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Understanding the nexus of green innovation and sustainable performance: evidence from the tourism industry in Indonesia

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Abstract

Purpose – This study examines the role of green innovation strategy (GIS) and green innovation readiness (GIR), particularly technology readiness (TR), organizational readiness (OR), and environmental readiness (ER), in facilitating the implementation of green innovation (GI) and its subsequent impact on sustainable performance (SP). These readiness factors help organizations prepare for effective GI adoption and sustainability transition.

Design/methodology/approach – A quantitative research approach was employed to test two structural models using data from 286 respondents representing SMEs in tourist areas within the Yogyakarta Special Region. Structural Equation Modeling (SEM) was used to examine the effects of readiness factors on GI and sustainability performance.

Findings – The first model confirms that both GIS and GIR positively and significantly affect GI, which, in turn, has a significant positive impact on SP. The second model further demonstrates that TR, OR, and ER each have positive and significant effects on GI, which subsequently enhances environmental, economic, and social sustainability outcomes.

Originality/value – This study advances the literature by offering an integrated framework that simultaneously investigates GIS, GIR, GI, and SP within a single model. By focusing on tourism-based SMEs in a developing country context, this study provides new empirical insights into how strategic and readiness-based factors interact to support green innovation.

Keywords Green innovation, Green innovation readiness, Green innovation strategy, Sustainable performance

Paper type Research article

1. Introduction

Innovation drives industrial growth and economic development across countries (Lin, Wang, & Wu, 2022). However, rapid industrialization has also intensified environmental degradation, including pollution, resource depletion, and climate change (Hysa, Kruja, Rehman, & Laurenti, 2020; Sinha, Sengupta, & Alvarado, 2020). This has led to the increasing recognition of the need for more sustainable practices, with a particular focus on green innovation as a critical solution to balance economic growth and environmental protection. In recent years, industries have faced tremendous pressure to lower their carbon footprint and reduce their negative environmental impacts, such as the stock exchange and construction industries in China (Li, Su, Ding, Tian, & Wu, 2024; Yang, Zhang, Yang, Qin, & Wang, 2024), the automotive industry in the USA (Hasan *et al.*, 2024), and agriculture in Malaysia (Raihan

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and Tuspekova, 2022). This phenomenon encourages organizations to focus on economic growth and take greater responsibility in terms of sustainability. Many organizations strive to improve economic performance, reduce environmental impacts, and positively contribute to society, which is called sustainability performance (Zhang, Sun, Yang, & Wang, 2020; Dalimunthe, Valeriani, Hartini, & Wardhani, 2020). Sustainability performance includes three main dimensions: environmental, social, and economic, known as the triple bottom line (Achmad, Prambudia, & Rumanti, 2023). To improve sustainability performance, companies in various industries have begun to adopt green innovation that combines environmentally friendly technologies with operational strategies to reduce negative environmental impacts while maintaining productivity and profits (Zhang, Sun, Yang, & Wang, 2020; Fernando, Jabbour, & Wah, 2019).

Green innovation has emerged as an essential approach to reducing negative environmental impacts while promoting sustainable growth (Zhang *et al.*, 2020; Song & Yu, 2018; Ge *et al.*, 2018). This concept refers to the development and implementation of environmentally friendly products, services, or processes that aim to reduce environmental damage and improve operational efficiency and long-term economic resilience. As described by Asadi *et al.* (2020) and Zhang (2020), green innovation is a systematic effort to apply technologies and strategies to reduce negative environmental impacts while strengthening corporate competitiveness and improving operational efficiency. Green innovation offers great potential to transform natural resource management and reduce environmental impacts, promoting sustainable economic growth (Asadi *et al.*, 2020).

The tourism industry is a key sector that contributes significantly to global and national economies by generating revenue, creating employment opportunities, and driving infrastructure development (Croes, Ridderstaat, Bąk, & Zientara, 2021). However, tourism also exerts considerable environmental pressure, including increased carbon emissions, waste generation, and high energy consumption (Achmad, Prambudia, & Rumanti, 2023). Recognizing this, countries worldwide, including Indonesia, have prioritized sustainable tourism development. The tourism industry contributes significantly to economic growth but also generates environmental challenges such as carbon emissions, waste, and resource depletion (Achmad *et al.*, 2023). Indonesia has prioritized sustainable tourism development due to its rich cultural and natural tourism potential (World Economic Forum, 2024). Yogyakarta, as one of Indonesia's major tourism destinations, plays an important role in supporting sustainable tourism initiatives through the Regional Tourism Development Master Plan (Government of Special Region of Yogyakarta, 2012). However, the rapid growth of tourism activities continues to create sustainability challenges, highlighting the need for effective green innovation implementation.

However, despite these promising prospects, effective and sustainable implementation of green innovations faces various complex challenges, especially in sectors with significant environmental impacts, such as the tourism industry (Lin *et al.*, 2019; El-Kassar & Singh, 2019; Gürlek and Koseoglu, 2021). Implementing green innovation in the tourism sector represents an important strategy for addressing ongoing sustainability challenges (Abbas & Sağsan, 2019; Asadi *et al.*, 2020). This involves adopting a green innovation strategy and ensuring readiness in three key areas: environmental, technological, and organizational (Zhang *et al.*, 2020). Environmental readiness encompasses understanding and managing natural resources at tourist destinations (Zhang *et al.*, 2020; Ramos, Ruiz-Pérez, & Alorda, 2021). Technological readiness involves incorporating eco-friendly technologies in tourism operations, such as renewable energy and energy-efficient solutions (Zhang *et al.*, 2020; Kim, Lee, & Preis, 2020). Organizational readiness pertains to the willingness of tourism entities to embrace green innovation in their culture and processes, including changing business models and investing in training (Zhang *et al.*, 2020; Dalimunthe *et al.*, 2020). Green innovation readiness, including technological, organizational, and environmental dimensions, is essential for effective green innovation adoption and long-term sustainability (Zhang *et al.*, 2020). By systematically evaluating these dimensions, organizations can proactively address gaps, enhance their

innovation capacity, and maximize the benefits of green innovation for long-term sustainability (Song & Yu, 2018; Soewarno, Tjahjadi, & Fithrianti, 2019; Ramos *et al.*, 2021).

This research brings significant novelty compared to previous studies that explored the topic of green innovation. Research from Asadi *et al.* (2020), Zhang *et al.* (2020), and Wang (2019) measures green innovation for sustainable business performance but not from readiness factors and green innovation strategy. Seeing the gap in research from several previous studies, this research explores green innovation strategy and the concept of green innovation readiness as critical factors that influence the successful implementation of green innovation, ultimately shaping sustainable performance in the tourism industry. While previous studies have examined the role of green innovation, there remains a limited understanding of how readiness factors—technology readiness, organizational readiness, and environmental readiness—act as enablers or barriers in the adoption process of green innovation.

This study examines how green innovation strategy and green innovation readiness contribute to green innovation implementation and sustainable performance. By integrating technological, organizational, and environmental readiness, the study explains how organizational preparedness shapes green innovation adoption and strengthens sustainability outcomes. The findings extend the green innovation literature by showing that successful implementation depends not only on external pressures and strategic initiatives but also on organizations' readiness to support sustainability practices. Focusing on the tourism sector, this study provides a holistic perspective on the role of readiness factors in enhancing or constraining green innovation effectiveness. The study also offers practical insights for businesses and policymakers in designing readiness-driven sustainability strategies to support long-term growth and resilience.

