



# Does green knowledge management build successful green ventures in the presence of innovative practices and knowledge-sharing behaviour

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## ABSTRACT

The cumulative stress to acknowledge environmental challenges bound businesses to embrace sustainable practices into their business operations. In Vietnamese context, green ventures are considered a key contributor, hence, play major part in transformative landscape. Therefore, the study finds an opportunity to explore the effectiveness of green knowledge management practices on the success of Vietnam's green ventures particularly in the presence of innovative practices and knowledge sharing behavior. Drawing upon Knowledge-Based Dynamic Capabilities View, the study extends the literature by exploring knowledge management through four dimensions namely are green knowledge creation, knowledge acquisition, knowledge application and knowledge storage in order to assess their collective impact on green ventures. The background of the research is embedded in the cruciality to build understanding that how Vietnamese manufacturing firms can have leverage on green knowledge management practices to achieve long-term sustainability. Results gauged through PLS-SEM model reveal that knowledge storage has a positive and significant impact on successful green ventures. Findings also reveal that innovative practices significantly mediate the relationship of knowledge creation and knowledge storage with successful green ventures. In addition to this, knowledge sharing behavior also mediates the association of knowledge application, knowledge storage and knowledge creation with successful green ventures. The study adds comprehensive knowledge explaining that knowledge sharing culture amplifies the benefits crafted from knowledge management practices, making organizations more innovative and resilient. Despite insightful findings, the study has limitation in terms of small sample size, hence, future studies are recommended to expand the sample size to generalize the findings in a broader context.

## Introduction

The Industrial Revolution created employment and income for millions of people and initiated the global phenomenon of economic growth. However, it has also put a great strain on the natural environment by increasing over-consumption of natural resources, which has led to ecological deterioration and climate change across the globe (Arslan et al., 2022; Subramanian, 2018). Knowledge management (KM) has garnered significant scholarly attention owing to its potential to promote sustainable development in an organization (Chopra et al., 2021; Hussain et al., 2022). KM is widely recognized as a valuable strategic asset for organizations of all sizes and categories, in

streamlining the creation, communication, sharing and effective implementation of collective knowledge within a company. KM is a particular determinant of sustainable development for firms focused on sustainable business practices. This interplay of KM and sustainable development has prompted a fundamental shift in the organization's perception of how KM boosts the progress of an organization in a sustainable fashion. Therefore, there is a surge in the organizational focus on the integration of KM into the routine practices and processes within the organization. As a result, KM has arisen as a fresh approach that connects the existing condition with the organization's sustainability aspirations and targets, helping to bridge the gap between the two (Chang et al., 2018; Yousaf et al., 2021). The existing literature

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emphasizes the exploration of the impact of KM on the advancement of sustainability in various domains (Abbas & Sağsan, 2019; de Guimarães et al., 2018; Martins et al., 2019; Ribeiro et al., 2018; Shahzad et al., 2020). Nonetheless, Green Knowledge Management remains a novel concept, therefore, there is a significant scarcity of research in the area of green KM and its role in sustainable development and green ventures of organizations (Streimikiene & Akberdina, 2021; Wang et al., 2022). In addition, knowledge acquisition has been recognized as a primary factor in the learning cycle as it supports the continuous development and expansion of the knowledge repository of an organization. Therefore, scholars have been highlighting how the knowledge acquisition encourages the innovative practices of firms (Dat et al., 2022; Hirose Nishihara, 2018).

Since the global manufacturing landscape experiences rapid evolution, therefore, incorporation of sustainability is now viewed as hyper-critical dilemma in academia especially in the case of emerging economies. Particularly talking about Vietnam, the manufacturing industry of the country struggles hard to maintain its environmental performance while embracing sustainable practices into their operations. Although, global trends of sustainability pushes developing economies such as Vietnam to transform into green economy by 2030 (Abbas & Khan, 2023). However, based on International Labor organization (2020), 54% of organizations in Vietnam belong to manufacturing category and their vast consumption of unsustainable materials leads to massive environmental challenges. This also captures the attention of stakeholders and government that further pressures these firms to adopt sustainable practices to maintain environmental balance. According to Gupta & Barua (2018), innovative practices in this regard are helpful to limit the harmful impact, however, its adoption is quite challenging due to inconsistency in transition process throughout the region. It is also argued that the implementation of green practices in Vietnam is in slow-moving phase due to various barriers (Pham et al., 2023). In addition to this, awareness on green practices is also dubious in general public. Hence, it is imperative to assess the factors that ensure the success of green initiatives among Vietnam's manufacturers

In this regard, knowledge management practices are a critical focus, promising successful green initiatives. The collective agreement existing in literature outlines the essentiality of KM practices in case of green ventures as they aimed at facilitating organization with necessary environmental related knowledge that is further important for sustainable operations (Matuszewska-Pierzynka, 2021; Wang et al., 2022). According to literature, these practices allow firms to take maximum leverage on environmental knowledge related to associated compliance, technologies and appropriate practices. It is also argued that the effective management of knowledge, firms specially manufacturing can optimize their green performance and leverage green innovation. Additionally, mediating role of knowledge sharing behavior can't be overlooked because knowledge sharing behavior promotes the dissemination of information among individuals that makes the adoption process of green practices much easier (Cera et al., 2022; Lin et al., 2024; Tien et al., 2023). Therefore, the present study holds great significance due to its emphasis on how green KM system ensures the successful implementation of green ventures in the domain of the Vietnamese manufacturing sector. The study investigates multiple facets of the GKM system, which includes green KC, KA, KAP, and KS. The study is significant due to its consideration of the impact of these facets of the GKM system on the success of green ventures through several innovative practices and green knowledge-sharing behavior in the organization. The study also adds significant contribution by extending its view on natural resource RBV perspective and knowledge-based dynamic capability perspective by explaining that organizations may have an option to utilize internal and external competencies in order to address environmental issues. This also shapes sustainable competitive advantage of firm which allows organizations to disseminate green information that is extremely challenging to be replicated.

The latter part of the study is organized into four sections. Literature

review covers the key concepts of variables along with the hypothesis development which are constructed in the light of previous literature. The literature review section also presents a theoretical model which supports the proposed framework of the study. In methodology section, data collection methods, sampling technique, study population and data analysis approaches are outlined briefly. Findings are also presented in following section where the economic meaning of findings are briefly elaborated. Finally, summary of key findings is concluded in the last section where limitation and implications are also discussed.

