

Green Innovation as a Key Mediator in Green Supply Chain Practices: Evidence from Fashion SMEs

Green Innovation as a Key Mediator in Green Supply Chain Practices

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ABSTRACT

In response to increasing global pressure for environmental sustainability, businesses are required to integrate environmentally friendly practices throughout their supply chains. This study aims to analyze the effect of green innovation in mediating the influence of top management commitment and knowledge management orientation on green supply chain management practices in fashion SMEs. The approach used is explanatory quantitative, with 100 SME respondents analyzed using the Partial Least Squares–Structural Equation Modeling (PLS-SEM) method. The findings show that top management commitment significantly influences green innovation but not green supply chain management practices directly. Knowledge management orientation significantly affects green supply chain management practices, but not green innovation. Furthermore, green innovation mediates the relationship between top management commitment and green supply chain management practices, but not knowledge management orientation. These findings suggest that leadership commitment should be effectively translated into innovative environmental initiatives to strengthen sustainable supply chain practices. This study provides theoretical implications for the development of sustainable management models and practical implications for SMEs in strengthening green economy-based business strategies.

Keywords: *Green Innovation, Green Supply Chain Management, Knowledge Management Orientation, Top Management Commitment.*

INTRODUCTION

Small and Medium Enterprises (SMEs) are a key driver of regional economic growth through job creation and income generation. Within this sector, the fashion industry holds a strategic role as part of the creative economy with high value-added and export potential. However, it also contributes to environmental degradation due to chemical use, textile waste, and high energy consumption (Bett, 2024). Therefore, transforming fashion SMEs toward a green industry is essential to support sustainable and inclusive economic development. The application of green concepts is one tactical method that can be used to accomplish this goal. Business actors can incorporate environmental sustainability principles into every phase of the supply chain, including waste management, production, distribution, and raw material procurement (Chen et al., 2024). According to Kumar and El-kassar (2019) and Huyen et al. (2025), the adoption of these practices not only helps protect the environment but also boosts operational effectiveness and enhances the company's favorable reputation among customers. In the context of fashion SMEs in Sukabumi, green supply chain management practices are a relevant strategy, considering that this region is developing an environmentally-based creative industry center to strengthen the green economy and the welfare of the local community.

Top management commitment and knowledge management orientation are the two primary internal elements that determine how well green supply chain management

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practices are implemented. Top management commitment serves as a determinant of the organization's strategic direction in implementing sustainable policies. Leaders with a green vision will encourage decisions that support environmentally friendly innovation, the provision of resources for green-oriented activities, and the formation of an organizational culture that is pro-sustainability (Chawewong & Naipinit, 2023). Top management commitment directly influences green process innovation, which in turn strengthens green supply chain management practices within the organization.

However, knowledge management orientation is a crucial basis for the development, sharing, and use of knowledge pertinent to sustainable supply chain practices and green innovation (Khan et al., 2023; Khanal et al., 2023; Rehman et al., 2024). SMEs with a strong knowledge orientation are more adaptable to the dynamics of the business environment and sustainability policies and are able to utilize information to improve supply chain efficiency (Polas et al., 2023). Understanding environmentally friendly materials, green technology, and sustainable production processes is key for SMEs to strengthen their competitive advantage while maintaining ecological balance.

According to this concept, green innovation acts as a mediator between the influence of top management commitment and knowledge management orientation on green supply chain management practices. Green innovation is the ability of an organization to develop more environmentally friendly technologies, processes, and products. It connects the company's internal strategies with the implementation of green supply chain practices (Ahmed et al., 2023). A study emphasizes that green innovation is a major driver of organizational sustainability because it combines economic efficiency with ecological responsibility (Bett, 2024). Therefore, the existence of green innovation enables SMEs to implement green supply chain management practices more optimally and consistently in the long term.

The positive correlation between top management commitment, knowledge management orientation, green innovation, and green supply chain management techniques has also been confirmed by a number of earlier studies. Increased green innovation is a result of top management's dedication, and this strengthens the application of green supply chain management techniques (Burki & Ersoy, 2019). Another study adds that knowledge management orientation directly influences green innovation and organizational environmental performance (Polas et al., 2023). However, empirical results in various SMEs contexts still show inconsistencies, mainly due to resource constraints, technology affordability, and organizational cultures that do not yet support green practices (Younes et al., 2025).

