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The Mediating Role of Green Innovation in the Relationship Between Strategic Green Marketing Orientation and Marketing Performance

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Abstract

This study investigates the relationships between strategic green marketing orientation (SGMO), green innovation, and marketing performance within the manufacturing sector in Saudi Arabia. Employing a cross-sectional research design, data was collected from mid-level employees in the marketing departments of manufacturing firms. A total of 357 responses were gathered using a structured questionnaire, which measured the three key constructs using validated scales adapted from prior studies. Structural equation modeling (SEM) was utilized to analyze the data, enabling the examination of both direct and indirect relationships among the variables. Results revealed that SGMO has a strong positive effect on green innovation, which in turn significantly enhances marketing performance. Additionally, green innovation was found to mediate the relationship between SGMO and marketing performance, highlighting its pivotal role in translating green marketing strategies into improved market outcomes. The study underscores the importance of integrating environmental concerns into marketing strategies and fostering green innovation to achieve sustainable business success. These findings offer valuable insights for managers and policymakers in the manufacturing sector, emphasizing the need to align green marketing practices with innovation to drive both environmental and economic benefits.

Keywords: sustainability; green innovation; marketing; performance

1. Introduction

In the contemporary business landscape, sustainability has emerged as a defining theme, reshaping how organizations operate and compete. Driven by escalating environmental challenges, stringent regulatory requirements, and a shift in consumer preferences toward eco-friendly products and practices, businesses are increasingly recognizing the need to integrate environmental considerations into their strategies (Sharma, 2021). This shift is not merely a response to external pressures but also a strategic move to ensure long-term viability and competitiveness. Within this context, strategic green marketing orientation (SGMO) has gained significant attention as a framework for aligning marketing strategies with sustainability goals (Shibli et al., 2021; Amoako et al., 2022). SGMO refers to the extent to which organizations incorporate environmental concerns into their marketing efforts, such as promoting eco-friendly products, adopting sustainable practices, and engaging with stakeholders on environmental issues (Kaur et al., 2022). It represents a proactive approach to addressing environmental challenges while creating value for customers and stakeholders. Supporting the concept of SGMO is the idea of green innovation, which focuses on creating products, processes, or technologies designed to reduce environmental harm (Giantari & Sukaatmadja, 2021). Green innovation is

increasingly recognized as a vital source of competitive advantage, allowing companies to stand out in the market, lower costs by improving resource efficiency, and respond to the rising demand for eco-friendly solutions (Lin et al., 2021; Borazon et al., 2022). When combined, SGMO and green innovation offer a strategic pathway for businesses to achieve sustainability goals while strengthening market performance.

The manufacturing industry, in particular, faces mounting pressure to embrace environmentally responsible practices due to its significant contribution to global emissions and resource depletion. As one of the leading sectors impacting the environment, it is now under closer scrutiny from governments, consumers, and investors. In Saudi Arabia, where manufacturing is a key economic driver, balancing industrial expansion with environmental sustainability is becoming increasingly important. The country's Vision 2030 initiative, which promotes economic diversification and reduced reliance on oil, further reinforces the need for sustainable business approaches. However, despite this growing focus, research examining the connection between green marketing strategies, innovation, and marketing performance in Saudi Arabia's manufacturing sector remains limited. Gaining insights into these relationships is crucial for organizations aiming to achieve both economic growth and environmental responsibility.

This study seeks to bridge this research gap by exploring how SGMO influences green innovation and marketing performance in Saudi Arabia's manufacturing sector. It aims to determine whether companies with a strong orientation toward green marketing are more inclined to implement green innovations and how such efforts contribute to their marketing success. The findings are expected to offer valuable guidance for business leaders and policymakers on leveraging green marketing and innovation for sustainable growth. Ultimately, the study emphasizes the significance of aligning green marketing initiatives with innovative practices, encouraging organizations to adopt comprehensive sustainability strategies that enhance both competitiveness and environmental responsibility.

2. Literature Review

The growing emphasis on sustainability in business has led to increased interest in understanding how organizations can integrate environmental concerns into their strategies to achieve competitive advantage (Ho et al., 2021). SGMO has emerged as a critical framework for aligning marketing strategies with sustainability goals. SGMO refers to the extent to which firms incorporate environmental considerations into their marketing efforts, such as promoting eco-friendly products, adopting sustainable practices, and engaging with stakeholders on environmental issues (Thakkar, 2021). Organizations with a strong SGMO are better positioned to differentiate themselves in the market, build stronger relationships with environmentally conscious consumers, and enhance their corporate reputation (Borah et al., 2023). However, the mechanisms through which SGMO influences organizational outcomes, such as innovation and performance, remain underexplored. This study seeks to address this gap by examining the role of SGMO in driving green innovation and its subsequent impact on marketing performance.

