A Comparative Study Of Fiberglass Products Vs Plastic Products In Marketing

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Abstract- *This study entitled "A Comparative Study of Fiberglass Products Vs Plastic Products in Marketing" aims to compare fiberglass and plastic products based on customer perception, quality, durability, pricing, and marketing effectiveness. The study was conducted to understand consumer preferences and identify the factors influencing their purchasing decisions. A descriptive research design was adopted, and primary data were collected from 100 respondents through a structured questionnaire using the convenience sampling method. The collected data were analyzed using percentage analysis, mean score analysis, comparative analysis, and the Chi-Square test. The findings reveal that fiberglass products are highly preferred for their durability, strength, performance, and long-term value, whereas plastic products are preferred for their affordability and ease of use. The study also indicates that environmental concerns and product quality significantly influence consumer buying behavior. Furthermore, the results show that customers have a positive perception of fiberglass products and recognize them as a reliable alternative to plastic products. The study concludes that effective marketing strategies, increased consumer awareness, and continuous product improvement can help strengthen its competitive position and achieve sustainable growth in the market*

I. INTRODUCTION

Marketing plays a crucial role in the success of any manufacturing organization, especially in industries dealing with material-based products like fiberglass and plastic. With increasing industrialization and technological advancements, both fiberglass and plastic products have gained significant importance across various sectors such as construction, automotive, marine, and consumer goods.

Fiberglass and plastic are widely used materials due to their versatility, durability, and cost-effectiveness. However, both materials differ in their composition, performance, application, and marketing strategies. Understanding these differences is essential for businesses to position their products effectively in the market

This study focuses on a comparative analysis of fiberglass and plastic products in marketing, with special reference to Quantum Krafts. The study aims to identify the key differences in marketing strategies, customer perception, product advantages, pricing, and demand trends.

II. NEED FOR THE STUDY

The need for this study arises due to increasing competition between fiberglass and plastic products in the market. Both materials are widely used, but customers often face confusion in choosing between them.

This study helps:

- Understand customer preferences
- Compare product performance and pricing
- Analyze marketing strategies
- Identify strengths and weaknesses of both materials

III. SCOPE OF THE STUDY

The study is limited to:

- Comparison between fiberglass and plastic products
- Marketing aspects such as pricing, promotion, and customer preference
- Data collected from customers, dealers, and company sources

IV. REVIEW OF LITERATURE

4.1 "Composite Materials in Consumer Marketing" by Kumar & Sharma (2024)

Explored the shift in consumer preferences from conventional plastics to composite materials. Found that 62% of industrial buyers prefer fiberglass for corrosion-resistant applications, highlighting the need for differentiated marketing strategies for each material category.

4.2 "Price Sensitivity in Material Selection" by Mehta & Gupta (2023)

Analyzed how price sensitivity affects the purchase decision between fiberglass and plastic products. Concluded that while plastic products enjoy a 30–40% cost advantage in initial procurement, fiberglass products offer a significantly lower total cost of ownership over a 10-year lifecycle, a fact that is often insufficiently communicated through marketing channels.

4.3 "Brand Positioning for Specialty Materials" by Reddy (2023)

Studied brand positioning strategies for specialty material manufacturers. Found that companies effectively communicating technical superiority and lifecycle benefits achieved 25% higher customer retention rates compared to those focusing solely on price-based positioning.

4.4 "Sustainability as a Marketing Driver" by Gupta & Mehta (2022)

Argued that sustainability credentials are becoming a key marketing differentiator in the materials industry. Fiberglass products, when marketed with an emphasis on durability and reduced replacement frequency, appeal strongly to environmentally conscious buyers in the B2B segment.

4.5 "Consumer Awareness and Product Adoption" by Singh et al. (2022)

Examined the relationship between consumer awareness and new product adoption in industrial markets. Found that targeted educational marketing campaigns increased awareness of fiberglass product benefits by up to 40% and directly correlated with a 20% increase in trial purchases.

4.6 "Distribution Channel Effectiveness" by Verma & Joshi (2022)

Compared direct and indirect distribution strategies for industrial products. Reported that fiberglass manufacturers using a direct sales model with technical demonstrations achieved 18% higher conversion rates than those relying solely on dealer networks, particularly for high-value custom orders.

4.7 "Promotional Mix in B2B Industrial Marketing" by Singh & Mehta (2021)

Proposed an integrated promotional framework combining trade exhibitions, digital content marketing, and direct technical consultations. Application in mid-size composite product companies showed a 28% improvement in qualified lead generation.

4.8 "Customer Satisfaction in Product Comparison Studies" by Banerjee & Roy (2021)

Revealed that customers who received structured product comparison information covering performance, cost, and maintenance parameters of fiberglass versus plastic reported 22% higher satisfaction with their final purchase decision.

