

Internal Environmental Management in the Indian Automobile Industry: Impact on Sales Growth in the Post-Pandemic Era

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ABSTRACT

The present study empirically investigates the impact of “internal environmental management” (IEM) practices on sales growth within the Indian automobile market, specifically focusing on the post-pandemic recovery period. The research aims to understand how green operational strategies contribute to enhanced sales performance in a rapidly evolving market landscape. Utilizing a quantitative technique, data was collected from a total of 153 employees working in either automobile OEMs or tier 1 suppliers to OEMs across the Delhi-NCR region. The hypothesized relationships between IEM practices (including support from CEOs and Middle management, cross-functional cooperation, and certification to ISO: 14001 or any other EMS) and sales growth were tested using SmartPLS 4 v 4.1.1.2 software. The findings suggest a significant positive relationship between robust IEM practices followed by the firm and sales growth of the firm. Specifically, the study demonstrates that companies prioritizing resource efficiency and fostering employee participation in environmental initiatives experienced notable improvements in sales figures during the post-pandemic recovery. These results provide valuable insights for automobile manufacturers, management, key decision makers, environmental activists, and the government seeking to leverage sustainable practices for competitive advantage in the Indian market.

Keywords: Internal Environmental Management (IEM), SmartPLS, OEMs, EMS, Post-Pandemic.

Introduction

The adoption of Internal Environmental Management (IEM) practices in the supply chain embodies an enterprise's commitment towards environment preservation by fostering a collaborative culture, promoting cross-functional coordination, and ensuring the proactive involvement of top and middle-level management in formulating environmental protection initiatives and strategies. As a strategic approach, IEM facilitates the determination of measurable environmental goals and the formulation of well-structured management initiatives to achieve them. By integrating environmental considerations into core business operations, firms also enhance their compliance with regulatory frameworks while simultaneously strengthening their capacity to implement comprehensive environmental management programs. Beyond regulatory adherence, IEM serves as a catalyst for continuous environmental improvement by encouraging investments in sustainable technologies, eco-friendly certifications, and total-quality environmental management systems. By embedding environmental principles into their strategic vision, firms not only enhance operational efficiency but also enhance their competitive advantage in an increasingly today's sustainability-driven market. The implementation of IEM fosters resilience, innovation, and long-term value creation by aligning corporate sustainability goals with broader environmental imperatives. Consequently, organizations that proactively integrate IEM into their business models are better positioned to meet stakeholder expectations, drive sustainable growth, and contribute to global environmental conservation efforts (Namagembe et al., 2019; Rahman et al., 2023; Rao & Holt, 2005).

Internal Environmental Management (IEM) focuses on creating the necessary internal conditions and structural adjustments to support the effective implementation of green initiatives within an

organization. A fundamental aspect of IEM is the commitment and proactive involvement of senior and mid-level managers, which serves as a critical foundation for the successful adoption of “green supply chain management” (GSCM) practices and the enhancement of environmental performance. A key component of IEM is cross-functional collaboration among various departments, such as marketing, human resource management, operations, and finance, to drive environmental improvements across all business functions. To further embed green initiatives into corporate operations, many organizations integrate total quality environmental management practices, such as obtaining various ISO certifications and establishing successful EMS, as part of their IEM framework. These efforts collectively contribute to fostering a sustainable and environmentally responsible organizational culture (Alghababsheh *et al.*, 2022; Barve & Muduli, 2013; Jabbour *et al.*, 2015)

Previous research has highlighted the crucial role of IEM in enhancing sustainability outcomes (Rahman *et al.*, 2023). These findings reinforce that proactive environmental management contributes to improved organizational performance while aligning with broader sustainability goals. Existing research further supports the significant influence of IEM on the external environment (Nguyen & Le, 2020). The findings of this study confirm that IEM positively impacts the destination image in the Vietnam tourism industry (VTI). Despite numerous studies on the topic, there remains a notable gap in research specifically examining the impact of Internal Environmental Management (IEM) on sales growth. Most existing literature has predominantly focused on the influence of IEM on environmental performance or overall organizational performance. As a result, the direct relationship between IEM practices and firms’ sales growth remains underexplored, highlighting the research vacuum and a need for further investigation in this area. Thus, the guiding research objective of this article is to examine the impact of “Internal Environmental Management” (IEM) on firms’ sales growth. It is thus hypothesised:

H1: The adoption of IEM positively and significantly influences the SG

The structure of the article is organized as follows: the next section outlines the research methodology employed in the study, followed by a data analysis. This is then succeeded by a discussion of the key findings, leading into the conclusion and future research directions.