Green Innovation, defined as the development of new products, processes, or technologies that reduce environmental impact, has been identified as a key driver of sustainable business success (Lin et al., 2021). Firms that invest in green innovation are better positioned to meet regulatory requirements, reduce operational costs, and respond to consumer demand for sustainable products (Nuryakin & Maryati, 2022). Green innovation empowers organizations to develop environmentally friendly solutions that not only reduce ecological impact but also strengthen their competitive position in the market (Roh et al., 2022). Companies embracing such innovations often benefit from greater resource efficiency, minimized waste, and enhanced product quality, all of which contribute to improved market outcomes. However, despite its growing significance, the mediating role of green innovation between green marketing strategies and marketing performance has not been extensively explored in existing studies. This research aims to examine this link, offering insights into how green innovation serves as a crucial connector between environmental initiatives and business success.

Marketing performance, which includes factors like corporate reputation, customer satisfaction, and market share, remains a key indicator of a company's overall success (Kar & Harichandan, 2022). Organizations that

integrate sustainability into their marketing efforts tend to perform better in the market, as they align more closely with consumer values and build stronger trust among stakeholders (Alam et al., 2013). As environmental consciousness among consumers grows, brands that actively promote their green initiatives gain an advantage in attracting and retaining customers (Roh et al., 2022). Moreover, engaging in sustainable practices enhances a company's image, fostering brand loyalty and expanding market share. Still, the exact mechanisms through which green marketing strategies and green innovation jointly influence marketing performance remain insufficiently understood. This study seeks to fill that gap by investigating the connections between SGMO, green innovation, and marketing performance, particularly focusing on the mediating role played by green innovation.

The alignment of SGMO and green innovation is especially critical for the manufacturing sector, which faces mounting pressure to adopt sustainable practices due to its heavy environmental impact (Majeed et al., 2022). Known for high levels of resource usage and emissions, manufacturing firms are increasingly expected to implement greener approaches. By incorporating green marketing strategies and investing in eco-friendly innovations, these firms can reduce their environmental footprint while enhancing their market competitiveness. This research specifically targets the manufacturing sector in Saudi Arabia, where the industry is a cornerstone of the national economy. The country's Vision 2030 plan, aimed at economic diversification and reducing reliance on oil, highlights the growing need to embed sustainability into business operations. However, studies examining the interplay between green marketing, innovation, and marketing performance in this context are still scarce. This study endeavors to address this gap by providing valuable insights into how manufacturing companies in Saudi Arabia can leverage SGMO and green innovation to achieve sustainable growth and long-term success.

2.1. Hypotheses Development

2.1.1. SGMO and Green Innovation

SGMO reflects an organization's commitment to integrating environmental concerns into its marketing strategies. Firms with a strong SGMO are more likely to invest in sustainable practices, such as low-carbon technologies, renewable energy, and eco-friendly product development (Habib et al., 2021). These investments create a conducive environment for green innovation by fostering a culture of sustainability and providing the necessary resources for innovation. Firms that prioritize environmental concerns in their marketing strategies are more likely to allocate resources to research and development (R&D) for sustainable product design and manufacturing processes. This, in turn, drives green innovation by enabling firms to develop new products and processes that reduce environmental impact. Therefore, it is hypothesized that:

H1: SGMO has a positive influence on green innovation.

2.1.2. SGMO and Marketing Performance

SGMO enables organizations to align their marketing strategies with the growing demand for sustainable products and practices (Ismail, 2022). By promoting eco-friendly offerings and engaging with stakeholders on environmental issues, firms can enhance their corporate reputation, customer loyalty, and market share (Farida, 2016). Firms that effectively communicate their green initiatives are more likely to attract environmentally conscious consumers, leading to increased sales and market share. Additionally, sustainable practices can enhance a firm's reputation, making it more attractive to investors and other stakeholders (Valmohammadi, 2017). However, the direct impact of SGMO on marketing performance may be moderate, as the benefits of green marketing strategies are often realized indirectly through other mechanisms, such as innovation. Thus, it is hypothesized that:

H2: SGMO has a positive influence on marketing performance.