## Literature review

### Theoretical background

Wernerfelt (1984) introduced the Resource-Based View (RBV) framework, which highlights the pivotal role played by an organization's strategic resources and capabilities in shaping its competitive advantage. According to RBV, sustainable competitive advantages can be achieved when organizations possess resources that are unique, valuable, non-substitutable, and challenging for competitors to imitate. Recent research, exemplified by Amankwah-Amoah & Adomako (2021) underscores the value of timely and relevant knowledge acquisition from an organization's resource network as a rare and valuable asset for achieving success. Atkočiūnienė & Siudikienė (2021) and Fernandes et al. (2022) further emphasize the strategic significance of recognizing knowledge as a valuable resource.

The central focus of our study is based on the notion that green knowledge is crucial and strategic asset of green firm and it sparks the proactive participation of organization in environmentally friendly initiatives that uplift the overall environmental performance of firm. In this regard, Natural resource-based view, the extended version of RBV serves as a foundation to illustrate that how firms are able to manage their resources effectively while considering environmental paradigm. This version of RBV reflects on the pressure comes from stakeholders that push organization to take environmental measures in order to subdue the negative impact of wastages and emissions. On the other hand, the obligation also shapes firm existing practices with a great concern toward environment (Abbas, 2020a; Yodchai et al., 2022).

Furthermore, the study also integrates NRBV perspective with the extended version of knowledge-based view. This view considers the dynamic capabilities of firm and according to Knowledge-Based Dynamic Capabilities (KBDCV), when precious knowledge and natural resources are combined together, they become a most critical assets of an organization. Hence, organizations may have an option to utilize internal and external competencies in order to address environmental issues. This also shapes sustainable competitive advantage of firm which allows organizations to disseminate green information that is extremely challenging to be replicated (Kaur, 2022). Moreover, when competitive advantage of firm is nourished in dynamic settings, it helps firms to embrace change and adjust their operations accordingly. It also boosts confidences to work on novel ideas that may shape business landscape.

Based on afore-mentioned arguments, the study used integrated theoretical lens of RBV, NRBV and KBDC to explain the conceptual framework of the study. Based on the stated integrated perspective, it can be argued that resource-based view allows green ventures to reap benefits from distinctive and eccentric resources such as knowledge management practices to develop competitive edge and produce sustainability outcomes. Meanwhile, natural RBV provides such ventures a strategic thought-process that is necessary for them to recognize the significance of environmental resources to link knowledge management process with environmental initiatives. Knowledge based view in the context of dynamic capabilities extends the significance of proposed relationship by highlighting those dynamic capabilities of green ventures allows them to create, gather, share and implement knowledge to fulfill green consumer demands and address environmental challenges. In this regard, knowledge sharing behavior along with innovative

practices appear to be a bridge as they make sure that correct form of sustainable knowledge is being fostered to develop green products/services leading to successful green ventures. Thus, the entire conceptual model illustrates that how knowledge as a unique resource and dynamic capabilities of firm shapes organizations to become innovative and achieve sustainable goals.

#### *Knowledge creation and successful green ventures*

Green knowledge creation effectively contributes toward the success of green ventures as it promotes innovation and concentrates on sustainable practices. The entire process of green knowledge management begins with the creation of novel ideas related to environment which are essential for navigating green innovation and sustainable performance of firm (Abbas, 2020b; Paraschiv et al., 2021). The focal point of majority of studies reveals that only those firms can successfully boost their environmental performance when they are capable of soaking up green knowledge and utilized effectively. In addition to this, it is also argued that green knowledge, a process of sharing, storing and acquiring information; can have a positive effect on knowledge driven leadership (Ahsan et al., 2020). Interestingly, this knowledge-driven leadership helps in promoting sustainability and innovation in organization which ensures green success. Studies highlight that green knowledge when integrated in business strategies, helps firms to incorporate their practices with sustainability-oriented framework (Shafi et al., 2022; Wang, 2019). Thus, establishing a vigorous knowledge base that promote green practices. This deliberate creation of green knowledge plays bigger role in success of green ventures as it simultaneously makes advancement in green innovation and sustainable practices (Pan et al., 2022).

Further to discussion, studies postulate that green knowledge creation harbors knowledge sharing and collaboration across organizations which makes green ventures successful. By leveraging on green knowledge creation, firms are able to identify collective judgement to address complex environmental challenges (Orzes & Sarkis, 2019; Tiberius et al., 2021). Besides, the concerted approach helps firms to develop a supportive eco-system for green venture to achieve long-term success. The inclusion of diverse perspective which is an outcome knowledge creation, creates more sustainable solutions leading to successful green ventures (Zhao, 2023). In addition to this, a robust network grounded in green knowledge creation also facilitates green ventures to gain access of new markets, find attractive funding opportunities and experience technological advancement that may lead to long-term success (Orzes & Sarkis, 2019; Tiberius et al., 2021).

*H1: Green Knowledge creation positively influences Successful green ventures.*

#### *Knowledge acquisition and successful green ventures*

The sustainability literature significantly highlights a crucial role of knowledge acquisition in the success of green ventures. By reviewing conceptual and empirical evidences, it become easier to understand that how sustainable business outcomes are driven by knowledge acquisition. From theoretical point of view, there are several theories scholars come up with to explain the relationship between knowledge acquisition and successful green ventures (Banelienė & Strazdas, 2023; Cheba et al., 2023). For instance, Guo (2023) argued that from resource-based view perspective, knowledge is a critical resource of firm which helps in building competitive advantage. Since, green knowledge represents eco-friendly practices and technologies, hence, it is viewed as a valuable source of a firm that makes organizations innovative. Therefore, acquiring green knowledge is crucial to achieve superior performance. Ahmed et al. (2022) also highlighted a critical aspect of knowledge, hence, categorizing it as a strategic source. According to authors, knowledge-based view conceptualizes the idea that knowledge acquisition and constant learning are two fundamental resources of firm that

ensure the success of sustainable firms. Empirical literature also reveals that external knowledge acquisition makes firm innovative that would lead to long-term sustainability (Hudáková et al., 2023). Study of Aamir et al. (2021) also argued firms engaged in collaborations and acquire relevant green knowledge, likely to achieve sustainable outcomes with success. In conclusion, success of green ventures is driven by collective efforts that are achieved through collaborative learning environment and diverse knowledge resources. Therefore, we hypothesize:

*H2: Knowledge acquisition positively influences Successful green ventures.*

#### *Knowledge application and successful green ventures*

Knowledge application which is another crucial aspect of knowledge management positively affect green venture outcomes. Studies demonstrate that when knowledge is being utilized affectively it will allow firms to become more innovative to achieve sustainable outcomes. Study of Khan (2023) highlights that implementing green knowledge brings the best from individuals leading to log-term sustainability. This comprehensive understanding underscores that acquiring knowledge is not sufficient for organization, the effective implementation is the key to achieve desirable outcomes. Another study proclaims that green knowledge application within HRM may boost the performance of organization through significant advancements in existing operations (Tee et al., 2023). Hence, it can be hypothesized that:

*H3: Knowledge application positively influences Successful green ventures.*

Studies highlight the crucial role of effective knowledge storage mechanisms that are well-suited for green ventures to achieve green objectives (Maravilhas & Martins, 2019). Capitalizing on stored green knowledge allows firms to facilitate consumers needs by offering eco-friendly services. Resulting in successful green ventures (Chaithanapat et al., 2022). It is also argued that proper storage of knowledge allows firms to utilize valuable information on time to give better response to environmental threats. Stored knowledge also helps firms to give effective response to institutional and stakeholder pressures, leading to successful green ventures. This way firms' innovative and absorptive capacity enhance; thus, it becomes easier to leverage on environmental information that is necessary to address environmental challenges (Tiwari, 2022).

To discuss the argument further, organizations are also compelled to seamlessly integrate environmental considerations into their research and development initiatives, as underscored by (Abbas & Dogan, 2022) in response to the evolving demands of dynamic markets. These organizations must engage in activities that not only promote the production of high-quality products with minimal resource consumption but also yield benefits for both the environment and the company itself, aligning with the insights of (Song et al., 2022). Drawing from the preceding discussions surrounding Green Knowledge Management (GKM), Corporate Social Responsibility (CSR), and green innovation, the present research contends that firms equipped with a GKM system are strategically positioned to innovate in environmentally sustainable ways and successfully pursue their sustainable development objectives.

*H4: Knowledge storage positively influences Successful green ventures.*

#### *Mediating role of innovation*

Through knowledge-based businesses, customers' requirements, necessities, and expectations have steadily replaced the services and goods produced by traditional labor and creative organizations in recent years (Mizintseva & Gerbina, 2018). The key to organizational success is knowledge management, which also plays a big role in enabling

enterprises to generate novel products and services, expand into new markets, and become more sustainable. Authors concluded that organizations using knowledge management strategies were comparatively inventive and had superior long-term financial performance after doing analytic study on New Zealand enterprises. This study reveals that gaining industry knowledge, for instance, was crucial for promoting novelties that best met consumer wants. In their study of Spanish companies, López-Nicolás and Meroño-Cerdán (2011) came to the conclusion that knowledge management strategy effects a sustainable firm performance by boosting its inventive capabilities and talents. Once an employee is prepared to absorb knowledge from and support other employees in developing new capabilities and skills, knowledge management, specifically knowledge sharing in a corporation, begins (Bonfiglio et al., 2019).

Firms that actively engage in a continuous learning process exhibit a higher degree of success in delivering innovative products and services to their customers. Enhanced learning enables these firms to seize every opportunity to introduce products and services that align with the ever-evolving market demands. Firms that are equipped with relevant knowledge and market trends are able to realize the needs of consumers and stakeholders. In addition to this, the right amount of skills and capabilities also allows such firm to thrive by utilizing innovative practices that promise long-term sustainability. With robust learning mechanism, the efficiency of firms also increases which ensures success (Calantone et al., 2019; Mehdi khani & Valmohammadi, 2019). Study of Sanz-Valle et al. (2019) also established a link between knowledge management and technological innovation, emphasizing the need of constant learning to adopt innovative practices proactively. Similarly, another study demonstrate that organizations must have three abilities to be entered in innovative category; they are committed to learning, possess cultural and technological innovativeness and do have knowledge of market trends (Weerawardena et al., 2018). On the other hand, Chen et al. (2018) also highlights the significance of service innovation that shapes firms' reputation in the society. However, with recent technological advancement, the predominant inclination of industries toward technological innovation, diverts their attention from service innovation (Den Hertog et al., 2010). It is also noteworthy that certain earlier research asserts the growing significance of service innovation even within manufacturing enterprises (Cheng & Krumwiede, 2019).

Den Hertog et al. (2019) offer a comprehensive definition of innovation in services as a "novel service experience or service solution encompassing one or more of the following dimensions: a fresh service concept, novel customer interactions, innovative value systems or business partnerships, novel revenue models, and pioneering organizational or technological service delivery systems." Furthermore, innovation in services can also manifest through the inventive amalgamation of existing services, technologies, personnel, and methodologies to cater to the needs of both existing and potential customers (Chen et al., 2019). Therefore, the hypotheses that have been formulated can be expressed as follows:

*H5: Innovative practices mediate the relationship between knowledge creation and successful green ventures.*

*H6: Innovative practices mediate the relationship between knowledge acquisition and successful green ventures.*

*H7: Innovative practices mediate the relationship between knowledge application and successful green ventures.*

*H8: Innovative practices mediate the relationship between knowledge storage and successful green ventures.*

#### *Mediation of green knowledge sharing behavior*

Knowledge sharing behavior is identified by scholars as a significant construct that happens to play effective role of mediator in organizational sustainability literature (Khan et al., 2019; Song et al., 2020). Since, the concept of knowledge management explains the series of

activities such as creating, acquiring, storing and implementing it, therefore, it appears to be highly related to environmental sustainability of organization. In this regard, it can be deduced that success of green initiative generally relies on firms' capability that how effectively it implements acquired knowledge and information (Cheng, 2019; Rennings & Zwick, 2020; Schoenherr & Swink, 2021). Empirical evidences also demonstrate that firms having knowledge sharing culture are more prone to conceptualize novel and innovative ideas that ultimately increase their innovative and absorptive capacity. Studies also highlight that promoting knowledge sharing environment multiplies the positive impact of green knowledge management because it provokes firms to exchange expertise and best practices that are truly a potential driver of firm's success (Chen et al., 2019; Wu, 2019). It is also argued that knowledge sharing is a vital form of bridge that allows firm to convert knowledge resources into tangible outcomes, leading to successful green outcomes. The debate highlights that knowledge sharing behavior is not simply an auxiliary process, it serves as a catalyst to create the bridge between green knowledge management and successful green venture by increasing environmental responsibility and fostering innovative capabilities (Arfi et al., 2018; Srinivasan & Swink, 2018). Therefore, we hypothesize that:

*H5: Knowledge sharing mediates the relationship between knowledge creation and successful green ventures.*

*H6: Knowledge sharing mediates the relationship between knowledge acquisition and successful green ventures.*

*H7: Knowledge sharing mediates the relationship between knowledge application and successful green ventures.*

*H8: Knowledge sharing mediates the relationship between knowledge storage and successful green ventures.*

#### **Methodology**

##### *Research strategy and sampling of target population*

The researcher has followed the aligned conceptions from the positivism philosophy, a deductive approach of using the generalized theory concepts to synthesize specific designed hypotheses, and used the primary data quantitative research strategy for data collection (Saunders et al., 2007). The researcher has targeted the employees of the manufacturing firms working in various organizational settings within the country boundary of Vietnam.

The targeted population has been defined as the sub-group of the whole population consisting of the same properties in the aspect of perception (Memon et al., 2020). The present study used cross-sectional research design to explore the assess the stated relationship. Furthermore, the study used non-probability purposive sampling technique to select and assess respondents. The reason for choosing this technique as it helps in selecting those respondents that truly represent sample population having particular characteristics perfectly aligned with research objectives. The selected sampling technique ensures researchers that selected sample is aware of terms such as green knowledge, knowledge sharing behavior, innovative capabilities, entrepreneurship etc. An inclusion criterion was specifically developed for present study to identify desired sample population. Firstly, it is to make sure while selecting respondents that they must have minimum 3-year experience in a company which adopts green practices. Secondly, researchers made sure that sample chosen for the study actively involves in green knowledge management and innovative practices. In addition to this, only those employees were considered who hold critical position in the company related to sustainability and knowledge management initiatives.

The study also developed a three-step procedure to reach out participants; identification of industry, preliminary contact, and ultimate selection. Pertaining to industry identification, only those manufacturing firms were considered who are familiar with green knowledge management practices and largely known for green



innovative practices. The identification was done with the help of industry reports and other relevant sites. Researchers prepared a brief list of potential respondents based on inclusion criteria and they were approached through professional networks. Lastly, participants were finalized that were perfectly aligned with inclusion criteria and agreed to participate in the study without any pressure.

Further to discussion, the study used Daniel Soper calculator to derive the sample size of the study as Soper (2024) argued that sample size for SEM can be determined through number of observed and latent variables, anticipated effect size and significance level. Based on the criteria, the sample size drawn for the study was 180. However, for better generalization, the study collected data from 300 employees. This helped researchers to handle potential loss in case of partial responses. After collecting the responses, the study used data cleaning process by removing incomplete surveys, identifying outliers and assessing redundant entries. While data cleaning process, 15 responses were omitted because they were incomplete.

#### Instrumentation and measurement of the variables

The researcher has used all the scales of the variables from authentic and empirically evaluated study measurements. The researcher has used the online and self-administered mediums for the collection of primary data. For the measurement of different knowledge practices, the researcher encountered a study that used all the sub-constructs of knowledge management altogether in one framework and measured knowledge acquisition with the help of 5 items, the knowledge creation with the help of 5 items, knowledge storage by 5 items, and knowledge application by using 6 items and all scale items have reliable Cronbach alpha values (Yu et al., 2022).

The mediating variable of green knowledge sharing was adopted from a study that used 5 items for the measurement of green knowledge sharing with the Cronbach alpha value of 0.887 (Zhang et al., 2021). Next, the second mediating variable of the study the innovative practices was measured by using a 10-items scale (Wang et al., 2022) and primarily adopted the scale from (Kam-Sing Wong, 2012). In the end, the dependent variable of successful green ventures was measured in this study on 5 items used by a very recent study and highlighted the reliability and validity of the scale items with 0.927, and AVE of 0.719 respectively (Jinliang et al., 2023).

Along with the main body questions in the questionnaire, the researcher has also asked some demographical questions from the respondents and the most common questions include age, gender, education, work experience, and type of job.

#### Data analysis techniques and ethical considerations

The researcher has used the SPSS software for initial screening including missing values, outliers, and normality of the data, items, and variables. along with it, the researcher has run the advanced testing of PLS-SEM comprised of two steps one of which includes reliability and validity computation and the second step of structural equation modeling in which high-quality steps of two-stage approach and bootstrapping have been used (PLS, 2023; SmartPLS, 2023). Further, the researcher has considered all the ethical considerations while conducting this research and has collected all the data with the voluntary participation of respondents, has ensured the anonymity and the confidentiality of the personal information and has compiled all the results with no personal inference and biases, and yes originally depicted the viewpoint of the respondents in discussion (Scribber, 2023). The following table shows the description of the gathered scales, their sources and the number of the items.

Variable Name	Symbol	No of items	Source
Knowledge creation	KC	5	(Yu et al., 2022).

(continued on next column)

(continued)

Variable Name	Symbol	No of items	Source
Knowledge acquisition	KA	5	(Yu et al., 2022).
Knowledge storage	KST	5	(Yu et al., 2022).
Knowledge application	KAP	6	(Yu et al., 2022).
Knowledge sharing	KS	5	(Yu et al., 2022).
Innovative practices	IP	10	(Kam-Sing Wong, 2012)
Successful green ventures	SGV	5	(Jinliang et al., 2023)

## Findings

### Internal consistency reliability

In order to evaluate the reliability of different variables the researcher has employed internal consistency reliability. According to Surucu and Maslakci (2020), internal consistency reliability is often referred to as a “test retest” approach because in this a same test is performed several times after a particular time frame and then there obtained results are compared, if the test yield similar results again and again it indicates the construct are reliable. Reliability is assessed through Cronbach alpha. According to (Hair et al., 2011), the value of  $\alpha$  should be more than 0.7 to establish reliability. Results of internal consistency reliability is given in table 1 below. The value of  $\alpha$  for IP, KA, KAP, KC, KS, KST and SGV is 0.91, 0.80, 0.88, 0.89, 0.91, 0.87 and 0.83, respectively. All the obtained values are above 0.7, thus the current data set is reliable.

