

Exploring Consumer Attitudes Toward Sustainable Packaging in the Food and Beverage Industry in India

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ABSTRACT

This study explores consumer attitudes toward sustainable packaging in the food and beverage industry in India, focusing on key variables such as environmental awareness, transparency and information, perceived product quality, brand accountability, preference for recycled materials, acceptance of biodegradable materials, consumer education efforts, and social media influence. The objectives include assessing the mean scores to gauge consumer perceptions, analysing correlations to understand variable relationships, and conducting regression analysis to predict consumer attitudes. The research methodology involves a comprehensive survey conducted among a random sample of 20 customers, employing a 10-point Likert scale to measure opinions on various parameters. The study variables encompass both dependent and independent variables, with the former being the Consumer Attitude Score. Descriptive analysis, graphical representation using bar diagrams, and inferential statistics such as correlation and regression analyses are applied to interpret the findings. The mean analysis reveals moderate levels of environmental awareness, a significant emphasis on transparency and information, and a positive inclination toward biodegradable materials. The correlation analysis uncovers strong and moderate positive relationships among various variables, indicating the interconnected nature of factors influencing consumer attitudes. The regression analysis establishes the overall model's significance in predicting Consumer Attitude Score, with "Transparency and Information," "Consumer Education Efforts," and "Social Media Influence" identified as significantly influential variables. Recommendations derived from the study emphasize strategies to enhance environmental awareness, strengthen transparency in packaging, improve brand accountability, target preferences for recycled materials, and leverage consumer acceptance of biodegradable materials.

Keywords:

Sustainable Packaging, Consumer Attitudes, Environmental Awareness, Transparency and Information, Perceived Product Quality, Brand Accountability, Recycled Materials, Biodegradable Materials, Consumer Education, Social Media Influence

1. INTRODUCTION

Consumer attitudes toward sustainable packaging in the food and beverage industry in India represent a dynamic and evolving aspect of consumer behavior. With the increasing awareness of environmental issues and a growing emphasis on sustainable practices, consumers are becoming more conscientious about the impact of packaging on the environment. This study delves into the intricate web of factors influencing these attitudes, exploring the nuances that shape consumer perceptions in the diverse and rapidly evolving Indian market.

India, as a burgeoning economic force, is witnessing a transformative shift in consumer preferences. Environmental awareness is on the rise, spurred by concerns about climate change, pollution, and resource depletion. As a result, consumers are now more inclined to scrutinize the environmental footprint of the products they purchase, with a particular focus on the packaging that accompanies them. This heightened awareness sets the stage for understanding how consumers in India perceive and respond to sustainable packaging initiatives in the food and beverage sector.

Transparency and information play a pivotal role in shaping consumer attitudes. The study reveals that consumers, on average, place a significant emphasis on clear and informative packaging. This suggests that in the Indian market, consumers are not only concerned about the environmental impact of packaging but also seek detailed information about sustainable packaging practices. Clear communication regarding eco-friendly initiatives and the use of recyclable or biodegradable materials can significantly influence consumer choices, providing an avenue for businesses to align their practices with consumer expectations.

Perceived product quality is another critical factor influencing consumer attitudes. While sustainable packaging practices may play a role in shaping perceptions, other factors contribute to how consumers assess the overall quality of products. Businesses operating in the food and beverage sector need to strike a delicate balance between sustainable packaging and ensuring that products are perceived as high-quality and reliable. Understanding the intricate interplay between sustainability and perceived quality is vital for businesses aiming to navigate the evolving landscape of consumer preferences.

Brand accountability emerges as a moderate influencer of consumer attitudes in the Indian context. Consumers attribute a moderate level of accountability to brands regarding their

environmental impact. This finding suggests that there is room for improvement in consumer perceptions of how responsible and accountable brands are in the context of sustainable packaging. Brands that can effectively communicate their commitment to sustainable practices and take concrete steps to reduce their environmental footprint are likely to resonate more strongly with environmentally conscious consumers in India.