In addition to offering useful suggestions for business actors and local governments in developing strategies to boost competitiveness based on a green economy, it is hoped that this study will provide theoretical contributions for the development of a sustainable management model in the SME sector. By strengthening management commitment, improving knowledge orientation, and encouraging green innovation, fashion SMEs in Sukabumi are expected to become green business models that are not only economically profitable but also play a role in preserving the environment and improving community welfare. Therefore, this study aims to examine in depth the role of green innovation as a mediator between top management commitment and knowledge management orientation on green supply chain management practices in fashion SMEs in Sukabumi.

LITERATURE REVIEW & HYPOTHESIS DEVELOPMENT

The Effect of Green Innovation on Green Supply Chain Management Practices

Green innovation includes technological, process, and product development activities focused on reducing ecological consequences and improving environmental efficiency. Previous research repeatedly demonstrates that green innovation improves organizational performance overall as well as environmental performance (Chavira et al., 2023; Cheng et al., 2024; Mu'min et al., 2025). In addition, green innovation is widely recognized as a key driver of sustainable development because it integrates economic efficiency with ecological responsibility (Bett, 2024; Siagian & Siagian, 2025; Zhang et al., 2025). Within

the supply chain context, green innovation functions as an internal transformation mechanism that enables firms to systematically embed environmentally friendly principles into operational and managerial processes (Negi et al., 2025).

In this context, Gelmez et al. (2024) offer empirical proof that green supply chain management techniques greatly and favorably boost green innovation in businesses. Their findings indicate that the implementation of green procurement, eco-friendly logistics, and sustainable operational practices encourages companies to adopt cleaner technologies and develop more efficient environmental processes. This relationship suggests that firms with stronger green supply chain management implementation tend to have higher levels of innovation in environmental practices, as sustainability-oriented supply chains create both the capability and motivation for continuous green improvement.

H1: Green innovation has a positive effect on green supply chain management practices.

The Effect of Knowledge Management

Knowledge management orientation reflects the extent to which organizations are able to create, disseminate, and utilize knowledge to drive green innovation and sustainability. Some studies highlight that green knowledge management is a key driver of environmentally friendly technological innovations (Wu & Tham, 2023; Kusa et al., 2024; Nyuga & Tanova, 2024). Furthermore, there is a strong correlation between the improvement of green innovation and the primary aspects of knowledge management, including information acquisition, distribution, and responsiveness (Polas et al., 2023). Therefore, knowledge management orientation plays an important role for SMEs in developing adaptive capabilities and strategic competencies in response to environmental sustainability dynamics and demands. However, Fan and Zhou (2023) found that knowledge management orientation may have a negative effect on green innovation when it is overly focused on internal control and standardization, as this condition can reduce flexibility and limit exploratory environmental innovation activities.

In contrast, Javed et al. (2025) emphasize that a strong knowledge management orientation through effective knowledge sharing, organizational learning capability, and knowledge integration has a positive effect on green supply chain management practices. This is because effective knowledge management orientation enables firms to better coordinate environmental knowledge and translate it into sustainable supply chain actions. Thus, knowledge management orientation not only supports the development of green innovation under appropriate conditions but also plays a crucial role in strengthening the implementation of green supply chain management practices.

H2: Knowledge management orientation has a positive effect on green innovation.

H3: Knowledge management orientation has a positive effect on green supply chain management practices.

The Effect of Top Management Commitment

Top management commitment is understood as the level of support, attention, and involvement of top management in directing organizational strategies toward environmental sustainability. Several studies explain that green commitment from top management plays an important role in determining organizational policy direction to enhance sustainable business performance (Gachanja & Kinyua, 2021; Chawewong & Naipinit, 2023; Chen et al., 2023; Tetteh et al., 2024). In this regard, top management commitment has been identified as a key driver that encourages the implementation of green initiatives within organizations. It also has a positive influence on green process innovation and strengthens the adoption of green supply chain practices (Tarigan et al., 2020). With strong leadership commitment, organizations are better able to allocate resources effectively, build an environmentally oriented organizational culture, and ensure that strategic decisions align with sustainability goals. These conditions ultimately

support the development of environmentally friendly innovations and long-term organizational sustainability (Rahayu et al., 2025).