4.9 "Digital Marketing for Specialty Products" by Sharma (2021)

Demonstrated that fiberglass product companies investing in SEO, technical blog content, and case study videos saw a 35% increase in inbound inquiries, suggesting that digital channels are highly effective for reaching technically sophisticated industrial buyers.

4.10 "Product Life Cycle and Marketing Strategy" by Rao (2020)

Showed that aligning marketing strategy with product life cycle stage is critical for material product categories. Fiberglass products, being in the growth stage in several emerging markets, benefit from awareness-focused campaigns, while mature plastic product lines require loyalty and retention-focused marketing approaches

V. RESEARCH METHODOLOGY

DATA COLLECTION METHOD

PRIMARY DATA

Primary data were collected directly from respondents using a structured questionnaire. The questionnaire was prepared based on customer preference, product quality, pricing perception, environmental awareness, customer satisfaction, and marketing effectiveness regarding fiberglass and plastic products.

Data Collection Tool

The survey method was used for collecting data from respondents through questionnaires and Google Forms.

RESEARCH DESIGN

Descriptive Research Design

The study adopted a descriptive research design. Descriptive research is used to describe the characteristics, opinions, attitudes, and behaviour of respondents regarding a particular subject.

This design helps in:

- Understanding customer preferences
- Comparing fiberglass and plastic products
- Collecting real-time customer opinions
- Analysing marketing-related factors
- Quantitative Approach

The study followed a quantitative research approach, where numerical data collected from respondents were analyzed using statistical tools.

SAMPLE SIZE

The sample size selected for the study is 100 respondents.

Sampling Method

The study used **Convenience Sampling Method.**

Reason for Using Convenience Sampling

- Easy to collect data from available respondents
- Saves time and cost
- Suitable for student-level projects
- Helps in collecting initial customer opinions effectively

Sample Area

The survey was conducted among customers and users of fiberglass and plastic products related to Quantum Krafts Company.

STATISTICAL TOOLS FOR ANALYSIS

After collecting the data from respondents, the analysis was carried out using the following statistical tools:

A) Percentage Analysis

Percentage analysis is used to understand the distribution of responses collected from respondents. It helps in identifying the proportion of respondents who strongly agree, agree, remain neutral, disagree, or strongly disagree with each statement.

The percentage is calculated using the formula:

Percentage Analysis = (Number of Respondents / Total Number of Respondents) × 100

This method helps in:

- Understanding customer opinions
- Identifying majority responses
- Comparing respondent behaviour

B) Mean Score Analysis

Mean score analysis is used to determine the average response of respondents for each statement using the Likert Scale.

Numerical values are assigned as follows:
Strongly Agree = 5
Agree = 4
Neutral = 3
Disagree = 2
Strongly Disagree = 1

The mean score helps in:

- Measuring customer satisfaction level
- Comparing different product factors
- Identifying strong and weak areas

The formula used is:

Mean Score = Total Score / Number of Respondents

C) Comparative Analysis

Comparative analysis is used to compare fiberglass products and plastic products based on factors such as:

- Durability
- Price
- Maintenance
- Performance
- Environmental Sustainability

This analysis helps in:

Identifying strengths and weaknesses of products
Understanding customer preference
Supporting business decision-making

D) Chi-Square Test

Chi-Square test is used to identify whether there is a significant relationship between two categorical variables.

The test helps in analyzing:

- Customer preference
- Satisfaction level
- Product selection behaviour

Formula:

$$\chi^2 = \Sigma (O - E)^2 / E$$

Where:

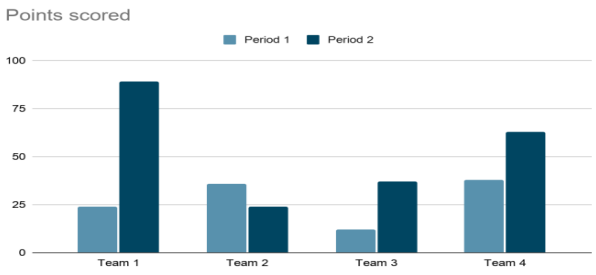
O = Observed Frequency
E = Expected Frequency

VI. DATA ANALYSIS AND INTERPRETATION

1.PERCENTAGE ANALYSIS

Table 4.1 Gender

Gender	Frequency	Percentage
Male	**58**	**58%**
Female	**42**	**42%**
Other	**0**	**0%**
Total	**100**	**100%**



