	61	66%
	Pottery Craft	3	3%
	Ceramic Crafts	10	11%
	Natural Fiber	12	13%
Length of business	3-6 years	5	5%
	7-9 years	18	20%
	> 10 years	69	75%
Location	Yogyakarta City	6	7%
	Sleman	12	13%
	Bantul	23	25%
	Kulonprogo	8	9%
	Gunung Kidul	43	47%
Total			100%

4.2 Measurement Model Analysis

Upon conducting the initial assessment, it was determined that all variables exhibited reliability and validity. The outer loading of each item surpassed the threshold of 0.7. Furthermore, the Average Variance Extracted (AVE), Cronbach Alpha, and Composite Reliability values exceeded

the respective thresholds of 0.50, 0.60, and 0.70 [35]. These findings are displayed in Table 2. To assess discriminant validity, the heterotrait-monotrait (HTMT) method was employed. Table 3 showcases all HTMT values, which were found to be below 0.85 [36].

Table 2. Reliability and Validity

Construct	Items	Outer Loadings	Cronbach Alpha	Composite Reliability	AVE
Green Human Capital	GHC1	0.821	0.867	0.904	0.652
	GHC2	0.797			
	GHC3	0.806			
	GHC4	0.846			
	GHC5	0.766			
Green Structural Capital	GSC1	0.810	0.921	0.938	0.715
	GSC2	0.866			
	GSC3	0.776			
	GSC4	0.880			
	GSC5	0.860			
	GSC6	0.876			
Green Relational Capital	GRC1	0.852	0.877	0.910	0.670
	GRC2	0.839			
	GRC3	0.825			

	GRC4	0.862			
	GRC5	0.703			
Green Business Strategy	GBS1	0.844	0.917	0.933	0.667
	GBS2	0.828			
	GBS3	0.724			
	GBS4	0.799			
	GBS5	0.816			
	GBS6	0.830			
	GBS7	0.868			
Firm Performance	FP1	0.878	0.883	0.919	0.739
	FP2	0.846			
	FP3	0.883			
	FP4	0.832			

Table 3. Discriminant Validity (HTMT)

	1	2	3	4	5
Firm Performance					
Green Business Strategy	0.453				
Green Human Capital	0.586	0.795			
Green Relational Capital	0.575	0.503	0.666		
Green Structural Capital	0.542	0.552	0.602	0.371	

4.3 Structural Model Analysis

The second step of the PLS-SEM analysis process is to execute the structural model. The structural model is assessed using the R-squared, f-squared, and path coefficient values to determine the degree to which the

independent factors influence the dependent variable [35]. Bootstrapping is employed to assess the structural model's or path coefficients' (500 samples) effectiveness.

Table 4. R-Squared (R²)

Variable	R2
Firm Performance	0.406

The R² value is employed to differentiate and evaluate the research model, if the R² value is 0.75, then the model is considered strong, if it is 0.50, then considered moderate, and if it is 0.25, then considered weak. Table 4 shows that the coefficient of

determination (R2) for variables with regard on firm performance is 0.406, which means that the research model is capable of predicting the value of the dependent variable by 40.6%, which is considered acceptable

Table 5. f-Squared (f²)

	FP	GBS	GHC	GSC	GRC
Firm Performance					
Green Business Strategy	0.000				
Green Human Capital	0.021				
Green Structural Capital	0.103				
Green Relational Capital	0.111				

Determining the significance of the independent variable in explaining the dependent variable is a crucial task, and the f^2 value plays a key role in this process. To categorize the effect size as small, medium, or large, the f^2 assessment employs thresholds of 0.02, 0.15, or 0.35, respectively. When the f^2

value is below 0.02, it signifies the absence of any effect [35]. Based on the data presented in Table 5, the f^2 values for the GBS, GHC, GSC, and GRC variables are 0.000, 0.021, 0.103, and 0.111, respectively. Therefore, it can be concluded that the impact of the independent variable on the dependent variable is small.

