

THE ROLE OF GREEN ENTREPRENEURIAL ORIENTATION AND GREEN SUPPLY CHAIN INTEGRATION ON KNOWLEDGE CREATION PROCESS IN THE MANUFACTURING INDUSTRY

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ABSTRACT

Manufacturing firms are increasingly required to build knowledge-based capabilities that help them interpret sustainability demands and convert environmental information into organizational learning. Drawing upon the Knowledge-Based View (KBV), Natural Resource Based View (NRBV) and Supply Chain Integration, this study examines the effects of Green Entrepreneurial Orientation (GEO) and Green Supply Chain Integration (GSCI) on Knowledge Creation Process (KCP), as well as the moderating role of Green Absorptive Capacity (GAC). A quantitative research design was employed using survey data collected from 122 manufacturing firms operating in West Java and Banten, Indonesia. Data were analyzed using Partial Least Squares Structural Equation Modeling (PLS-SEM). The results indicate that Green Entrepreneurial Orientation and Green Supply Chain Integration positively influence Knowledge Creation Process. However, Green Absorptive Capacity does not significantly moderate the relationship between Green Entrepreneurial Orientation and Knowledge Creation Process. These findings suggest that both sustainability-oriented strategic orientation and environmental collaboration across the supply chain play important roles in fostering organizational knowledge creation. The study contributes to the Knowledge-Based View literature by identifying organizational antecedents of Knowledge Creation Process within sustainability-oriented contexts and provides practical insights for manufacturing firms seeking to strengthen organizational learning capabilities.

Keywords: Green Entrepreneurial Orientation; Green Supply Chain Integration; Green Absorptive Capacity; Knowledge Creation Process; Manufacturing Industry

1. INTRODUCTION

Global sustainability agendas, including the SDGs, the Paris Agreement, and the Glasgow Climate Pact, have increased pressure on firms to embed environmental and social considerations into their operational and strategic activities (Ullah et al., 2021; Xu et al., 2022; Xu et al., 2023). As expectations for responsible business practices continue to increase, sustainability is no longer viewed solely as a regulatory obligation but increasingly as an organizational capability that enables firms to adapt to evolving environmental, social, and economic challenges (Asiedu et al., 2025). Within this context, the manufacturing sector faces particularly significant sustainability pressures due to its intensive use of natural resources and substantial contribution to global emissions. According to the World Economic Forum (2022), manufacturing activities account for approximately 20% of global carbon emissions, making the sector a central focus of sustainability-related policies and industrial transformation initiatives worldwide.

In Indonesia, efforts to promote sustainable industrial development have been reflected through various policy instruments, including PP No. 22 of 2021 concerning Environmental Protection and Management, the implementation of Green Industry Standards, and the strengthening of Environmental, Social, and Governance (ESG) practices. Nevertheless, the existence of regulatory frameworks and external sustainability pressures does not automatically translate into effective organizational transformation. Manufacturing firms are increasingly exposed to diverse sources of information related to environmental regulations, green technologies, stakeholder expectations, and sustainability practices. Consequently, the critical challenge is no longer limited to acquiring information but rather to an organization's ability to interpret, process, and transform that information into actionable knowledge that supports organizational learning and strategic adaptation. As sustainability challenges continue to evolve, organizations are increasingly required to make sense of changing environmental regulations, stakeholder expectations, and technological advancements. Under such conditions, organizational effectiveness depends not merely on access to information but on the ability to convert diverse and fragmented information into meaningful knowledge. Consequently, the capacity to create and integrate knowledge has become an essential organizational capability for addressing sustainability-related challenges. Organizations that lack effective knowledge creation mechanisms may encounter difficulties in translating sustainability requirements into coordinated actions and strategic responses, even when relevant information is readily available.

