



The Influence of Green Market Orientation on Business Performance: Exploring the Mediating Role of Green Innovation

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ABSTRACT

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Keywords:

green market orientation (GMO), business performance (BP), green innovation (GI), green product, sustainability

This study examines the impact of green market orientation (GMO) on business performance (BP), emphasizing the mediating role of green innovation (GI). Using a quantitative approach and Partial Least Squares Structural Equation Modelling (PLS-SEM), data were gathered from 128 owners/managers of MSMEs producing green products in northern India. The findings confirm that GMO significantly enhances BP by improving operational efficiency, customer satisfaction, and competitive advantage (e.g., GMO influences BP with a β coefficient of 0.78). Additionally, GI is a key mediator, amplifying BP through sustainable practices and green product innovations. Despite these insights, the study is geographically limited and relies on self-reported data. The findings also highlight the critical need for companies to incorporate environmentally friendly strategies into their business practices to ensure enduring sustainability. Future research should explore diverse samples, objective performance measures, and the role of digital technologies in advancing green innovation and business outcomes.

1. INTRODUCTION

1.1 Green market orientation (GMO)

Green market orientation (GMO) refers to a strategic business approach that emphasizes integrating environmental considerations into marketing practices. It involves aligning business operations with green principles, such as sustainable resource use, energy efficiency, and pollution reduction, to cater to environmentally conscious consumers. A strong GMO enhances a company's ability to adapt to market demands while addressing ecological concerns. Furthermore, companies that adopt GMO strategies often experience significant improvements in business performance, such as increased competitiveness, cost savings, and a more substantial market reputation. By prioritizing environmental values alongside business goals, GMO enables organizations to achieve sustainable growth while meeting customer expectations.

1.2 Green innovation (GI)

Green innovation (GI) focuses on developing products, processes, and practices that are environmentally friendly and contribute to sustainability goals. As highlighted by Baquero [1], this includes creating energy-efficient products, reducing pollution, recycling waste, and minimizing the use of harmful chemicals. Abedin et al. [2] further emphasize that GI aims to meet environmental standards while enhancing

competitiveness and minimizing negative environmental impacts. GI is driven by multiple factors, including consumer demand for eco-friendly products, competitive pressures, and regulatory requirements. Beyond improving existing products and processes, GI emphasizes the creation of innovative, sustainable alternatives. This approach enables businesses to align operations with environmental goals, fostering long-term success and contributing to improved environmental, social, and economic outcomes. Ultimately, GI represents a strategic effort to integrate sustainability into core business operations, strengthening the alignment between corporate growth and the global sustainability agenda.

1.3 Business performance (BP)

It refers to how efficaciously a corporation achieves goals and aims through numerous metrics along with profitability, performance, patron satisfaction, and aggressive benefit [3]. In the context of this, it consists of the following factors Economic Performance This entails profitability, cost performance, and financial benefits due to sustainable practices and inexperienced improvements. Companies undertaking green marketplace orientations frequently see increased earnings due to decreased prices and improved aid control. Environmental Performance This measures the discount in pollutants, electricity conservation, waste recycling, and standard ecological effects of commercial enterprise sports. GI improves environmental performance by integrating eco-friendly practices into production and

operational processes [4]. This includes aspects such as employer satisfaction, buyer satisfaction, and the company's reputation. A strong GMO retains workers and meets increasing buyer demand for sustainable products. Business performance (BP) in this context is the holistic calculation of a company's success in integrating economic, environmental, and social dimensions through GMO and innovation [5]. This integrated approach ensures long-standing sustainability and competitiveness in the market.

Sustainability has emerged as a critical global concern, particularly for the business sector, which must address economic, societal, and environmental dimensions [5]. The Triple Bottom Line (TBL) framework emphasizes integrating these three pillars into business operations to achieve financial success, societal well-being, and environmental quality. For instance, Bapat et al. [6] highlight that sustainable development involves meeting present needs without compromising resources for future generations. Green practices, such as energy-efficient production, resource conservation, and pollution reduction, play an essential role in attaining sustainability goals. Companies aligning their strategies with the TBL framework benefit from enhanced competitiveness, cost reduction, and a stronger market reputation. Additionally, Hanna and Rajkumar [7] underscore the indispensable role of businesses in promoting sustainable development, as these efforts cannot succeed without active corporate participation. While sustainability practices and the TBL framework are well-documented, there is limited research on how these practices enhance BP, particularly in medium-level enterprises. Although studies, such as those by Katewa et al. [8], have explored the relationship between green practices and business success, there remains a need for deeper insights into the specific strategies production organizations must adopt to promote responsible consumption and sustainable production effectively. This study aims to provide actionable recommendations for production organizations to align their operations with sustainability objectives by encouraging responsible consumption and manufacturing practices.