Table 6. Hypothesis testing

	Path	Original Sample (O)	t values	p values	Decision
H1	GHC → Firm Performance	2.427	2.944	0.003	Accepted
H2	GSC → Firm Performance	2.395	3.240	0.001	Accepted
H3	GRC → Firm Performance	2.451	2.990	0.003	Accepted
H4	GIC → Firm Performance	-5.454	2.825	0.005	Rejected
H5	GIC X GBS → Firm Performance	-0.306	4.298	0.000	Rejected

Based on the results obtained through the process of bootstrapping, as presented in Table 6 and in line with our hypotheses, the final step reveals significant findings. It is evident that GHC has a direct and positive impact on firm performance ($\beta = 2.427$, $p < 0.003$), green structural capital also has a direct and positive effect on firm performance ($\beta = 2.395$, $p < 0.001$), and green relational capital similarly contributes to a positive and significant effect on firm performance ($\beta = 2.451$, $p < 0.003$). On the other hand, it is noteworthy that green intellectual capital exhibits a negative and significant influence on firm performance ($\beta = -5.454$, $p < 0.005$). Furthermore, the presence of GBS weakens the impact of GIC on firm performance ($\beta = -0.306$, $p < 0.005$). Consequently, this study provides evidence to support H1, H2, and H3, whereas H4 demonstrates a negative relationship, indicating that an increase in green intellectual capital leads to a decrease in firm performance, and vice versa. Additionally, H5 reveals that the effect of green intellectual capital on firm performance is weakened by the implementation of a green business strategy.

DISCUSSION

The results of our study offer valuable perspectives on the elements that impact the success of Craft SMEs.

The hypothesis testing suggest that the H1 hypothesis is supported, which

indicates that green human capital has a positive and significant impact on small business performance. These findings are also supported by previous research that suggests that green human capital can have a positive impact on business performance [12], [29]. The importance of green human capital in improving company performance is noted by Song et al., [28] The importance of green human capital is that employees' environmental knowledge and abilities are crucial to the success of SMEs and managers should hire individuals who have a superior understanding of the environment in order to contribute to green innovation and improve the performance of SMEs.

The results of the hypothesis testing suggest that the H2 hypothesis is supported, which indicates that green structural capital has a positive and significant impact on the performance of small businesses. These findings are also supported by previous research that suggests that green structural capital can enhance business performance [12], [21], [31]. SMEs devote funds to green structural capital and human capital, these resources are crucial to the organization's ability to fulfill demand in the market, including the capacity to adapt to environmental changes. Managers should attempt to invest in and develop a powerful GSC that will assist SMEs in the design of their processes and systems. This can facilitate the conversion of environmental knowledge into

practical abilities that can be applied to the organization, which would lead to increased performance.

The results of the hypothesis testing suggest that the H3 hypothesis is supported, which indicates that green capital related to relations has a positive and significant impact on the performance of small businesses. These findings are also supported by previous research that describes the importance of green relational capital in improving business performance [12], [21], [30], [31]. The utilization of this capital is difficult for competitors to replicate [30]. SMEs are more inclined to utilize relational capital to facilitate the integration of environmental information, this can lead to increased performance, specifically if the company's partner, client and supplier relationships are strong.

From the results of the hypothesis test, it can be seen that the H4 hypothesis is reject, which indicated that green intellectual capital has a significant negative impact on the performance of SME's. The results of this study show the opposite direction to the hypothesis, i.e. the direction is negative, meaning that when GIC is high, SME performance decreases and vice versa. Furthermore, this result is contradicted by previous research that green intellectual capital can improve company performance [12], [31]. Firm performance requires GIC to respond to internal and external opportunities and mitigate threats [12]. Managers seeking to implement environmental programs should consider GIC as a comprehensive guide because GIC is an intangible resource that helps achieve superior organizational performance and make it sustainable.

The results of the hypothesis testing indicate that the H5 hypothesis is rejected, which indicates that GBS diminishes the effectiveness of GIC on the performance of SMEs. Previous studies have demonstrated that GIC has a significant role in the development of GBS in manufacturing companies [17]. Additionally, environmental employees and company managers collaborate to enhance GBS and to achieve superior performance [14]. This is attributed

to the significant role of GIC in the GBS relationship, as the organization's human resources are responsible for initiating and implementing environmental initiatives within the company. These findings demonstrate the importance of GIC and GBS to the performance of a company. The findings of this study contribute to the existing literature on SME performance, highlighting the role of GBS in mitigating the impact of GIC on SME performance. GBS facilitates the development of green plans that will contribute to the green knowledge base and help managers make more informed decisions, this will lead to environmentally friendly company performance.

