

## Sustainable Marketing Strategies for Bamboo-Based Products: A Study of the Vidarbha Region

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Received:  
26/08/2025  
Revised:  
04/09/2025  
Accepted:  
27/09/2025  
Published:  
10/10/2025

### ABSTRACT

This study explored the impact of sustainable marketing strategies on consumer buying decisions and the relationship between consumer awareness and perception of bamboo-based products in the Vidarbha region of Maharashtra. Using a structured questionnaire with 53 respondents, the research employed descriptive and analytical methods, including weighted averages and correlation analysis. Findings reveal that all sustainable marketing mix elements (Promotion, Price, Place, and Product) positively influence consumer decisions, with Promotion being the most impactful and Product the least. Consumer awareness was mostly moderate (58.49%) and high (37.74%), indicating a generally positive understanding of bamboo products' ecological benefits. A significant positive correlation ( $r = 0.62, p < 0.05$ ) between awareness and perception highlights that higher awareness enhances favorable consumer attitudes toward bamboo products. The study concludes that sustainable marketing strategies, particularly effective promotion and awareness-building initiatives, play a crucial role in influencing consumer behavior. Strengthening education, transparent pricing, product innovation, accessibility, and policy support can further enhance consumer perception and adoption of bamboo-based products, while simultaneously supporting rural livelihoods in Vidarbha.

**Keywords:** Sustainable Marketing, Bamboo-Based Products, Consumer Buying Behavior, Consumer Awareness, Consumer Perception, Marketing Mix (4Ps), Vidarbha Region



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### INTRODUCTION

Sustainability has become an important part of business practices today, as consumers and organizations are increasingly concerned about environmental protection and responsible use of resources. Among the different natural materials, bamboo has gained special attention because it is fast-growing, renewable, and highly versatile. Across the world, bamboo products are being promoted as eco-friendly alternatives to plastic and wood. In India too, bamboo plays a vital role in rural economies, cultural traditions, and small-scale industries, which makes it a strong base for developing sustainable businesses.

The Vidarbha region of Maharashtra is rich in bamboo resources and many communities here are dependent on bamboo-related activities for their livelihood. However, these products often struggle to reach wider markets due to weak marketing strategies and limited consumer awareness. In such cases, sustainable marketing practices become very important. The way products are designed, priced, distributed, and promoted can directly influence the decisions of consumers. At the same time, consumer awareness about sustainability and their

personal perception of eco-friendly products also plays a key role in shaping their buying behavior.

This study is focused on two aspects: first, to examine how the sustainable marketing mix (product, price, place, and promotion) affects consumer buying decisions for bamboo-based products, and second, to understand the relationship between consumer awareness and consumer perception. By studying the Vidarbha region, the research not only highlights the local economic and social context but also contributes to the wider discussion on sustainable marketing. The outcomes of this study are expected to help bamboo entrepreneurs, marketers, and policymakers to design better strategies that support both consumer needs and environmental goals.

### REVIEW OF LITERATURE

From a global market perspective, the Food and Agriculture Organization (FAO, 2010) reported that bamboo and rattan contribute significantly to the global economy, with a market size running into billions of dollars annually. In the Indian context, Naidu and Kumar (2013) pointed out that bamboo contributes to rural livelihoods, handicrafts, and construction, with

How to cite: Thadi, Lokeswari. "Sustainable Marketing Strategies for Bamboo-Based Products: A Study of the Vidarbha Region. *Advances in Consumer Research*" vol. 2, no. 4, 2025, pp. 4996-5000.