This perspective is consistent with the Knowledge-Based View (KBV), which identifies knowledge as a strategic resource that underpins organizational capabilities and competitive advantage (Grant, 1996; Spender, 1996). From a KBV perspective, organizational value is generated not merely through information possession but through the capability to create, integrate, and apply knowledge more effectively than competitors. Accordingly, the knowledge creation process (KCP) represents a fundamental organizational mechanism through which new knowledge is generated via the exchange, integration, and combination of knowledge

originating from multiple sources (Nonaka & Takeuchi, 1995). Recent studies suggest that organizations with stronger knowledge creation capabilities are better positioned to enhance learning capacity, adapt to environmental changes, and develop solutions to increasingly complex challenges (Khraishi et al., 2023; Zhang et al., 2025).

Scholarly interest in knowledge creation has grown considerably in recent years alongside the expanding literature on sustainability transformation. Emerging evidence indicates that successful sustainability initiatives depend not only on technological resources or environmental investments but also on an organization's ability to acquire, integrate, and utilize relevant knowledge in strategic decision-making processes (Zhang et al., 2025). Consequently, identifying the organizational factors that facilitate knowledge creation has become an important research agenda within both strategic management and sustainability literature.

One organizational capability frequently associated with knowledge creation is Green Entrepreneurial Orientation (GEO). GEO reflects an organization's tendency to pursue sustainability-related opportunities through innovative, proactive, and risk-taking behaviors (Jiang et al., 2018; Idrees et al., 2025). Firms exhibiting stronger green entrepreneurial orientation are generally more willing to explore new opportunities, seek environmental knowledge, and encourage learning activities that contribute to knowledge development. Empirical findings by Wang et al. (2022) demonstrate that GEO positively influences knowledge exchange and knowledge integration activities, both of which constitute essential components of the knowledge creation process.

In addition to entrepreneurial orientation, Green Supply Chain Integration (GSCI) has also been recognized as an important antecedent of organizational knowledge creation. Through collaboration with suppliers, customers, and internal organizational functions, firms gain access to valuable information and expertise that would otherwise remain beyond organizational boundaries (Wong et al., 2020). Continuous interaction and information sharing enable organizations to acquire insights regarding environmental technologies, sustainable operational practices, and emerging market requirements. Kong et al. (2020) found that green supply chain integration significantly enhances knowledge exchange and knowledge combination processes, thereby facilitating the creation of new organizational knowledge.

Furthermore, the effectiveness with which firms utilize available information may depend on their level of Green Absorptive Capacity (GAC). Green absorptive capacity refers to an organization's ability to recognize the value of environmental knowledge, assimilate that knowledge, and apply it within organizational activities (Wang et al., 2022). Organizations possessing higher absorptive capacity are generally more capable of transforming external information into valuable knowledge that supports organizational learning and capability development. Consequently, GAC may strengthen the relationship between strategic sustainability-oriented capabilities and the knowledge creation process.

This study aims to examine the effects of Green Entrepreneurial Orientation and Green Supply Chain Integration on Knowledge Creation Process in Indonesian manufacturing firms

and to investigate the role of Green Absorptive Capacity in strengthening these relationships. Theoretically, the study contributes to the Knowledge-Based View literature by identifying organizational antecedents of knowledge creation within sustainability-oriented contexts. The originality of this study lies in integrating Green Entrepreneurial Orientation, Green Supply Chain Integration, and Green Absorptive Capacity into a unified framework to explain Knowledge Creation Process as the primary organizational outcome within the Indonesian manufacturing sector.

2. LITERATURE REVIEW

2.1 Natural Resource-Based View Theory

The Resource-Based View (RBV) proposes that differences in organizational performance are largely attributable to firm-specific resources and capabilities that are valuable, rare, difficult to imitate, and non-substitutable (Wernerfelt, 1984; Barney, 1991). Extending this perspective, Hart (1995) introduced the Natural Resource-Based View (NRBV), which incorporates environmental resources and capabilities as strategic assets that enable firms to achieve long-term competitive advantage. According to NRBV, organizations can create sustained value not only through the effective deployment of internal resources but also through the development of capabilities that support environmental sustainability (Hart & Dowell, 2011).