Research Methodology

In the context of the Indian automotive sector, the present study employed a structured methodological approach that involved primary data collection through questionnaire, precise variable measurement to ensure reliability and validity, and the application of contemporary analytical techniques, specifically Partial Least Squares Predict (PLS-Predict), to evaluate the effectiveness of Internal Environmental Management (IEM) in enhancing firms’ sales growth. The unit of analysis for this research comprised automobile manufacturing enterprises across Delhi – NCR. Primary data was gathered using an online structured questionnaire circulated among mid- and senior-level management professionals working within the supply chains of either automobile OEMs or tier 1 suppliers to OEMs across the Delhi-NCR region. The data collection period spanned from June 2024 to November 2024. Participants were identified and contacted through professional networking platforms such as LinkedIn, as well as through company websites. In addition, on-site data collection was conducted through personal visits to companies that provided formal consent for participation.

Out of the 168 responses received, 153 were found to be complete and valid for statistical analysis. 102 respondents were associated with OEMs and the rest 51 were employed with tier 1 suppliers to OEMs. The constructs used in this study were based on measurement items adapted from established literature. IEM was assessed as a first-order reflective construct using scales developed by previous studies (Zhu & Sarkis, 2004). To evaluate sales growth, respondents were asked to indicate the change in specific sales-related dimensions since the implementation of IEM in their organization, using a five-point Likert scale where 1 indicated a significant decrease and 5 represented a significant increase. Smart PLS 4 v4.1.1.2, (Ringle *et al.*, 2022) software was utilized for the data analysis.

Data Analysis

Prior to model estimation, a comprehensive evaluation for common method bias (CMB) was conducted. All the VIF values were under 3, confirming the absence of CMB (Ned Kock, 2015). Construct reliability and convergent validity were established as both Composite Reliability and Cronbach’s Alpha values exceeded recommended thresholds, and the Average Variance Extracted (AVE) for each construct was above 0.50 (Hair *et al.*, 2010; Hair & Alamer, 2022) (Table 1). Discriminant validity was evaluated using the “Heterotrait-Monotrait” (HTMT) and “Fornell Larcker” criteria (Tables 2 & 3). Inner VIF

values were all below the recommended threshold of 5 (Hair & Sarstedt, 2019) (Table 7). The model's explanatory power was assessed using the "coefficient of determination" (R^2), and effect sizes (f^2) (Tables 5 & 6). An R^2 value of 0.616 indicates that the independent variable, IEM, accounts for 61.6% of the variance in the dependent variable, SG. Model fit was evaluated using the "standardised root mean square residual" (SRMR), which yielded a value of 0.077—well within the acceptable threshold of 0.08, indicating a good model fit (Table 8). Furthermore, the statistical significance of the path coefficients supported proposed hypotheses H1.