5. CONCLUSION

This research demonstrates some previously documented findings that GHC has a positive and significant impact on firm performance, which means that the abilities of employees and managers in environmental conservation can have a positive effect on the performance of SMEs. GSC has a positive and significant impact on firm performance, which means that the system and expertise of small businesses in environmental conservation can augment the performance of SMEs. GRC has a positive impact on firm performance, this means that SMEs can enhance their performance by maintaining relationships with stakeholders in order to improve their own performance. GIC has a negative, significant impact on firm performance. Conversely, SME performance is dependent on GIC's response to internal and external stimuli, as well as dangers. GBS decreases the importance of GIC in the performance of SMEs. Therefore, to develop craft industry SMEs, it is recommended to encourage employees to engage in environmentally friendly practices, manage waste effectively and sustainably, strengthen relationships with stakeholders for environmental preservation, pursue continuous innovation and operational efficiency, and design eco-friendly products using sustainable materials.

REFERENCE

- [1] S. Borghesi, G. Cainelli, and M. Mazzanti, "Linking emission trading to environmental innovation: Evidence from the Italian manufacturing industry," *Res Policy*, vol. 44, no. 3, pp. 669–683, Apr. 2015, doi: 10.1016/J.RESPOL.2014.10.014.
- [2] Y. Jin, C. Cheng, and H. Huixiang Zeng, "Is evil rewarded with evil? The market penalty effect of corporate environmentally irresponsible events," 2019, doi: 10.1002/bse.2403.
- [3] Kementerian Lingkungan Hidup dan Kehutanan, "Indeks Kualitas Lingkungan Hidup," Jakarta, Dec. 2021.
- [4] A. D. Amara, "Bagaimana Sampah Dapat Memengaruhi Hutan dan Sumber Air?," *Waste4change Alam Indonesia*, Mar. 20, 2021. Accessed: Oct. 12, 2023. [Online]. Available: <https://waste4change.com/blog/bagaimana-sampah-memengaruhi-hutan-dan-sumber-air/>
- [5] A. W. Saraswati, "Ancaman Masalah Sampah di Indonesia," *Greeneration Foundation*, Bandung, Feb. 03, 2022. Accessed: Oct. 12, 2023. [Online]. Available: <https://greeneration.org/publication/green-info/ancaman-masalah-sampah-di-indonesia/>
- [6] W. Jun, W. Ali, M. Y. Bhutto, H. Hussain, and N. A. Khan, "Examining the determinants of green innovation adoption in SMEs: a PLS-SEM approach," *European Journal of Innovation Management*, vol. 24, no. 1, pp. 67–87, Dec. 2019, doi: 10.1108/EJIM-05-2019-0113.
- [7] Sabihaini, A. Kurniawan, J. Eko Prasetyo, and Rusdiyanto, "Environmental analysis and impact on green business strategy and performance in SMEs post the Covid-19 pandemic," *Cogent Economics & Finance*, vol. 12, no. 1, Dec. 2024, doi: 10.1080/23322039.2024.2330428.
- [8] A. Hariyono and I. M. Narsa, "The value of intellectual capital in improving MSMEs' competitiveness, financial performance, and business sustainability," *Cogent Economics & Finance*, vol. 12, no. 1, Dec. 2024, doi: 10.1080/23322039.2024.2325834.
- [9] T.-Y. Chiou, H. K. Chan, F. Lettice, and S. H. Chung, "The influence of greening the suppliers and green innovation on environmental performance and competitive advantage in Taiwan," *Transp Res E Logist Transp Rev*, vol. 47, no. 6, pp. 822–836, Nov. 2011, doi: 10.1016/j.tre.2011.05.016.
- [10] S. Sabihaini, D. Hadiwidjiyo, D. Djumahir, and M. Rahayu, "Kompleksitas Lingkungan Dan Regulasi Pemerintah: Implikasinya Terhadap Kinerja Perbankan Di Jawa Timur," *Jurnal Keuangan dan Perbankan*, vol. 16, no. 3, pp. 455–471, 2012.