A central argument of NRBV is that environmental capabilities emerge through cumulative learning processes, organizational experience, and interactions with multiple stakeholders, making them difficult for competitors to replicate (Aragón-Correa & Sharma, 2003). Consequently, firms that proactively respond to environmental challenges are more likely to develop unique organizational capabilities that enhance their strategic adaptability.

Within the context of this study, NRBV provides the theoretical foundation for Green Entrepreneurial Orientation (GEO). Green Entrepreneurial Orientation reflects a firm's strategic tendency to pursue environmental opportunities through innovative, proactive, and risk-taking behaviors (Jiang et al., 2018; Idrees et al., 2025). From an NRBV perspective, such orientation represents an environmental capability that enables organizations to identify sustainability-related opportunities and mobilize resources toward environmentally responsible initiatives. As firms increasingly engage in sustainability-oriented activities, they are expected to generate learning opportunities and acquire environmental knowledge that contributes to organizational knowledge development.

2.2 Knowledge-Based View Theory

The Knowledge-Based View (KBV) explains firm heterogeneity by emphasizing how organizations develop, combine, and apply knowledge-based resources (Grant, 1996). KBV argues that sustainable competitive advantage arises not merely from possessing knowledge but from an organization's ability to create, integrate, and apply knowledge effectively within its routines and processes (Grant, 1996; Spender, 1996). Accordingly, organizations are viewed as

knowledge-integrating entities whose primary role is to transform dispersed information into valuable organizational capabilities.

Within KBV, knowledge creation is important because firms must continuously reorganize internal and external knowledge to support learning and capability development. Nonaka and Takeuchi (1995) explain that new knowledge emerges through interactions between tacit and explicit knowledge, while Nahapiet and Ghoshal (1998) emphasize the importance of knowledge exchange and knowledge integration in facilitating organizational knowledge creation. Consequently, the Knowledge Creation Process (KCP) represents a key organizational mechanism through which information and experience are transformed into actionable knowledge.

In addition, KBV provides a theoretical basis for understanding Green Absorptive Capacity (GAC), which reflects an organization's ability to identify, assimilate, and utilize environmental knowledge obtained from external sources (Gluch et al., 2009; Wang et al., 2022). Firms with stronger absorptive capabilities are expected to be more effective in converting external environmental information into organizational knowledge, thereby enhancing their knowledge creation processes.

2.3 Supply Chain Management Theory

SCM theory views firms as part of interdependent networks in which coordination with suppliers, customers, and internal units enables the flow of information and resources (Mentzer et al., 2001; Christopher, 2016). Within this perspective, supply chain integration facilitates collaboration, information sharing, and process synchronization among internal functions, suppliers, and customers (Frohlich & Westbrook, 2001; Flynn et al., 2010).

As environmental concerns have become increasingly important, the concept has evolved into Green Supply Chain Integration (GSCI), which incorporates environmental objectives into supply chain relationships and collaborative activities (Srivastava, 2007; Kong et al., 2020). Through continuous interaction and environmental collaboration, organizations gain access to diverse sources of environmental information and expertise. Such exchanges enable firms to acquire, combine, and utilize knowledge originating from multiple stakeholders across the supply chain.

Accordingly, SCM Theory provides the theoretical foundation for understanding Green Supply Chain Integration as an organizational capability that facilitates knowledge exchange and knowledge integration, both of which are essential components of the Knowledge Creation Process.

2.4 Hypotheses Development

2.4.1 The relationship Green Entrepreneurial Orientation and Knowledge Creation Process

Green Entrepreneurial Orientation (GEO) reflects a firm's tendency to actively identify environmental opportunities, initiate sustainability-oriented actions, and commit resources despite uncertainty (Jiang, 2018). Such an orientation encourages organizations to continuously explore emerging environmental opportunities and respond to changing stakeholder expectations, regulatory requirements, and market demands (Wang et al., 2022). Within

manufacturing environments, where firms face increasing pressure to improve resource efficiency and environmental performance, GEO can create conditions for knowledge creation because environmentally oriented initiatives require firms to search for new information, discuss alternatives across functions, and develop shared understanding. Consequently, organizations with stronger green entrepreneurial orientations are more likely to engage in activities that facilitate the sharing of sustainability-related knowledge.

