

# Consumer Awareness, Attitudes, and Adoption of Bamboo Products among Urban Consumers in Mumbai: An Empirical Study

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## Abstract

*Rapid urbanisation and rising environmental concerns have increased the relevance of sustainable consumption in Indian metropolitan contexts. Bamboo has emerged as a sustainable material due to its renewability. Despite an estimated valuation of over ₹28,000 crore for India's bamboo and rattan industry, urban markets rely on imports of ₹3,600 crore in finished bamboo products annually, indicating a gap between domestic supply and urban market adoption (NITI Aayog, 2023). This study examines consumer awareness, attitudes, and adoption behaviour relating to bamboo products among residents of Mumbai. Primary data were collected from 212 respondents using a structured questionnaire. Descriptive statistical techniques were employed to assess awareness, attitudes, adoption patterns, and perceived barriers. Pearson's correlation analysis and one-way Analysis of Variance (ANOVA) were used to examine relationships between key variables and differences in adoption across product categories. The results indicate high awareness and positive attitudes towards bamboo products; however, regular usage remains limited, highlighting an awareness–adoption gap. Attitudes show a stronger association with adoption behaviour ( $r = 0.58, p < 0.01$ ) than awareness alone ( $r = 0.46, p < 0.01$ ), indicating that favourable perceptions do not translate into sustained consumption. Adoption varies across product categories, with higher uptake for low-cost household utility items and lower adoption for personal care products. Key constraints include higher prices, limited availability, durability concerns, and design compatibility. The study provides empirical evidence and highlights the category-dependent nature of green product adoption, underscoring the need for policy and market interventions to support sustained adoption of bamboo products in India.*

**Keywords:** Bamboo Products; Sustainable Consumption; Urban Consumers; Consumer Behaviour; Adoption Behaviour

## Introduction

Sustainable consumption has emerged as a key pathway for balancing economic growth with environmental responsibility in rapidly growing economies such as India. Policy initiatives and market innovations increasingly emphasise materials and products that reduce ecological pressure while supporting livelihoods and domestic value addition. In this context, consumer preferences and purchasing decisions play a central role in shaping the success of environmentally responsible markets, particularly

in metropolitan areas where consumption levels are high and product choices are diverse.

Urban consumers influence market outcomes not only through demand but also by signalling acceptance of alternative materials and production practices. Studies on green consumer behaviour indicate that awareness of environmental benefits and positive attitudes towards sustainability can encourage the adoption of eco-friendly products, although such attitudes do not always translate into consistent purchasing behaviour (Joshi & Rahman, 2015; Thøgersen, 2010). Examining this relationship between perception and behaviour is therefore essential for understanding how sustainable products gain traction in competitive urban markets.

Bamboo has gained recognition as a sustainable material with considerable ecological and economic potential. It is a fast-growing, renewable resource capable of substituting for timber, plastics and other resource-intensive materials across a wide range of applications, including furniture, household goods and lifestyle products. Empirical studies highlight bamboo's capacity for rapid biomass regeneration, carbon sequestration and its suitability for long-lasting products (Lobovikov et al., 2007; Nath et al., 2015). Acknowledging these advantages, the Government of India has repositioned bamboo as a strategic sector through the restructured National Bamboo Mission, with a focus on strengthening production, processing, value addition and market linkages (Government of India, 2018).

Despite India's substantial bamboo resource base and policy support, the domestic market for finished bamboo products remains underdeveloped in urban centres. According to NITI Aayog, the bamboo and rattan industry in India is valued at over ₹28,000 crore, yet the country continues to import finished bamboo products worth approximately ₹3,600 crore annually, indicating unmet potential for domestic manufacturing and urban market adoption (NITI Aayog, 2023). This contrast points to an awareness–adoption gap, where favourable perceptions of bamboo as a sustainable material do not consistently translate into regular consumer purchases.