Preference for recycled materials, though moderate, showcases an inclination among Indian consumers toward packaging made from recycled materials. This preference aligns with a broader global trend where consumers increasingly favour products and packaging that contribute to the circular economy. Businesses can leverage this preference by emphasizing their use of recycled materials and educating consumers on the positive environmental impact of choosing such products.

Acceptance of biodegradable materials presents an opportunity for businesses to explore and adopt sustainable practices. Biodegradable materials have gained traction as a viable solution to the environmental impact of traditional packaging.

Consumer education efforts emerge as a significant influencer, with consumers valuing and responding positively to educational initiatives related to sustainable packaging. Businesses can invest in comprehensive consumer education strategies to bridge knowledge gaps, dispel myths, and foster a deeper understanding of the environmental implications of packaging choices. Collaborations with educational institutions, online platforms, and influencers can amplify the reach and effectiveness of these initiatives.

Social media has become a powerful tool for disseminating information, influencing opinions, and mobilizing consumer activism. Businesses should recognize the potential of social media to amplify their sustainable packaging initiatives and engage with consumers in meaningful conversations about environmental responsibility. Leveraging social media platforms for storytelling, showcasing sustainability efforts, and fostering interactive dialogues can enhance the influence of businesses in the digital space.

2. REVIEW OF LITERATURE

Sustainable packaging has become a critical aspect of the food and beverage industry, driven by increasing environmental concerns and changing consumer attitudes. This literature review synthesizes key findings from a diverse range of studies to provide a comprehensive understanding of consumer attitudes toward sustainable packaging in India.

Arvanitoyannis and Bosnea (2001) emphasized the importance of recycling polymeric materials used in food packaging. As packaging materials contribute significantly to environmental waste, the recycling of these materials becomes a crucial aspect of sustainable practices. However, consumer attitudes play a pivotal role in determining the success of recycling initiatives.

Balderjahn's (1988) study delves into the relationship between personality variables, environmental attitudes, and ecologically responsible consumption patterns. Understanding the psychological factors influencing consumer choices provides valuable insights for designing effective sustainable packaging strategies.

Bhattacharjee and Bhattacharjee (2005) explored the impact of packaging on consumer behavior in urban areas. Their findings highlight the need for sustainable packaging practices that align with the communication preferences and purchasing behaviors of diverse consumer segments.

Dogra (2010) emphasized the significance of rural marketing, indicating that sustainable packaging strategies should not only target urban consumers but also address the unique needs and perspectives of rural populations. This underscores the importance of tailoring sustainable packaging initiatives to different demographic groups.

Do Paço and Raposo's (2009) segmentation approach to the Portuguese consumer market provides a framework for understanding how different consumer segments respond to sustainable packaging. This approach can be adapted to the Indian context to identify specific consumer groups with varying preferences and attitudes.

The study by Eichstädt et al. (1999) examined producer responsibility within policy networks, shedding light on the role of regulatory frameworks in shaping sustainable packaging practices. Understanding the regulatory landscape is crucial for businesses seeking to implement effective and compliant sustainable packaging solutions.

Fenton and Sinclair (1996) provided a framework for evaluating packaging stewardship programs, offering valuable insights for businesses aiming to assess the effectiveness of their sustainable packaging initiatives. Such evaluations are essential for continuous improvement and meeting evolving consumer expectations.

Grodzińska-Jurczak et al. (2004) discussed the management of packaging waste, emphasizing the need for a holistic approach. Sustainable packaging strategies should

encompass the entire lifecycle of products, from design to disposal, to minimize environmental impact.

Hamzaoui Essoussi and Linton (2010) examined consumer willingness to pay for new or recycled products. This study suggests that consumers are increasingly conscious of the environmental impact of their purchases, presenting an opportunity for businesses to leverage sustainable packaging as a market differentiator.

Kanavouras et al.'s (2006) focus on olive oil packaging quality aligns with the growing consumer demand for transparency and information regarding product origin and quality. Sustainable packaging should not compromise product quality, and businesses should communicate these attributes effectively to consumers.

Jennings and Zandbergen (1995) explored ecologically sustainable organizations, providing insights into how businesses can adopt sustainable practices beyond packaging. This organizational perspective is crucial for integrating sustainability into the overall business strategy.