From a Knowledge-Based View (KBV) perspective, organizational outcomes are influenced not only by strategic orientations but also by the ability to create and utilize knowledge effectively (Grant, 1996; Nahapiet & Ghoshal, 1998). Knowledge creation processes enable organizations to transform information and experience into actionable knowledge through activities such as knowledge exchange and knowledge integration. In this regard, the influence of GEO may extend beyond strategic intent by fostering organizational conditions that support knowledge development and learning.

Empirical evidence supports this argument. Wang et al. (2022) found that firms exhibiting stronger green entrepreneurial orientation demonstrate higher levels of knowledge exchange and knowledge integration. Similarly, Idrees et al. (2025) reported that sustainability-oriented entrepreneurial behavior contributes to organizational learning processes that facilitate the creation of new knowledge. These findings suggest that GEO can serve as an important antecedent of knowledge creation by encouraging organizations to seek, combine, and utilize sustainability-related knowledge more effectively. Accordingly, firms with stronger Green Entrepreneurial Orientation are expected to exhibit higher levels of Knowledge Creation Process in emerging country context, Indonesia.

H1: Green Entrepreneurial Orientation positively influences Knowledge Creation Process.

2.4.2 The relationship Green Supply Chain Integration and Knowledge Creation Process

Green Supply Chain Integration (GSCI) describes the degree to which firms align internal functions and external supply chain partners in managing environmental issues (Kong et al., 2020). By interacting with suppliers and customers on environmental issues, firms can obtain technical, operational, and market-related knowledge that enriches internal learning processes. Such interactions facilitate organizational learning by exposing firms to new technologies, environmental practices, and market information (Wong et al., 2020).

From a Knowledge-Based View (KBV) perspective, interactions among supply chain partners provide opportunities for organizations to acquire, exchange, and integrate knowledge originating from different sources (Grant, 1996). Supply chain relationships characterized by collaboration and trust are more likely to support knowledge exchange and knowledge integration, which are fundamental components of the knowledge creation process (Shu et al., 2012; Kong et al., 2020). Through these mechanisms, firms can combine internal and external knowledge to develop new insights and organizational capabilities.

Although Kong et al. (2020) demonstrated the positive effect of GSCI on knowledge creation in Chinese manufacturing firms, evidence remains limited across different institutional and industrial contexts. The extent to which these relationships hold in emerging economies with different sustainability adoption levels and supply chain structures remains unclear. Given that green supply chain integration enhances access to environmental information, promotes

inter-organizational learning, and facilitates knowledge exchange among supply chain partners, firms with higher levels of GSCI are expected to exhibit stronger knowledge creation processes.

H2: Green Supply Chain Integration positively influences Knowledge Creation Process.

2.4.3 Moderating Effect Green Absorptive Capacity

Green Absorptive Capacity (GAC) reflects a firm's capability to understand external environmental knowledge and embed it into organizational routines and decisions (Cohen & Levinthal, 1990; Zahra & George, 2002). Within sustainability contexts, GAC enables firms to recognize the value of environmental information, technologies, and practices obtained from external stakeholders and incorporate them into organizational routines and decision-making processes (Gluch et al., 2009; Wang et al., 2022). Consequently, absorptive capacity is often viewed as a critical capability that determines how effectively organizations transform external information into organizational knowledge.

Although Green Entrepreneurial Orientation (GEO) encourages firms to proactively pursue environmental opportunities and explore sustainability-related initiatives, the effectiveness of such orientation may depend on the organization's ability to process and internalize the knowledge generated through these activities. From a Knowledge-Based View (KBV) perspective, entrepreneurial orientation alone does not guarantee the creation of organizational knowledge. Rather, organizations must possess the capability to acquire, interpret, and integrate information obtained from internal and external sources into meaningful knowledge resources (Grant, 1996).