### Outer loadings

After the examination of internal consistency reliability for each variable, the researcher has analysed outer loadings (indicators reliability). The estimated associations presented in the reflective measurement model of a study is termed as outer loadings (Modak et al., 2023). According to Kamis et al. (2020), the value of outer loadings ranges between 0 and 1, however 0.6 is the cut-off value. The results of outer loadings are presented in table 2. In this table, only those factors of the variables are included whose indicator reliability is greater than 0.6. For instance, the factors included for measurement of indicator reliability of IP were IP4, IP5, IP6, IP7, IP8, IP9, and IP10, for KA were KA1, KA2, KA3, and KA5, for KAP were KAP1, KAP2, KAP3, KAP4, KAP5 and KAP6, for KC were KC1, KC2, KC3, KC4, and KC5, for KS were KS1, KS2, KS3, KS4, and KS5, for KST were KST1, KST2, KST3, KST4 and KST5, and lastly for SGV were SGV1, SGV2, SGV3, SGV4 and SGV5.

### Convergent validity

To measure the dataset’s true reliability, convergent validity was determined. It is measured with two indicators, “Composite Reliability

**Table 1**  
Internal consistency reliability.

	$\alpha$
IP	0.916
KA	0.802
KAP	0.884
KC	0.894
KS	0.915
KST	0.878
SGV	0.837

Note: “KA= Knowledge acquisition, KAP= Knowledge application, KC= Green Knowledge creation, KS= Knowledge Sharing, KST= Knowledge Storage, SGV= Successful green ventures, IP= Innovative practices”

**Table 2**  
Outer loadings.

	IP	KA	KAP	KC	KS	KST	SGV
IP10	0.721						
IP4	0.842						
IP5	0.851						
IP6	0.855						
IP7	0.882						
IP8	0.83						
IP9	0.728						
KA1		0.862					
KA2		0.818					
KA3		0.785					
KA5		0.696					
KAP1			0.783				
KAP2			0.834				
KAP3			0.795				
KAP4			0.818				
KAP5			0.797				
KAP6			0.731				
KC1				0.831			
KC2				0.857			
KC3				0.862			
KC4				0.829			
KC5				0.811			
KS1					0.872		
KS2					0.877		
KS3					0.868		
KS4					0.857		
KS5					0.843		
KST1						0.762	
KST2						0.858	
KST3						0.888	
KST4						0.807	
KST5						0.784	
SGV1							0.711
SGV2							0.877
SGV3							0.88
SGV4							0.733
SGV5							0.685

Note: “KA= Knowledge acquisition, KAP= Knowledge application, KC= Green Knowledge creation, KS= Knowledge Sharing, KST= Knowledge Storage, SGV= Successful green ventures, IP= Innovative practices”

(CR) and Average Variance Extracted (AVE).” In the view of Hanafiah (2020), CR must be greater than 0.7, and AVE should be more than 0.5 to ensure the dataset is valid. Results of convergent validity is provided in table 3, the table indicates that values of CR for all observed variables i. e., IP, KA, KAP, KC, KS, KST, and SGV are above 0.7, and their AVE values are also above 0.50, thus the dataset is valid.

### Discriminant validity

Discriminant validity analyses how closely a measurement test measures the intended concept. It further specifies that particular constructs are unrelated that must not be theoretically relevant to one another (Ronkko & Cho, 2022). In current study, researcher has assessed

**Table 3**  
Convergent validity.

	Cronbach alpha	Composite reliability	Average variance extracted (AVE)
IP	0.921	0.934	0.669
KA	0.823	0.873	0.628
KAP	0.898	0.911	0.638
KC	0.897	0.922	0.702
KS	0.915	0.936	0.745
KST	0.878	0.912	0.674
SGV	0.848	0.886	0.611

Note: “KA= Knowledge acquisition, KAP= Knowledge application, KC= Green Knowledge creation, KS= Knowledge Sharing, KST= Knowledge Storage, SGV= Successful green ventures, IP= Innovative practices”

discriminant validity by employing two approaches i.e., “HTMT Criterion and Fornell Larcker’s (1981) criterion.”

### HTMT

HTMT is a novel approach to analyse discriminant validity. To ensure that discriminant validity is established in dataset, the HTMT value should be distinguished from 1 (Rasoolimanesh, 2022). According to Ab Hamid et al. (2017), if the resultant value of HTMT of all the observed variables are less than 1, discriminant validity is said to be existed. Results of HTMT is given in table 4. As all the values presented in table are below 1, it confirms discriminant validity.

### Fornell-Larcker (1981) criterion

According to Fornell-Larcker (1981) criterion, the value of correlation between variables and any other variables must be lesser than the square root of AVE of a variable (Hair Jr et al., 2021). The results of Fornell-Larcker are presented in Table 5, the results show the existence to discriminant validity through Fornell-Larcker approach.

### Measurement model

The measurement model of present study is shown in Fig. 1 and Fig. 2 below. In this model, there are four independent variables including green knowledge creation with 5 items, knowledge acquisition with 5 items, knowledge application with 6 items and knowledge storage with 5 items. Moreover, there are two mediating variables including innovative practices with 10 items, and knowledge sharing with 5 items. Lastly, one dependent variable that is successful green ventures with 5 items.

### SEM analysis

In this study, SEM was employed to analyse the direct and indirect path analysis, and for assessing the hypotheses significance bootstrapping approach was utilized, as this approach is useful for yielding accurate results. The results of path analysis are shown in table 6 in which the thumb of rule for the hypothesis to get accepted is that its level of significance must be less than 0.05, however, some of the hypotheses get accepted at p-value 0.10 as well. In this study, there were 4 direct and 8 indirect hypotheses. The results shown indicated that the relationship between KST and SGV was accepted as its p-value is 0, and t-statistics 4.502. However, all other direct hypotheses were rejected because they did not fall on the criterion set for significance. Here 0 p-value suggests a strong statistical significance between variables. The t-statistic which is 4.502 further supports the significance of relationship, outlining that knowledge sharing storage positively affect successful green ventures. This means that dedication of firms toward knowledge storage mechanism leads to success of green ventures. Therefore, when firms successfully manage their stored knowledge to be utilized for sustainable purposes, they likely to gain more benefits and experience success in their green initiatives. The rejection of other direct hypotheses indicate that they failed to meet the significance criteria, highlighting that other dimension of green knowledge management such as knowledge acquisition, knowledge application, knowledge creation did not reveal a significant impact in the given dataset. This articulate that not all the dimensions of green knowledge management can be a key to successful green ventures. This also implies that depending on context, resources and efforts should be devoted to particular dimensions of knowledge management rather than focusing on their collective impact.