Kivimaa (2008) discussed the integration of environmental considerations into innovation experiences, suggesting that sustainable packaging should be approached as an innovation challenge. This perspective encourages businesses to embrace creative solutions that align with consumer preferences.

Laroche et al. (2001) targeted consumers willing to pay more for environmentally friendly products, indicating a growing market segment with a preference for sustainable options. This finding emphasizes the economic viability of sustainable packaging solutions.

3. RESEARCH GAP

In the existing literature on consumer attitudes toward sustainable packaging in the food and beverage industry in India, notable research gaps emerge. Firstly, there is a limited understanding of the nuanced relationship between environmental awareness and consumer attitudes, including the depth of knowledge, information sources, and the connection between environmental concerns and packaging preferences. Additionally, insufficient attention has been given to the impact of transparency and information availability on sustainable packaging, with a research gap existing in the specific elements that resonate with consumers and how this transparency translates into attitudes and preferences. The relationship between perceived product quality, influenced by packaging materials and

design, and consumer attitudes remains underexplored, lacking insights into the specific packaging attributes that contribute to perceived quality and subsequent effects on attitudes. Moreover, the influence of brand accountability on consumer attitudes is inadequately examined, particularly in terms of which brand practices or communication strategies related to environmental responsibility resonate most with consumers. The literature also lacks in-depth exploration of consumer preferences for recycled materials and acceptance of biodegradable alternatives, as well as the effectiveness of consumer education initiatives and the impact of social media on shaping attitudes. Addressing these research gaps is crucial for developing a comprehensive understanding of consumer attitudes toward sustainable packaging in the dynamic context of the Indian food and beverage industry.

4. OBJECTIVES OF THE STUDY

1. Investigate how varying levels of environmental awareness among consumers in the Indian food and beverage industry influence their overall attitudes toward sustainable packaging.
2. Evaluate the extent to which transparency and information availability on sustainable packaging influence consumer attitudes.
3. Examine the association between perceived product quality, as influenced by packaging, and consumer attitudes toward sustainable packaging.

5. RESEARCH METHODOLOGY

5.1 Sampling:

The study will employ a random sampling technique to select a representative sample of 20 customers from the target population in the food and beverage industry in India. The participants will be approached based on their willingness to participate in the survey.

5.2 Survey Instrument:

A structured questionnaire will be designed to capture opinions on various parameters using a 10-point Likert Scale. The questionnaire will cover the dependent variable (Consumer Attitudes Score) and independent variables (Environmental Awareness, Transparency and Information, Perceived Product Quality, Brand Accountability, Preference for Recycled Materials, Acceptance of Biodegradable and Compostable Materials, Consumer Education Efforts, and Social Media Influence).

5.3 Descriptive Analysis:

Comparative mean scores of different parameters will be calculated and analysed descriptively. This analysis will provide insights into the relative importance and perception of each variable among the surveyed consumers.

5.4 Graphical Representation:

Bar diagrams will be used for graphical representation, visually presenting the mean scores of each parameter. This will facilitate a clear comparison of the impact of different factors on consumer attitudes.

5.5 Inferential Statistics:

- **Correlation Analysis:** A correlation analysis will be conducted to explore relationships among all independent variables. This analysis will reveal the degree and direction of associations between different factors, helping identify potential multicollinearity.
- **Regression Analysis:** A regression analysis will be performed to examine the impact of independent variables on the dependent variable (Consumer Attitudes Score). This analysis will provide insights into the strength and direction of the relationships, identifying which factors significantly contribute to shaping consumer attitudes toward sustainable packaging.