Despite increasing policy support and growing environmental awareness, the adoption of bamboo products in urban Indian markets remains uneven, indicating a gap between favourable perceptions and actual consumption behaviour. Existing Indian studies have largely focused on environmental awareness and purchase intentions, with limited evidence on how these perceptions translate into real adoption across different product categories in large metropolitan settings. Understanding this gap is particularly important in cities where consumption choices are influenced by both sustainability concerns and practical market constraints.

In this context, the present study makes three contributions. First, it moves beyond intention-based analysis by examining actual adoption behaviour and category-wise usage of bamboo products among urban consumers. Second, by focusing on Mumbai, India's largest metropolitan market, the study provides insights into how sustainability-related attitudes interact with everyday market constraints in a complex urban environment. Third, the study applies the Attitude–Behaviour–Context (ABC) framework to show that adoption differs across product categories, highlighting the role of factors such as price, availability, design, and perceived durability in shaping sustainable consumption behaviour.

## **Literature Review**

Sustainable consumption is increasingly viewed as an important approach for reconciling economic growth with environmental responsibility in rapidly expanding economies such as India. The concept encompasses the adoption of products and practices that minimize environmental impacts throughout their life cycle, including production, use, and disposal (Mont & Plepys, 2008). Within this framework, consumers are considered active agents who can influence market dynamics and production decisions through their purchasing behaviour (Peattie, 2010). Urban consumers shape market outcomes not only through their purchasing decisions but also by signalling acceptance of alternative materials and production practices.

Empirical studies suggest that awareness of environmental benefits, positive attitudes, and perceived behavioural control are significant determinants of green product adoption (Joshi & Rahman, 2015; Thøgersen,

2010). However, awareness alone is not sufficient for consumers to adopt green products consistently. Factors such as price, perceived quality, availability, and convenience often determine whether intentions translate into actual purchases (Biswas & Roy, 2015; Laroche, Bergeron, & Barbaro-Forleo, 2001). This implies that while consumers may value sustainability, real-world constraints can influence their choices. Understanding these nuances is essential for promoting sustainable products effectively.

Thompson and Tong (2016) found that fashion leadership—the tendency to be among the first to adopt new fashion trends—significantly influenced purchase intentions for bamboo textiles, suggesting that some categories may attract early adopters motivated by novelty and social differentiation rather than purely environmental concerns. This finding implies that positioning strategies may need to emphasize different value propositions depending on the product category.

Research on sustainable consumption in urban India consistently reveals high levels of environmental awareness and positive attitudes toward green products, though these do not always translate into purchasing behavior. Padmaja and Mohan (2016) reported that urban consumers in Bengaluru demonstrate considerable awareness of environmental issues and express favorable attitudes toward sustainable products, yet their study focused primarily on intentions rather than verified purchase behaviour.

Bamboo is a fast-growing, renewable resource capable of sequestering significant amounts of carbon, reducing pressure on natural forests, and serving as a substitute for timber, plastics, and other environmentally intensive materials (Lobovikov et al., 2007; Nath, Das, & Das, 2015). Bamboo products span multiple categories, including furniture, household items, personal care goods, and home décor, offering both functional and aesthetic value. These properties have positioned bamboo as a potential driver of green consumption in urban markets, where awareness of environmental sustainability is rising.

Government initiatives have further emphasised the economic and ecological importance of bamboo. The National Bamboo Mission (Government of India, 2018) aims to promote cultivation, processing, market development, and value addition. It recognises the potential of bamboo to generate employment, support rural livelihoods, and contribute to domestic industrial growth. NITI Aayog (2023) highlights that while the domestic bamboo and rattan industry is valued at over ₹28,000 crore, imports of finished bamboo products still account for approximately ₹3,600 crore, reflecting strong consumer demand that domestic supply currently cannot meet. This market gap highlights the importance of understanding urban consumer behaviour to guide both policy and industry interventions.