Top management is crucial in supplying resources, establishing strategic direction, and guaranteeing policy support for environmental projects. Agyabeng-Mensah et al. (2020) discovered that top management commitment has a beneficial impact on the implementation of green supply chain management methods. This indicates that without strong commitment from top management, sustainability programs may not be implemented effectively. Therefore, top management commitment is considered a critical factor in strengthening organizational readiness and capability to adopt green supply chain management practices, ensuring that environmental sustainability becomes an integral part of business operations and decision-making processes.

H4: Top management commitment has a positive effect on green innovation.

H5: Top management commitment has a positive effect on green supply chain management practices.

Green Innovation as a Mediating Variable

Green supply chain management practices refer to supply chain management strategies that integrate environmental principles into every stage of business activities, from raw material procurement, production processes, distribution, and waste management (Dzikriansyah et al., 2023; Kristanti & Anshori, 2023; Hariyani et al., 2024). The implementation of green supply chain management practices has been proven to increase operational efficiency, reduce waste, and strengthen organizational competitiveness (Khanal et al., 2023). For fashion SMEs, green supply chain management practices are highly relevant because they support a balance between economic profitability and ecological responsibility, thereby contributing to the development of sustainable businesses.

Literature indicates that top management commitment and knowledge management orientation can influence green supply chain management practices both directly and indirectly through the mediating role of green innovation (Polas et al., 2023). In this relationship, green innovation functions as a strategic mechanism that translates top management commitment and knowledge management orientation into more concrete and measurable green supply chain practices. However, in SME contexts, limitations in financial resources, technological capabilities, and organizational culture may weaken the relationships among these variables (Younes et al., 2025). Despite these challenges, empirical findings show consistent patterns supporting the importance of this linkage.

Alam et al. (2023) found that knowledge management orientation enhances green innovation, which subsequently improves supply chain performance. This indicates that green innovation acts as an important mediating mechanism connecting knowledge management orientation with the implementation of green supply chain management practices. Similarly, Haldorai et al. (2025) found that top management commitment significantly drives green supply chain management practices through the development of green innovation. These findings confirm that green innovation plays a key mediating role in translating both managerial commitment and knowledge-based capabilities into sustainable supply chain outcomes.

H6: Green innovation mediates the positive effect of knowledge management orientation on green supply chain management practices.

H7: Green innovation mediates the positive effect of top management commitment on green supply chain management practices.

Figure 1 depicts the study's conceptual model, which shows the relationships among top management commitment, green supply chain management techniques, green innovation, and knowledge management orientation in fashion SMEs. The model states that green innovation acts as a mediating variable and has a direct impact on green supply

chain management strategies. The positioning of knowledge management orientation and top management commitment as antecedent variables that influence green supply chain management practices both directly and indirectly through green innovation highlights the fact that sustainability performance is influenced not only by leadership and knowledge factors but also by the degree to which they are translated into innovation.

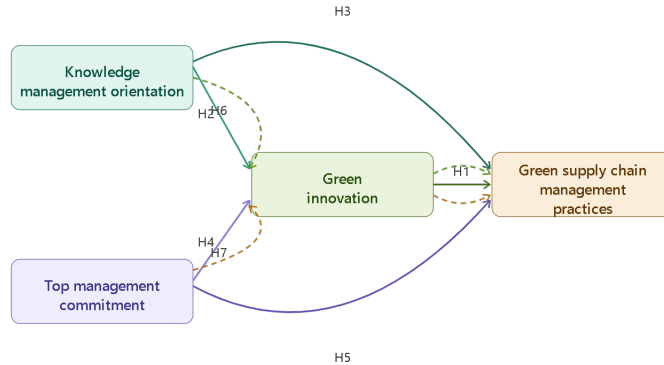


Figure 1. Research Framework

RESEARCH METHODS

In order to investigate causal links between independent, mediating, and dependent variables through empirical hypothesis testing, this study used an explanatory quantitative approach. Because it allows for an objective and quantifiable study of correlations using survey data gathered through questionnaires, the quantitative approach was chosen. The explanatory design is utilized to assess the direct and indirect effects of top management commitment and knowledge management orientation on green supply chain management practices, with green innovation acting as a mediating variable. The research population includes all fashion sector SMEs that are actively operating and registered with the Sukabumi City Cooperative, Micro, Industry, and Trade Agency (*Dinas Koperasi, Usaha Kecil dan Menengah, Perindustrian dan Perdagangan/Diskumindag*) in 2025. Based on official data from Diskumindag (2024), the number of active fashion SMEs is recorded at 135 business units, covering the sub-sectors of Muslim clothing, clothing manufacturing, batik, and fashion accessories.