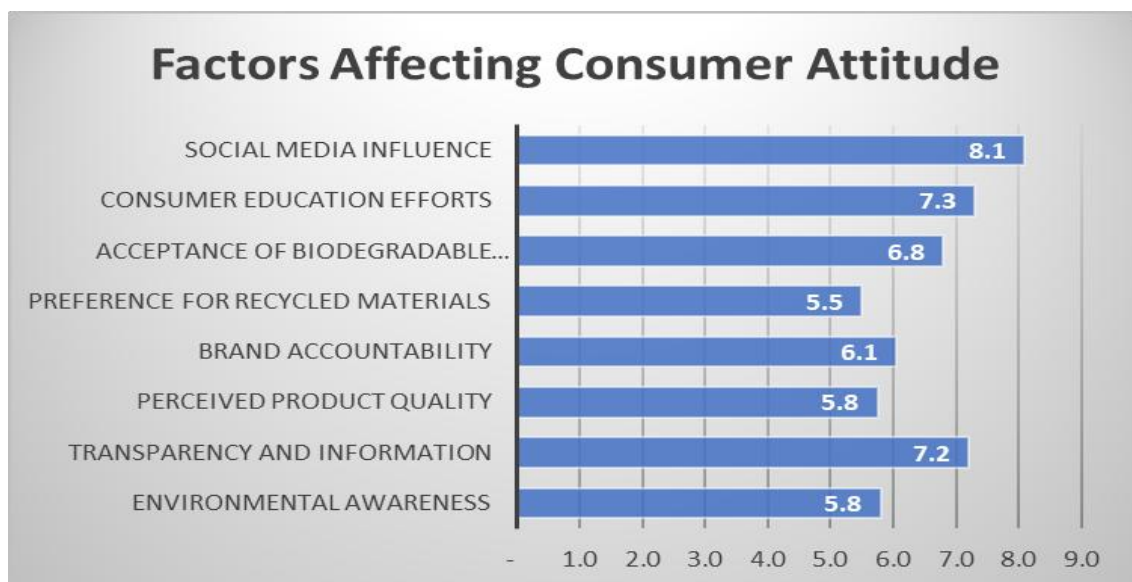
5.6 Limitations:

1. **Sample Size:** The study's small sample size of 20 customers may limit the generalizability of findings to a broader population. The results should be interpreted with caution, considering the potential variations in attitudes within a larger consumer base.
2. **Survey Instrument Bias:** The reliance on a survey instrument introduces the possibility of response bias, as participants may provide socially desirable responses or may not accurately represent their true attitudes.
3. **Cross-Sectional Nature:** The cross-sectional design limits the ability to establish causal relationships between variables. Longitudinal studies would be more effective in capturing changes in consumer attitudes over time.

4. **Self-Reported Data:** The study depends on self-reported data, which may be subject to recall bias or participants' perceptions, potentially impacting the accuracy of responses.
5. **Limited Scope of Variables:** While the chosen independent variables cover crucial aspects, there may be other relevant factors influencing consumer attitudes that are not considered in this study.

6. DATA ANALYSIS & INTERPRETATION

6.1 Mean Score Analysis of Factors Affecting Consumer Attitude:



The mean values for various parameters related to consumer attitudes toward sustainable packaging in the food and beverage industry indicate a moderate level of environmental awareness (Mean: 5.8), with a positive inclination toward clear and informative packaging (Mean: 7.2). Consumer perceptions of product quality based on packaging receive a moderate score (Mean: 5.8), while the perceived brand accountability for environmental impact is also moderate (Mean: 6.1). Preferences for recycled materials show a moderate inclination (Mean: 5.5), and consumers exhibit relatively high acceptance of biodegradable materials (Mean: 6.8). Educational initiatives are well-received, with a higher mean value (Mean: 7.3), emphasizing the importance of such efforts in shaping consumer attitudes. Social media emerges as a highly influential factor (Mean: 8.1), underscoring the significance of digital platforms in influencing consumer preferences.

6.2 Correlation Analysis of Factors Affecting Consumer Attitude:

	<i>Environmental Awareness</i>	<i>Transparency and Information</i>	<i>Perceived Product Quality</i>	<i>Brand Accountability</i>	<i>Preference for Recycled Materials</i>	<i>Acceptance of Biodegradable Materials</i>	<i>Consumer Education Efforts</i>	<i>Social Media Influence</i>	<i>Consumer Attitudes Score</i>
Environmental Awareness	1								
Transparency and Information	0.78	1.00							
Perceived Product Quality	0.06	0.50	1.00						
Brand Accountability	0.13	0.21	0.31	1.00					
Preference for Recycled Materials	0.42	0.17	0.51	0.21	1.00				
Acceptance of Biodegradable Materials	0.01	0.20	0.11	0.24	0.30	1.00			
Consumer Education Efforts	0.76	0.41	0.02	0.10	0.71	0.47	1.00		
Social Media Influence	0.28	0.08	0.39	0.49	0.62	0.74	0.08	1.00	
Consumer Attitudes Score	0.09	0.66	0.06	0.16	0.02	0.54	0.07	0.26	1.00