Several studies have examined consumer perceptions of sustainable products, including bamboo, in India and globally. Joshi and Rahman (2015) emphasise that green purchase behaviour is influenced by environmental awareness, social norms, and perceived benefits. Thøgersen (2010) notes that cultural and contextual factors significantly affect sustainable consumption patterns across countries. In the Indian context, recent research highlights a growing interest in eco-friendly household products, but adoption often varies by product category, price, and accessibility (Chakrabarti, 2020). For example, personal care and small household items are more likely to be adopted than higher-cost or durable goods such as furniture, which indicates that combination of affordability and convenience shapes consumer decisions.

Prasad (2023) highlights concerns about aesthetics, finishing quality, and modern design fit that dampen adoption in lifestyle and furniture categories. Many consumers associate bamboo with traditional or rustic applications rather than contemporary design, limiting appeal among urban consumers seeking modern aesthetics. Additionally, perceptions of durability and quality vary, with some consumers questioning whether bamboo products can match the performance of conventional alternatives.

Barriers to adoption include limited product availability, high prices relative to conventional alternatives, insufficient information about quality and durability, and weak branding or marketing (Biswas & Roy, 2015; Nath et al., 2015). Addressing these barriers is important for translating awareness and positive attitudes into consistent adoption. Studies on sustainable urban consumption emphasise the role of policy support, certification, and market interventions in building consumer confidence and stimulating demand for eco-

friendly products (Peattie, 2010; Laroche et al., 2001).

Production scale limitations and regional supply issues constrain product availability and accessibility. Dutta (2020) notes that despite India's bamboo resources, processing infrastructure and distribution networks remain underdeveloped. Urban consumers may have difficulty finding bamboo products in convenient retail locations, reducing perceived behavioral control and purchase likelihood.

Recent studies emphasise that sustainable consumption is shaped not only by attitudes but also by contextual constraints such as price, availability, and perceived risk, particularly in urban and emerging-economy settings (White et al., 2022; Joshi & Modi, 2023).

Existing research shows that while consumers may be aware of environmental concerns and hold favourable views towards sustainable products, these factors alone do not always lead to regular purchasing. Bamboo, despite its clear ecological and functional benefits, can only realise its potential in urban markets when products are affordable, easily available, and perceived as reliable in terms of quality. This makes it important to examine how urban consumers in India actually view and use bamboo products in their everyday lives. Empirical evidence from metropolitan markets such as Mumbai can help policymakers and industry stakeholders better align domestic production and marketing strategies with consumer expectations.

While several studies have examined sustainable consumption in individual Indian cities, systematic comparisons across urban centers remain rare. Mumbai, as India's financial capital and most populous metropolitan area, presents a unique consumer landscape characterized by cosmopolitan influences, higher purchasing power, and greater exposure to global sustainability trends. However, city-specific empirical research on Mumbai consumers' green purchasing behavior is limited in the reviewed literature.

### **Theoretical Framework: Attitude–Behaviour–Context (ABC) Model**

This study is anchored in the Attitude–Behaviour–Context (ABC) model, which explains pro-environmental behaviour as an outcome of the interaction between individual attitudes and external contextual conditions. The model posits that while favourable environmental attitudes are a necessary precondition for sustainable consumption, actual behaviour depends on whether contextual factors enable or constrain individuals from acting on those attitudes.

Within the ABC framework, attitudes (A) reflect consumers' awareness, beliefs, and evaluations of environmentally sustainable products; behaviour (B) refers to actual adoption and usage practices; and context (C) comprises external conditions such as price, availability, accessibility, perceived quality, design compatibility, and institutional support. Sustainable consumption behaviour is most likely to occur when positive attitudes are supported by enabling contexts, whereas contextual barriers can inhibit adoption even among environmentally conscious consumers.

The ABC model is particularly relevant in urban consumption settings, where awareness of sustainability is high but purchasing decisions are strongly shaped by market conditions. Urban consumers may express favourable attitudes towards sustainable products while prioritising affordability, convenience, and perceived reliability in practice. The framework therefore provides a suitable lens for examining the awareness–adoption gap frequently observed in sustainable consumption research.