2. LITERATURE REVIEW

2.1 GMO and BP

An eco-friendly sustainable environment is a huge problem for many nations, mainly in enterprises. Sustainable development focuses on three fundamental areas: economy, society, and environment. Its method meets nowadays desires. According to AL-Dabbagh [9], a sustainable layout targets to create green systems that use power efficiently and closely in the long term. Building on the findings of AL-Dabbagh [9], further explored the gaps between customer expectations and perceptions of green products, emphasizing the challenges in promoting sustainable practices.

While Ministry of Environment, Forest and Climate Change [10] highlighted the strategic role of sustainability in business, Ashtankar et al. [11] focused on how market orientation enables companies to effectively respond to consumer demands, Companies that are marketplace-oriented collect records about what clients need and what their competition is doing. They use these facts to create better costs for his or her clients. This perspective is complemented by the work of Sharma et al. [12], who examined the specific barriers faced

by Indian SMEs in adopting GIs. To develop sustainably, agencies need to use fewer dangerous chemical compounds, save resources, and use strength wisely. Lee et al. [13] highlight the role of sustainable supply chain practices in ensuring business sustainability. NITI Aayog [14] emphasize GMO as a vital aspect of modern enterprises. NITI Aayog [15] further support this by showcasing how adopting green practices enhances operational capability and reciprocity within organizations. To gain higher commercial enterprise performance, an agency needs to adopt green practices. A study of 361 production groups in Europe us of observed that a green advertising and marketing approach can assist organizations in improving their operations and advertising and marketing results. Green advertising orientation boosts performance in small and medium-sized establishments (SMEs) by increasing worker delight, preserving employees, improving purchaser satisfaction, and enhancing the agency's image. Quick, the greater the essential inexperienced marketing orientation is, the better the corporation plays. Based on this, the main speculation is proposed by Vishwakarma et al. [16].

2.2 GMO and GI

Environmental concerns have made consumers more targeted at protecting the planet [17]. Many human beings now decide to buy merchandise that has a lower environmental impact and that inspires them to be environmentally conscious. Asad et al. [18] emphasized the rising consumer focus on green products and their environmental implications. This shift in consumer demand aligns with Asad et al. [18], who stress that businesses must adopt eco-innovations to meet these expectations and ensure long-term growth. Entrepreneurial innovation is crucial for economic growth, and inexperienced innovation is a strategic manner to reduce the negative impact of commercial enterprise sports in the surroundings, ultimately assisting sustainability as highlighted by Aftab et al. [19]

Tjahjadi et al. [20] have shown that market orientation ends in innovation. For instance, research on manufacturing businesses in China found that marketplace orientation affects innovation and overall performance [21]. Customer calls for and competitor stress encourage corporations to pursue inexperienced improvements, aiming to provide extra value-introduced benefits [22]. Research on Taiwan's hybrid car enterprise showed that the call for inexperienced products undoubtedly impacts green product and system innovation. As defined, the first step for organizations in the purpose of advertising is to sell the improvement of green merchandise. Consequently, the stronger the point of interest in GMO, the greater the massive GI turns into [23]. According to this, the hypothesis is proposed.

2.3 GI as a mediator between GMO and BP

Strict environmental rules have reshaped production and consumption patterns, encouraging clients to adopt eco-friendly behavior, and people now choose to buy green products [24]. In reaction, organizations are increasingly more focused on green sustainable markets to meet their social & environmental needs and responsibilities [22], The demand from green buyers and decrease poor environmental effects, businesses adopt green sustainable product and system improvements [25]. This makes eco-friendly innovation

crucial for organizations to deal with pressures from clients, competition, and regulators. GI is likewise gaining a competitive benefit in an ultra-modern, environmentally aware world [26]. When applied in production SMEs, GI can drastically improve commercial enterprise performance. Therefore, the more critical the GMO, the greater the significance of GI becomes, leading to better BP. Based on this, the hypothesis is proposed [27].