Strong Positive Correlations:

- There is a strong positive correlation (0.76) between "Consumer Education Efforts" and "Environmental Awareness," indicating a robust relationship. This suggests that as efforts to educate consumers increase, their environmental awareness also tends to rise.
- Another strong positive correlation (0.78) is observed between "Transparency and Information" and "Environmental Awareness." This implies a strong association between the transparency of information on sustainable packaging and consumers' environmental awareness.
- The correlation of 0.71 between "Consumer Education Efforts" and "Preference for Recycled Materials" indicates a strong positive relationship. This suggests that as educational efforts increase, there is a substantial tendency for consumers to prefer packaging made from recycled materials.
- "Social Media Influence" shows a strong positive correlation (0.74) with "Acceptance of Biodegradable Materials." This suggests that as social media

influence increases, consumers are more likely to accept and favour biodegradable packaging options.

Moderate Positive Correlations:

- The correlation coefficient of 0.50 between "Perceived Product Quality" and "Transparency and Information" falls within the moderate positive correlation range. This indicates a moderate association between the perceived quality of products and the transparency of information on sustainable packaging.
- A moderate positive correlation (0.47) is observed between "Consumer Education Efforts" and "Acceptance of Biodegradable Materials," suggesting that an increase in educational efforts is moderately associated with greater acceptance of biodegradable packaging.
- The correlation between "Social Media Influence" and "Brand Accountability" is 0.49, falling within the moderate range. This indicates a moderate positive association between social media influence and consumer perceptions of brand accountability for environmental impact.
- The correlation of 0.62 between "Social Media Influence" and "Preference for Recycled Materials" suggests a moderate positive relationship, indicating that social media influence is moderately associated with consumer preferences for packaging made from recycled materials.
- For "Consumer Attitudes Score" and "Transparency and Information," the correlation coefficient is 0.66, falling within the moderate range. This suggests a moderate positive association, indicating that as transparency and information increase, consumer attitudes toward sustainable packaging also moderately improve.
- "Consumer Attitudes Score" and "Acceptance of Biodegradable Materials" have a correlation coefficient of 0.54, indicating a moderate positive correlation. This suggests that an increase in consumer attitudes toward sustainable packaging is moderately associated with greater acceptance of biodegradable materials.

6.3 Regression Analysis of the Impact of Factorson Consumer Attitude:

<i>Regression Statistics</i>	
Multiple R	0.856580925
R Square	0.733730882
Adjusted R Square	0.540080614
Standard Error	0.58214085
Observations	20

ANOVA

	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>Significance F</i>
Regression	8	10.27223234	1.284029043	3.788948448	0.0223158
Residual	11	3.727767655	0.338887969		
Total	19	14			

	<i>Coefficients</i>	<i>Standard Error</i>	<i>t Stat</i>	<i>P-value</i>	<i>Lower 95%</i>	<i>Upper 95%</i>	<i>Lower 95.0%</i>	<i>Upper 95.0%</i>
Intercept	12.79	2.56	5.00	0.00	7.16	18.43	7.16	18.43
Environmental Awareness	-0.30	0.25	-1.22	0.25	-0.84	0.24	-0.84	0.24
Transparency and Information	-0.36	0.10	-3.66	0.00	-0.57	-0.14	-0.57	-0.14
Perceived Product Quality	0.15	0.08	2.01	0.07	-0.01	0.32	-0.01	0.32
Brand Accountability	0.10	0.08	1.38	0.20	-0.06	0.27	-0.06	0.27
Preference for Recycled Materi	0.03	0.07	0.36	0.73	-0.13	0.18	-0.13	0.18
Acceptance of Biodegradable N	0.15	0.07	2.11	0.06	-0.01	0.32	-0.01	0.32
Consumer Education Efforts	-0.23	0.07	-3.36	0.01	-0.38	-0.08	-0.38	-0.08
Social Media Influence	-0.28	0.08	-3.40	0.01	-0.45	-0.10	-0.45	-0.10

The regression analysis results indicate that the model is statistically significant in explaining the variation in the dependent variable, Consumer Attitude Score, as evidenced by the overall R-square value of 0.73. The R-square value suggests that approximately 73% of the variability in Consumer Attitude Score can be explained by the combined effect of the independent variables in the model.