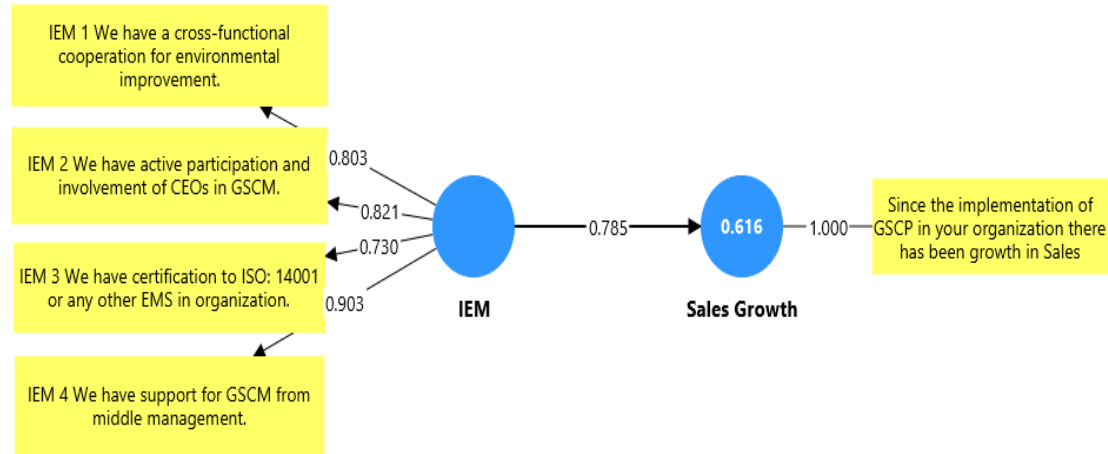


Figure 1: Predictive Model

Table 1: Reliability and Validity

	Cronbach's alpha	Composite reliability (rho_a)	Composite reliability (rho_c)	Average variance extracted (AVE)
IEM	0.831	0.843	0.888	0.666

Table 2 : HTMT Discriminant Validity

	Heterotrait-monotrait ratio (HTMT)
Sales Growth <-> IEM	0.858

Table 3: Fornell Larcker Discriminant Validity

	IEM	Sales Growth
IEM	0.816	
Sales Growth	0.785	1.000

Table 4: Outer Loadings, outer weights

	Outer Loadings		Outer Weights	
	IEM	Sales Growth	IEM	Sales Growth
IEM 1	0.803		0.279	
IEM 2	0.821		0.312	
IEM 3	0.73		0.278	
IEM 4	0.903		0.351	
SG		1		1

Table 5: R – Square and R Square Adjusted

	R-square	R-square adjusted
Sales Growth	0.616	0.613

Table 6: F Square

	IEM	Sales Growth
IEM		1.604
Sales Growth		

Table 7: Factor Loadings and Collinearity Stats VIF

	IEM	Sales Growth	VIF
IEM 1	0.803	0.583	1.824
IEM 2	0.821	0.652	2.040
IEM 3	0.730	0.580	1.469
IEM 4	0.903	0.733	2.765
SG	0.785	1.000	1.000

Table 8: SRMR and Estimated SRMR

	Saturated model	Estimated model
SRMR	0.077	0.077

Discussion and Conclusion

The findings of this study underscore the pivotal role of Internal Environmental Management (IEM) in enhancing a firm's sales growth, as evidenced through the PLS-SEM analysis. IEM encompasses a range of internal strategies aimed at embedding environmental sustainability within organisational operations. These practices typically include setting clear environmental objectives, implementing internal audits and performance evaluations, providing environmental training to employees, fostering cross-functional collaboration, and integrating environmental concerns into corporate decision-making processes. Through the effective application of these practices, manufacturing firms can optimise their environmental initiatives, leading to significant improvements in sales performance and overall organisational outcomes. Given their responsibility for operational outcomes, manufacturing managers are likely to adopt IEM when it demonstrates tangible benefits such as growth in sales. In this context, the active participation of governmental bodies is essential. Although current regulatory frameworks in India have proven effective in curbing environmentally harmful practices, there remains a need for stricter enforcement to ensure full compliance.

While the study successfully meets its primary objectives, certain limitations should be acknowledged. The reliance on a cross-sectional, survey-based design may have introduced response bias; future studies would benefit from more robust strategies, such as longitudinal follow-ups or non-response bias assessments. Additionally, future research could delve into specific dimensions of GSCP including "green purchasing", "investment recovery", and "customer cooperation" to provide deeper insights. Expanding research in these areas would offer valuable contributions to both policy formulation and strategic industry decision-making.

Annexure

Codes	Particulars
SG	"Since the implementation of GSCP in your organization there has been growth in Sales."
IEM 1	"We have a cross-functional cooperation for environmental improvement."
IEM 2	"We have active participation and involvement of CEOs in GSCM."
IEM 3	"We have certification to ISO: 14001 or any other EMS in organization."
IEM 4	"We have support for GSCM from middle management."

Measurement Scale

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