2. Theoretical and hypothesis development

2.1 Green innovation

Green innovation refers to the development and implementation of environmentally friendly products, processes, and practices that reduce environmental impacts while improving organizational performance and sustainability (El-Kassar & Singh, 2019; Khan, Kaur, Jabeen, & Dhir, 2021; Achmad and Wiratmadj, 2025). It includes initiatives such as energy efficiency, waste reduction, eco-friendly materials, and low-carbon technologies (Jermsittiparsert, Somjai, & Toopgajank, 2020). In the tourism sector, green innovation is increasingly important due to the industry's environmental impacts, including emissions, waste generation, and energy consumption. Prior studies suggest that successful green innovation implementation depends on organizational readiness and strategic orientation toward sustainability (Padilla-Lozano and Collazzo, 2022).

2.2 Green innovation strategy

Green innovation strategy focuses on the deliberate planning and policy formulation aimed at embedding green innovation into business operations. Green innovation strategy provides a structured approach for organizations to integrate sustainability objectives into their innovation processes, ensuring a proactive rather than reactive stance toward environmental challenges (Soewarno *et al.*, 2019; Song & Yu, 2018). This strategy involves setting strategic sustainability goals, such as reducing carbon footprints, minimizing waste, and increasing energy efficiency. Additionally, green innovation strategy includes allocating resources for green research and development (R&D) by investing in eco-friendly technologies and sustainable production methods (Achmad, Zulkarnain, Rumanti, Wiratmadja, & Shuhidan, 2025).

2.3 Green innovation readiness

Green innovation readiness refers to an organization's preparedness to adopt and implement green innovation by ensuring that essential conditions, resources, and capabilities are in place

(Asadi *et al.*, 2020). According to Zhang *et al.* (2020), readiness is defined as the "preparation and sufficient conditions" required for successful innovation adoption. Green innovation readiness consists of three key dimensions: technology readiness, organizational readiness, and environmental readiness. Technology readiness refers to the availability and access to sustainable technologies, such as renewable energy systems, eco-friendly production processes, and digital tools that facilitate innovation (Zhang *et al.*, 2020). Organizational readiness represents an organization's internal capacity to embrace innovation, including leadership commitment, employee competencies, operational flexibility, and a sustainability-driven corporate culture (Zhang *et al.*, 2020). Environmental readiness encompasses external factors that support green innovation, such as government policies, regulatory frameworks, consumer demand for sustainability, and financial incentives (Zhang *et al.*, 2020). Organizations with high green innovation readiness are better positioned to implement green innovation effectively, as they have both internal and external conditions conducive to sustainability-driven transformation.

2.4 Green innovation readiness and green innovation

Industries can optimize green innovation benefits through comprehensive readiness, which Zhang *et al.* (2020) define as the preparation and sufficient conditions required for an organization to successfully implement innovation. Readiness ensures that businesses possess the necessary resources, capabilities, and external support to facilitate green innovation adoption (Albort-Morant, Leal-Millán, & Cepeda-Carrión, 2016; Li, Huang, & Tong, 2021). Evaluating readiness before and during implementation is crucial, as it enables rapid business model development, enhances resource allocation, and strengthens core competencies (Xue, Boadu, & Xie, 2019; Tjahjadi, Agastya, Soewarno, & Adyantari, 2022). In the tourism industry, where sustainability challenges are particularly pressing, a structured approach to green innovation adoption is essential (Tjahjadi *et al.*, 2022). Zhang *et al.* (2020) highlight that readiness consists of three interdependent dimensions: technology readiness, organizational readiness, and environmental readiness. Technology readiness ensures that businesses have access to sustainable technologies, such as renewable energy and eco-friendly transportation. Organizational readiness reflects an organization's ability to adapt its operational processes, corporate culture, and management practices to effectively integrate green innovation. Environmental readiness, on the other hand, refers to external enablers such as pro-environment regulations, consumer demand for sustainable practices, and market incentives that drive the adoption of green products and services. A high level of readiness across these dimensions creates the necessary conditions for industries, including tourism, to seamlessly and effectively embrace green innovation.

Lin *et al.* (2022) emphasize that environmental investment and technology readiness are key factors influencing the success of green innovation, as adequate financial and technological support significantly enhances an organization's ability to implement sustainability-driven innovations. Additionally, Zhang *et al.* (2020) examined how these readiness dimensions shape green innovation performance, finding that technological, organizational, and environmental readiness collectively influence a company's innovation capabilities. Beyond these factors, organizational learning plays a critical role in green innovation success, as it strengthens firms' ability to absorb and implement environmentally sustainable practices (Tu & Wu, 2021; Zhang, Sun, Yang, & Li, 2018). Tu and Wu (2021) further argue that green innovation fosters competitive advantage, particularly when organizations integrate it with continuous learning and adaptation strategies. Therefore, understanding and strengthening readiness factors is crucial for ensuring the effective implementation of green innovation and achieving long-term sustainability. Based on previous thoughts, the following hypothesis is proposed:

H1. Green innovation readiness (GIR) positively affects green innovation (GI).

H1a. Technology readiness (TR) positively affects green innovation (GI).

H1b. Organization readiness (OR) positively affects green innovation (GI).

H1c. Environment readiness (ER) positively affects green innovation (GI).

2.5 Green innovation strategy and green innovation

Modern industries, facing environmental challenges and pressures, recognize the importance of environmentally friendly innovation for sustainable development and competitive advantages (Sun and Sun, 2021; Rui & Lu, 2021). A focus on a green innovation strategy enhances resources for eco-friendly products or processes, promoting green innovation within industries (Soewarno *et al.*, 2019). This strategy integrates environmental, sustainability, and efficiency aspects into innovation processes (Lin, Cheah, Azali, Ho, & Yip, 2019; Zhang *et al.*, 2020), aiming to develop environmentally friendly products, services, or processes that improve sustainability performance and reduce negative environmental impacts (Zhang *et al.*, 2020). Green innovation strategies support both business interests and environmental goals, such as reducing carbon emissions, saving resources, and preserving ecosystems (Asadi *et al.*, 2020; Song & Yu, 2018; Ge *et al.*, 2018). Acting as a catalyst, these strategies enable organizations to proactively foster eco-friendly innovations, creating a conducive environment and alleviating government-imposed regulatory pressures (Wang, 2019; Cao & Chen, 2019; Albort-Morant *et al.*, 2016).

Song and Yu (2018) states that a green innovation strategy positively influences an organization's environmental image and creativity in addressing environmental issues. The research establishes a positive relationship between the environmental image of an organization and creativity, with this creativity positively impacting sustainable innovation development. Soewarno *et al.* (2019) findings suggest that organizations adopting green innovation strategies proactively have enhanced opportunities for developing eco-friendly products and services. These strategies encourage the pursuit of sustainable and efficient solutions in operations, fostering a culture of innovation and motivating professionals to create greener products. Effective implementation of green innovation strategies in industries, as concluded by Asadi *et al.* (2020), tends to reduce the environmental impact of production processes. This reduction is achieved through prioritizing energy efficiency, sustainable use of raw materials, and improved waste management (Asadi *et al.*, 2020; Song & Yu, 2018), leading to decreased carbon emissions and other negative environmental impacts. Based on previous thoughts, the following hypothesis is proposed:

H2. Green innovation strategy (GIS) positively affects green innovation (GI).