Non-probability purposive sampling was used in the sampling process to choose respondents based on predetermined criteria, such as SMEs that have been in operation for at least two years, employ more than three permanent employees, carry out independent production and distribution, and be willing to participate by answering the questionnaire. A total of 100 fashion SME respondents in Sukabumi were obtained, which is considered sufficient for analysis using Partial Least Squares–Structural Equation Modeling (PLS-SEM). This adequacy follows the 10-times rule, which requires a minimum sample size of at least ten times the maximum number of structural paths directed at any construct in the model.

Primary data collected directly through the distribution of structured questionnaires was the primary data used. The dimensions and indicators of each research variable that had been theoretically validated based on earlier Scopus-indexed literature were used to create the questionnaires. Each indication was measured using a five-point Likert scale, where 1 = strongly disagree and 5 = strongly agree. Secondary data, such as official Ministry of Trade reports, international scientific publications, and sustainability reports pertaining to the application of green supply chain management practices in the fashion industry, were also utilized as supporting material for the analysis.

Between March and May of 2025, data was gathered using both online and offline (in-person) approaches. For the online approach, managers or owners of SMEs who are part of the Sukabumi SMEs community were given surveys through Google Forms. In the meantime, direct visits to a number of the region’s fashion production facilities were used in the offline method. Three specialists in the fields of sustainable management and SMEs

development performed content validity testing prior to the instruments being used in the primary data collection to ensure the indicators were pertinent to the theoretical idea. The questionnaire was finalized as a research tool after a few minor changes based on expert advice.

Structural Equation Modeling (SEM) utilizing SmartPLS software version 3.0 was used to analyze the data. Because it is thought to be appropriate for studies including predictive models, a small sample size (less than 200 respondents), and data distribution that might not be entirely normal, the PLS-SEM approach was used. Evaluation of the measurement model (outer model) to determine the validity and reliability of the indicators and evaluation of the structural model (inner model) to test the relationships between variables in the research model comprised the two main phases of the analysis process.

RESULTS

To evaluate a research model’s model fit, two steps are involved in the data processing procedure utilizing the Partial Least Squares (PLS)-based SEM approach (Hair et al., 2020). Three criteria, convergent validity, discriminant validity, and composite reliability, are used in the first stage to assess the outer model. The correlation between item scores and construct scores estimated by the PLS program is used to evaluate convergent validity for reflective indicators. While loading levels between 0.50 and 0.60 are still suitable for exploratory research or scale building, indicators with a loading value above 0.70 are deemed to have strong validity. A minimum loading factor criterion of 0.60 is used in this investigation to guarantee sufficient measurement validity.