When GAC is stronger, firms are more likely to convert environmental initiatives into structured learning because they can interpret external knowledge and connect it with existing organizational knowledge. Such firms are better able to identify relevant environmental information, facilitate cross-functional knowledge sharing, and integrate newly acquired knowledge with existing organizational knowledge bases. In contrast, organizations with limited absorptive capacity may encounter difficulties in processing environmental information, thereby reducing the effectiveness of entrepreneurial initiatives in stimulating knowledge creation.

Empirical evidence supports this argument. Wang et al. (2022) found that Green Absorptive Capacity strengthens the relationship between Green Entrepreneurial Orientation and organizational knowledge creation activities. However, existing evidence remains limited to specific institutional contexts and has primarily examined knowledge creation as an intermediate mechanism rather than as a focal organizational outcome. Therefore, further investigation is needed to understand whether Green Absorptive Capacity strengthens the influence of Green Entrepreneurial Orientation on Knowledge Creation Process in the context of Indonesian manufacturing firms. Accordingly, firms with higher levels of Green Absorptive Capacity are expected to derive greater knowledge creation benefits from their Green Entrepreneurial Orientation.

H3: Green Absorptive Capacity positively moderates the relationship between Green Entrepreneurial Orientation and Knowledge Creation Process.

3. METHODS

3.1. Research Design

This study employs a quantitative research approach to examine the relationships among Green Entrepreneurial Orientation (GEO), Green Supply Chain Integration (GSCI), Knowledge Creation Process (KCP), and Green Absorptive Capacity (GAC). (SP). A cross-sectional survey design was adopted, whereby data were collected from respondents at a single point in time (Malhotra et al., 2017). The cross-sectional approach is appropriate for testing theoretical relationships among variables and examining the proposed conceptual framework within a specific organizational context (Cooper & Schindler, 2014).

3.2. Population, Sample, and Data Collection

The target population of this study consists of manufacturing firms operating in West Java and Banten, Indonesia. These provinces were selected because the manufacturing sector contributes approximately 33.49% of Banten's Gross Regional Domestic Product (GRDP) and 42.88% of West Java's total economic output, indicating a high concentration of manufacturing activities in these provinces (Statistics Indonesia, 2023), which represent large and intense manufacturing clusters. A purposive sampling technique was employed to ensure that respondents possessed sufficient knowledge regarding sustainability initiatives, innovation practices within their organizations.

Data were collected through an online survey. A pilot study was subsequently conducted with 30 respondents. This sample size is consistent with the recommendation of Perneger et al. (2014), who suggested that a pilot sample of 30–40 respondents is sufficient. The pilot data were analyzed using SPSS to assess the validity and reliability of the measurement scales.

The minimum sample size was determined using G*Power. Based on calculation, the minimum sample size is 99. Of the 210 questionnaires distributed, 122 usable responses were obtained from eligible respondents so that the number of samples are met the requirement.

3.3 Research Variables and Measurement

The study consists of two independent variables, namely Green Entrepreneurial Orientation (GEO) and Green Supply Chain Integration (GSCI). Knowledge Creation Process (KCP) as dependent variable while Green Absorptive Capacity (GAC) is included as a moderating variable.

All constructs were measured by adopting from previously validated studies. Total 62 item questionnaires. We used the scale from Jiang (2018) for GEO and consist of five items to reflect enterprise's strategic orientation. GSCI was measured by three dimensions, consist of green internal integration, green supplier integration and green customer integration adopted from Kong (2020). Knowledge creation process consist of knowledge exchange and knowledge integration were measured by Kong (2020) and being used by Wang (2022). Green absorptive capacity was measured by Wang (2022). Responses were assessed using a six-point Likert scale ranging from 1 ("strongly disagree") to 6 ("strongly agree").