2.1.3. Green Innovation and Marketing Performance

Green Innovation plays a critical role in translating environmental strategies into tangible market outcomes (Chen et al., 2021). Firms that adopt green innovation practices are better positioned to meet consumer demand for sustainable products, reduce operational costs, and differentiate themselves from competitors. Green innovation enables firms to develop eco-friendly products that appeal to environmentally conscious consumers, leading to increased customer satisfaction and loyalty (Tjahjadi et al., 2020). Additionally, green innovation can reduce production costs by improving resource efficiency and minimizing waste, which enhances profitability and market competitiveness (Chong et al., 2016). These advantages contribute to improved marketing performance by enhancing corporate reputation, customer satisfaction, and market share. Therefore, it is hypothesized that:

H3: Green innovation has a positive influence on marketing performance.

2.1.4. Mediating Role of Green Innovation

While SGMO may have a direct impact on marketing performance, its influence is likely to be significantly mediated by green innovation (Negi et al., 2023). SGMO fosters a culture of sustainability and provides the resources needed for green innovation, which in turn drives marketing performance by enabling firms to offer innovative, eco-friendly solutions that resonate with consumers (Lin et al., 2021). Firms with a strong SGMO are more likely to invest in R&D for sustainable product design, leading to the development of green products that attract environmentally conscious consumers. These green products enhance the firm's market performance by improving customer satisfaction and loyalty. Thus, it is hypothesized that:

H4: Green innovation mediates the relationship between SGMO and marketing performance.

Figure 1 presents the research model.

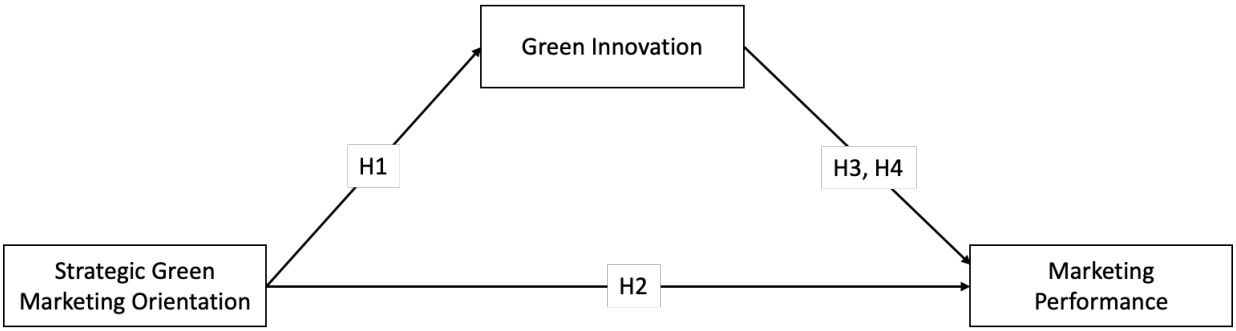

Figure 1. Research model.

3. Methodology

This study employs a cross-sectional study design to investigate the relationships between SGMO, green innovation, and marketing performance. Data was collected at a single point in time, specifically in November 2024, from mid-level employees working in the marketing departments of manufacturing organizations in Saudi Arabia. The cross-sectional approach allows for the efficient collection of data from a specific population at a given time, making it suitable for examining the relationships between the variables of interest. The target population for this study consists of mid-level employees in the marketing departments of manufacturing firms in Saudi Arabia. Convenience sampling was used to select participants due to its practicality and accessibility. A total of 357 responses were collected, which is considered an adequate sample size for Structural Equation Modeling (SEM) analysis. According to guidelines for SEM, a sample size of 200 or more is generally acceptable, and larger samples (300 or more) provide more reliable results, especially when testing complex models with multiple constructs and mediating effects.

Data were collected using a structured questionnaire distributed to mid-level employees in the marketing departments of manufacturing firms. The questionnaire was designed to measure three key constructs: SGMO, green innovation, and marketing performance. SGMO was measured using a 5-point Likert scale (1 = Strongly Disagree, 5 = Strongly Agree) with 9 items adapted from Papadas et al. (2017). Green innovation was also measured using a 5-point Likert scale with 6 items adapted from Song and Yu (2018). Marketing performance was assessed using a 5-point Likert scale (1 = Much Worse, 5 = Much Better), where managers were asked to rate their company's performance relative to competitors. This scale included 6 items adapted from Fraj et al. (2011).