3. OBJECTIVES

- 1) To analyse the effect of GMO on BP in medium-level enterprises.
- 2) To analyse the effect of GMO on GI in medium-level enterprises.
- 3) To analyse the effect of GI on BP in medium-level enterprises.
- 4) To mediate the effect of GI between GMO and BP relationship.

4. HYPOTHESIS

H1: *The adoption of GMO significantly enhances BP in Indian MSMEs, particularly by improving operational efficiency, customer satisfaction, and competitive advantage, especially in the context of digital transformation.*

H2: *The adoption of GMO leads to enhanced GI in Indian MSMEs, driven by both traditional green principles and the increasing role of digital technologies.*

H3: *GI significantly improves BP in Indian MSMEs, facilitating cost reduction, increased competitiveness, and market differentiation through sustainable practices, empowered by digital solutions.*

H4: *The impact of GMO on BP in Indian MSMEs is positively mediated by GI, with digital tools and technologies playing a critical role in advancing sustainable practices and performance outcomes.*

5. METHODOLOGY

5.1 Research design/ data collection

This study adopts a quantitative research design using Partial Least Squares Structural Equation Modeling (PLS-SEM) to explore the relationship between GMO, GI, and BP within Indian MSMEs.

PLS-SEM Approach: PLS-SEM was chosen for its robustness in handling complex models with multiple variables and for its effectiveness in evaluating both direct and indirect relationships. This method also facilitates testing mediation effects and dealing with multicollinearity, especially when working with relatively small sample sizes [28].

Sample Selection: Data were collected from 128 MSME owners/managers in northern India, specifically focusing on enterprises involved in green product manufacturing. The study utilizes quota sampling to ensure representation from diverse geographical regions, namely cities like Lucknow, Amritsar, and Dehradun, which are becoming significant hubs for sustainable business practices.

This region-specific focus is critical to understanding how GMO and innovation practices vary across different Indian states. The choice of northern India reflects a unique

opportunity to capture evolving trends in GI in regions where there has been growing awareness and adoption of sustainability initiatives.

Sample Constraints: A total of 29 questionnaires were distributed, and 128 valid responses were received. The response rate was 42.67%, which, while acceptable, introduces potential sampling biases. Specifically, the respondents may be more inclined toward green practices compared to those who did not participate, which could limit the generalizability of the findings. The sample is thus constrained to MSMEs in northern India, and future studies should consider expanding the geographical scope to include other regions of India, as well as other industries, to test the robustness and applicability of the findings on a broader scale.

Incorporating Digital Tools: An additional unique aspect of this study is the incorporation of digital technologies in the analysis of GI. As MSMEs in India are increasingly adopting digital tools to enhance their sustainability practices, the study highlights the growing role of digital solutions in driving GI and improving BP. Future research could expand on this by examining the impact of specific digital tools and platforms that support green practices.

5.2 Result and findings

The descriptive statistics in Table 1 indicate a consistently positive perception of GMO, GI, and BP, with mean values exceeding 4.0. For instance, the highest agreement is observed for BP6 (mean = 4.51), suggesting that respondents strongly align with the statement reflecting cost efficiency and market competitiveness resulting from sustainable practices. However, slight variability in responses, such as for GI5 (Std. Dev = 1.178), highlights areas where perceptions of GI are more diverse. This finding warrants further exploration of the specific challenges or inconsistencies in adopting GIs.

Table 1. Descriptive statistics

Variable	Mean	Median	Mode	Std. Deviation
GMO 1	4.42	4.00	5.00	.811
GMO 2	4.17	4.00	5.00	1.001
GMO 3	4.35	4.00	4.00	.740
GMO 4	4.17	4.00	5.00	.898
GMO 5	4.24	4.00	5.00	1.021
GMO 6	4.45	5.00	5.00	.870
GMO 7	4.21	4.00	5.00	.997
GMO 8	4.17	4.00	5.00	1.032
GMO 9	4.28	4.00	5.00	.879
GMO 10	4.28	4.00	5.00	.965
GI 1	4.24	4.00	5.00	.921
GI 2	4.28	4.00	5.00	1.015
GI 3	4.07	4.00	5.00	.927
GI 4	4.39	5.00	5.00	.969
GI 5	4.02	4.00	5.00	1.178
GI 6	4.24	4.00	5.00	.923
GI 7	3.94	4.00	5.00	1.026
BP 1	4.26	4.00	4.00	.838
BP 2	4.26	4.00	5.00	1.010
BP 3	4.50	5.00	5.00	.815
BP 4	4.48	5.00	5.00	.890
BP 5	4.48	4.00	5.00	.890
BP 6	4.51	4.00	5.00	.872
BP 7	4.41	4.00	5.00	.867
BP 8	4.30	4.00	5.00	1.093
BP 9	4.18	4.00	5.00	.938
BP 10	4.50	5.00	5.00	.775
BP 11	4.17	4.00	5.00	1.060
BP 12	4.37	4.00	4.00	.805