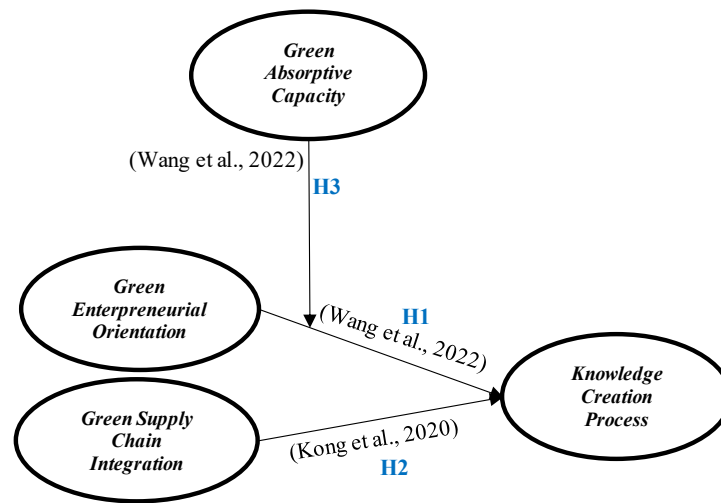


Figure 3.1 Research Model

Table 3.1 Operationalization Variables

Variable	Dimension	Definition	Item Questionnaire	Source
Green Entrepreneurial Orientation (GEO)	Unidimensional	An organizational predisposition to pursue opportunities that simultaneously generate economic and environmental value through the initiation of environmentally oriented activities.	5	Jiang (2018); Kong (2020); Wang (2022)
Green Supply Chain Integration (GSCI)	Green Supplier Integration (GSI)	The extent of a firm's collaboration with suppliers in implementing environmentally sustainable practices.	5	Kong (2020)
	Green Customer Integration (GCI)	The degree to which a firm engages with customers to understand and address environmental requirements associated with green products and services	5	
	Green Internal Integration (GIN)	The coordination and collaboration among internal functional units to support the implementation of environmentally sustainable practices.	5	
Knowledge Creation Process (KCP)	Knowledge Exchange (KE)	The exchange and sharing of information and knowledge among individuals and organizational subunits.	4	Kong (2020); Wang (2022)
	Knowledge Integration (KI)	The process of combining existing knowledge and developing new ways of integrating knowledge, thereby facilitating the continuous creation of new organizational knowledge.	5	

Variable	Dimension	Definition	Item Questionnaire	Source
Green Innovation (GI)	Product Innovation (GPD)	involves the incorporation of environmental considerations into product design, including the use of materials that are non-toxic, recyclable, and environmentally friendly	4	Kong (2020); Wang (2022)
	Process Innovation (GPR)	focuses on improving manufacturing processes to save energy, prevent pollution, recycle waste, and reduce harmful emissions	4	
Green Absorptive Capacity (GAC)	Unidimensional	A firm's ability to understand, absorb, and utilize knowledge related to environmental issues and green technology.	8	Wang (2022)
Sustainable Performance (SP)	Environmental	A firm's capability to reduce environmental impacts by minimizing pollution, emissions, and the likelihood of environmental incidents.	6	Aftab (2022)
	Social	A firm's ability to enhance employee health and safety, improve community well-being, and maintain compliance with professional and ethical standards.	7	
	Economics	The improvement of firm profitability achieved through energy efficiency, material savings, and reductions in operational costs.	4	

4. RESULTS AND DISCUSSION

4.1 Respondent Profile

The majority of 122 participating firms had operated for more than ten years (93%), indicating that most respondents represented relatively mature organizations with established operational systems. Large enterprises accounted for 84% of the sample, while medium-sized firms represented the remaining 16%. In terms of industrial sectors, food and beverage manufacturing (28%) and automotive-related industries (25%) constituted the largest proportion of respondents. These characteristics suggest that the sample reflects manufacturing firms that are highly exposed to sustainability pressures and supply chain complexity.