In this study, consumer awareness and attitudes towards bamboo products represent the attitudinal component of the ABC model, while adoption behaviour, measured through purchase experience and usage across product categories, constitutes the behavioural component. Contextual factors are captured through perceived barriers such as higher prices, limited availability, concerns regarding durability and aesthetics, insufficient product variety, and the absence of standardised certification.

By applying the ABC framework, the study examines whether positive attitudes towards bamboo products translate into adoption among urban consumers in Mumbai or whether contextual constraints moderate this relationship. Anchoring the analysis in the ABC model strengthens the explanatory power of the study by integrating individual perceptions with market and institutional conditions, thereby providing a robust

theoretical basis for the proposed hypotheses and empirical findings.

## Objectives

The present study aims to examine urban consumer behaviour towards bamboo products in the context of sustainable consumption, with specific reference to Mumbai. The objectives of the study are as follows:

1. To assess the level of awareness and attitudes of urban consumers in Mumbai towards bamboo products.
2. To examine the extent of adoption and usage of bamboo products across different product categories.
3. To analyse the relationship between consumer awareness, attitudes, and adoption behaviour of bamboo products.
4. To identify key barriers influencing the adoption of bamboo products in urban markets.

## Hypothesis of the Study

Based on the review of literature and the objectives of the study, the following hypotheses are proposed:

H1: There is a significant positive relationship between consumer awareness of bamboo products and their adoption behaviour among urban consumers in Mumbai.

H2: There is a significant positive relationship between consumers' attitudes towards bamboo products and their adoption behaviour among urban consumers in Mumbai.

H3: The adoption of bamboo products differs across product categories, with higher adoption for personal care and household items compared to furniture and home décor products.

## Research Methodology

### Research Design

The study uses a descriptive and analytical research design to examine urban consumer awareness, attitudes, and adoption behaviour towards bamboo products. A quantitative approach was used to capture measurable patterns in consumer perceptions and purchasing behaviour and to analyse the relationships between key variables.

### Study Area and Sample

The study was conducted in Mumbai, one of India's largest metropolitan cities and a major consumption hub. Mumbai was selected due to its diverse consumer base, high purchasing power, and exposure to sustainability-oriented products.

Primary data were collected from urban consumers residing in Mumbai using a structured questionnaire. A non-probability convenience sampling approach was employed in view of time limitations and accessibility constraints. Only respondents aged 18 years and above and residing in Mumbai were included in the study. This method was deemed suitable for accessing a diverse yet accessible urban population. Participation in the survey was voluntary and responses were collected anonymously to ensure confidentiality and ethical compliance. This approach enabled efficient data collection from a diverse urban cohort while maintaining respondent privacy.

Data were collected using a structured questionnaire designed specifically for this study and administered online. The questionnaire was developed based on insights from existing literature on sustainable consumption and green purchasing behaviour (Joshi & Rahman, 2015; Biswas & Roy, 2015; Thøgersen, 2010).

The questionnaire comprised five sections:

5. Demographic profile of respondents (age, gender, education, occupation, income).
6. Awareness of bamboo products, including knowledge of environmental benefits and product availability.
7. Attitudes towards bamboo products, measured using statements related to sustainability, quality, aesthetics, and suitability for everyday use.
8. Adoption and usage behaviour, assessed across different bamboo product categories such as personal

care items, household goods, furniture, and home décor.

9. Perceived barriers to adoption, including price, availability, information gaps, and quality concerns.

Most attitudinal and perception-related items were measured using a five-point Likert scale, ranging from Strongly Disagree (1) to Strongly Agree (5). Product usage was measured using frequency-based response options. The final sample consisted of 212 respondents.

### **Variables and Measurement**

The key variables examined in the study include:

#### **Independent Variables:**

10. Awareness of Bamboo Products: Measured using 5 items on a 5-point Likert scale (Strongly Disagree to Strongly Agree).
11. Attitudes towards Bamboo Products: Measured using 6 items on a 5-point Likert scale.
12. Product Categories: Categorized into personal care, household items, furniture, and home décor.

