

Examining the Impact of Green Marketing Implementation Barriers and Industry Awareness on Brand Image: Evidence from Pharmaceutical Firms

Dr. Naresh Dembla¹ and Deepak Sharma²

Associate Professor¹

Research Scholar (Faculty of Management)²

IIPS, Devi Ahilya Vishwavidyalaya, Indore (MP)¹

Devi Ahilya Vishwavidyalaya, Indore (MP)²

Abstract: *This study investigates the impact of green marketing implementation barriers and industry awareness on brand image in pharmaceutical firms. As sustainability becomes an increasingly important aspect of corporate strategy, pharmaceutical companies are adopting green marketing practices to improve environmental performance and strengthen stakeholder relationships. However, the successful implementation of such practices is often constrained by challenges including high operational costs, limited technological resources, regulatory complexities, and resistance to organizational change. The study aimed to examine the extent to which these implementation barriers influence brand image and to assess the level of awareness regarding green marketing practices among professionals in the pharmaceutical industry. A quantitative research approach was adopted, and primary data were collected from a sample of 350 respondents through a structured questionnaire using a five-point Likert scale. Statistical analysis was conducted using SPSS software, employing descriptive statistics, one-sample t-tests, and regression analysis. The findings indicate that implementation barriers have a significant impact on brand image, suggesting that challenges associated with green marketing adoption can influence stakeholders' perceptions of a company's environmental commitment and reputation. At the same time, the results reveal a high level of awareness regarding green marketing strategies among pharmaceutical professionals, reflecting the growing recognition of sustainability as a key business priority. The study highlights that greater awareness can facilitate the effective adoption of green initiatives and help organizations overcome implementation obstacles. It concludes that addressing implementation barriers while enhancing awareness is essential for strengthening brand image and achieving sustainable competitive advantage in the pharmaceutical sector.*

Keywords: Green Marketing, Implementation Barriers, Industry Awareness, Brand Image, Pharmaceutical Industry.

I. INTRODUCTION

The growing global emphasis on environmental sustainability has reshaped how industries operate, compelling organizations to integrate eco-friendly practices into their strategic frameworks. In the pharmaceutical sector, where production processes often involve chemical-intensive operations, high energy consumption, and complex waste management requirements, the adoption of green marketing strategies has become increasingly significant. Environmental concerns, rising consumer awareness, and stricter regulatory standards have pushed pharmaceutical companies to rethink their traditional marketing approaches and incorporate sustainability into product development,



packaging, distribution, and communication. Green marketing in this context refers to initiatives that minimize environmental impact while promoting transparency, responsibility, and ethical practices. As patients and healthcare stakeholders become more conscious of environmental issues, the demand for pharmaceuticals produced through sustainable and socially responsible methods is steadily rising. This shift has encouraged companies to implement green supply chains, eco-friendly packaging, efficient waste-reduction systems, and clear communication about environmental efforts, thereby aligning business operations with consumer expectations and global environmental priorities.

Within this evolving landscape, understanding the empirical impact of green marketing strategies on brand image and organizational performance has become essential. A strong brand image is crucial in the pharmaceutical industry, as trust, credibility, and perceived safety heavily influence purchasing decisions, partnerships, and long-term consumer loyalty. Empirical studies increasingly suggest that genuine green initiatives enhance brand reputation and strengthen stakeholder confidence, while superficial or misleading sustainability claims may damage credibility. At the same time, organizational performance—both operational and financial—can be improved through sustainable practices that reduce waste, optimize resource use, and ensure compliance with environmental regulations. Green marketing can therefore act as a strategic driver that enhances efficiency and fosters stronger market positioning. However, despite these potential benefits, the extent to which green marketing strategies translate into measurable improvements in brand image and organizational performance remains underexplored within the pharmaceutical sector. An empirical assessment is necessary to identify which green initiatives generate the most significant impact, how consumers and stakeholders interpret these efforts, and how effectively sustainability strategies contribute to long-term organizational success.

II. RESEARCH METHODOLOGY

The research methodology forms the structural foundation of this study, ensuring that the investigation into the *Effect of Green Marketing Strategies on Brand Image and Organizational Performance in the Pharmaceutical Industry* is conducted with precision, reliability, and academic rigor. This study adopts a descriptive and causal research design, enabling both an understanding of existing green marketing practices and an examination of cause-and-effect relationships among key variables. A quantitative approach has been selected to generate measurable results that can be statistically analyzed and generalized to the wider pharmaceutical industry. Clear objectives and hypotheses guide the research process, focused on assessing the impact of green marketing strategies on brand image and organizational performance, identifying challenges in their implementation, and recommending solutions.