Table 4.1 Descriptive Statistics

Variable	Grand Mean	Standard Deviation
GEO	3.972	1.644
GSCI	3.943	1.687
KCP	3.944	1.736
GAC	3.985	1.652

Table 4.2 Respondent Profile

Characteristic	Category	Frequency	Percentage
Firm Age	5–10 years	9	7.40%
	>10 years	113	92.60%
Firm Size	Medium Enterprise	20	16.40%
	Large Enterprise	102	83.60%
Location	West Java	93	76.20%
	Banten	29	23.80%
Industry Sector	Food & Beverage	34	27.90%
	Automotive & Components	31	25.40%
	Textile & Garment	15	12.30%
	Electronics & Electrical	12	9.80%
	Packaging Industry	12	9.80%
	Chemical Industry	8	6.60%
	Others	10	8.20%

4.2 Measurement Model Assessment

The quality of the measurement model was evaluated by examining convergent validity, discriminant validity, and construct reliability. The results indicate that all measurement items met the recommended criteria. Indicator loadings were above the acceptable threshold of 0.70, suggesting that the indicators adequately captured their intended constructs. In addition, composite reliability (CR) values ranged from 0.916 to 0.932, while all AVE values exceeded the recommended minimum of 0.50. These findings provide evidence of satisfactory internal consistency and convergent validity. Discriminant validity was subsequently assessed using the Heterotrait–Monotrait Ratio (HTMT), with all values remaining below the recommended cut-off of 0.90 (Henseler et al., 2015; Hair et al., 2022). Therefore, the measurement model demonstrates acceptable psychometric properties and is suitable for subsequent structural model analysis.

Table 4.3 Convergent and Reliability Validity

Construct	Cronbach's Alpha	Composite Reliability	AVE
GEO	0.897	0.924	0.708
GSCI	0.961	0.974	0.927
KCP	0.956	0.978	0.958
GAC	0.921	0.932	0.631

Table 4.4 Discriminant Validity (HTMT)

Construct	GEO	GSCI	KCP	GAC
GEO	-			
GSCI	0.234	-		
KCP	0.85	0.625	-	
GAC	0.106	0.12	0.146	-

Prior to hypothesis testing, collinearity diagnostics were examined using the Variance Inflation Factor (VIF). All VIF values remained below the commonly accepted threshold, indicating the absence of severe multicollinearity issues. The explanatory power of the model was assessed through the coefficient of determination (R^2). The results revealed an R^2 value of 0.821 for Knowledge Creation Process, suggesting that Green Entrepreneurial Orientation, Green Supply Chain Integration, and Green Absorptive Capacity collectively explain 82.1% of the variance in Knowledge Creation Process. This result indicates substantial explanatory power and demonstrates that the proposed model effectively captures the key antecedents of organizational knowledge creation within manufacturing firms.

Table 4.5 Coefficient of determination

Endogenous Construct	R^2
Knowledge Creation Process (KCP)	0.821

4.2 Hypothesis Results

The results indicate that firms with stronger environmental entrepreneurial orientation tend to show more active knowledge exchange and integration. Green Entrepreneurial Orientation is a significant antecedent of Knowledge Creation Process with $\beta = 0.690$, $p < 0.001$. Therefore, **H1 is supported**. This result supports the argument of the Natural Resource-Based View (NRBV), which suggests that sustainability-oriented strategic capabilities enable firms to develop unique organizational resources through learning and adaptation. Firms exhibiting stronger green entrepreneurial orientation are more likely to engage in proactive opportunity seeking, environmental experimentation, and sustainability-related exploration activities. These behaviors create favorable conditions for knowledge exchange and knowledge integration, which constitute the core dimensions of organizational knowledge creation. The result is consistent with previous studies by Wang et al. (2022) and Idrees et al. (2025), which found that sustainability-oriented entrepreneurial behavior promotes organizational learning and knowledge development. The present study extends these findings by demonstrating that knowledge creation should not merely be viewed as an intermediate mechanism leading to innovation but also as an important organizational outcome in its own right. In manufacturing firms, sustainability-related entrepreneurial initiatives appear to stimulate the development of organizational knowledge that can subsequently support future strategic and operational decisions.