2.6 Green innovation and sustainable performance

Innovation in organizations supporting business goals and strategic competitiveness is very important. Likewise, environmentally friendly innovation is likely to positively impact company performance and comprehensive benefits derived from developing environmentally friendly products, increasing operational efficiency, and increasing managerial effectiveness (Sobaih, Hasanein, & Elshaer, 2020). In addition, environmentally friendly processes and product innovation not only minimize the negative impact of business on the environment but also improve organizations' social and financial performance by minimizing costs and waste (Weng, Chen, & Chen, 2015). Moreover, green innovation is considered a key tool for the successful performance of their businesses (Khalid, Ahmad, Ramayah, Hwang, & Kim, 2019; El-Kassar & Singh, 2019) to achieve their green goals. There is empirical evidence that green innovation has a positive effect on sustainable performance (Asadi *et al.*, 2020; Wang & Juo, 2021; Kraus, Rehman, & García, 2020). Research from Kraus *et al.* (2020) shows that green innovation can positively improve environmental performance and significantly mediate

between corporate social responsibility and environmental performance. Weng *et al.* (2015) emphasized that innovation and technology transfer can sometimes reduce environmental impact. Research from Asadi *et al.* (2020) stated the importance and potential of environmentally friendly innovation in driving sustainable performance in the hotel industry. Abbas & Sağsan's (2019) research found that companies that actively implemented green innovation experienced reduced operational costs, increasing their profitability. Green innovation often involves energy efficiency, better waste management, and more sustainable raw materials. This leads to reduced operational costs, an essential factor in sustainable performance. Based on previous thoughts, the following hypothesis is proposed:

H3. Green innovation (GI) positively affects sustainable performance (SP)

H3a. Green innovation (GI) positively affects environment sustainability (ENS)

H3b. Green innovation (GI) positively affects economic sustainability (ECS)

H3c. Green innovation (GI) positively affects social sustainability (SOS)

Based on the hypothetical explanation in the paragraph above, which explains the role of green innovation strategy and readiness in the tourism industry and how green innovation will influence sustainable performance. So, the entire formulation of the hypothesis in this research can be seen in Figure 1.

3. Methodology

3.1 Sample and data collection

Quantitative research methods are the optimal choice when the primary goal of the research is to recognize significant relationships between the variables involved. Data were collected using a structured questionnaire. The target population for this research consists of SMEs located around tourist areas. The sampling process focused on SMEs operating in the tourism sector, which were selected based on their direct involvement in providing products and services to tourists. Since the total population of SMEs engaged in tourism-related activities in Yogyakarta is unknown, this study employed non-probability sampling, specifically purposive sampling. According to Purwono, Ulya, Purnasari, and Juniatmoko (2019), purposive sampling is appropriate when the exact population size is unavailable, allowing researchers to select respondents based on specific characteristics relevant to the study. This study specifically targeted SMEs directly involved in tourism-related activities, ensuring that the collected data was contextually relevant and representative of the tourism sector's adoption of

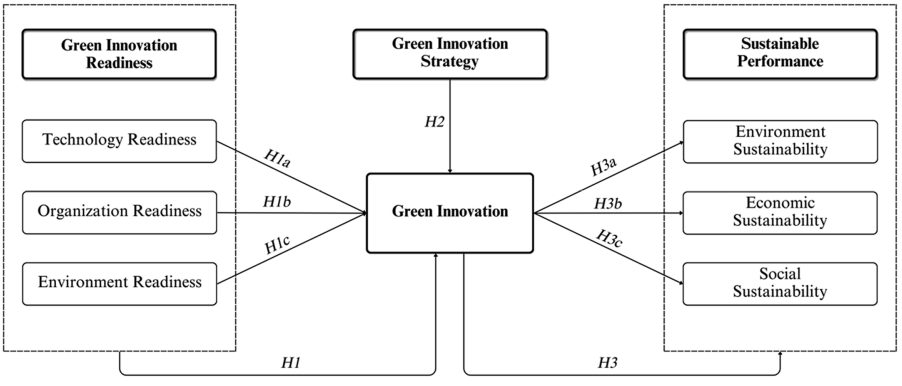

Figure 1. Theoretical model

green innovation. Random sampling, in contrast, may have included SMEs that are not directly relevant to tourism, reducing data validity for hypothesis testing (Slater & Hasson, 2025). SMEs were chosen for their pivotal role in supporting the tourism ecosystem through various activities, including accommodation, transportation, food services, and cultural or entertainment experiences. These SMEs contribute significantly to the overall value chain of tourism by offering localized and diversified services that enhance the tourist experience (Achmad *et al.*, 2023). The process of reaching respondents involved collaboration with local SME associations and the Department of Tourism, which provided access to SMEs around tourism areas. Yogyakarta, located in Indonesia on the island of Java, is a Special Region known for its rich cultural heritage and significant tourism potential. It is one of the major tourist destinations in Indonesia, attracting both domestic and international visitors. Yogyakarta offers a range of tourism experiences, including cultural, natural, and religious tourism, making it a key area for studying the impact of tourism on sustainability. Its unique geographical location and the diversity of its attractions make it an ideal setting for exploring how green innovation affects sustainable performance in the tourism industry.

Data were collected from February to November 2023 using online and offline questionnaires distributed to tourism SMEs. Of 286 questionnaires, 283 valid responses were obtained, yielding a 98.95% response rate. The high response rate in this survey was achieved through an effective questionnaire distribution strategy and a structured follow-up approach. The questionnaire was distributed online via digital platforms, email, and offline via direct communication with SME owners and managers in collaboration with local tourism business associations. This approach increased the study's credibility and encouraged the participation of respondents who felt the topic was relevant to their industry. In addition, a sufficient data collection period and a systematic follow-up strategy, such as reminders via email, phone calls, and in-person visits, ensured that participants who initially did not respond were encouraged to participate. This personalized approach significantly reduced the non-response rate and increased the overall survey completion rate. A sample size of 283 respondents was deemed appropriate following Hair, Risher, Sarstedt, and Ringle (2019) recommendation of ten times the highest number of structural paths in the model.

The questionnaire was distributed to SMEs leaders using a 6-point Likert scale or even numbers, with the number 1 being "strongly disagree" and 6 being "strongly agree" (Hair *et al.*, 2019). Researchers avoid odd questionnaires to avoid biased answers with neutral categories (Hair *et al.*, 2019). Complete details regarding the target and sample SMEs, as well as characteristics of respondents, are presented in Table 1. In determining the sample size, this research followed the guidelines suggested by Hair *et al.* (2019), using ten times the highest number of structural paths leading to a specific latent construct in the structural model.