- [11] Y. Guo, L. Wang, and Q. Yang, "Do corporate environmental ethics influence firms' green practice? The mediating role of green innovation and the moderating role of personal ties," *J Clean Prod*, vol. 266, p. 122054, Sep. 2020, doi: 10.1016/j.jclepro.2020.122054.
- [12] C. H. Wang and W. Juo, "An environmental policy of green intellectual capital: Green innovation strategy for performance sustainability," *Bus Strategy Environ*, vol. 30, no. 7, pp. 3241–3254, Nov. 2021, doi: 10.1002/bse.2800.
- [13] Y. Li, "Environmental innovation practices and performance: moderating effect of resource commitment," *J Clean Prod*, vol. 66, pp. 450–458, Mar. 2014, doi: 10.1016/j.jclepro.2013.11.044.
- [14] N. Bıçakcıoğlu, V. Theoharakis, and M. Tanyeri, "Green business strategy and export performance," *International Marketing Review*, vol. 37, no. 1, pp. 56–75, Jul. 2019, doi: 10.1108/IMR-11-2018-0317.
- [15] R. M. Rodríguez-González, G. Maldonado-Guzman, and A. Madrid-Guijarro, "The effect of green strategies and eco-innovation on Mexican automotive industry sustainable and financial performance: Sustainable supply chains as a mediating variable," *Corp Soc Responsib Environ Manag*, vol. 29, no. 4, pp. 779–794, Jul. 2022, doi: 10.1002/csr.2233.
- [16] S. Yahya, S. Jamil, and M. Farooq, "The impact of green organizational and human resource factors on developing countries' small business firms tendency toward green innovation: A natural resource-based view approach," *Creativity and Innovation Management*, vol. 30, no. 4, pp. 726–741, Dec. 2021, doi: 10.1111/caim.12469.
- [17] S. Begum, M. Ashfaq, K. Asiaei, and K. Shahzad, "Green intellectual capital and green business strategy: The role of green absorptive capacity," *Bus Strategy Environ*, Mar. 2023, doi: 10.1002/bse.3399.
- [18] H. Lin, L. Chen, M. Yuan, M. Yu, Y. Mao, and F. Tao, "The eco-friendly side of narcissism: The case of green marketing," *Sustainable Development*, vol. 29, no. 6, pp. 1111–1122, Nov. 2021, doi: 10.1002/sd.2206.
- [19] S. U. Rehman, S. Kraus, S. A. Shah, D. Khanin, and R. V. Mahto, "Analyzing the relationship between green innovation and environmental performance in large manufacturing firms," *Technol Forecast Soc Change*, vol. 163, p. 120481, Feb. 2021, doi: 10.1016/j.techfore.2020.120481.
- [20] K. Asiaei, N. G. O'Connor, O. Barani, and M. Joshi, "Green intellectual capital and ambidextrous green innovation: The impact on environmental performance," *Bus Strategy Environ*, vol. 32, no. 1, pp. 369–386, Jan. 2023, doi: 10.1002/bse.3136.
- [21] Y. M. Yusoff, M. K. Omar, M. D. Kamarul Zaman, and S. Samad, "Do all elements of green intellectual capital contribute toward business sustainability? Evidence from the Malaysian context using the Partial Least Squares method," *J Clean Prod*, vol. 234, pp. 626–637, Oct. 2019, doi: 10.1016/j.jclepro.2019.06.153.
- [22] N. M. Suki, N. M. Suki, A. Sharif, S. Afshan, and G. Rexhepi, "Importance of green innovation for business sustainability: Identifying the key role of green intellectual capital and green SCM," *Bus Strategy Environ*, vol. 32, no. 4, pp. 1542–1558, May 2023, doi: 10.1002/bse.3204.
- [23] S. Sabihaini and J. E. Prasetyo, "Competitive strategy and business environment on SMEs performance in YOGYAKARTA, INDONESIA," *International Journal of Management (IJM)*, vol. 11, no. 8, pp. 1370–1378, 2020.
- [24] C. R. G. Popescu, "Addressing Intellectual Capital in the Context of Integrated Strategy and Performance: Emphasizing the Role of Companies' Unique Value Creation Mechanism, While Targeting Better Organizational