From Table 6, it can be observed that innovative practices do not mediate the relationship between knowledge acquisition, knowledge application and successful green ventures because the significant value is greater than 0.05. This indicates that innovative practices did not prove to be facilitator in their current form to make acquired knowledge useful for the success for green ventures. The absence of mediation also highlights that innovative practices even being effective often

Table 4  
HTMT.

	IP	KA	KAP	KC	KS	KST	SGV
IP							
KA	0.065						
KAP	0.063	0.446					
KC	0.526	0.081	0.045				
KS	0.699	0.052	0.078	0.729			
KST	0.583	0.300	0.111	0.441	0.476		
SGV	0.641	0.193	0.109	0.417	0.582	0.651	

Note: “KA= Knowledge acquisition, KAP= Knowledge application, KC= Green Knowledge creation, KS= Knowledge Sharing, KST= Knowledge Storage, SGV= Successful green ventures, IP= Innovative practices”

Table 5  
Fornell-Larcker.

	IP	KA	KAP	KC	KS	KST	SGV
IP	0.818						
KA	0.341	0.792					
KAP	0.212	0.361	0.794				
KC	0.482	0.119	0.102	0.838			
KS	0.641	0.205	0.266	0.665	0.863		
KST	0.525	0.254	0.195	0.395	0.427	0.821	
SGV	0.562	0.159	0.182	0.363	0.508	0.559	0.782

Note: “KA= Knowledge acquisition, KAP= Knowledge application, KC= Green Knowledge creation, KS= Knowledge Sharing, KST= Knowledge Storage, SGV= Successful green ventures, IP= Innovative practices”

implemented improperly when align with knowledge acquisition and application. Further, the negative coefficient of indirect path highlights that sometimes-innovative practices have an adverse impact in the form of barriers that may subdue the benefits of knowledge acquisition and application. There could be several reasons for it. For example, if innovative practices are not properly matched with strategic objectives of green ventures, chances are less to get benefit from acquired knowledge. Misallocation of resource devoted to IP might damage the potential benefit of knowledge acquisitions. Also, if innovative practices are implemented poorly then organizations may face operational challenges which converse the relationship of KA and SGV. In addition to this, innovative practices often deflect green ventures from other useful resources including human capital, time etc; which are also crucial for the success of green firms. Besides, additional complexities in the form of change resistance, bureaucratic challenges create difficulties for green ventures to implement innovative practices properly. Particularly in Vietnamese context, it can be explained that if green firms choose

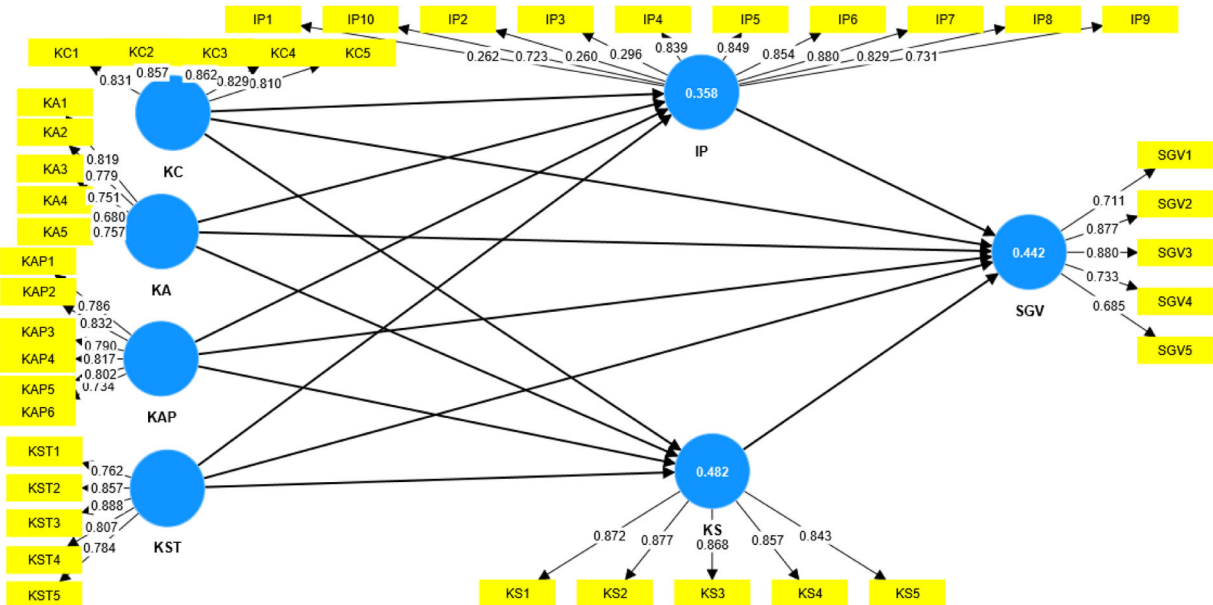


Fig. 1. Measurement Model.