3.2 Instrument development

This research develops the model presented in Figure 1. Each construct and its operationalization are clearly defined, with details on how each item was measured and incorporated into the structural model. Two models will be tested in this research. The first model measures the impact of GIR and all its dimensions (TR, OR, and ER) and GIS on GI. Furthermore, this research also describes the impact of GI on SP and all its dimensions (ENS, ECS, and SOS). In addition, a second model of each dimension of each construct was also examined. In this research, the data used is based on the results of distributing and filling out qualitative questionnaires. The statement items in the questionnaire were selected based on careful elaboration and literature review. The research instrument has previously been tested by academics with expertise in the tourism sector, SME coordinators, and tourism coordinators. The main goal is to remove imprecise wording and simplify the administration of the instrument.

The independent variables include GIR and GIS. GIS is assessed with 6 question items focusing on organizations' use of green innovation strategies in operational processes (Asadi *et al.*, 2020; Soewarno *et al.*, 2019). GIS, also with three dimensions (TR, OR, ER), comprises

Table 1. Characteristic of respondent

Characteristic	Number of respondents (n = 283)	(%)
Type of SMEs		
Food and beverage	87	30.74%
Transportation and accommodation	45	15.90%
Craft	53	18.73%
Fashion clothing	53	18.73%
Market for antique	8	2.83%
Art and performing	37	13.07%
Gender		
Male	204	72.08%
Female	79	27.92%
Age of SMEs		
1–10 years	56	19.79%
11–20 years	129	45.58%
21–30 years	44	15.55%
31–40 years	35	12.37%
≥40 years	19	6.71%
Respondent's Age		
<20 years	9	3.18%
20–25 years	42	14.84%
26–30 years	69	24.38%
31–35 years	44	15.55%
36–40 years	56	19.79%
≥40 years	63	22.26%
Number of Workers		
<5 workers	23	8.13%
6–10 workers	42	14.84%
11–15 workers	66	23.32%
16–20 workers	122	43.11%
21–25 workers	21	7.42%
≥25 workers	9	3.18%
Product sales region		
Nasional	235	83.04%
Global	48	16.96%

16 question items (Zhang *et al.*, 2020; Jun, Ali, Bhutto, Hussain, & Khan, 2021). Dependent variable, GI is assessed with 7 question items (Asadi *et al.*, 2020; Soewarno *et al.*, 2019). SP, measured through three dimensions (ENS, ECS, SOS), evaluates sustainable tourism performance. ENS assesses the environmental impact with 5 statement items, ECS gauges economic impact with 5 statement items, and SOS evaluates social impacts with 5 statement items (Shahzad *et al.*, 2021). This holistic approach covers environmental, economic, and social aspects in measuring sustainability integration into tourism performance. The measurement items are provided in Appendix A.

4. Result

This research employs Partial Least Squares Structural Equation Modeling (PLS-SEM) to assess the model. PLS-SEM was employed due to its suitability for exploratory models, non-normal data, and complex structural relationships (Hair *et al.*, 2019). PLS-SEM involves two

critical stages: the measurement model stage and the structural model stage, both requiring thorough evaluation to ensure analysis validity and reliability (Hair *et al.*, 2019).

4.1 Assessment of the measurement model

The measurement model serves as an intermediary stage that illustrates the connection between indicators and constructs (Hair *et al.*, 2019). The assessment of the measurement model in the initial form of a reflective model involves four key stages: namely internal consistency evaluation, indicator reliability evaluation, convergent validity evaluation, and discriminant validity evaluation.

Internal Consistency Evaluation in this study, assessed through Cronbach's Alpha and Composite Reliability, confirms satisfactory consistency within the measurement model (Hair *et al.*, 2019). For reliability indicators, outer loading values below 0.4 warrant exclusion, while values equal to or exceeding 0.7 are considered outstanding. The assessment in this study adheres to these criteria (Hair *et al.*, 2019). The subsequent evaluation is convergent validity, where the instrument is deemed valid if the Average Variance Extracted (AVE) result is > 0.5 (Hair *et al.*, 2019). Discriminant validity evaluation is the next stage, utilizing cross-loading values and the Fornell-Larcker criterion, both of which demonstrate that all constructs meet the criteria. All criteria are met properly (Hair *et al.*, 2019). The results of the measurement model assessment are detailed in Tables 2–3.

4.2 Assessment of the structural model

Path coefficients from PLS-SEM results, with associated p-values and t-statistics, undergo testing for the research hypothesis using a two-tailed bias-corrected Accelerated Bootstrap method, with a predetermined significance level of 0.05. Accelerated bootstrapping, employing 5,000 subsamples, quickly generates samples to estimate the sampling distribution of model parameters (Hair *et al.*, 2019). Hypothesis validation depends on a t-value exceeding 1.96 and a p-value below 0.05; otherwise, it is rejected (Hair *et al.*, 2019). Table 4 presents the outcomes of the structural model, where statistically significant path coefficients between dependent and independent variables indicate hypothesis validation.

Model 1 shows that all hypotheses (H1, H2, and H3) proposed in this research are supported. GIR has a positive effect on GI ($\beta = 0.257$, t-value $= 4.024$, $p < 0.05$). Besides that, GIS also positively affects GI ($\beta = 0.519$, t-value $= 8.802$, $p < 0.05$). Conversely, GI positively and significantly influenced SP ($\beta = 0.473$, t-value $= 7.466$, $p < 0.05$). Model 2 shows that H1a, H1b, and H1c are accepted. TR has a significantly positive effect on GI ($\beta = 0.141$, t-value $= 2.066$, $p < 0.05$), OR has a significantly positive effect on GI ($\beta = 0.178$, t-value $= 2.502$, $p < 0.05$), and ER has a significant positive effect on GI ($\beta = 0.148$, t-value $= 2.120$, $p < 0.05$). H2 is also proven and accepted that GIS has a positive effect on GI. In the end, GI was significantly and positively related to ENS ($\beta = 0.355$, t-value $= 5.295$, $p < 0.05$), ECS ($\beta = 0.276$, t-value $= 4.099$, $p < 0.05$), and SOS ($\beta = 0.341$, t -value $= 5.247$, $p < 0.05$). Thus, model 2 in this research is supported by H3a, H3b, and H3c.

Model quality was evaluated using VIF, R^2, and Q^2 values. First, the VIF of the latent variable is acceptable because it is less than 5, thus indicating the absence of multicollinearity. Therefore, the measurement model is satisfactory (Hair *et al.*, 2019)—second, R^2 adjustment. GI (43.7%), STD (26.5%), and SOS (29.6%) have R^2 values ≥ 0.50. These values indicate acceptable explanatory power (Hair *et al.*, 2019). Meanwhile, ENS (21.8%) and ECS (17.0%) have an R^2 value < 0.25. Therefore, it is considered weak in explaining the variability of endogenous variables. Third, a Q^2 value above 0 indicates prediction accuracy (Hair *et al.*, 2019). The results of testing the quality of the model are presented in Table 5, and Figure 2 presents the research model, which describes the structural relationship between all hypotheses that have a significant relationship with the dependent and independent variables.