The data analysis was conducted using "Structural Equation Modeling (SEM)", a robust multivariate statistical technique that allows for the examination of complex relationships between multiple independent and dependent variables. SEM was chosen because it enables the simultaneous testing of direct and indirect (mediating) effects, making it ideal for this study's research framework. Ethical considerations were carefully addressed throughout the study. Participants were informed about the purpose of the research and assured of the confidentiality of their responses. Participation was voluntary, and respondents had the right to withdraw at any time.

4. Results

The demographic profile of the study participants, as presented in Table 1, provides valuable insights into the characteristics of the sample. The majority of participants were male (61.6%), reflecting the gender distribution commonly observed in the manufacturing sector in Saudi Arabia, where male employees tend to dominate the workforce. Female participants accounted for 38.4%, indicating a growing but still limited presence of women in this industry. In terms of age, the largest group of participants fell within the 31–40 years range (46.2%), suggesting that most respondents were mid-career professionals with significant experience in their roles. The second-largest age group was 20–30 years (26.6%), representing younger employees who are likely newer to the workforce. Participants aged 41–50 years and above 50 years made up 21.0% and 6.2%, respectively, indicating a smaller proportion of older, more experienced employees in the sample. Regarding education level, the majority of participants held a Bachelor's degree (58.8%), which is typical for mid-level employees in marketing departments. A significant portion also held a Master's degree (33.6%), reflecting the advanced qualifications of many respondents. A smaller percentage had a PhD or higher (7.6%), suggesting that a minority of participants were highly educated and possibly in senior or specialized roles. When it comes to job experience, the largest group of participants had 5–10 years of experience (42.0%), indicating that most respondents were well-established in their careers and had substantial knowledge of their organizations' practices. Those with 11–15 years of experience accounted for 25.2%, while participants with less than 5 years of experience made up 22.4%. Only 10.4% of respondents had more than 15 years of experience, representing a smaller group of highly experienced professionals.

Table 1. Demographics of study participants (n=257).

Demographic Variable	Category	Frequency (n)	Percentage (%)
Gender	Male	220	61.6%
	Female	137	38.4%
Age	20–30 years	95	26.6%
	31–40 years	165	46.2%
	41–50 years	75	21.0%
	Above 50 years	22	6.2%
Education level	Bachelor's Degree	210	58.8%
	Master's Degree	120	33.6%
	PhD or Higher	27	7.6%
Job experience	Less than 5 years	80	22.4%
	5–10 years	150	42.0%
	11–15 years	90	25.2%
	More than 15 years	37	10.4%
Organization size	Small (1–100 employees)	75	21.0%
	Medium (101–500 employees)	150	42.0%
	Large (501+ employees)	132	37.0%

Finally, in terms of organization size, the sample was well-distributed across small, medium, and large organizations. Participants from medium-sized organizations (101–500 employees) constituted the largest group (42.0%), followed by those from large organizations (501+ employees) at 37.0%. Participants from small organizations (1–100 employees) accounted for 21.0%, ensuring a diverse representation of the manufacturing sector.

The measurement model results, as presented in Table 2, demonstrate the reliability and validity of the constructs used in the study. The SGMO construct consists of 9 items, all of which exhibit strong factor loadings ranging from 0.757 to 0.901, well above the recommended threshold of 0.7. This indicates that the items are highly representative of the construct. The Cronbach's alpha value of 0.839 and composite reliability (CR) of 0.749 confirm the internal consistency and reliability of the construct. Additionally, the AVE value of 0.679 exceeds the minimum threshold of 0.5, demonstrating strong convergent validity. These results suggest that the SGMO scale is reliable and valid for measuring the extent to which organizations integrate environmental concerns into their marketing strategies. The green innovation construct includes 6 items, with factor loadings ranging from 0.779 to 0.871, all of which are above the 0.7 threshold. This indicates that the items effectively capture the concept of green innovation. The Cronbach's alpha value of 0.702 and composite reliability (CR) of 0.825 indicate good internal consistency and reliability. The AVE value of 0.675 further confirms the convergent validity of the construct. These results suggest that the green innovation scale is robust and suitable for measuring the extent to which organizations adopt environmentally friendly practices in their product development and manufacturing processes. The marketing performance construct comprises 6 items, with factor loadings ranging from 0.781 to 0.931, all of which are above the recommended threshold of 0.7. This indicates that the items are highly representative of the construct. The Cronbach's alpha value of 0.738 and composite reliability (CR) of 0.751 demonstrate acceptable internal consistency and reliability. The AVE value of 0.764 exceeds the minimum threshold of 0.5, indicating strong convergent validity. These results suggest that the marketing performance scale is reliable and valid for assessing the effectiveness of an organization's marketing efforts in terms of corporate reputation, customer loyalty, and satisfaction.