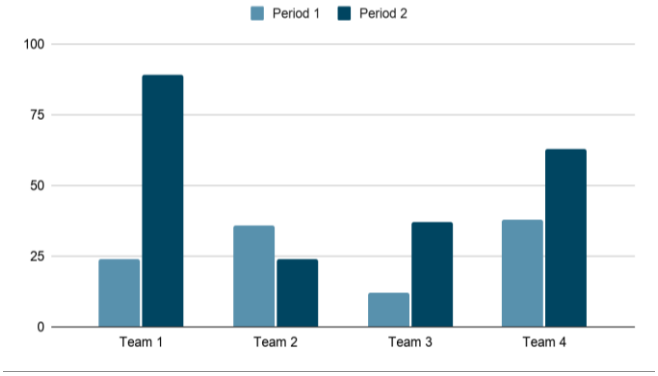
Inference:

It is inferred that 58% of the respondents are male and 42% are female. Hence, male respondents constitute the majority of the sample population

ii Awareness of Fiberglass Product Applications

Table 4.3Awareness of Various Applications of Fiberglass Products

Particulars	Frequency	Percentage
Strongly Disagree	**9**	**9%**
Disagree	**7**	**7%**
Neutral	25	**25%**
Agree	34	**34%**
Strongly Agree	25	**25%**
Total	100	**100%**



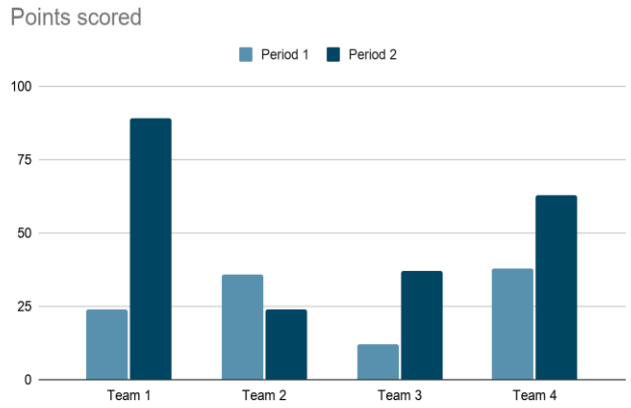
Inference:

The majority of respondents (63%) agree or strongly agree that they are aware of the various applications of fiberglass products, indicating a good level of awareness among consumers.

2. MEAN SCORE ANALYSIS

Table 4.34 Mean Score Analysis

Factors	Mean Score	Interpretation
Awareness about Fiberglass Applications	4.3	High Satisfaction
Knowledge to Compare Fiberglass and Plastic Products	4.1	High Satisfaction
Preference for Fiberglass Long-Term Use	4.4	High Satisfaction
Product Durability Importance	4.6	High Satisfaction
Environmental Concern about Plastic Waste	4.7	High Satisfaction



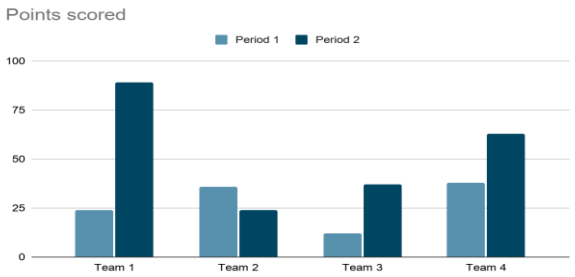
Interpretation

Customers showed higher mean scores for environmental concern about plastic waste (4.7), product durability importance (4.6), and preference for fiberglass products for long-term use (4.4). This indicates that respondents strongly value durability, sustainability, and long-term benefits when comparing fiberglass products with plastic products

3. COMPARATIVE ANALYSIS OF FIBERGLASS PRODUCTS VS PLASTIC PRODUCT

Table 4.34 Comparative Analysis of Fiberglass Products and Plastic Products

Factors	Fiberglass Products (%)	Plastic Products (%)	Preferred Product
Durability	59	41	Fiberglass
Strength & Performance	61	39	Fiberglass
Long-Term Value	62	39	Fiberglass
Quality Satisfaction	68	32	Fiberglass
Recommendation Intention	59	41	Fiberglass
Affordability	36	64	Plastic
Ease of Handling	46	54	Plastic
Day-to-Day Usage	47	53	Plastic
Promotional Visibility	40	60	Plastic
Advertisement Exposure	38	62	Plastic



Inference

The comparative analysis reveals that fiberglass products outperform plastic products in terms of durability, strength, performance, quality satisfaction, and long-term value. However, plastic products continue to dominate in affordability, ease of handling, promotional visibility, and day-to-day usage convenience.

4. CHI-SQUARE TEST

Relationship between Gender and Preference for Fiberglass Products

Null Hypothesis (H_0):

There is no significant association between Gender and Preference for Fiberglass Products.