Table 2. Constructs' reliability and convergent validity

Latent construct	Item	Outer loading	Cronbach's alpha	Composite reliability	AVE
Green innovation readiness (GIR)					
Technology Readiness (TR)	TR1	0.729	0.821	0.864	0.516
	TR2	0.790			
	TR3	0.691			
	TR4	0.613			
	TR5	0.782			
	TR6	0.690			
Organization Readiness (OR)	OR1	0.850	0.835	0.744	0.503
	OR2	0.937			
	OR3	0.420			
Environment Readiness (ER)	ER1	0.842	0.873	0.907	0.662
	ER2	0.746			
	ER3	0.887			
	ER4	0.841			
	ER5	0.741			
Green Innovation Strategy (GIS)	GIS1	0.789	0.732	0.816	0.505
	GIS2	0.701			
	GIS3	0.583			
	GIS4	0.755			
	GIS5	0.590			
Green Innovation (GI)	GI3	0.561	0.755	0.838	0.514
	GI4	0.606			
	GI5	0.776			
	GI6	0.844			
	GI7	0.757			
Sustainable Performance (SP)					
Environment Sustainability (ENS)	ENS1	0.674	0.780	0.849	0.531
	ENS2	0.727			
	ENS3	0.806			
	ENS4	0.785			
	ENS5	0.639			
Economic Sustainability (ECS)	ECS1	0.791	0.810	0.869	0.573
	ECS2	0.839			
	ECS3	0.809			
	ECS4	0.720			
	ECS5	0.599			
Social Sustainability (SOS)	SOS2	0.781	0.723	0.825	0.542
	SOS3	0.726			
	SOS4	0.664			
	SOS5	0.769			

Table 3. Fornell-Larcker criterion analysis

	ECS	ENS	ER	GI	GIS	OR	SOS	TR
ECS	*0.757*							
ENS	0.397	*0.729*						
ER	0.297	0.260	*0.813*					
GI	0.264	0.343	0.228	*0.717*				
GIS	0.203	0.461	0.187	0.565	*0.689*			
OR	0.204	0.135	0.470	0.088	0.119	*0.682*		
SOS	0.405	0.314	0.296	0.326	0.314	0.289	*0.736*	
TR	0.192	0.193	0.590	0.161	0.180	0.566	0.272	*0.718*

Table 4. Hypotheses results

Hypotheses		Model 1 β value	*T*-values	Model 2 β value	*T*-values	*p* value	Result
H1	GIR → GI	0.257	4.024	–	–	0.000	Accepted
H1a	TR → GI	–	–	0.141	2.066	0.047	Accepted
H1b	OR → GI	–	–	0.178	2.502	0.030	Accepted
H1c	ER → GI	–	–	0.148	2.120	0.034	Accepted
H2	GIS → GI	0.519	8.802	0.546	10.302	0.000	Accepted
H3	GI → SP	0.473	7.466	–	–	0.000	Accepted
H3a	GI → ENS	–	–	0.355	5.295	0.000	Accepted
H3b	GI → ECS	–	–	0.276	4.099	0.000	Accepted
H3c	GI → SOS	–	–	0.341	5.247	0.000	Accepted

Table 5. VIF value, R^2 value and Q^2 value

	VIF max	R^2	R^2 adj	Q^2
GI	1.847	0.437	0.427	0.259
STD	1.000	0.265	0.262	0.146
ENS	1.000	0.218	0.214	0.157
ECS	1.000	0.170	0.167	0.136
SOS	1.000	0.206	0.203	0.148

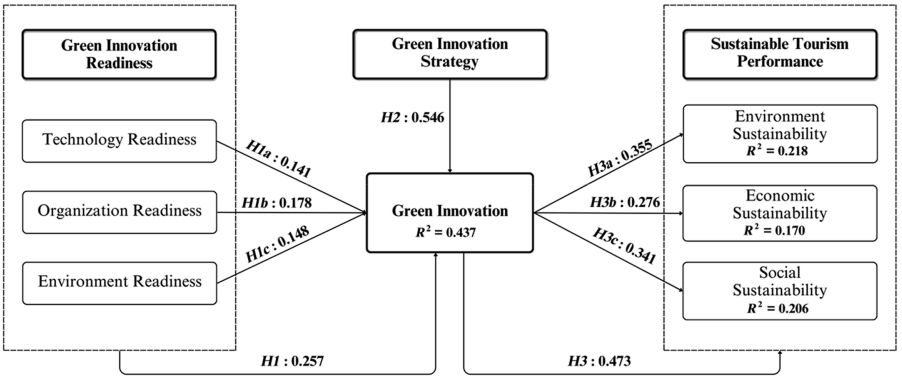

Figure 2. Result of hypotheses testing

5. Discussion

This research investigates the relationship between GIS and GIR in the context of applying GI, also exploring the impact of GI on SP in the tourism industry. The findings indicate a positive influence of GIR on GI, with each GIR dimension (TR, OR, and ER) contributing positively to GI (β values: 0.141, 0.178, and 0.148). These results support Hypothesis 1 ($p < 0.05$), consistent with previous studies by Zhang *et al.* (2020) and Jun *et al.* (2021), and emphasize the importance of multidimensional readiness in facilitating green transformation in SMEs. From

a theoretical perspective, this study reinforces the conceptual framework that a high level of GIR, which encompasses technological, organizational, and environmental components, significantly contributes to GI implementation. The results ($\beta = 0.257$, $t = 4.024$, $p < 0.05$) validate the notion that when SMEs are better prepared internally and externally, they can adopt GI more effectively, supporting the views of Pigosso, Schmiegelow, and Andersen (2018) and Fridgeirsson, Ingason, and Onjala (2023). Each readiness dimension was also tested individually (H1a, H1b, H1c), showing positive and significant relationships: TR ($\beta = 0.141$, $t = 2.066$), OR ($\beta = 0.178$, $t = 2.502$), and ER ($\beta = 0.148$, $t = 2.120$). These findings highlight that readiness is not a singular construct but an integrated system that enables strategic innovation adoption. In terms of practical implications, these findings suggest that policymakers and practitioners in the tourism sector should invest in the technological infrastructure, build internal capabilities, and strengthen external support systems to accelerate the adoption of green innovation. For example, OR reflects the organization's internal environment, including culture and management, which must support innovation (Zhang *et al.*, 2020; Jun *et al.*, 2021). ER is especially critical in Yogyakarta, where tourism depends on environmental and cultural preservation, such as waste management programs, eco-friendly transportation, and sustainable resource use. This finding reinforces the importance of ER in fostering green innovation in regions where tourism relies heavily on environmental preservation.

H2 proposes a positive relationship between GIS and GI, which is empirically supported ($\beta = 0.519$, t-value $= 8.802$, $p < 0.05$) and consistent with Ge *et al.* (2018), indicating that GIS implementation promotes green practices. The high β and t-values demonstrate that a well-formulated green innovation strategy significantly enhances green innovation adoption and supports the alignment of strategic initiatives with sustainability goals. Gao, Sun, Yuan, Xue, and Sheng (2021) and Soewarno *et al.* (2019) also highlight capital investment and technology as important drivers of environmentally friendly practices among SMEs. The findings confirm that strategic planning for green innovation strengthens organizations' ability to integrate sustainable practices. Practically, a formalized GIS through policies, resource allocation, and sustainability-oriented R&D enables tourism SMEs in Yogyakarta to adopt eco-friendly practices such as waste management, renewable energy use, and sustainable accommodations. These findings emphasize the important role of GIS in supporting both business performance and environmental sustainability in the tourism industry.