Source: Data managed through researchers.

The reliability test validates excellent results by a Cronbach's Alpha based on the standardized items 0.961 of 29 items (Table 2). This indicates that the scale used in the study is highly reliable and suitable for measuring the concepts of interest. Strong reliability supports data for further analysis.

Table 2. Reliability statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	Number of Items
0.960	0.961	29

Source: Data managed through researchers.

The factor loadings presented in Table 3 confirm the construct validity of the measurement items across GMO, GI, and BP. All loadings exceed the generally accepted threshold of 0.7, indicating that the items strongly represent their respective constructs. Even the lowest loading, BP11 at 0.679, is considered marginally acceptable, contributing adequately to the overall reliability of the model. These strong factor loadings validate the robustness of the constructs and support the data's suitability for further structural analysis.

Table 3. Rotated component matrix

Variable	1	2	3
GMO1	.839		
GMO2	.751		
GMO3	.752		
GMO4	.813		
GMO5	.741		
GMO6	.851		
GMO7	.784		
GMO8	.701		
GMO9	.714		
GMO10	.889		
GI1		.837	
GI2		.778	
GI3		.764	
GI4		.839	
GI5		.767	
GI6		.844	
GI7		.819	
BP1			.826
BP2			.758
BP3			.842
BP4			.871
BP5			.747
BP6			.731
BP7			.810
BP8			.708
BP9			.763
BP10			.868
BP11			.679
BP12			.828

Source: Data managed through researchers.

5.3 Structural version analysis

The indirect impact in this mediation evaluation is calculated as the product of path coefficients from GMO to GI (0.80) and from GI to BP (0.42), resulting in an indirect effect of 0.336. The total effect, representing the relationship between GMO and BP before including the mediator, is 0.78. The direct effect, after accounting for the mediation of GI, is 0.67. These values highlight the partial mediation role of GI between GMO and BP.

These results are summarized in Table 4, which presents the

direct and mediated path coefficients, along with the calculated Variance Accounted For (VAF) of 43.08%. This confirms that GI partially mediates the GMO–BP relationship, with other factors also contributing to the overall effect.

Table 4. Structural model analysis

(1) Direct Relationship Analysis (without Mediation GI)		
Hypotheses	β Coefficient	Result
GMO->BP	0.78	Supported
(2) Path Analysis with Mediation (Including GI)		
Hypotheses	β Coefficient	Result
GMO-> BP	0.67	Supported
GMO-> GI	0.80	Supported
GI-> BP	0.42	Supported
(3) Mediation Effect Analysis		
Hypotheses	Variance Accounted For (VAF)	Result
GMO->GI-> BP	43.08%	Partial Mediation, Supported

Source: Data managed through researchers.

The (VAF) value is used to regulate the degree to which a mediating variable (in this case, GI) mediates the relationship between an independent variable (GMO) and a dependent variable (BP). The calculation is given below:

$$VAF = \frac{\text{Indirect effect}}{\text{Total effect}}$$

$$VAF = \frac{0.336}{0.78} \times 100 = 43.08\%$$

The VAF indicates how much of the effect of GMO on BP is mediated by GI. In this study, the indirect effect (0.336) accounts for 43.08% of the total effect (0.78), which means that GI partially mediates the relationship between GMO and BP. Since the VAF is between 20% and 80%, it confirms partial mediation, suggesting that other factors also contribute to the direct impact of GMOs on BP.