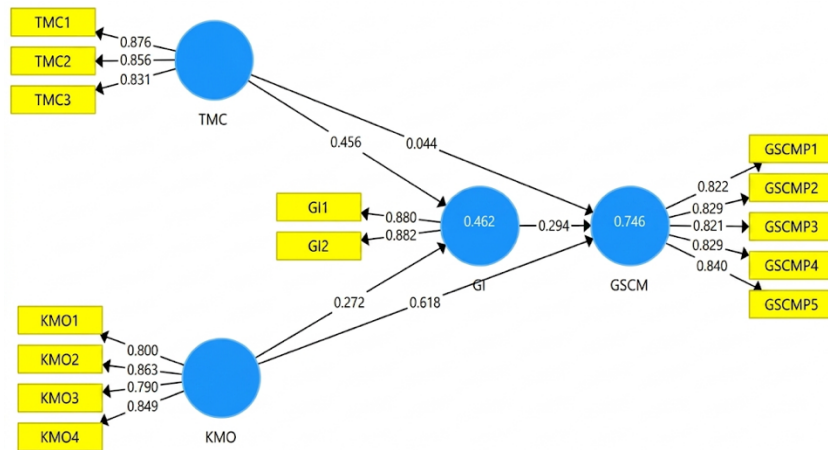


Figure 2. PLS Algorithm Model

Table 1. Outer Loading

Variable	Indicator	Outer Loading
Green Supply Chain Management Practices (GSCMP)	GSCMP1	0.822
	GSCMP2	0.829
	GSCMP3	0.821
	GSCMP4	0.829
	GSCMP5	0.840
Knowledge Management Orientation (KMO)	KMO1	0.800
	KMO2	0.863
	KMO3	0.790
	KMO4	0.849
Top Management Commitment (TMC)	TMC1	0.876
	TMC2	0.856
	TMC3	0.831
Green Innovation (GI)	GI1	0.880
	GI2	0.882

The results of using SmartPLS for data processing are displayed in Figure 2 and Table 1. The assessment of the outer model, which examines the relationship between constructs and their indicators, indicates that the measuring model has met the convergent validity standards. This is shown by all indicators with loading factor values higher than 0.70, which is above the minimal threshold required for adequate validity. It can be said that the indicators employed in this study are suitable for additional structural model analysis and are valid in measuring their respective constructs.

To make sure that each latent variable's idea was distinct from the others, discriminant validity was used. The model has good discriminant validity if each loading value of an indicator for a latent variable has the highest loading value when compared to loading values for other latent variables. The discriminant validity test yielded the following results in Table 2.

Table 2. Discriminant Validity Values (Cross Loading)

Variable	Indicator	GI	GSCMP	KMO	TMC
Green Innovation (GI)	GI1	0.880	0.619	0.514	0.570
	GI2	0.882	0.607	0.548	0.582
Top Management Commitment (TMC)	TMC1	0.579	0.581	0.577	0.876
	TMC2	0.589	0.554	0.623	0.856
	TMC3	0.506	0.620	0.662	0.831
Knowledge Management Orientation (KMO)	KMO1	0.437	0.707	0.800	0.528
	KMO2	0.575	0.676	0.863	0.629
	KMO3	0.457	0.682	0.790	0.607
	KMO4	0.518	0.670	0.849	0.632
Green Supply Chain Management Practices (GSCMP)	GSCMP1	0.690	0.822	0.595	0.600
	GSCMP2	0.549	0.829	0.638	0.639
	GSCMP3	0.500	0.821	0.766	0.531
	GSCMP4	0.527	0.829	0.724	0.511
	GSCMP5	0.617	0.840	0.692	0.561

The cross-loading results from Table 2 show that each item often has a greater connection with its own construct than with other constructs, indicating adequate discriminant validity. The overall pattern reveals that the measuring items are adequately differentiated and do not significantly overlap with other constructs, even though a few values exhibit somewhat tight correlations across other constructs. As a result, it can be said that the measurement model satisfies the necessary discriminant validity requirements and is appropriate for additional examination.

Other techniques for assessing validity and reliability include construct reliability and Average Variance Extracted (AVE). If a construct's value exceeds 0.70, its AVE exceeds 0.50, its composite reliability exceeds 0.70 (although 0.60 is still acceptable in exploratory research), and its Cronbach's alpha exceeds 0.60, which denotes acceptable internal consistency, it is considered reliable. Table 3 displays the AVE, composite reliability, and Cronbach's alpha values for each variable.

Table 3. Cronbach's Alpha, Composite Reliability, and AVE

Variable	CA	Rho_A	CR	AVE
Green Innovation	0.712	0.712	0.874	0.777
Green Supply Chain Management Practices	0.886	0.886	0.916	0.686
Knowledge Management Orientation	0.844	0.846	0.896	0.683
Top Management Commitment	0.815	0.816	0.890	0.730

Table 3 indicates that every construct satisfies the necessary validity and reliability requirements. This is demonstrated by Cronbach's alpha values greater than 0.60, composite reliability values greater than 0.70, and AVE values greater than 0.50, all of which support sufficient convergent validity and acceptable internal consistency. These findings demonstrate the measurement model's dependability and the indicators' consistent representation of the corresponding constructs, which qualify the model for additional structural study.

Inner model or structural model testing is used to examine the link between constructs, significant values, and R-squared of the research model. The structural model is evaluated using R-squared for the t-test dependent construct and the significance of the structural path parameter coefficient.