H3 proposes that GI is positively related to SP. Based on hypothesis testing, H3 in this research is supported and shows a positive relationship between GI and SP ($\beta = 0.473$, t-value $= 7.466$, $p < 0.05$). This statistically significant relationship ($p < 0.05$) illustrates that green innovation enhances sustainability performance across environmental, economic, and social dimensions. Organizations that prioritize environmentally oriented innovation are more likely to design and utilize resources for sustainable processes and products, aligning with previous findings by Asadi *et al.* (2020). In the context of tourism, such practices include improving energy efficiency, managing waste responsibly, and integrating renewable resources. These not only reduce environmental impact but also attract environmentally conscious tourists, reinforcing earlier research by Wang, Wang, and Chang (2022) on the economic advantages of green practices. The validation of Hypothesis 3 is further supported through sub-hypotheses H3a, H3b, and H3c. H3a confirms a positive relationship between GI and ENS ($\beta = 0.355$, $t = 5.295$, $p < 0.05$), with GI practices such as recycling, pollution control, and energy efficiency proving integral to environmental performance (Cherrafi *et al.*, 2018; Shahzad *et al.*, 2021). This affirms that adopting green innovation is not only a reactive response to regulations but a proactive strategy for reducing ecological footprints and improving long-term ecological resilience. H3b establishes that GI positively affects ECS ($\beta = 0.276$, $t = 4.099$, $p < 0.05$), as it leads to cost savings, improved resource utilization, product differentiation, and enhanced competitiveness (Aguilera-Caracuel & Ortiz-de-Mandojana, 2013; Zhang & Ma, 2021; Vasileiou, Georgantzis, Attanasi, & Llerena, 2022). These findings are particularly important for SMEs in the tourism sector, where innovation-

driven differentiation and efficiency can significantly improve operational margins and customer value. H3c confirms the link between GI and SOS ($\beta = 0.341$, $t = 5.247$, $p < 0.05$), with GI fostering social benefits such as community engagement, support for local livelihoods, and inclusive participation in sustainability efforts (Shahzad *et al.*, 2021; Razzaq, Fatima, & Murshed, 2023). Theoretically, this study contributes to the body of knowledge by empirically validating the multidimensional impact of GI on sustainability, offering robust evidence that GI serves as a central construct in achieving holistic sustainable development within SMEs, particularly in tourism. It highlights the role of innovation readiness and strategic intent as key enablers that amplify the impact of GI on environmental, economic, and social goals. Practically, the findings suggest that tourism-based SMEs should not view GI merely as an environmental obligation, but as a strategic investment that can drive long-term performance. Through initiatives like eco-tourism, sustainable operations, and green certification, SMEs can reduce costs, gain competitive advantages, and contribute meaningfully to community welfare and destination resilience. These implications are particularly relevant in regions like Yogyakarta, where tourism is closely linked with ecological and cultural preservation.

6. Conclusion

The tourism industry, crucial for global economic growth, often brings negative environmental impacts. This study investigates the role of GIR and GIS in driving the adoption of GI and its impact on SP in the tourism sector. By refining the research objective, this study specifically examines how different dimensions of readiness—technological, organizational, and environmental—interact to shape green innovation adoption and sustainability outcomes. The study confirms the hypotheses, showing that both GIS and GIR positively influence the adoption of GI, which in turn enhances Sustainable Performance SP in the tourism sector. The results highlight the positive and significant impact of green innovation strategy and readiness, particularly in technological, organizational, and environmental aspects. These findings highlight the significant contribution of green innovation in promoting sustainability within the tourism industry, particularly through the integration of environmentally friendly practices by SMEs.

Theoretical contributions of this research enhance understanding of the relationship between green innovation readiness and green innovation, confirming that readiness and strategy are key drivers of GI in the tourism sector. The study demonstrates how technological, organizational, and environmental readiness facilitate or hinder green innovation adoption and highlights the positive impact of GI on sustainable tourism performance. Practically, the findings emphasize the importance of readiness and strategic initiatives in implementing green innovation within Yogyakarta's tourism sector. SMEs can improve operational efficiency and reduce environmental impacts through green technologies such as renewable energy and efficient water systems. The study also provides implications for policymakers by encouraging sustainable tourism policies, fiscal incentives, technical guidance, and support programs that promote green innovation adoption. For SMEs, assessing technological, organizational, and environmental readiness can support the gradual integration of sustainable practices, including energy efficiency, waste reduction, and sustainable resource use. Through phased green innovation adoption, SMEs can reduce operational costs, strengthen competitiveness, and attract environmentally conscious tourists while supporting regional sustainability goals.

Despite its contributions, this study has several limitations. First, the research is limited to the Yogyakarta Special Region, which may restrict the generalizability of the findings to other tourism destinations with different conditions. Second, the cross-sectional design limits the ability to establish causal relationships between green innovation readiness, strategy, and sustainable performance. Future studies should adopt longitudinal or experimental approaches to examine these relationships over time. Finally, this study does not investigate the long-term consequences of green innovation adoption. Future research is encouraged to explore its long-term impact on competitiveness, financial performance, and organizational resilience in the tourism sector.

Supplementary material
The supplementary material for this article can be found online.

Reference

Abbas, J., & Sağsan, M. (2019). Impact of knowledge management practices on green innovation and corporate sustainable development: A structural analysis. *Journal of Cleaner Production*, *229*, 611–620. doi: 10.1016/j.jclepro.2019.05.024.

Achmad, F., Prambudia, Y., & Rumanti, A. A. (2023). Improving tourism industry performance through support system facilities and stakeholders: The role of environmental dynamism. *Sustainability*, *15*(5), 4103. doi: 10.3390/su15054103.

Achmad, F., & Wiratmadja, I. I. (2025). Organizational performance and competitive advantage in SMEs: The role of green innovation and knowledge management. *Journal of Open Innovation: Technology, Market, and Complexity*, *11*(2), 100532. doi: 10.1016/j.joitmc.2025.100532.

Achmad, F., Zulkarnain, I., Rumanti, A. A., Wiratmadja, I. I., & Shuhidan, S. M. (2025). Enhancing performance of batik SMEs through cleaner production adoption: Insights from clustering algorithm analysis. In *Asia Pacific Conference on Manufacturing Systems and International Manufacturing Engineering Conference*, Singapore (pp. 151–163). Springer. doi: 10.1007/978-981-96-4353-0_14.

Aguilera-Caracuel, J., & Ortiz-de-Mandojana, N. (2013). Green innovation and financial performance: An institutional approach. *Organization & Environment*, *26*(4), 365–385. doi: 10.1177/1086026613507931.

Albort-Morant, G., Leal-Millán, A., & Cepeda-Carrión, G. (2016). The antecedents of green innovation performance: A model of learning and capabilities. *Journal of Business Research*, *69*(11), 4912–4917. doi: 10.1016/j.jbusres.2016.04.052.