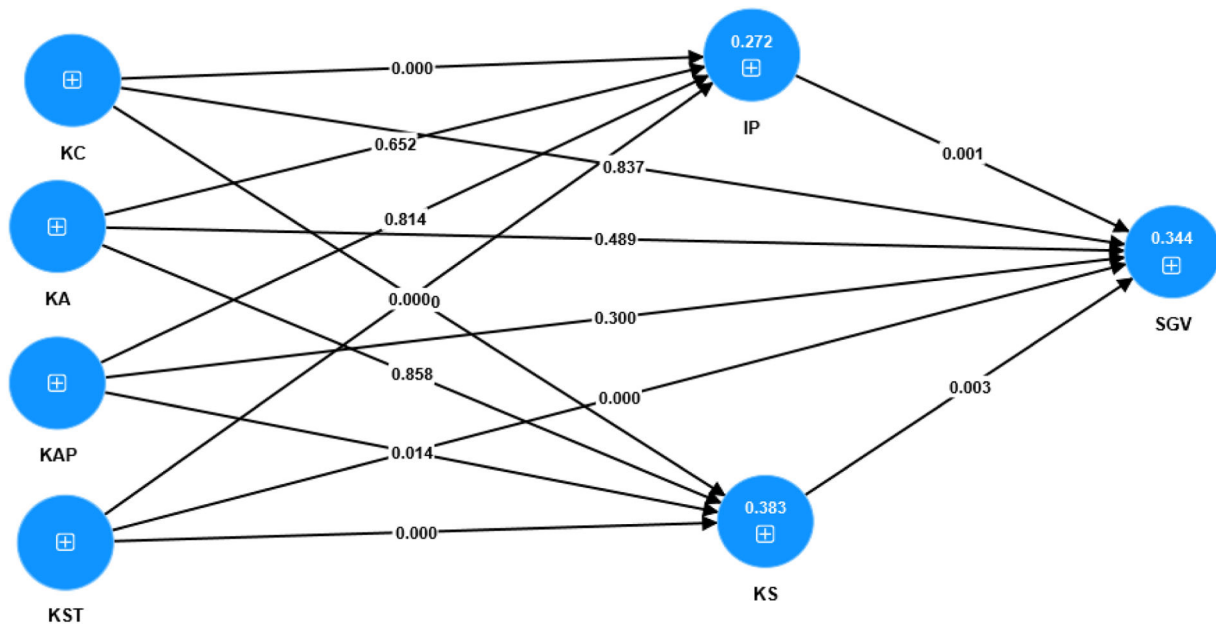


Fig. 2. SEM.

**Table 6**  
Hypotheses Testing.

	Original sample	Sample mean	Standard deviation	T statistics	P values
KA -> SGV	0.037	0.036	0.053	0.693	0.489
KAP -> SGV	0.057	0.053	0.055	1.038	0.301
KC -> SGV	0.015	0.014	0.074	0.206	0.837
KST -> SGV	0.312	0.304	0.067	4.502	0.000
KA -> IP -> SGV	-0.005	-0.004	0.011	0.437	0.662
KC -> IP -> SGV	0.049	0.05	0.019	2.591	0.010
KAP -> IP -> SGV	-0.003	-0.002	0.012	0.217	0.828
KST -> IP -> SGV	0.082	0.084	0.026	3.174	0.002
KAP -> KS -> SGV	-0.025	-0.022	0.011	1.844	0.066
KST -> KS -> SGV	0.049	0.049	0.019	2.505	0.013
KA -> KS -> SGV	-0.002	-0.002	0.012	0.167	0.867
KC -> KS -> SGV	0.094	0.094	0.034	2.771	0.006

Note: "KA= Knowledge acquisition, KAP= Knowledge application, KC= Green Knowledge creation, KS= Knowledge Sharing, KST= Knowledge Storage, SGV= Successful green ventures, IP= Innovative practices"

technologies that are either costly or not aligned with domestic market conditions; their resources might not be useful their green success journey. Also, operational disruption can also be occurred if individuals do not possess critical skills which brings negative effect on the success of green ventures.

Further to discussion, innovative practices proved to be a significant mediator in case of knowledge creation and knowledge strategies as p-values are less than 5% and t-values are greater than 1.96. Innovative practices fully mediate the relationship of knowledge creation with SGV whereas it partially mediates the relationship of knowledge storage with SGV. This implies that knowledge creation needs supportive mechanisms to influence SGV positively. The presence of full mediation in that case confirms that knowledge creation is effective when it is utilized for innovation purposes. This significant indirect path shows that effectively transforming created knowledge into innovative actions is substantial

for green ventures. To explain it further, it can be illustrated that creating knowledge does not guarantee green success, however, when it is applied through the lens of innovation, it adds greater value to the firm. Results also imply that knowledge effectively stored and retrieved by firms facilitate in achieving green goals. Besides, it should also be implemented along with innovative practices to fully realize the collective potential benefits on green success. Table 6 also explains that knowledge sharing behavior does not mediate the association of KAP and KA with SGV. The insignificant indirect path values suggest although these aspects of knowledge management are important, however, their impact in the context of green venture success is not straight forward. Therefore, the relationship is not mediated by knowledge sharing behavioral as well. Furthermore, it was found that KS fully mediates the association between KAP and SGV (p-value 0.066, t-statistics 1.84), and partially between KST and SGV (p-value 0.013, t-statistics 1.84) and between KC and SGV (p-value 0.006, t-statistics 1.84).

## Discussion and conclusion

### Discussion of key findings

The researcher has designed a comprehensive model with the association between green knowledge-based practices and successful green ventures in the section of the literature and has empirically evaluated them with the help of the PLS-SEM technique. After running the main test of hypotheses testing in the Smart PLS, the researcher has revealed some mixed results. The researcher has explored the significant direct and indirect impact of knowledge creativity and knowledge storage on the successful green ventures through knowledge sharing and innovative practices. As well as the study has illustrated the significance of knowledge application for the success of green practices of manufacturing sector firms. For the empirical support and validation of the encountered results, the researcher has searched and cited relevant, appropriate and sufficient literature studies. To verify the significance of knowledge management practices, a study was found that investigated all 4 types of knowledge management practices in increasing organizational performance and their data analysis revealed support for their assumed relationship and verified the incumbency of the KM practices including knowledge sharing, creativity, and storage in accelerating the performance level (Migdadi, 2022).



Another study was comprised of the empirical examination of the relationship between the knowledge management process and performance of the non-profit organizations and sports clubs and evaluated the data using the same SEM analysis to calculate the tests, after the analysis the study incorporated two empirical foundations and supports for this study one; they confirmed the significance of the KM processes in incrementing the firm performance level and second; the study also investigated and assured the significant mediating role of innovativeness, innovative practices and attitude towards innovation, and justified that these catalysts further push the firms towards more sustainable and green venture creation (Delshab et al., 2022). In addition to this, another literature empirical support was explored that has targeted the KM practices and processes in their researched model and evaluated their impact overall on organizational performance with the perception of the employees same as this study has practiced and the literature study also resulted in the support and validation of all the knowledge management practices including knowledge sharing, creativity, application and storage for boosting the firms quality, operational and innovative performance level and all these indicators growth ultimately leads to the success of the firms in becoming green ventures (Al Ahbabi et al., 2019).