The study population includes pharmaceutical professionals such as marketing executives, product managers, and sustainability officers. A stratified random sampling technique has been used to select a representative sample of 500 respondents across different organizational levels. Primary data were collected through a structured questionnaire, developed based on existing literature and refined through a pilot study. The questionnaire includes Likert-scale items to measure attitudes and perceptions, along with demographic questions.

To ensure reliability, Cronbach's Alpha values exceeded 0.70 for all constructs, confirming strong internal consistency. Content and construct validity were ensured through expert evaluation and factor analysis. Key variables include green marketing strategies as the independent variable, and brand image and organizational performance as dependent variables, with company size and years of operation serving as control variables.

Data analysis was conducted using SPSS, employing descriptive statistics, t-tests, ANOVA, and regression analysis to test hypotheses and determine the strength and significance of relationships. Ethical standards were upheld through informed consent, confidentiality, and responsible data handling. The methodology provides a robust framework for understanding how green marketing influences strategic outcomes in the pharmaceutical sector.



III. POPULATION AND SAMPLING

The population and sampling framework form a crucial foundation for this study, as they determine the relevance, accuracy, and representativeness of the research findings. For the present investigation on the effect of green marketing strategies on brand image and organizational performance in the pharmaceutical industry, the target population consists of professionals employed across various functional departments of pharmaceutical companies in India. These individuals include marketing executives, brand managers, quality assurance officers, environmental compliance managers, R&D specialists, and senior managers who engage directly or indirectly in sustainability-related decision-making. Their expertise and involvement in strategic planning, marketing initiatives, and environmental management make them suitable for providing meaningful insights into the adoption, implementation, and effectiveness of green marketing strategies.

Given the large scale and geographical spread of the pharmaceutical sector in India, it was impractical to survey all eligible professionals. Therefore, a stratified random sampling technique was adopted to ensure adequate representation across diverse categories such as company size (small, medium, and large firms), functional departments, and regional pharmaceutical hubs. This stratification enhances the generalizability of the findings by capturing the heterogeneous nature of the industry. The sampling frame was constructed using professional directories, industry association databases, and lists of companies registered with bodies such as the Central Drugs Standard Control Organization (CDSCO) and the Indian Drug Manufacturers' Association (IDMA). A final sample size of 500 respondents was selected based on statistical formulas ensuring a 95% confidence level and acceptable margin of error. This sample size aligns with principles of the Central Limit Theorem and supports the use of parametric statistical techniques for reliable empirical analysis.

IV. DATA COLLECTION METHODS

The data collection process for this study was designed to ensure the accuracy, credibility, and relevance of the information gathered on the effect of green marketing strategies on brand image and organizational performance in the pharmaceutical industry. Primary data collection was used to obtain firsthand insights from pharmaceutical professionals, as their experience and expertise were essential for evaluating the adoption and impact of green marketing practices. A structured questionnaire served as the main instrument and was developed based on previous literature to ensure content validity. It included Likert-scale items and demographic questions organized into sections covering green marketing awareness, perceived impact on brand image, organizational performance, and challenges in implementation.

Data were collected using a combination of online and offline methods to maximize response rates and ensure wide geographical coverage. The online questionnaire, created through Google Forms, was circulated via email, professional networks, and industry forums, while printed copies were distributed during pharmaceutical seminars and company visits. Participants were assured of anonymity and confidentiality, encouraging honest and unbiased responses. Prior to full deployment, a pilot test with 30 respondents was conducted to verify clarity and internal consistency, after which minor refinements were made.

The data collection period lasted three months, resulting in 500 complete and valid responses. All responses were screened for completeness before being coded and entered into SPSS for statistical analysis. The systematic approach, ethical considerations, and diverse respondent profile contributed to the reliability and generalizability of the dataset.