#### **Dependent Variables:**

13. Adoption Behaviour: Measured through purchase history, usage frequency, and future purchase intent using binary (Yes/No) and frequency scales (Never to Frequently).
14. Moderating/Control Variables: Socio-demographic factors such as age, gender, education, income, and occupation were also recorded.

The internal consistency of the multi-item scales used in the study was assessed using Cronbach's alpha. The awareness scale, comprising five items, demonstrated excellent internal reliability (Cronbach's  $\alpha = 0.917$ ). Similarly, the attitude scale, consisting of six items, exhibited strong internal consistency (Cronbach's  $\alpha = 0.912$ ). These values exceed the recommended threshold for exploratory and behavioural research, indicating that the measurement items reliably capture consumer awareness and attitudes towards bamboo products.

The study employed a non-probability convenience sampling method due to time and accessibility constraints in a large metropolitan setting. While this approach enabled efficient data collection from a diverse urban cohort, it introduces certain limitations. The sample is skewed towards younger consumers, with a high representation of respondents below 25 years of age, reflecting greater accessibility and responsiveness of students and young adults to online surveys. As younger consumers are typically more exposed to sustainability discourse, levels of awareness and positive attitudes may be relatively overrepresented. Additionally, convenience sampling limits the statistical generalisability of the findings beyond the study sample. The results should therefore be interpreted as indicative of awareness–adoption patterns among accessible urban consumers in Mumbai rather than the entire metropolitan population. Nevertheless, the sample size is adequate for exploratory and relational analysis, and the findings provide meaningful insights into urban sustainable consumption behaviour.

### **Data Analysis**

The data collected were analysed using descriptive and inferential statistical techniques. Descriptive statistics such as frequencies, percentages, and mean scores were used to summarise respondent characteristics and to assess levels of awareness, attitudes, adoption behaviour, and perceived barriers. Inferential analysis included Pearson's product-moment correlation analysis to examine the relationship between consumer awareness, attitudes, and adoption behaviour, and one-way Analysis of Variance (ANOVA) to assess differences in adoption across bamboo product categories. All analyses were conducted at a 5 per cent level of significance.

## Results and Analysis

### Socio-economic Profile of Respondents

The sample comprised young urban individuals, with nearly 72 per cent of respondents below 25 years of age, indicating substantial representation of students and young adults. Female respondents constituted 57.5 per cent of the sample, while males accounted for 42 per cent. A relatively well educated urban sample, majority of the respondents were undergraduates, followed by postgraduates and graduates. The income distribution encompassed all income categories, with a notable proportion reporting monthly earnings exceeding ₹1,00,000. The sample indicates an urban cohort who may have greater exposure to sustainability-related information and discourse.

**Table 1 Awareness Levels of Bamboo Products among Urban Consumers in Mumbai (N = 212)**

Awareness Statements	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
Bamboo is a fast-growing and renewable resource	8.0	5.7	17.9	38.2	30.2
Bamboo products are environmentally friendly compared to plastic/synthetic products	6.1	5.7	6.6	33.0	48.6
Bamboo products can be used for a wide range of purposes	6.1	3.3	10.8	36.8	42.9
Bamboo products are manufactured in India	6.6	3.3	18.4	39.6	32.1
Bamboo products help reduce environmental pollution	6.6	3.8	11.8	34.9	42.9

Source: Calculated from primary survey data

Table 1 presents the awareness levels of respondents regarding bamboo products. The results indicate a high level of awareness among urban consumers, particularly regarding the environmental friendliness and renewable nature of bamboo. More than two-thirds of respondents were of the opinion that bamboo products are environmentally sustainable and help reduce pollution. Awareness regarding the wide range of applications of bamboo products was also substantial. However, relatively higher neutral responses were observed with respect to the manufacturing of bamboo products in India, indicating partial knowledge about domestic production.

### Consumer Attitudes towards Bamboo Products

Consumer attitudes towards bamboo products are predominantly positive. Attitude-related statements record mean scores in the range of 3.9 to 4.2, reflecting favourable perceptions towards eco-friendly and sustainable products. Respondents largely agree that purchasing bamboo products contributes to environmental protection and responsible consumption.