increasing attention from policymakers under initiatives like the National Bamboo Mission. More recently, Singh and Varma (2017) argued that easing of felling and transit regulations has enhanced bamboo's role in commercial value chains. In the Vidarbha region, recent studies (Deshmukh & Wankhede, 2019; Jadhav, 2021) have documented both opportunities and challenges in bamboo-based entrepreneurship. These works note that while raw bamboo availability is high, the lack of organized marketing channels and product diversification limits its economic potential. Moreover, regional government reports (Maharashtra Forest Department, 2020) have stressed the need for farmer awareness and processing facilities to strengthen the bamboo economy. Consumer behavior research has consistently shown the importance of environmental concern in shaping purchase intentions. Ottman (2011) argued that green consumers tend to prefer eco-friendly products but may not always translate their concern into actual purchase behavior. This "attitude-behavior gap" has been observed in India as well. Jain and Kaur (2006) found that while Indian consumers express positive attitudes toward green products, factors such as price and quality still dominate final purchase decisions. Similarly, Biswas and Roy (2015) demonstrated that consumer awareness, perceived value, and willingness to pay are strongly correlated in the adoption of eco-friendly products in Indian markets. Price sensitivity has been a central issue in sustainable marketing. Grunert (2005) argued that willingness to pay premiums depends on consumers' perception of functional and social benefits of eco-friendly products. In the Indian case, D'Souza, Taghian, and Khosla (2007) found that consumers are cautious about paying more for green products unless clear long-term benefits are communicated. This is especially relevant for bamboo, where production is often labor-intensive, leading to higher retail costs. Distribution and branding also play a significant role. Peattie and Crane (2005) emphasized that sustainable products require differentiated marketing channels, including direct-to-consumer and cooperative models. In rural India, Tewari (2012) observed that craft-based bamboo products often fail to reach urban consumers due to weak retail and digital linkages. Branding and provenance storytelling have been recommended by Beverland and Farrelly (2010), who showed that authenticity and cultural narratives can enhance consumer trust in sustainable products. Certification and traceability are other important dimensions. Chen (2010) argued that eco-labels and certification schemes improve credibility and reduce skepticism toward green claims. In India, Thøgersen, Haugaard, and Olesen (2010) found that consumer trust in eco-labels significantly increases purchase likelihood, though awareness remains low in semi-urban regions. Finally, institutional support and cooperative models have been highlighted as crucial for bamboo's success. Sundar (2000) stressed that collective action and cooperative marketing enhance bargaining power for non-timber forest products, including bamboo. Similar insights were echoed by Beniwal and Lodhiyal (2011), who studied bamboo-based enterprises and emphasized

the role of community participation and government facilitation in value-chain integration.

## RESEARCH METHODOLOGY

### Research Design

The present study adopts a descriptive and analytical research design to examine the effect of sustainable marketing mix strategies on consumer buying decisions and to analyze the relationship between customer awareness and consumer perception regarding bamboo-based products in the Vidarbha region. This design is appropriate as it facilitates both measurement of consumer responses and statistical testing of hypotheses.

### Research Objectives

1. To check the effect of sustainable marketing mix strategies (product, price, place, and promotion) on consumer buying decisions.
2. To analyze the relationship between customer awareness and consumer perception.

### Sampling Design

The study is based on **primary data** collected from consumers in the Vidarbha region of Maharashtra. A convenience sampling method was employed due to accessibility and time constraints. The sample size comprised 53 respondents, which was considered sufficient for preliminary statistical testing and correlation analysis.

### Data Collection

Data was collected using a structured questionnaire, designed on a five-point Likert scale ranging from 1 = Strongly Disagree to 5 = Strongly Agree. The questionnaire was divided into the following sections:

- **Section A:** Items related to sustainable marketing mix strategies (product, price, place, and promotion).
- **Section B:** Items measuring consumer buying decisions.
- **Section C:** Items on customer awareness of bamboo products (6 items).
- **Section:** Items on consumer perception of bamboo products (6 items).

### Measurement of Constructs

The constructs were measured through multiple items adapted from existing studies and contextualized to bamboo-based products. Reliability was tested using

### Cronbach's Alpha:

- Product ( $\alpha = 0.81$ , Good)
- Price ( $\alpha = 0.76$ , Acceptable)
- Place/Distribution ( $\alpha = 0.71$ , Acceptable)
- Promotion ( $\alpha = 0.83$ , Good)
- Consumer Buying Decision ( $\alpha = 0.85$ , Good)

Since all alpha values exceeded the **threshold of 0.70**, internal consistency and scale reliability were confirmed.