Asadi, S., Pourhashemi, S. O., Nilashi, M., Abdullah, R., Samad, S., Yadegaridehkordi, E., … Razali, N. S. (2020). Investigating influence of green innovation on sustainability performance: A case on Malaysian hotel industry. *Journal of Cleaner Production*, *258*, 120860. doi: 10.1016/j.jclepro.2020.120860.

Cao, H., & Chen, Z. (2019). The driving effect of internal and external environment on green innovation strategy-The moderating role of top management's environmental awareness. *Nankai Business Review International*, *10*(3), 342–361. doi: 10.1108/NBRI-05-2018-0028.

Cherrafi, A., Garza-Reyes, J. A., Kumar, V., Mishra, N., Ghobadian, A., & Elfezazi, S. (2018). Lean, green practices and process innovation: A model for green supply chain performance. *International Journal of Production Economics*, *206*, 79–92. doi: 10.1016/j.ijpe.2018.09.031.

Croes, R., Ridderstaat, J., Bąk, M., & Zientara, P. (2021). Tourism specialization, economic growth, human development and transition economies: The case of Poland. *Tourism Management*, *82*, 104181. doi: 10.1016/j.tourman.2020.104181.

Dalimunthe, D. Y., Valeriani, D., Hartini, F., & Wardhani, R. S. (2020). The readiness of supporting infrastructure for tourism destination in achieving sustainable tourism development. *Society*, *8*(1), 217–233. doi: 10.33019/society.v8i1.149.

El-Kassar, A. N., & Singh, S. K. (2019). Green innovation and organizational performance: The influence of big data and the moderating role of management commitment and HR practices. *Technological Forecasting and Social Change*, *144*, 483–498. doi: 10.1016/j.techfore.2017.12.016.

Fernando, Y., Jabbour, C. J. C., & Wah, W. X. (2019). Pursuing green growth in technology firms through the connections between environmental innovation and sustainable business performance: Does service capability matter?. *Resources, Conservation and Recycling*, *141*, 8–20. doi: 10.1016/j.resconrec.2018.09.031.

Fridgeirsson, T. V., Ingason, H. T., & Onjala, J. (2023). Innovation, awareness and readiness for climate action in the energy sector of an emerging economy: The case of Kenya. *Sustainability*, *15*(17), 12769. doi: 10.3390/%20su151712769.

Gao, Y., Sun, Y., Yuan, Y. H., Xue, X., & Sheng, F. (2021). Exploring the influence of resource management between green innovation strategy and sustainable competitive advantage: The differences between emerging and traditional industries. *International Journal of Technology Management*, *85*(2-4), 101–126. doi: 10.1504/IJTM.2021.115267.

Ge, B., Yang, Y., Jiang, D., Gao, Y., Du, X., & Zhou, T. (2018). An empirical study on green innovation strategy and sustainable competitive advantages: Path and boundary. *Sustainability*, *10*(10), 3631. doi: 10.3390/su10103631.

Government of Special Region of Yogyakarta (2012). Regional regulation of the special region of Yogyakarta province number 1 of 2012 concerning the tourism development master plan of the special region of Yogyakarta province 2012–2025. Available from: https://peraturan.bpk.go.id/Details/25639/perda-prov-diy-no-1-tahun-2012.

Gürlek, M., & Koseoglu, M. A. (2021). Green innovation research in the field of hospitality and tourism: The construct, antecedents, consequences, and future outlook. *Service Industries Journal*, *41*(11-12), 734–766. doi: 10.1080/02642069.2021.1929930.

Hair, J. F., Risher, J. J., Sarstedt, M., & Ringle, C. M. (2019). When to use and how to report the results of PLS-SEM. *European Business Review*, *31*(1), 2–24. doi: 10.1108/EBR-11-2018-0203.

Hasan, M. R., Shawon, R. E. R., Rahman, A., Al Mukaddim, A., Khan, M. A., Hider, M. A., & Zeeshan, M. A. F. (2024). Optimizing sustainable supply chains: Integrating environmental concerns and carbon footprint reduction through AI-enhanced decision-making in the USA. *Journal of Economics, Finance and Accounting Studies*, *6*(4), 57–71. doi: 10.32996/jefas.2024.6.4.7.

Hysa, E., Kruja, A., Rehman, N. U., & Laurenti, R. (2020). Circular economy innovation and environmental sustainability impact on economic growth: An integrated model for sustainable development. *Sustainability*, *12*(12), 4831. doi: 10.3390/su12124831.

Jermsittiparsert, K., Somjai, S., & Toopgajank, S. (2020). Factors affecting firm's energy efficiency and environmental performance: The role of environmental management accounting, green innovation and environmental proactivity. *International Journal of Energy Economics and Policy*, *10*(3), 325–331. doi: 10.32479/ijeep.9220.

Jun, W., Ali, W., Bhutto, M. Y., Hussain, H., & Khan, N. A. (2021). Examining the determinants of green innovation adoption in SMEs: A PLS-SEM approach. *European Journal of Innovation Management*, *24*(1), 67–87. doi: 10.1108/EJIM-05-2019-0113.

Khalid, S., Ahmad, M. S., Ramayah, T., Hwang, J., & Kim, I. (2019). Community empowerment and sustainable tourism development: The mediating role of community support for tourism. *Sustainability*, *11*(22), 6248. doi: 10.3390/su11226248.

Khan, S. J., Kaur, P., Jabeen, F., & Dhir, A. (2021). Green process innovation: Where we are and where we are going. *Business Strategy and the Environment*, *30*(7), 3273–3296. doi: 10.1002/bse.2802.

Kim, M. J., Lee, C. K., & Preis, M. W. (2020). The impact of innovation and gratification on authentic experience, subjective well-being, and behavioral intention in tourism virtual reality: The moderating role of technology readiness. *Telematics and Informatics*, *49*, 101349. doi: 10.1016/j.tele.2020.101349.

Kraus, S., Rehman, S. U., & García, F. J. S. (2020). Corporate social responsibility and environmental performance: The mediating role of environmental strategy and green innovation. *Technological Forecasting and Social Change*, *160*, 120262. doi: 10.1016/j.techfore.2020.120262.

Li, Y., Huang, L., & Tong, Y. (2021). Cooperation with competitor or not? The strategic choice of a focal firm's green innovation strategy. *Computers and Industrial Engineering*, *157*, 107301. doi: 10.1016/j.cie.2021.107301.

Li, H., Su, Y., Ding, C. J., Tian, G. G., & Wu, Z. (2024). Unveiling the green innovation paradox: Exploring the impact of carbon emission reduction on corporate green technology innovation. *Technological Forecasting and Social Change*, *207*, 123562. doi: 10.1016/j.techfore.2024.123562.

Lin, W. L., Cheah, J. H., Azali, M., Ho, J. A., & Yip, N. (2019). Does firm size matter? Evidence on the impact of the green innovation strategy on corporate financial performance in the automotive sector. *Journal of Cleaner Production*, *229*, 974–988. doi: 10.1016/j.jclepro.2019.04.214.

Lin, T., Wang, L., & Wu, J. (2022). Environmental regulations, green technology innovation, and high-quality economic development in China: Application of mediation and threshold effects. *Sustainability*, *14*(11), 6882. doi: 10.3390/su14116882.