However, the data reveal that preference for bamboo products over conventional materials such as plastic or wood is moderate rather than strong. While respondents express positive attitudes in principle, their willingness to choose bamboo products is influenced by factors such as price, availability, design, and perceived durability. Variation in responses indicates differing levels of commitment towards sustainable consumption.

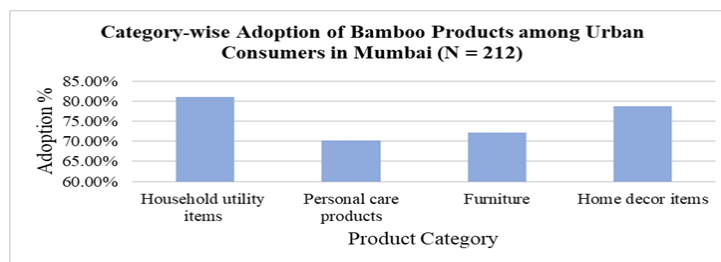
Inferential analysis confirms that attitudes play a significant role in shaping adoption behaviour. Pearson's correlation analysis shows a strong positive relationship between consumer attitudes and adoption behaviour ( $r = 0.58$ ,  $p < 0.01$ ), indicating that respondents with more favourable attitudes are substantially more likely to adopt bamboo products.

### Adoption Patterns across Product Categories

Adoption of bamboo products varies considerably across product categories. Personal care products and household utility items record the highest adoption levels, with more than half of the respondents reporting usage. These products are relatively affordable, easily available, and frequently used, making them more accessible to urban consumers. These are perceived as easy, low-cost switches.

However, adoption of bamboo furniture and home decor products is significantly lower. These categories involve higher prices, longer usage periods, and greater concerns regarding durability and aesthetics. These patterns indicate that consumers are more inclined to adopt bamboo products in low-risk, everyday-use categories, while they remain cautious in high-involvement purchase decisions. High price points and a lack of variety were cited as the primary reasons for this gap.

One-way ANOVA results confirm statistically significant differences in adoption across product categories ( $F = 9.84$ ,  $p < 0.01$ ), indicating that product type is an important determinant of adoption behaviour.



**Figure 1** Category-wise Adoption of Bamboo Products among Urban Consumers in Mumbai (N = 212)

Source: Calculated from primary survey data

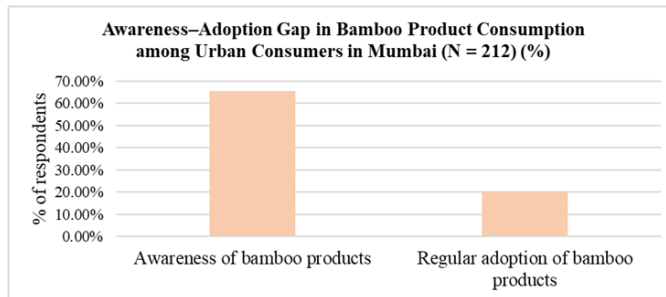
### Relationship between Awareness, Attitudes and Adoption

**Table 2** Comparative Relationship between Awareness, Attitudes, and Adoption Behaviour

Relationship	Statistical Test	Correlation Coefficient (r)	Significance (p-value)	Strength of Relationship
Awareness ↔ Adoption	Pearson's Correlation	0.46	< 0.01	Moderate
Attitudes ↔ Adoption	Pearson's Correlation	0.58	< 0.01	Moderately Strong

Source: Calculated from primary survey data

As shown in Table 2, the correlation between consumer attitudes and adoption behaviour ( $r = 0.58$ ,  $p < 0.01$ ) is stronger than the relationship between awareness and adoption ( $r = 0.46$ ,  $p < 0.01$ ), indicating that attitudes exert a greater influence on actual consumption behaviour than awareness alone.