Table 4. R-Square Values

Variable	R-Square	Adjusted R-Square
Green Innovation	0.462	0.451
Green Supply Chain Management Practices	0.746	0.738

In theory, there are two endogenous variables in this study that are impacted by other model variables. According to Table 4, the R-square value for green innovation is 0.462, meaning that the predictors in the model account for 46.2% of its variation, with additional factors outside the research influencing the remaining 53.8%. In contrast, the R-square score for green supply chain management practices is 0.746, which indicates that the model accounts for 74.6% of its variation, with the remaining portion coming from outside factors that were not taken into consideration.

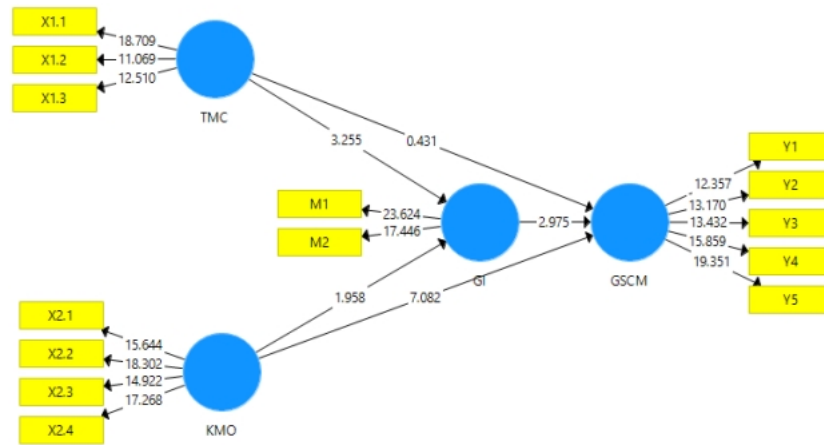


Figure 3. Structural Model

Table 5. Hypothesis Test

Path	Original Sample	Sample Mean	Standard Deviation	t-statistics	p-values
Green Innovation → Green Supply Chain Management Practices	0.294	0.291	0.099	2.975	0.004
Knowledge Management Orientation → Green Innovation	0.272	0.268	0.139	1.958	0.053
Knowledge Management Orientation → Green Supply Chain Management Practices	0.618	0.614	0.087	7.082	0.000
Top Management Commitment → Green Innovation	0.456	0.430	0.140	3.255	0.002
Top Management Commitment → Green Supply Chain Management Practices	0.044	0.049	0.102	0.431	0.667
Knowledge Management Orientation → Green Innovation → Green Supply Chain Management Practices	0.080	0.075	0.046	1.726	0.087
Top Management Commitment → Green Innovation → Green Supply Chain Management Practices	0.134	0.125	0.063	2.143	0.035

To address possible problems with non-normal data distribution, PLS analysis employs simulation and the bootstrap method for hypothesis testing. Despite slight differences between calculations, this method produces solid statistical estimates, where

a subsample of 100 guarantees a consistent t-statistic and trustworthy hypothesis decisions at the 5% significance level.

According to Figure 3 and Table 5, the path analysis results indicate that knowledge management orientation has no significant impact on green innovation ($p = 0.053$), but green innovation has a substantial impact on green supply chain management techniques ($p = 0.004$). On the other hand, top management commitment has a significant impact on green innovation ($p = 0.002$) but has no significant impact on green supply chain management practices ($p = 0.667$), while knowledge management orientation has a significant direct impact on green supply chain management practices ($p = 0.000$).

In terms of the mediation effects, green innovation does not mediate the relationship between knowledge management orientation and green supply chain management practices ($p = 0.087$), but it does significantly mediate the relationship between top management commitment and green supply chain management practices ($p = 0.035$). The results indicate that only a portion of the direct and indirect links in the model are supported, particularly those that employ green innovation as a mediating mechanism.

DISCUSSION

This study examines the relationships among green innovation, knowledge management orientation, top management commitment, and green supply chain management practices in fashion SMEs in Sukabumi. The findings indicate several significant and non-significant relationships, highlighting both consistencies and contrasts with prior literature. Green innovation has a significant positive effect on green supply chain management practices. This confirms that environmentally oriented innovation strengthens sustainable supply chain activities such as eco-design, green procurement, and reverse logistics. This result is consistent with Bag et al. (2022), Ahmed et al. (2023), Dzikriansyah et al. (2023), Liu et al. (2024), Gelmez et al. (2024), and Junejo et al. (2025), all of whom emphasize green innovation as a key driver and integrative mechanism for sustainable supply chain implementation.