Table 2. Measurement model.

Items with constructs	Loadings	Cronbach's alpha	Composite reliability	Average variance extracted (AVE)
Strategic Green Marketing Orientation		0.839	0.749	0.679
SGMO1: "We invest in low-carbon technologies for our production processes"	0.757			
SGMO2: "We use specific environmental policy for selecting our partners"	0.757			
SGMO3: "We invest in R&D programs in order to create environmentally friendly products/services"	0.861			
SGMO4: "We make efforts to use renewable energy sources for our products/services"	0.797			
SGMO5: "We have created a separate department/unit specializing in environmental issues for our organization"	0.881			
SGMO6: "We participate in environmental business networks"	0.901			
SGMO7: "We engage in dialogue with our stakeholders about environmental aspect of our organization"	0.849			
SGMO8: "We implement market research to detect green needs in the marketplace"	0.885			
SGMO9: "Among other target markets, we also target to environmentally conscious consumers"	0.872			
Green Innovation		0.702	0.825	0.675
GI1: "The company chooses the materials of the product that produce the least amount of pollution for conducting the product development or design"	0.81			
GI2: "The company uses the fewest amount of materials to comprise the product for conducting the product development or design"	0.779			
GI3: "The company would circumspectly deliberate whether the product is easy to recycle, reuse, and decompose for conducting the product development or design"	0.865			
GI4: "The manufacturing process of the company reduces the consumption of water, electricity, coal, or oil"	0.871			

Items with constructs	Loadings	Cronbach's alpha	Composite reliability	Average variance extracted (AVE)
GI5: "The manufacturing process of the company effectively reduces the emission of hazardous substances or waste"	0.822			
GI6: "The manufacturing process of the company reduces the use of raw materials"	0.867			
Marketing Performance		0.738	0.751	0.764
MP1: "Corporate reputation"	0.898			
MP2: "Alignment between company's offer and market expectations"	0.884			
MP3: "Successful launching of new products onto the markets"	0.931			
MP4: "Corporate and brand image"	0.87			
MP5: "Customer loyalty"	0.781			
MP6: "Customer satisfaction"	0.873			

Table 3 presents the discriminant validity assessment using the Fornell-Larcker criterion, which evaluates whether each construct is distinct from the others in the model. The results indicate that green innovation has an AVE square root of 0.822, which is higher than its correlations with marketing performance (0.721) and SGMO (0.769). Similarly, marketing performance has an AVE square root of 0.874, which exceeds its correlation with SGMO (0.767). SGMO also meets the criterion, with its AVE square root of 0.804 being greater than its correlations with the other constructs. These results confirm that each construct possesses sufficient discriminant validity, meaning they are conceptually distinct from each other.

Table 3. Discriminant validity (Fornell-larcker criterion).

	Green Innovation	Marketing Performance	SGMO
Green Innovation	0.822		
Marketing Performance	0.721	0.874	
SGMO	0.769	0.767	0.804

Table 4 presents the structural model results, showing the path coefficients, standard deviations, t-statistics, and p-values for the hypothesized relationships. The findings confirm that all proposed hypotheses (H1–H4) are statistically significant. H1: SGMO has a strong positive effect on green innovation ($\beta = 0.869$, $p = 0.00$), indicating that firms with a strategic green marketing approach are more likely to engage in innovative sustainable practices. H2: SGMO also has a significant but weaker effect on marketing performance ($\beta = 0.273$, $p = 0.007$), suggesting that while green marketing strategies contribute to improved performance, their direct impact is moderate. H3: Green innovation has a substantial positive influence on marketing performance ($\beta = 0.684$, $p = 0.00$), highlighting the critical role of sustainability-driven innovation in enhancing a firm's market success. H4: The indirect effect of SGMO on marketing performance through green innovation is also significant ($\beta = 0.595$, $p = 0.00$), demonstrating that green innovation acts as a mediator in the relationship. This implies that organizations adopting a SGMO can improve their marketing performance primarily by fostering green innovation. These results emphasize the importance of integrating green marketing strategies with innovation to achieve sustainable business success.