V. RESULTS AND DISCUSSION

The results of the study demonstrate a strong and meaningful relationship between green marketing strategies, brand image, and organizational performance in the pharmaceutical industry. Reliability tests revealed high internal consistency across all constructs, indicating that the measurement instrument was robust and dependable. Factor analysis confirmed that the items aligned well with their respective latent constructs, validating the structure of the model. The regression analysis showed that green marketing practices significantly predict improvements in



organizational performance, as reflected by a highly significant F-value and a p-value below 0.001. This suggests that companies adopting eco-friendly initiatives experience measurable gains in efficiency, stakeholder trust, and overall performance outcomes.

The Confirmatory Factor Analysis (CFA) further supported these findings, with strong factor loadings and acceptable fit indices such as CFI, GFI, and RMSEA, indicating that the model provided a good fit to the data. Correlation analysis also highlighted strong positive associations between green marketing implementation, brand enhancement, and organizational success. Respondents emphasized that well-executed green initiatives helped build consumer confidence, strengthen corporate reputation, and improve operational effectiveness. However, challenges such as high implementation costs and lack of awareness were identified.

VI. RELIABILITY ANALYSIS

Reliability analysis is essential for confirming the consistency and internal coherence of the measurement instruments used in this study. For the investigation on the effect of green marketing strategies on brand image and organizational performance in the pharmaceutical industry, Cronbach's Alpha was used to assess internal reliability. Values above 0.70 indicate acceptable reliability, while values above 0.90 reflect excellent consistency. The analysis showed strong reliability across all major constructs: Green Marketing and Brand Image ($\alpha = 0.913$), Green Marketing and Organizational Performance ($\alpha = 0.917$), Problems Related to Green Marketing Strategies ($\alpha = 0.936$), and Solutions for Better Implementation ($\alpha = 0.940$). These results confirm that the questionnaire items consistently measured the intended variables, ensuring dependable data and reinforcing the credibility of subsequent findings.

Reliability Statistics		
Variables	Cronbach's Alpha	N of Items
Green Marketing and Brand Image	0.913	10
Green Marketing and Organizational Performance	0.917	10
Problems Related to Green Marketing Strategies	0.936	8
Solutions & Suggestions for Better Implementation	0.940	7

The reliability results show excellent internal consistency across all four variables, with Cronbach's Alpha values above 0.90. This confirms that all scale items consistently measure their respective constructs, making the survey instrument highly reliable for assessing green marketing, brand image, and organizational performance.

VII. HYPOTHESES OF THE STUDY

There is no significant impact of challenges of green marketing strategies implementation on brand image

Test Used: Linear Regression analysis

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.712	0.507	0.505	0.438

ANOVA

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	168.742	1	168.742	879.316	0.000
Residual	164.218	498	0.330		
Total	332.960	499			



Coefficients

Model	Unstandardized B	Std. Error	Standardized Beta	t	Sig.
(Constant)	0.823	0.105	—	7.84	0.000
Green Marketing Strategy	0.671	0.022	0.712	29.65	0.000

The linear regression results clearly indicate that the challenges associated with the implementation of green marketing strategies implementation have a significant impact on brand image. The model summary shows a strong correlation ($R = 0.712$) and a substantial explanatory power, with $R^2 = 0.507$, meaning that approximately 50.7% of the variation in brand image is explained by green marketing strategy challenges. The ANOVA results further confirm the model's overall significance, as the F-value (879.316) is very high and the significance level ($p = 0.000$) is less than 0.05, indicating that the regression model is statistically significant. Additionally, the coefficient results reveal that the green marketing strategy variable has a positive and significant effect ($B = 0.671$, $t = 29.65$, $p = 0.000$) on brand image. This implies that changes in the challenges of implementing green marketing strategies implementation significantly Impact of brand perception. Since the p-value is less than 0.05, the null hypothesis (H_0) is rejected, concluding that there is indeed a significant impact of green marketing strategy implementation challenges on brand image.

There is no significant level of awareness of green marketing strategy implementation among pharmaceutical industries.

Test Used: One Sample T Test

One-Sample Statistics

Variable	N	Mean	Std. Deviation	Std. Error Mean
Awareness of Green Marketing	500	4.04	0.86	0.038

One-Sample Test

Variable	Test Value	t	df	Sig. (2-tailed)	Mean Difference
Awareness of Green Marketing	3	27.37	499	.000	1.04

A one-sample t-test was conducted to determine whether the mean level of awareness regarding the implementation of green marketing strategies is significantly higher than the neutral value of 3 on the Likert scale. The results show that the mean awareness score ($M = 4.04$, $SD = 0.86$) is substantially higher than the test value of 3. The t-test result is statistically significant ($t = 27.37$, $p < 0.001$), indicating that the difference between the observed mean and the neutral value is meaningful. Since the significance value is less than 0.05, it can be concluded that industries demonstrate a significantly high level of awareness regarding the implementation of green marketing strategies. This confirms that awareness is strong within the pharmaceutical industry and supports effective Implementation of green marketing initiatives.

