

A Study on Customer Satisfaction Towards Bottle Design, Usage and Quality Factors of PET Preforms and Bottles

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Abstract—The PET (Polyethylene Terephthalate) packaging industry plays a significant role in supplying quality packaging solutions to beverage, pharmaceutical, food, and cosmetic industries is a leading manufacturer of PET preforms and bottles serving various industrial sectors. The present study aims to analyze customer satisfaction towards bottle design, usage, and quality factors of PET preforms and bottles manufactured b. The study adopted a descriptive research design. Primary data were collected from 104 respondents through a structured questionnaire. Statistical tools such as percentage analysis, chi-square test, and comparative analysis were used for interpretation. The findings reveal that most customers are satisfied with bottle design, quality, durability, and portability. Chi-square analysis confirms no significant association between gender and satisfaction level ($p = 0.961 > 0.05$). Price and quality are identified as major factors influencing purchase decisions. The study concludes that maintaining high product quality, improving bottle design, and ensuring consistent product availability will strengthen customer satisfaction and market performance.

Index Terms—Customer Satisfaction, PET Bottles, Bottle Design, Product Quality, Packaging Industry.

I. INTRODUCTION

The packaging industry is one of the fastest-growing sectors globally, and PET packaging has gained significant popularity due to its lightweight structure, durability, recyclability, and cost-effectiveness. PET preforms and bottles are extensively used in beverages, food products, pharmaceuticals, cosmetics, edible oils, and household products.

Customer satisfaction in the PET packaging industry mainly depends on factors such as product quality, bottle design, durability, weight consistency, usability,

pricing, and availability. Companies that maintain high product quality and innovative designs build stronger customer loyalty and market reputation. Manufactures PET preforms and bottles for various industrial applications. The company focuses on providing high-quality packaging solutions that meet customer expectations and industrial standards. Understanding customer satisfaction helps the company improve product performance and sustain business growth in the competitive packaging market.

II. OBJECTIVES OF THE STUDY

- To analyze the combined impact of bottle design, usability, and quality factors on customer satisfaction.
- To identify the major factors influencing customer purchase decisions and satisfaction levels.
- To examine customer satisfaction across regional and local markets.

III. NEED FOR THE STUDY

- Understanding customer satisfaction is essential for business improvement and growth.
- It helps in building customer trust and strengthening market performance.
- Since imported raw materials are expensive, the study aims to evaluate whether the increased cost provides added benefits.

IV. SCOPE OF THE STUDY

- The study focuses on bottle design, usability, and quality factors.

- Data is collected from selected customers and users.
- The study helps in improving product design and manufacturing quality.

V. REVIEW OF LITERATURE

Kumar and Sharma (2023) studied customer satisfaction in the PET packaging industry and found that bottle quality, durability, and usability are the primary determinants. Customers prefer PET bottles that are lightweight, leak-proof, and easy to handle. The study also highlighted that maintaining consistent product quality helps companies improve customer trust and long-term business relationships.

Ramesh and Devi (2022) concluded that attractive bottle appearance, convenient shape, and ease of handling significantly improve customer preference and market acceptance. Innovative bottle designs increase product value and customer satisfaction.

Singh (2022) analyzed that weight consistency, strength, transparency, and leak resistance are major quality factors affecting customer satisfaction in PET bottle manufacturing. Maintaining proper production standards reduces defects and improves market reputation.

Mehta and Kumar (2021) found that customers prefer PET bottles because they are durable, lightweight, recyclable, and convenient for storage and transportation. Quality packaging improves customer confidence and product acceptance.

Raj and Karthik (2021) highlighted that packaging quality positively influences brand image, repeat purchases, and long-term customer loyalty. Customers are highly satisfied with products that provide proper safety, durability, and attractive packaging.

VI. RESEARCH DESIGN

The study adopts a descriptive research design to understand customer perceptions regarding bottle design, convenience, durability, product quality, and satisfaction level.

Sources of Data

Primary Data: Primary data were collected through a structured questionnaire from 104 customers and users of PET preforms and bottles manufactured.

Secondary Data: Secondary data were collected from company records, internal reports, published journals, and articles related to PET packaging industry and customer satisfaction.

Sample Size

The study was conducted among 104 respondents including customers and users associated.

Tools Used for Analysis

- Percentage Analysis
- Chi-Square Test
- Comparative Analysis

VII. PERCENTAGE ANALYSIS

Percentage Analysis is used to express data in percentage form to understand the distribution of respondent opinions.

Formula: $\text{Percentage} = (\text{Number of Respondents} / \text{Total Number of Respondents}) \times 100$

Table 1: Gender Distribution of Respondents

Gender	Frequency	Percentage
Male	50	48.1%
Female	54	51.9%
Total	104	100%

Inference: Out of 104 respondents, 54 (51.9%) are female and 50 (48.1%) are male. Female respondents slightly outnumber male respondents in the survey.