Padilla-Lozano, C. P., & Collazzo, P. (2022). Corporate social responsibility, green innovation and competitiveness–causality in manufacturing. *Competitiveness Review: An International Business Journal*, *32*(7), 21–39. doi: 10.1108/CR-12-2020-0160.

Pigosso, D. C., Schmiegelow, A., & Andersen, M. M. (2018). Measuring the readiness of SMEs for eco-innovation and industrial symbiosis: Development of a screening tool. *Sustainability*, *10*(8), 2861. doi: 10.3390/su10082861.

Purwono, F. H., Ulya, A. U., Purnasari, N., & Juniatmoko, R. (2019). *Metodologi penelitian (Kuantitatif, Kualitatif dan Mix method)*. Surakarta: Guepedia.

Raihan, A., & Tuspekova, A. (2022). Toward a sustainable environment: Nexus between economic growth, renewable energy use, forested area, and carbon emissions in Malaysia. *Resources, Conservation & Recycling Advances*, *15*, 200096. doi: 10.1016/j.rcradv.2022.200096.

Ramos, V., Ruiz-Pérez, M., & Alorda, B. (2021). A proposal for assessing digital economy spatial readiness at tourism destinations. *Sustainability*, *13*(19), 11002. doi: 10.3390/su131911002.

Razzaq, A., Fatima, T., & Murshed, M. (2023). Asymmetric effects of tourism development and green innovation on economic growth and carbon emissions in Top 10 GDP Countries. *Journal of Environmental Planning and Management*, *66*(3), 471–500. doi: 10.1080/09640568.2021.1990029.

Rui, Z., & Lu, Y. (2021). Stakeholder pressure, corporate environmental ethics and green innovation. *Asian Journal of Technology Innovation*, *29*(1), 70–86. doi: 10.1080/19761597.2020.1783563.

Shahzad, M., Qu, Y., Zafar, A. U., & Appolloni, A. (2021). Does the interaction between the knowledge management process and sustainable development practices boost corporate green innovation?. *Business Strategy and the Environment*, *30*(8), 4206–4222. doi: 10.1002/bse.2865.

Sinha, A., Sengupta, T., & Alvarado, R. (2020). Interplay between technological innovation and environmental quality: Formulating the SDG policies for next 11 economies. *Journal of Cleaner Production*, *242*, 118549. doi: 10.1016/j.jclepro.2019.118549.

Slater, P., & Hasson, F. (2025). Data measurement, instruments and sampling. *Journal of Psychiatric and Mental Health Nursing*, *32*(3), 680–685. doi: 10.1111/jpm.13142.

Sobaih, A. E. E., Hasanein, A., & Elshaer, I. (2020). Influences of green human resources management on environmental performance in small lodging enterprises: The role of green innovation. *Sustainability*, *12*(24), 10371. doi: 10.3390/su122410371.

Soewarno, N., Tjahjadi, B., & Fithrianti, F. (2019). Green innovation strategy and green innovation: The roles of green organizational identity and environmental organizational legitimacy. *Management Decision*, *57*(11), 3061–3078. doi: 10.1108/MD-05-2018-0563.

Song, W., & Yu, H. (2018). Green innovation strategy and green innovation: The roles of green creativity and green organizational identity. *Corporate Social Responsibility and Environmental Management*, *25*(2), 135–150. doi: 10.1002/csr.1445.

Sun, Y., & Sun, H. (2021). Green innovation strategy and ambidextrous green innovation: The mediating effects of green supply chain integration. *Sustainability*, *13*(9), 4876. doi: 10.3390/su13094876.

Tjahjadi, B., Agastya, I. B. G. A., Soewarno, N., & Adyantari, A. (2022). Green human capital readiness and business performance: Do green market orientation and green supply chain management matter?. *Benchmarking: An International Journal*, *30*(10), 3884–3905. doi: 10.1108/BIJ-10-2021-0622.

Tu, Y., & Wu, W. (2021). How does green innovation improve enterprises' competitive advantage? The role of organizational learning. *Sustainable Production and Consumption*, *26*, 504–516. doi: 10.1016/j.spc.2020.12.031.

Vasileiou, E., Georgantzis, N., Attanasi, G., & Llerena, P. (2022). Green innovation and financial performance: A study on Italian firms. *Research Policy*, *51*(6), 104530. doi: 10.1016/j.respol.2022.104530.

Wang, C. H. (2019). How organizational green culture influences green performance and competitive advantage: The mediating role of green innovation. *Journal of Manufacturing Technology Management*, *30*(4), 666–683. doi: 10.1108/JMTM-09-2018-0314.

Wang, C. H., & Juo, W. J. (2021). An environmental policy of green intellectual capital: Green innovation strategy for performance sustainability. *Business Strategy and the Environment*, *30* (7), 3241–3254. doi: 10.1002/bse.2800.

Wang, Q. J., Wang, H. J., & Chang, C. P. (2022). Environmental performance, green finance and green innovation: What's the long-run relationships among variables?. *Energy Economics*, *110*, 106004. doi: 10.1016/j.eneco.2022.106004.

Weng, H. H., Chen, J. S., & Chen, P. C. (2015). Effects of green innovation on environmental and corporate performance: A stakeholder perspective. *Sustainability*, *7*(5), 4997–5026. doi: 10.3390/su7054997.

World Economic Forum (2024). *Travel & tourism development index 2024*. Geneva: World Economic Forum. Available from: https://www.weforum.org/publications/travel-tourism-development-index-2024/digest/

Xue, M., Boadu, F., & Xie, Y. (2019). The penetration of green innovation on firm performance: Effects of absorptive capacity and managerial environmental concern. *Sustainability*, *11*(9), 2455. doi: 10.3390/su11092455.

Yang, Z., Zhang, B., Yang, Y., Qin, B., & Wang, Z. (2024). Interprovincial inequality between economic benefit and carbon footprint: Perspective from China's Construction industry. *Environmental Impact Assessment Review*, *104*, 107293. doi: 10.1016/j.eiar.2023.107293.

Zhang, Q., & Ma, Y. (2021). The impact of environmental management on firm economic performance: The mediating effect of green innovation and the moderating effect of environmental leadership. *Journal of Cleaner Production*, *292*, 126057. doi: 10.1016/j.jclepro.2021.126057.

Zhang, Y., Sun, J., Yang, Z., & Li, S. (2018). Organizational learning and green innovation: Does environmental proactivity matter?. *Sustainability*, *10*(10), 3737. doi: 10.3390/su10103737.

Zhang, Y., Sun, J., Yang, Z., & Wang, Y. (2020). Critical success factors of green innovation: Technology, organization and environment readiness. *Journal of Cleaner Production*, *264*, 121701. doi: 10.1016/j.jclepro.2020.121701.

Further reading

Achmad, F., & Wiratmadja, I. I. (2024). Driving sustainable performance in SMEs through frugal innovation: The nexus of sustainable leadership, knowledge management, and dynamic capabilities. *IEEE Access*, *12*, 103329–103347. doi: 10.1109/ACCESS.2024.3433474.

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