- Reporting In Romania: The Case of Green Marketing and Green Marketing Strategies," *Journal of Marketing Research & Case Studies*, vol. 2019, p. 672821, 2019.
- [25] S. Begum, E. Xia, F. Ali, U. Awan, and M. Ashfaq, "Achieving green product and process innovation through green leadership and creative engagement in manufacturing," *Journal of Manufacturing Technology Management*, vol. 33, no. 4, pp. 656–674, May 2022, doi: 10.1108/JMTM-01-2021-0003.
- [26] C. Baah et al., "Examining the correlations between stakeholder pressures, green production practices, firm reputation, environmental and financial performance: Evidence from manufacturing SMEs," *Sustain Prod Consum*, vol. 27, pp. 100–114, Jul. 2021, doi: 10.1016/j.spc.2020.10.015.
- [27] A. Farrukh, S. Mathrani, and A. Sajjad, "Green-lean-six sigma practices and supporting factors for transitioning towards circular economy: A natural resource and intellectual capital-based view," *Resources Policy*, vol. 84, p. 103789, Jul. 2023, doi: 10.1016/j.resourpol.2023.103789.
- [28] W. Song, H. Yu, and H. Xu, "Effects of green human resource management and managerial environmental concern on green innovation," *European Journal of Innovation Management*, vol. 24, no. 3, pp. 951–967, May 2021, doi: 10.1108/EJIM-11-2019-0315.
- [29] K. Asiaei, N. Bontis, R. Alizadeh, and M. Yaghoubi, "Green intellectual capital and environmental management accounting: Natural resource orchestration in favor of environmental performance," *Bus Strategy Environ*, vol. 31, no. 1, pp. 76–93, Jan. 2022, doi: 10.1002/bse.2875.
- [30] N. Zahoor and A. M. Gerged, "Relational capital, environmental knowledge integration, and environmental performance of small and medium enterprises in emerging markets," *Bus Strategy Environ*, vol. 30, no. 8, pp. 3789–3803, Dec. 2021, doi: 10.1002/bse.2840.
- [31] K. Asiaei, R. Jusoh, O. Barani, and A. Asiaei, "How does green intellectual capital boost performance? The mediating role of environmental performance measurement systems," *Bus Strategy Environ*, vol. 31, no. 4, pp. 1587–1606, May 2022, doi: 10.1002/bse.2971.
- [32] Y.-S. Chen, "The Positive Effect of Green Intellectual Capital on Competitive Advantages of Firms," *Journal of Business Ethics*, vol. 77, no. 3, pp. 271–286, Nov. 2008, doi: 10.1007/s10551-006-9349-1.
- [33] Sabihaini, J. E. Prasetyo, Rusdiyanto, and A. Kurniawan, "Moderating Effects of Business Strategy and Environmental Uncertainty on the Relationship Between Personal Characteristics and Performance of Indonesian SMEs," *International Journal of Sustainable Development and Planning*, vol. 18, no. 9, pp. 2819–2828, Sep. 2023, doi: 10.18280/ijstdp.180920.
- [34] F. A. Acep, S. Sabihaini, and H. T. R. I. SUTIONO, "Pengaruh Perencanaan Strategi Bisnis Terhadap Kinerja Usaha Kecil Menengah Yang Dimediasi Strategi Keunggulan Kompetitif," *Jurnal Administrasi Bisnis (JABis)*, vol. 18, no. 1, pp. 14–25, 2020.
- [35] J. F. Hair, J. J. Risher, M. Sarstedt, and C. M. Ringle, "When to use and how to report the results of PLS-SEM," *European Business Review*, vol. 31, no. 1, pp. 2–24, Jan. 2019, doi: 10.1108/EBR-11-2018-0203.
- [36] J. Henseler, C. M. Ringle, and M. Sarstedt, "A new criterion for assessing discriminant validity in variance-based structural equation modeling," *J Acad Mark Sci*, vol. 43, no. 1, pp. 115–135, Jan. 2015, doi: 10.1007/s11747-014-0403-8.