Table 2: Satisfaction with Bottle Design

Response	Frequency	Percentage
Very Satisfied	30	34.9%
Neutral	30	34.9%
Dissatisfied	17	19.8%
Very Dissatisfied	9	10.5%
Total	86	100%

Inference: 34.9% of respondents are very satisfied with the bottle design and an equal percentage remain neutral. Only 19.8% are dissatisfied, indicating a mostly positive opinion towards the bottle design.

Table 3: Rating of Bottle Strength

Response	Frequency	Percentage
Excellent	49	47.1%
Good	30	28.8%
Average	12	11.5%
Poor	13	12.5%
Total	104	100%

Inference: 75.9% of respondents rated bottle strength as Excellent or Good, indicating strong positive customer perception regarding durability and quality.

Table 4: Factors Influencing Purchase Decision

Factor	Frequency	Percentage
Price	40	38.5%
Quality	32	30.8%
Bottle Design	23	22.1%
Brand Reputation	9	8.7%
Total	104	100%

Inference: Price is the major factor influencing purchase decisions (38.5%), followed by quality (30.8%) and bottle design (22.1%). Customers give more importance to affordability and quality than brand reputation.

VIII. CHI-SQUARE TEST

Null Hypothesis (H_0):

There is no significant association between Gender and Satisfaction Level of customers towards PET preforms and bottles.

Alternative Hypothesis (H_1):

There is a significant association between Gender and Satisfaction Level of customers towards PET preforms and bottles.

Table 5: Chi-Square Test Result

Particular	Value
Pearson Chi-Square	0.295
Degree of Freedom	3
Asymp. Sig. (2-sided)	0.961
N of Valid Cases	104

Inference: The significance value ($p = 0.961$) is greater than 0.05. Therefore, the Null Hypothesis (H_0) is accepted. There is no significant association between gender and satisfaction level. Male and female

respondents have similar opinions regarding PET preform and bottle quality.

IX. COMPARATIVE ANALYSIS

The comparative analysis of customer satisfaction responses indicates that the majority of respondents are satisfied with the overall quality and performance of PET preforms and bottles.

Table 6: Overall Satisfaction Level

Satisfaction Level	Frequency	Percentage
Very Satisfied	41	39.4%
Neutral	34	32.7%
Dissatisfied	20	19.2%
Very Dissatisfied	9	8.7%
Total	104	100%

The comparison shows that positive responses (39.4% Very Satisfied) significantly exceed dissatisfied responses. Product availability analysis also reveals that 70.6% of respondents report products are Always or Mostly Available in the local market, reflecting a strong distribution network.

X. FINDINGS AND IMPACT OF THE STUDY

- Majority of respondents (51.9%) are female, and young adults aged 22-31 form the major respondent group.
- 34.9% of respondents are very satisfied with bottle design and an equal percentage remain neutral.
- 77.2% of respondents agree that bottle design attracts them during purchase decisions.
- 74% of respondents find the bottle convenient to carry, and 72.9% find it easy to store.
- 75.9% of respondents rated the bottle strength as Excellent or Good.
- 51% of respondents have never experienced leakage issues, indicating good product reliability.
- 47.6% of respondents prefer quality over price while purchasing PET bottles.
- Price is the major purchase decision factor (38.5%), followed by quality (30.8%) and bottle design (22.1%).
- Chi-square test confirmed no significant association between gender and satisfaction level ($p = 0.961$).

- 38.5% of respondents always prefer Swasthik Plascon brand over others, showing good customer loyalty.

XI. SUGGESTIONS

- The company should continue maintaining high product quality standards to sustain customer satisfaction and strengthen market trust.
- Since customers find the bottles convenient and easy to handle, the company should further improve ergonomic and user-friendly bottle designs.
- The company should focus on continuous quality improvement to increase the number of excellent ratings and reduce average or poor feedback.
- As price plays a major role in purchasing decisions, the company should maintain reasonable pricing while ensuring quality consistency.
- Product availability should be improved in all regions to ensure uninterrupted supply and better dealer satisfaction.
- Regular customer and dealer feedback surveys should be conducted to identify market expectations and improvement areas.

XII. CONCLUSION

The study concludes that customer satisfaction towards PET preforms and bottles manufactured is generally positive. The findings show that most respondents are satisfied with the bottle design, quality, durability, portability, and availability. The chi-square analysis confirms that gender does not significantly influence overall satisfaction, indicating consistent product performance across all customer segments.

Bottle design plays an important role in attracting customers and influencing purchase decisions. Maintaining high product quality, improving bottle design, ensuring product availability, and addressing customer expectations will help to improve customer satisfaction and achieve better market performance in the competitive PET packaging industry.

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