Table 4. Path coefficients.

Paths	Beta	Standard deviation	T statistics	P values	Results
SGMO -> Green Innovation	0.869	0.032	27.108	0.00	H1 accepted
SGMO -> Marketing Performance	0.273	0.102	2.679	0.007	H2 accepted
Green Innovation -> Marketing Performance	0.684	0.094	7.298	0.00	H3 accepted
SGMO -> Green Innovation -> Marketing Performance	0.595	0.081	7.308	0.00	H4 accepted

The R-squared value in Figure 2 for green innovation is 0.755, which means that approximately 75.5% of the variance in green innovation is explained by the independent variables in the model. This indicates a strong explanatory power, suggesting that the factors included in the model have a significant impact on green innovation. For marketing performance, the R-squared value of 0.867 shows that 86.7% of the variance in marketing performance can be explained by the independent variables in the model. This is a very high R^2, indicating that the model does an excellent job in explaining marketing performance. The variables used in the model are highly relevant and have a strong relationship with the outcome.

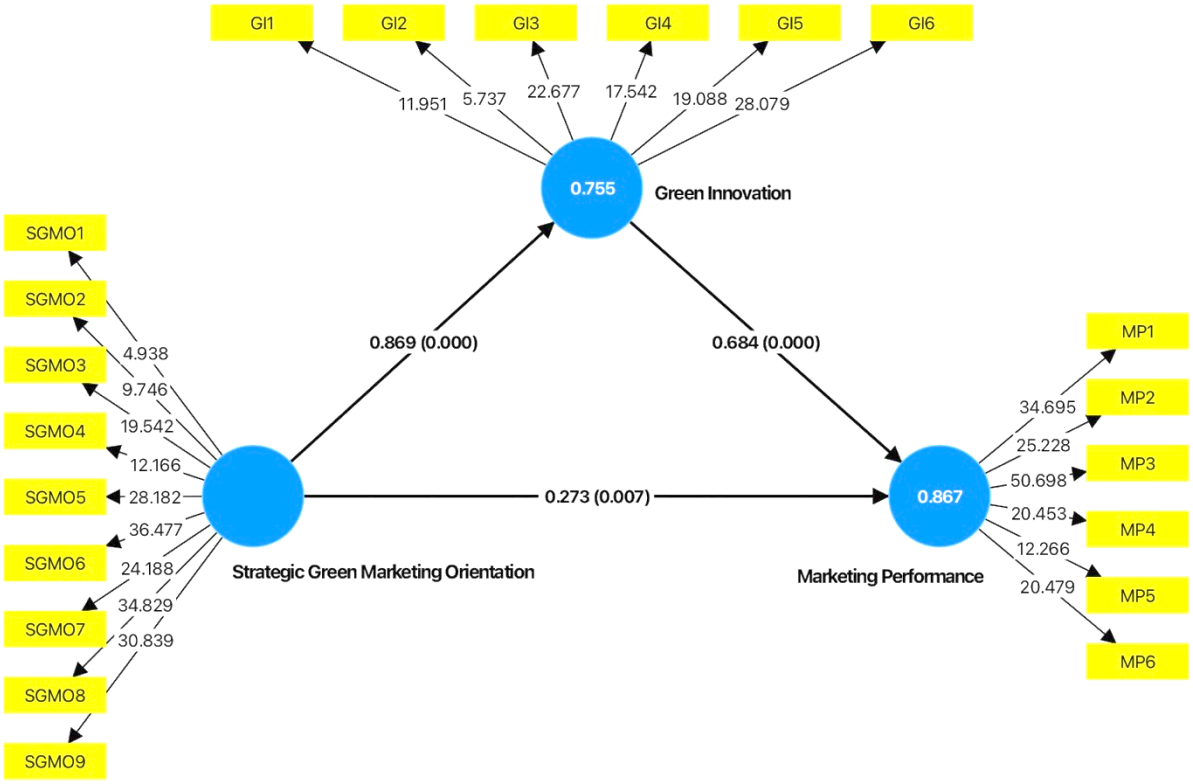

Figure 2. Structural model.

5. Discussion

The study findings provide insights into the relationships between SGMO, green innovation, and marketing performance within the manufacturing sector in Saudi Arabia. The results highlight the importance of integrating environmental concerns into marketing strategies and the role of green innovation in driving sustainable business success.