The results also indicate that Green Supply Chain Integration significantly enhances Knowledge Creation Process with $\beta = 0.436$, $p < 0.001$, therefore, **H2 is supported**. This finding supports Supply Chain Management Theory, which emphasizes the importance of inter-

organizational collaboration and information sharing in creating organizational value. Through integration with suppliers, customers, and internal functions, firms gain access to diverse sources of environmental knowledge that facilitate organizational learning. The findings align with Kong et al. (2020), who reported that green supply chain integration promotes knowledge exchange and knowledge integration within manufacturing organizations. The results therefore highlight the importance of supply chain collaboration as a critical mechanism for building organizational knowledge capabilities. Within the Indonesian manufacturing context, increasing sustainability pressures from customers, suppliers, and internal appear to encourage firms to strengthen collaboration and information sharing throughout the supply chain. Such interactions contribute to the accumulation and integration of sustainability-related knowledge within organizations.

Contrary to expectations, Green Absorptive Capacity did not significantly moderate the relationship between Green Entrepreneurial Orientation and Knowledge Creation Process with $\beta = 0.001$, $p > 0.05$, leading to **H3 is not supported**. Although prior studies suggested that absorptive capacity strengthens organizational learning by improving the acquisition and utilization of external knowledge (Wang et al., 2022), the present findings indicate that such effects may not automatically emerge within Indonesian manufacturing firms. One possible explanation is that many firms may still be at an early stage of sustainability capability development. Under such conditions, organizations may possess entrepreneurial intentions related to sustainability but lack sufficiently mature systems, routines, and learning infrastructures to fully leverage external environmental knowledge. Consequently, Green Entrepreneurial Orientation may directly stimulate knowledge creation regardless of the firm's absorptive capacity level. This finding suggests that absorptive capacity alone may not be sufficient to enhance organizational knowledge creation unless supported by complementary organizational capabilities and sustainability-oriented learning mechanisms.

5. CONCLUSIONS AND LIMITATIONS

5.1 Conclusions

This study examined how sustainability-oriented organizational capabilities contribute to Knowledge Creation Process in Indonesian manufacturing firms. The findings reveal that Green Entrepreneurial Orientation and Green Supply Chain Integration significantly enhance Knowledge Creation Process, indicating that both internal strategic orientation and external environmental collaboration play important roles in organizational knowledge development. However, Green Absorptive Capacity did not significantly moderate the relationship between Green Entrepreneurial Orientation and Knowledge Creation Process. Overall, the study shows that knowledge creation helps manufacturing firms translate sustainability-related information into learning processes that support organizational responses.

5.2 Theoretical Implication

1. This study extends the Knowledge-Based View (KBV) by demonstrating that Green Entrepreneurial Orientation and Green Supply Chain Integration are important organizational antecedents of Knowledge Creation Process in sustainability-oriented contexts.

2. The findings provide empirical support for the argument that organizational responses to sustainability challenges depend not only on access to information but also on the capability to create, exchange, and integrate knowledge.

5.3 Managerial Implication

1. Manufacturing firms should strengthen Green Entrepreneurial Orientation to encourage environmental exploration, proactive learning, and sustainability-oriented knowledge development.
2. Managers should promote Green Supply Chain Integration by enhancing collaboration with suppliers, customers, and internal functions to facilitate environmental knowledge sharing.
3. Firms should focus on developing organizational mechanisms that support knowledge exchange and knowledge integration, enabling sustainability-related information to be transformed into actionable organizational knowledge.

5.4 Limitations & Future Research

1. The study employed a cross-sectional design, limiting the ability to observe changes in organizational knowledge creation over time. Longitudinal research is recommended to better understand how sustainability-oriented capabilities influence the development of Knowledge Creation Process over time.
2. The study focused solely on Knowledge Creation Process and did not investigate other organizational knowledge outcomes. Future studies may examine the downstream consequences of Knowledge Creation Process by investigating whether organizational knowledge creation process contributes to Green Innovation and Sustainable Performance.
3. Future studies may incorporate additional organizational capabilities, such as environmental leadership, organizational learning culture, digital manufacturing or moderator green absorptive capacity between green supply chain integration and knowledge creation process and may other moderator variables.

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