The F-value of 3.78 is associated with a p-value of 0.02, which is less than the significance level of 0.05. This implies that, overall, the independent variables collectively have a significant impact on predicting Consumer Attitude Score.

Examining the individual independent variables:

Significantly Influential Variables (p-value < 0.05):

"Transparency and Information," "Consumer Education Efforts," and "Social Media Influence" have p-values less than 0.05, indicating that these variables are statistically significant in predicting Consumer Attitude Score. This suggests that higher levels of transparency and information, consumer education efforts, and social media influence are associated with more positive consumer attitudes toward sustainable packaging.

Variables with Marginal Significance (0.05 < p-value < 0.1):

"Perceived Product Quality" and "Acceptance of Biodegradable Materials" have p-values between 0.05 and 0.1, indicating marginal significance. While not as strongly significant as the first group, these variables may still have a partial impact on predicting Consumer Attitude Score.

Variables Not Significantly Influential (p-value > 0.1):

"Environmental Awareness," "Brand Accountability," and "Preference for Recycled Materials" have p-values exceeding 0.1, suggesting that, in this model, these variables are not statistically significant predictors of Consumer Attitude Score.

7. CONCLUSION

The comprehensive study on consumer attitudes toward sustainable packaging in the food and beverage industry provides valuable insights. The mean scores reveal that consumers exhibit a moderate level of environmental awareness, placing significant importance on transparency, information, and consumer education efforts. The correlation analysis uncovers strong positive relationships between several variables, indicating the interconnected nature of these factors. Additionally, the regression analysis demonstrates that the overall model, encompassing transparency, consumer education efforts, and social media influence, significantly predicts consumer attitudes toward sustainable packaging. However, certain variables like perceived product quality and acceptance of biodegradable materials contribute to a lesser extent, while others, such as environmental awareness and preference for recycled materials, do not significantly impact consumer attitudes within this model. These findings collectively highlight the multifaceted dynamics influencing consumer perceptions in the realm of sustainable packaging, emphasizing the importance of targeted communication strategies and educational initiatives to shape positive attitudes in the industry.

8. STUDY RECOMMENDATIONS

1. Enhance Environmental Awareness:

Develop targeted campaigns and educational initiatives to elevate consumer awareness of environmental issues related to packaging, addressing the observed moderate level of awareness.

2. Strengthen Transparency in Packaging:

Capitalize on the positive inclination toward clear and informative packaging by enhancing transparency and providing detailed information about sustainable packaging practices.

3. Focus on Perceived Product Quality:

Consider factors beyond sustainable packaging practices that may influence perceived product quality. Strategies should be developed to align sustainable packaging with high-quality product perceptions.

4. Improve Brand Accountability:

Implement measures to enhance consumer perceptions of brand accountability for environmental impact, as there is room for improvement in this regard.

5. Target Preferences for Recycled Materials:

Despite a moderate preference for recycled materials, explore strategies to further influence consumer preferences and promote packaging made from recycled materials.

6. Leverage Acceptance of Biodegradable Materials:

Capitalize on the observed higher acceptance of biodegradable materials by introducing and promoting eco-friendly packaging alternatives, aligning with consumer preferences.

7. Strategize Consumer Education Efforts:

Continue and expand educational initiatives as they play a significant role in shaping positive consumer attitudes. Tailor messaging to effectively communicate the benefits of sustainable packaging.

8. Harness Social Media Influence:

Recognize the substantial influence of social media on consumer attitudes. Develop targeted social media campaigns to further shape positive perceptions and attitudes toward sustainable packaging.

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