**Figure 2 Awareness–adoption gap**  
**Source: Calculated from primary survey data**

## Discussion

### Interpretation of Key Findings

The discussion interprets the empirical findings derived from the survey of urban consumers in Mumbai, linking observed patterns of awareness, attitudes, and adoption of bamboo products to the study’s objectives, hypotheses, and existing literature on sustainable urban consumption. The data show that urban consumers in Mumbai have high awareness and positive attitudes towards bamboo products, supporting H1 and H2. Over 80 per cent recognised bamboo’s environmental benefits and more than 68 per cent identified it as a renewable resource, while nearly 77 per cent linked bamboo use to sustainable consumption and about 79 per cent expressed positive eco-friendly purchase intentions. These patterns indicate that greater awareness is associated with favourable attitudes and increased openness to adoption.

### Awareness–adoption Gap

Despite these positive perceptions, the study reveals a clear awareness–adoption gap. While 63 per cent of respondents reported having purchased bamboo products in the past and nearly 88 per cent expressed willingness to purchase them in the future, only about 20 per cent reported regular usage. This gap highlights that awareness and positive attitudes alone do not ensure sustained adoption. Data on perceived barriers help explain this disconnect: around 43 per cent of respondents perceived bamboo products as more expensive, nearly 47 per cent reported limited availability in local markets, and over 58 per cent agreed that there is limited variety in urban stores. These constraints significantly reduce the likelihood of habitual use.

### Product Category-wise Variation

Product-wise analysis reveals clear variation in adoption, providing partial support for H3. Bamboo household items show the highest adoption, with about 54 per cent reporting occasional or frequent use, while personal care products exhibit moderate adoption at approximately 38 per cent, indicating limited habitual use. In contrast, adoption of bamboo furniture remains low, with nearly 59 per cent reporting never or rarely using such products, and a similar pattern is observed for home décor items (49 per cent). These findings suggest that adoption is stronger in low-cost, low-risk categories and weakens as price, durability expectations, and lifestyle compatibility become more influential. The category-wise variation observed in this study is consistent with recent evidence showing that perceived risk and contextual barriers play a stronger role in high-involvement sustainable purchases (Wang et al., 2024).

### Comparison with Previous Studies

The findings from Mumbai are consistent with existing literature on urban sustainable consumption and reinforce key behavioural and structural explanations. The sharp contrast between high environmental awareness (81.6 percent recognising eco-friendliness) and low regular usage (20.3 percent) strongly supports

the value–action gap identified by Biswas and Roy (2015) and Laroche et al. (2001). While respondents exhibit the environmental literacy noted by Padmaja and Mohan (2016), practical constraints such as price and limited availability continue to restrict consistent adoption. Concerns related to performance risk, particularly for durable goods, also align with prior research. In line with Prasad (2023), 42.9 percent of respondents expressed neutrality or scepticism regarding the durability of bamboo furniture, indicating that functional performance often outweighs environmental considerations. Category-wise patterns partially support Chakrabarti (2020): bamboo household items show higher adoption (53.8 percent occasional or frequent use), while personal care products remain unevenly adopted (29.7 percent never used). Finally, consistent with Peattie (2010) and Dutta (2020), 79.2 percent of respondents emphasised the role of government certification, and supply-side constraints remain significant, highlighting the importance of institutional and market support for sustainable urban consumption.

### **Implications for Sustainable Urban Consumption**

Category insights demand targeted action. Findings show that awareness alone is not enough to drive sustainable urban consumption. Although consumers recognise the environmental value of bamboo products, adoption remains limited due to practical constraints. The data point to three critical requirements: availability, affordability, and assurance. Over 66 per cent of respondents indicated that better availability would increase usage, 75.9 per cent highlighted the need for affordable pricing, and 72.1 per cent stressed the importance of stronger branding and marketing to build trust. Addressing these factors can help move bamboo products from occasional purchases to regular components of everyday urban consumption.