### Data Analysis Tools

The collected data was analyzed using SPSS software. The following statistical methods were applied:

1. **Reliability Analysis** – Cronbach’s Alpha test for internal consistency.
2. **Weighted Average Analysis** – to rank sustainable marketing mix factors.
3. **Awareness Categorization** – Internal equal class method to classify respondents into low, medium, and high awareness groups.
4. **Correlation Analysis (Pearson’s r)** – to test the relationship between customer awareness and consumer perception.

### Hypothesis Formulation

The hypothesis for testing correlation was stated as:

- **H<sub>0</sub>**: There is no significant correlation between customer awareness and consumer perception.
- **H<sub>1</sub>**: There is a significant correlation between customer awareness and consumer perception.

The results indicated a strong positive and statistically significant relationship between awareness and perception ( $r = 0.62$ ,  $p < 0.05$ ). This confirmed that

higher awareness levels are associated with more favorable consumer perceptions of bamboo-based products.

### Scale Interpretation

To interpret mean scores, the range was calculated as follows:

$$\text{Range} = \text{Maximum} - \text{Minimum} / 5 = 5 - 1 / 5 = 0.8$$

Accordingly, the interpretation scale was developed:

- 4.21 – 5.00 = Strongly Agree
- 3.41 – 4.20 = Agree
- 2.61 – 3.40 = Neutral
- 1.81 – 2.60 = Strongly Disagree
- 1.00 – 1.80 = Disagree

This scale was applied to analyze weighted averages of marketing mix elements.

### Ethical Considerations

The study maintained strict ethical standards. Respondents participated voluntarily, and their responses were kept anonymous and confidential. The data collected was used solely for academic research purposes without any commercial intent.

**Table no. 1:- Following table indicates Weighted average, result and rank**

	<b>WEIGHTED AVERAGE</b>	<b>RESULT</b>	<b>Rank</b>
A. Product	3.58	Agree	4
B. Price	3.68	Agree	2
C. Place / Distribution / Location	3.62	Agree	3
D. Promotion	3.75	Agree	1

### Interpretation

Table No. 1 presents the weighted averages of sustainable marketing mix elements product, price, place, and promotion along with their respective results and ranks. The findings indicate that all four factors fall within the Agree range, suggesting that consumers in the Vidarbha region generally acknowledge the role of sustainable marketing practices in shaping their buying decisions for bamboo-based products. Among these, **promotion** holds the highest weighted average (3.75), signifying its strong influence in attracting consumer

attention and driving purchase intentions. **Price** ranks second (3.68), highlighting consumer sensitivity towards value-for-money considerations in sustainable products. **Place/distribution** follows with a weighted average of 3.62, pointing to the importance of availability and accessibility. Finally, **product** receives the lowest rank (3.58), though still within the Agree category, suggesting that while consumers recognize product quality, it is relatively less influential compared to other marketing mix components.

**Table no. 2:- Following is indicating categories of awareness level for bamboo product**

Categories		Freq.	%
Low	6 to 14	2	3.77
Medium	15 to 23	31	58.49
High	24 to 30	20	37.74

Table No. 2 shows the distribution of respondents according to their awareness levels regarding bamboo-based products, assessed through the internal equal method. The results reveal that a majority of respondents (58.49%) fall into the medium awareness category, indicating that while consumers are aware of bamboo

trend towards eco-consciousness and recognition of bamboo as an alternative material. However, only a small share (3.77%) falls under the low awareness category, suggesting that lack of knowledge about bamboo products is not a major concern among consumers in the Vidarbha region.

products and their sustainable features, their knowledge is still moderate. A considerable proportion (37.74%) of respondents display high awareness, reflecting a positive

Overall, the analysis highlights that consumer awareness about bamboo-based products is largely moderate to high, which provides a strong base for enhancing

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sustainable marketing practices. Strengthening promotional campaigns and educational initiatives can further shift consumers from medium to high awareness, thereby improving perception and adoption of bamboo products.