The strong positive relationship between SGMO and green innovation (β = 0.869, p = 0.00) underscores the critical role of a strategic green marketing approach in fostering sustainable innovation. Organizations that prioritize environmental concerns in their marketing strategies are more likely to invest in green technologies, develop eco-friendly products, and adopt sustainable manufacturing processes (Roh et al., 2022). The high R-squared value of 0.755 for green innovation further emphasizes the substantial impact of SGMO on driving green practices within organizations. The direct effect of SGMO on marketing performance, although significant, is relatively weaker (β = 0.273, p = 0.007). This suggests that while green marketing strategies contribute to improved marketing outcomes, their direct impact is not as strong as their influence on innovation. The moderate direct effect implies that organizations should not rely solely on green marketing strategies to boost performance but should integrate them with other strategic initiatives. The substantial positive influence of green innovation on marketing performance (β = 0.684, p = 0.00) highlights the pivotal role of sustainability-driven innovation in achieving market success. Firms that adopt green innovation practices are better positioned to meet the growing demand for environmentally friendly products, enhance their corporate image, and build stronger relationships with environmentally conscious consumers (Kar & Harichandan, 2022). The high R-squared value of 0.867 for marketing performance further confirms the strong explanatory power of the model, indicating that green innovation is a key driver of marketing success. The significant indirect effect of SGMO on marketing performance through green innovation (β = 0.595, p = 0.00) demonstrates that green innovation acts as a crucial mediator in this relationship. This implies that the primary pathway through which green marketing strategies enhance marketing performance is by fostering green innovation (Tjahjadi et al., 2020). Organizations that adopt a SGMO are more likely to engage in innovative practices that lead to sustainable products and processes, which in turn drive better marketing outcomes (Chen et al., 2021).

The findings of this study carry significant implications for both managerial practice and policy formulation in the manufacturing sector, particularly in the context of Saudi Arabia. For managers, the results emphasize the importance of adopting a SGMO as a foundational strategy to drive green innovation and enhance marketing performance (Nuryakin & Maryati, 2022). Organizations should prioritize integrating environmental concerns into their marketing strategies by investing in low-carbon technologies, developing eco-friendly products, and engaging in sustainable manufacturing practices (Psomas et al., 2018). When creating dedicated departments or units focused on environmental issues, as highlighted in the SGMO construct, can help firms systematically address sustainability challenges and align their operations with global environmental standards.

Moreover, the study underscores the critical role of green innovation as a mediator between SGMO and marketing performance. Managers should recognize that green innovation is not just a supplementary activity but a core driver of competitive advantage. Allocating resources to research and development (R&D) for sustainable product design, reducing waste in manufacturing processes, and adopting renewable energy sources can significantly enhance a firm's market performance (Afriyie et al., 2019). These practices not only improve corporate reputation and brand image but also foster customer loyalty and satisfaction, which are key components of marketing success.

For policymakers, the study highlights the need to create an enabling environment that encourages firms to adopt green practices. This can be achieved through incentives such as tax breaks, subsidies for green technologies, and stricter environmental regulations. Additionally, awareness campaigns can help shift industry norms toward sustainability, encouraging more firms to embrace green marketing and innovation. By fostering a culture of environmental responsibility, policymakers can contribute to the broader goal of sustainable development while enhancing the competitiveness of the manufacturing sector. The study provides a roadmap for organizations and policymakers to align economic growth with environmental sustainability.

6. Conclusion

This study sheds light on the critical relationships between SGMO, green innovation, and marketing performance within the manufacturing sector in Saudi Arabia. The findings demonstrate that adopting a strategic green marketing approach significantly enhances green innovation, which in turn drives marketing performance. Specifically, the strong positive relationship between SGMO and green innovation highlights the importance of integrating environmental concerns into marketing strategies to foster sustainable practices. Furthermore, the mediating role of green innovation underscores that the primary pathway through which green marketing strategies improve marketing outcomes is by enabling innovative, eco-friendly solutions. The study also reveals that while the direct impact of SGMO on marketing performance is moderate, its indirect effect through green innovation is substantial. This suggests that organizations cannot rely solely on green marketing strategies to achieve superior performance; instead, they must combine these strategies with robust green innovation initiatives. By investing in sustainable technologies, eco-friendly product development, and environmentally conscious manufacturing processes, firms can enhance their corporate reputation, customer loyalty, and overall market success. For managers, these findings emphasize the need to prioritize sustainability as a core business strategy.

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