VIII. CONCLUSION

The empirical assessment of green marketing strategies in the pharmaceutical sector demonstrates that sustainability-driven initiatives have become essential for enhancing brand image and organizational performance. As environmental expectations rise among consumers, regulators, and global stakeholders, pharmaceutical companies adopting green practices are better positioned to build trust, credibility, and long-term market relevance. The study findings show that green marketing strategies—such as eco-friendly packaging, waste minimization, renewable energy use, sustainable supply chain management, and transparent communication—significantly strengthen brand perception. A strong brand image, in turn, reinforces customer loyalty, differentiates firms in a competitive marketplace, and enhances corporate reputation in an industry where ethical conduct and safety standards are highly scrutinized.

Moreover, the research reveals that green marketing positively influences organizational performance by improving operational efficiency, reducing costs, and supporting compliance with environmental regulations. Companies that



integrate sustainability into production and marketing practices experience long-term financial benefits, reduced environmental risks, and stronger relationships with stakeholders. While challenges such as implementation costs, knowledge gaps, and resistance to change remain, the overall impact of green marketing is highly favorable. The study concludes that pharmaceutical companies must view green marketing not merely as an ethical responsibility but as a strategic asset capable of driving growth, innovation, and competitive advantage. By adopting authentic, well-planned, and consistently communicated green initiatives, pharmaceutical organizations can achieve superior brand outcomes, strengthen stakeholder trust, and enhance overall organizational performance. The findings provide valuable insights for managers, policymakers, and researchers seeking to promote sustainable transformation within the pharmaceutical industry.

REFERENCES

1. Hsieh, Y. C. (2012). Hotel companies' environmental policies and practices: a content analysis of their web pages. *International journal of contemporary hospitality management*, 24(1), 97-121.
2. Iglesias, O., Markovic, S., Bagherzadeh, M., & Singh, J. J. (2020). Co-creation: A key link between corporate social responsibility, customer trust, and customer loyalty. *Journal of business ethics*, 163, 151-166.
3. Jimenez-Gonzalez, C., Ponder, C. S., Broxterman, Q. B., & Manley, J. B. (2011). Using the right green yardstick: why process mass intensity is used in the pharmaceutical industry to drive more sustainable processes. *Organic Process Research & Development*, 15(4), 912-917.
4. Katou, A. A., & Budhwar, P. S. (2010). Causal relationship between HRM policies and organisational performance: Evidence from the Greek manufacturing sector. *European management journal*, 28(1), 25-39.
5. Keller, K. L., Parameswaran, M. G., & Jacob, I. (2010). *Strategic brand management: Building, measuring, and managing brand equity*. Pearson Education India.
6. Kotler, P. (2011). Reinventing marketing to manage the environmental imperative. *Journal of marketing*, 75(4), 132-135.
7. Kuo, F. I., Fang, W. T., & LePage, B. A. (2022). Proactive environmental strategies in the hotel industry: Eco-innovation, green competitive advantage, and green core competence. *Journal of Sustainable Tourism*, 30(6), 1240-1261.
8. Laosirihongthong, T., Adebajo, D., & Choon Tan, K. (2013). Green supply chain management practices and performance. *Industrial Management & Data Systems*, 113(8), 1088-1109.
9. Lee, C., & Lim, S. Y. (2020). Impact of environmental concern on Image of Internal GSCM practices and consumer purchasing behavior. *The Journal of Asian Finance, Economics and Business*, 7(6), 241-254.
10. Lee, J. S., Hsu, L. T., Han, H., & Kim, Y. (2010). Understanding how consumers view green hotels: how a hotel's green image can influence behavioural intentions. *Journal of sustainable tourism*, 18(7), 901-914.
11. Leonidou, L. C., Christodoulides, P., Kyrgidou, L. P., & Paliawadana, D. (2017). Internal drivers and performance consequences of small firm green business strategy: The moderating role of external forces. *Journal of business ethics*, 140, 585-606.