**0: - There is no significant correlation between customer awareness and consumer perception**

"There is a strong positive and statistically significant relationship between customer awareness and consumer perception ( $r = 0.62, p < 0.05$ ). This indicates that higher levels of awareness about bamboo-based products are associated with more favorable consumer perceptions. Thus, efforts to improve awareness can directly enhance consumer perception in the Vidarbha region."

**Table No. 3: Correlation between Customer Awareness and Consumer Perception**

Variables	Pearson's r	Sig. (p-value)	Result
Awareness ↔ Perception	0.62*	0.000	Strong Positive & Significant Relation

## Findings

### Reliability of Constructs

All constructs measuring product, price, place, promotion, consumer buying decision, awareness, and perception reported Cronbach's alpha values greater than 0.70, confirming good internal consistency and reliability of scales used.

### Influence of Sustainable Marketing Mix

The weighted average analysis ranked Promotion (3.75) as the most influential factor in shaping consumer buying decisions, followed by Price (3.68), Place/Distribution (3.62), and Product (3.58). These results indicate that communication strategies and awareness campaigns are more effective in driving bamboo product adoption compared to intrinsic product attributes.

### Awareness Levels

Consumer awareness of bamboo-based products was categorized into low, medium, and high groups. A majority of respondents (58.49%) demonstrated medium awareness, while 37.74% had high awareness, and only 3.77% fell into the low awareness category. This suggests that although general awareness is present, there is scope to elevate consumers from medium to high awareness through targeted education and marketing campaigns.

### Relationship Between Awareness and Perception

Correlation analysis revealed a strong positive and statistically significant relationship between customer awareness and consumer perception ( $r = 0.62, p < 0.05$ ). This indicates that higher awareness is associated with more favorable consumer perceptions, such as trust in product quality, recognition of social and cultural value, and acceptance of bamboo as a modern, sustainable alternative.

## CONCLUSION

The study confirms that sustainable marketing strategies significantly shape consumer behavior towards bamboo-based products in the Vidarbha region. Promotion emerged as the most critical element, highlighting the importance of effective communication in building consumer trust and influencing purchase decisions. While awareness levels are moderate to high, increasing consumer knowledge further can enhance perceptions of bamboo's reliability, cultural value, and environmental benefits.

Importantly, the correlation results establish that awareness and perception are strongly linked, suggesting that awareness-building initiatives directly translate into favorable consumer attitudes. Thus, sustainable marketing strategies should prioritize consumer education, eco-labeling, and storytelling around bamboo's socio-environmental value to strengthen both awareness and perception.

## Suggestions

- 1. Strengthen Promotional Campaigns:** Since promotion ranked highest, targeted campaigns through social media, eco-fairs, and local exhibitions can boost visibility and reinforce sustainability benefits.
- 2. Educational Initiatives:** Awareness-building workshops, community programs, and school-level campaigns can move consumers from medium to high awareness, thereby strengthening perceptions.
- 3. Transparent Pricing Strategies:** As price was the second most influential factor, marketers should highlight value-for-money by showcasing long-term durability and ecological advantages of bamboo products.
- 4. Improve Accessibility:** Expanding distribution channels both online and offline can ensure bamboo products are easily available to urban and rural consumers in Vidarbha.
- 5. Product Differentiation and Innovation:** Although product scored lowest among marketing mix factors, there is scope to innovate designs, improve packaging, and highlight quality certifications to make bamboo products more attractive.
- 6. Community Empowerment Messaging:** Marketing strategies should emphasize the role of bamboo-based industries in supporting local artisans and rural livelihoods, appealing to socially responsible consumers.
- 7. Policy Support and Certification:** Collaboration with government bodies for eco-labels and sustainability certifications can enhance consumer trust and credibility.

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