6. DISCUSSION AND CHALLENGES

The first hypothesis, which shows that the adoption of GMO enhanced BP, is supported by the findings. Specifically, the path coefficient of 0.78 demonstrates a strong and significant relationship, highlighting the role of GMO in improving operational efficiency, customer satisfaction, and competitive advantage. This research aligns with sustainability theory and provides extra empirical suggestions supporting earlier studies. It highlights the growing significance of improving the BP of small and medium enterprises and MSMEs, particularly marked by heightened environmental and social awareness. This was also the rise of green buyers & competitors. MSME owners & managers in cities such as Lucknow, Amritsar, and Dehradun need to adopt GMO to offer sustainable products, maintain a competitive edge, and capitalize on market opportunities. MSMEs focused on eco-friendly markets should incorporate sustainability principles into their operations to boost BP. Therefore, the more effectively GMOs are implemented, the better the BP, especially in the context of India's northern cities that are witnessing rapid growth and environmental shifts.

The second hypothesis, which proposes that GMO enhances

GI, is validated by the result. The path coefficient of 0.80 confirms a significant positive relationship, indicating that organizations prioritizing green principles are more likely to develop innovative, sustainable products and processes. According to the entrepreneurship theory, companies must continually innovate to achieve sustainable performance. In today's environmentally conscious market, consumers in cities like Lucknow, Amritsar, Haridwar, and Rudrapur are increasingly inclined to purchase eco-friendly products and encourage businesses to adopt environmentally responsible practices. The production of MSMEs in towns that include Ludhiana, Dehradun, and Roorkee should pay attention to inexperienced innovation to fulfill client calls. Greenmarket orientation motivates businesses to improve each product and process innovation, reducing the environmental effect on their operations [29]. MSME owners and executives in those cities should apprehend that improving inexperienced marketplace orientation will foster greater inexperienced innovations, assisting them to stay aggressive and environmentally responsible.

The third hypothesis, which states that GI positively impacts BP, is also supported. With a path coefficient of 0.42, the findings confirm that GI significantly contributes to business outcomes by fostering cost efficiency, profitability, and market competitiveness. These consequences add empirical evidence to previous studies and highlight the developing importance of GI in a contemporary environmentally aware business environment. In which sustainability is gaining momentum, inexperienced innovation plays an essential function in the production of MSMEs [30]. It permits businesses to adopt sustainable manufacturing practices, mainly to progress business overall performance. The implementation of GI contributes to benefits like fee efficiency, better income, better product niches, and more advantageous recognition [31].

The fourth hypothesis, which examines the mediating role of GI between GMO and BP, is supported by the VAF value of 43.08%. This indicates partial mediation, suggesting that GI amplifies the effect of GMO on BP while other factors also play a role in this relationship. This finding. Enhances sustainability and entrepreneurship theories as applied to Indian MSMEs. It gives precious insights for MSME proprietors and executives in India, explaining how GMO affects BP by fostering GI. The study highlights the significance of GI as a mediator inside the GMO and BP. Consequently, promoting green products and process innovations is crucial to meeting the needs of eco-conscious purchasers and competing correctly with green competitors.

7. CONCLUSION

This study underscores the great effect of GMO, and GI on improving BP. The outcomes imply that adopting GMO results in enhanced operational efficiency, multiplied patron delight, and a stronger aggressive edge. Furthermore, GI plays a crucial role as a mediator in the dynamic, fostering progressed BP in the operation of sustainable practices towards the improvement of sustainable green merchandise. The findings emphasize the importance for corporations to integrate green strategies into their operations to pressure long-term sustainability, innovation, and common success. By aligning business strategies with environmental goals, organizations can't best reap operational blessings but

additionally contribute to broader ecological dreams, thereby securing a competitive gain in a more and more eco-conscious market. This study requires organizations to enhance BP through GI.

8. LIMITATIONS AND FUTURE STUDIES

Despite the treasured insights furnished in this observation, there are several limitations that future studies need to address. First, the observer's sample is restrained to production MSMEs in northern India, which may not be representative of different areas or industries. Future research must recollect a more varied pattern to enhance the general applicability of the findings. Second, examination is predicated on self-made records, which can be difficult to partial. Future studies ought to include goal performance measures and longitudinal statistics to validate the consequences. Third, the study makes a specialty of the direct and slanting effects of GMO and GI on enterprise performance. Future research could explore other ability mediators and moderators, consisting of organizational lifestyle, leadership, and outside environmental elements [32]. Additionally, examining the position of virtual technologies in improving GI and commercial enterprise overall performance could provide treasured insights for agencies aiming to combine sustainability with technological improvements.

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