Finally, another very recent study was explored that has used the KM practices in defining corporate green performance and has encountered the constructive results on the significance of the KM practices for incrementing and flourishing the green performance of the corporates and they further highlighted the significance of the green innovation as an effective mediator between KM practices and green performance (Abbas & Khan, 2023). In the light of all the above-cited studies, the researcher has created a suitable ground for incorporating the confirmation of the KM practices as a successful and well-applicable asset or tool for increasing the firm performance level and enabling the firm achieving the desire of successful green ventures.

### Conclusion

This study has pursued its aims to investigate the impact of different knowledge management practices along with innovative practices in the accomplishment of successful green ventures. To achieve this aim, the researcher has adopted a quantitative research strategy with primary data collection from the employees of the manufacturing sector of Vietnam and after performing the tests of PLS-SEM on Smart PLS, the researcher has concluded that knowledge management practices and its types sustain the overall activities of the manufacturing sector firms and these practices assist the firms in gaining new myriads of strategies for converting the firm practices towards green and in this domain the organizations empower themselves in touching and retaining the goal of green successful ventures with maximized profits, eco-friendly business process and a win-win stage accomplishment. Specifically, this study has highlighted the incumbency of the knowledge creativity, knowledge storage and knowledge sharing as the most important components that facilitate the firms achieving the level of successful green ventures and the additive influencer of the innovative practices additionally support the firms in effectively utilizing, evaluating, and integrating all the knowledge management components in fruitful ways and to fulfill the dream of success in the myriad of green ventures.

### Contributions

Every researcher while conducting any research has the ultimate purpose to serve the society, policymakers, associated stakeholders of the targeted sector, and the literature some key support and facilitation in the form of real-life phenomenon-based empirical information, so that the associated bodies will overcome their encountered challenges and gain success. The same has been done by the researcher after conducting this research and has provided some following contributions and implications:

### Theoretical implications

The researcher has primarily contributed to the literature with a comprehensive knowledge of the importance of the targeted variables from the viewpoint of the employees and has depicted all the vitality and awareness of the green knowledge management practices in the manufacturing sector of Vietnam. Furthermore, this study is the first type of research that has investigated such a diverse model with the integration of two mediators for supporting the mechanism of successful green ventures. This study has illustrated to the literature that green knowledge storage has more weightage in increasing the potential of manufacturing sector firms in achieving the goal of successful green ventures within the context of Vietnam. Additionally, this study has also contributed to the literature that knowledge-sharing and innovative practices are more influential factors in enhancing the contribution of knowledge creativity and knowledge storage for green business setups. The researcher has empowered the current knowledge of innovative practices present in the literature and has elaborated that the combined integration of innovative practices with knowledge management practices has an additional promoting mechanism on the success of the manufacturing sector in the ray of green and sustainability.

### Practical implications

This study has provided the significance of green knowledge management practices within the context of Vietnam and has discovered the importance of the targeted constructs as a suitable and effective course of conduct for diverting the conventional and environmental destructing strategies and processes of the manufacturing sector toward healthy and environmentally sustainable setups and also highlighted that innovative practices can act as a catalyst in enlightening the ways for the manufacturing firms to achieve the goal of green performance. This study also highlighted potential ways for the managers and policy-makers of all the sectors that have been dealing with the issue of sustainable eco-friendly practices to primarily focus on green knowledge practices and to explore innovative and eco-based business procedures and achieve successful green venture status.

### Limitations

The researcher has folded some limitations in the way of conducting this research along with the previously mentioned incumbent contributions and limitations. The study has its first limitation of the small sample size due to the lack of interest and sufficient response rate from the participants of the study as the researcher also had to face some accessibility issues for the employees because of the reservations of the higher authorities of the organizations due to lack of trust on the researcher.

The study also emphasized on particular practices of knowledge management; however, hence, ignored other meaningful practices that may influence green venture success. Therefore, the study did not fully capture the complex mechanism of knowledge management practices and its effectiveness of green ventures. The insignificant relationship of most of the practices of knowledge management also highlights the influence of contextual factors such as market situation, environmental regulation and local organizational culture. Therefore, the results can't be generalized due to the absence of these factors.

Along with this, the researcher used the only intervening variable innovative practices as a whole construct and did not consider any specifications related to some pinpointed and specific domain-based innovative practices either in the management or business processes. Additionally, the researcher has only evaluated the empirically designed model with the perception of employees of the manufacturing industries and has provided no depiction of the viewpoint of the managers or the other holding bodies that overall look after the whole business setups and all the incorporated activities and the working bodies of the industries.

### Recommendations for future studies

The researcher has originally mentioned all the limitations possessed by the study and based on the stated limitations the study suggests some recommendations and suggestions for the next studies that can be integrated by the future scholars. First of all, the researcher has used the employees of the manufacturing sector as the target population however, the managers also have quite privileged knowledge about the management practices as well as the day-to-day activities and communication among the employees, so they can also provide constructive and vital information on the journey and determinants of successful green ventures.

Second, this study has used two mediating impacts in the model and one of them was the type of green knowledge management so, the researcher suggests the next future scholars use some more influential and other than management some communicative and strategic factors as mediators or external variables and can provide some novel contributions to the theory and the literature. Further, the researcher has confined this study to the perception of the employees, further scholars can use a comparative or mixed method research strategy and can provide more in-depth insight into the knowledge about the empirical model of this study from a more generalized and entailed illustration.

Building an understanding regarding afore-stated limitations may allow practitioners to build more robust mechanism of knowledge management that is well-suited to particular industry or country. Managers and CEO of green ventures can be benefitted from the findings, however, they make sure to consider context-based findings while implementing the model.

### CRedit authorship contribution statement

**Mingqiang He:** Formal analysis, Data curation, Conceptualization. **Tin-Chang Chang:** Methodology, Investigation, Formal analysis. **Wu Chenggang:** Writing – review & editing, Writing – original draft, Visualization, Software, Resources. **Van Kien Pham:** Validation, Supervision, Project administration.

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