The relationship between knowledge management orientation and green innovation is not significant, indicating that knowledge processes in SMEs have not yet been effectively transformed into innovation outcomes. This finding contrasts with Polas et al. (2023) but aligns with Liu et al. (2024), Huynh et al. (2024), and Chen et al. (2025), who highlight limitations in SME learning systems, resources, and external support. However, knowledge management orientation shows a significant positive direct effect on green supply chain management practices. This is consistent with Bag et al. (2022), Ma et al. (2023), and Soesetyo et al. (2024), confirming that knowledge sharing and organizational learning directly facilitate green supply chain implementation.

Top management commitment has a significant positive effect on green innovation. This supports the upper echelons theory by López-Muñoz and Escribá-Esteve (2017) and is consistent with Gao et al. (2022), Chawewong and Naipinit (2023), Guo (2023), Yang et al. (2023), Hoang et al. (2025), and Seo and Shirasawa (2025), who emphasize leadership as a driver of green innovation culture. However, top management commitment does not have a significant direct effect on green supply chain management practices. This contrasts with Menon and Ravi (2021) and Tetteh et al. (2024) but is consistent with Dzikriansyah et al. (2023) and Ahmed et al. (2023), who argue that the effect of commitment is indirect and depends on supporting mechanisms such as innovation and collaboration, as also supported by Li et al. (2022).

Regarding mediation effects, green innovation does not significantly mediate the relationship between knowledge management orientation and green supply chain management practices. This contrasts with Polas et al. (2023) and Chen et al. (2025), but supports Bag et al. (2022), who suggest that knowledge may directly influence operational sustainability without formal innovation processes. In contrast, green innovation significantly mediates the relationship between top management commitment and green supply chain management practices. This finding is consistent with Chawewong and Naipinit (2023), Hariyani et al. (2024), and Liu et al. (2025), confirming that green

innovation acts as a critical bridge that transforms managerial commitment into tangible supply chain outcomes.

The findings show that green innovation is the most critical mechanism in translating strategic and knowledge-based factors into sustainable supply chain practices, while knowledge management orientation plays a more direct operational role, and top management commitment requires innovation as a mediating pathway to generate real impact. Implications of this study suggest that SMEs should prioritize building structured green innovation capabilities as the main pathway to improve sustainability performance. Managers need to ensure that leadership commitment is not only symbolic but is operationalized through innovation programs, eco-design practices, and resource-efficient production systems. At the same time, strengthening knowledge management systems remains important to directly support green supply chain practices, particularly through knowledge sharing, training, and documentation of best practices. Policymakers are also encouraged to support SMEs by providing incentives, technical guidance, and collaborative platforms that connect knowledge, innovation, and sustainable supply chain implementation.

CONCLUSION

The conclusions of this study show that top management commitment has a significant effect on green innovation but does not directly influence green supply chain management practices. This indicates that top management commitment needs to be translated through green innovation to create a real impact on green supply chain management practices. Meanwhile, knowledge management orientation has a significant direct effect on green supply chain management practices, but does not significantly affect green innovation. This suggests that knowledge management orientation in SMEs contributes more to the direct implementation of green practices rather than driving innovation. In addition, green innovation is proven to significantly mediate the relationship between top management commitment and green supply chain management practices, but not between knowledge management orientation and green supply chain management practices. The findings confirm that strengthening green supply chain management practices requires a combination of leadership commitment and green innovation, while knowledge orientation plays a more operational role.

The implication of this study is that fashion SMEs need to strengthen managerial commitment by encouraging green innovation activities such as eco-friendly product development, energy efficiency, and waste management systems. SMEs also need to optimize knowledge management practices to directly support green operational activities. This study has limitations, including its focus on fashion SMEs in a specific region, which may limit generalizability. It also does not include external factors such as government regulation, market pressure, or technological readiness. Future research is suggested to expand the model by adding moderating variables such as government support, green market orientation, and supply chain digitalization, as well as using different industries or longitudinal approaches to provide deeper insights into the dynamics of influencing green supply chain management practices implementation.

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