### **Policy Implications and Recommendations**

The findings of this study offer several directions for policymakers, industry stakeholders, and marketers aiming to promote bamboo products and sustainable consumption in urban India. The findings indicate that advancing sustainable urban consumption of bamboo products requires policy interventions that move beyond awareness creation and address structural market barriers.

### **Strengthen Domestic Production and Supply Chains**

India imports bamboo and with a strong consumer demand for bamboo products, domestic production and distribution need to be scaled up to meet urban market needs. Supporting small and medium enterprises (SMEs) in the bamboo sector—through financial incentives, training, and technology assistance—can help expand production. Improving processing infrastructure and supply chains will make products more widely available and ensure consistent quality, meeting urban consumers' expectations.

### **Improve Accessibility and Affordability**

Affordability remains a key determinant, with 75.9 percent of respondents highlighting competitive pricing as essential for regular purchase. Government and regulatory bodies can play a more active role in encouraging bamboo adoption by making these products easier to afford, access, and trust. Targeted fiscal support—such as production-linked incentives or retail tax concessions—can help narrow the price gap between bamboo products and conventional plastic or wood alternatives, reducing a key barrier for consumers. At the same time, integrating bamboo products into public procurement for government offices, schools, and other public institutions, along with partnerships with organised retail chains, can improve their visibility and normalise their presence in everyday urban consumption.

### **Focus on Design and Innovation**

Perceptions of bamboo as “rustic” or traditional limit its appeal in furniture and lifestyle products. Emphasising modern, modular furniture designs, along with improvements in finishing and material

treatment, can enhance perceived durability. Supporting designers and craftsmen with training and market insights can result in products that align with modern tastes while retaining bamboo's sustainable edge. Enhancing finishing quality may help alleviate respondent concerns regarding durability, concerns held by 42.9 percent of the respondents.

### **Build Trust through Certification and Standards**

There is an absence of standardised quality benchmarks with regards to bamboo products. The introduction of formal certification and eco-labelling mechanisms can help reduce perceived risk, particularly given that 79.2 percent of respondents indicated that government certification would enhance trust. Establishing a clear and credible certification or eco-labelling framework, supported by digital traceability tools, can address concerns about quality and durability and give consumers greater confidence in choosing bamboo products.

### **Conclusion**

This study examined urban consumer behaviour towards bamboo products in Mumbai and identified a clear divergence between environmental orientation and actual consumption practices. Although a majority of respondents demonstrate awareness of bamboo's ecological advantages and express favourable attitudes towards its use, regular adoption remains limited, with only 20.3 per cent reporting frequent usage. This finding confirms the persistence of the value–action gap within an urban, relatively high-income context.

The empirical analysis supports all three hypotheses proposed in the study. Consumer awareness exhibits a positive association with adoption, while attitudinal factors exert a stronger influence on usage behaviour. Importantly, adoption varies significantly across product categories, reflecting a hierarchy of consumer commitment. Low-cost and low-risk products, particularly household utility items, show higher levels of uptake, whereas high-involvement categories such as furniture and décor face resistance due to concerns regarding durability, performance reliability, and limited market availability. These results indicate that adoption decisions are strongly shaped by product-specific risk perceptions rather than general environmental concern alone.

The study contributes to the sustainable consumption literature by providing empirical evidence from the city of Mumbai and by demonstrating the category-specific nature of green product adoption.

From a policy and industry perspective, the findings suggest that awareness-focused strategies are insufficient to drive sustained adoption. Efforts to expand product availability, improve quality assurance, and enhance consumer trust, particularly in high-investment categories are likely to be more effective.

This study has certain limitations that should be acknowledged. The use of a non-probability convenience sampling method limits the statistical generalisability of the findings beyond the study sample. In addition, the cross-sectional design captures perceptions and adoption behaviour at a single point in time and does not account for changes in consumer behaviour over time. Future research may build on these findings by employing probabilistic sampling methods, longitudinal designs, and comparative analyses across multiple cities to better capture evolving patterns of sustainable consumption behaviour. Future research should adopt longitudinal and comparative approaches to examine how adoption patterns evolve across regions and over time.

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