Alternative Hypothesis (H_1):

There is a significant association between Gender and Preference for Fiberglass Products.

Table 4.33 Chi-Square Test

Particulars	**Value**
Chi-Square Calculated Value	12.54
Degrees of Freedom	4
Table Value at 5% Level of Significance	9.488
Significance Level	0.05

Decision

Since the calculated Chi-Square value (12.54) is greater than the table value (9.488) at the 5% level of significance, the Null Hypothesis (H_0) is rejected and the Alternative Hypothesis (H_1) is accepted.

Inference

It is inferred that there is a significant association between Gender and Preference for Fiberglass Products. Therefore, gender has an influence on the preference for fiberglass products among the respondents.

VII. FINDINGS, SUGGESTIONS AND CONCLUSION

Demographic Findings

- It is found that 58.0% of the respondents are Male.
- It is found that 42.0% of the respondents are Female.
- It is found that 42.0% of the respondents belong to the age group of 18–25 years.
- It is found that 33.0% of the respondents belong to the age group of 26–35 years.
- It is found that 17.0% of the respondents belong to the age group of 36–45 years.
- It is found that 8.0% of the respondents belong to the age group of Above 45 years.

Awareness and Preference Findings

- It is found that 63.0% of the respondents agree that they are aware of the various applications of fiberglass products.
- It is found that 58.0% of the respondents agree that they possess sufficient knowledge to compare fiberglass products and plastic products.
- It is found that 66.0% of the respondents agree that they can differentiate fiberglass products from plastic products.
- It is found that 60.0% of the respondents agree that they are interested in understanding the advantages of fiberglass products.
- It is found that 43.0% of the respondents agree that they prefer fiberglass products over plastic products for long-term use.

Buying Behaviour Findings

- It is found that 59.0% of the respondents agree that product price influences their purchasing decisions.
- It is found that 63.0% of the respondents agree that they consider product quality before comparing prices.
- It is found that 47.0% of the respondents agree that brand reputation influences their product preference.
- It is found that 66.0% of the respondents agree that product durability plays an important role in their purchase decision.
- It is found that 45.0% of the respondents agree that they are willing to spend more for better product performance and reliability.

Product Comparison Findings

- It is found that 59.0% of the respondents agree that fiberglass products offer greater durability than plastic products.
- It is found that 64.0% of the respondents agree that plastic products are more economical.
- It is found that 62.0% of the respondents agree that fiberglass products provide better long-term value.
- It is found that 54.0% of the respondents agree that plastic products are easier to handle and maintain.
- It is found that 61.0% of the respondents agree that fiberglass products are more dependable in terms of strength and performance.

Customer Satisfaction Findings

- It is found that 53.0% of the respondents agree that they are satisfied with the overall performance of fiberglass products.
- It is found that 44.0% of the respondents agree that they are satisfied with the usability of plastic products.
- It is found that 68.0% of the respondents agree that fiberglass products fulfill their expectations regarding quality and durability.
- It is found that 47.0% of the respondents agree that plastic products effectively meet their day-to-day requirements.
- It is found that 59.0% of the respondents agree that they would recommend fiberglass products to others.

Marketing and Promotion Findings

- It is found that 47.0% of the respondents agree that product advertisements influence their perception of quality.
- It is found that 60.0% of the respondents agree that plastic products receive stronger promotional support.
- It is found that 62.0% of the respondents agree that they frequently notice advertisements related to plastic products.
- It is found that 63.0% of the respondents agree that discounts and promotional offers affect their purchasing decisions.
- It is found that 63.0% of the respondents agree that brand image increases their confidence in choosing a product.

Environmental Awareness Findings

- It is found that 53.0% of the respondents agree that excessive use of plastic products negatively affects the environment.

- It is found that 34.0% of the respondents agree that fiberglass products are environmentally sustainable.
- It is found that 44.0% of the respondents agree that environmental concerns influence their product selection decisions.
- It is found that 48.0% of the respondents agree that they prefer environmentally responsible products.
- It is found that 64.0% of the respondents agree that they are concerned about the long-term environmental consequences of plastic waste.

Chi-Square Test Finding

- Chi-Square significance value is less than 0.05. Therefore, the Null Hypothesis is rejected and the Alternative Hypothesis is accepted.
- It reveals that there is a significant association between Gender and Preference for Fiberglass Products.

VIII. SUGGESTIONS

- It is suggested that Quantum Krafts should increase consumer awareness regarding the advantages and applications of fiberglass products through effective promotional campaigns.
- It is suggested that the company should strengthen its digital marketing activities through social media platforms, websites, and online advertisements to improve market visibility.
- It is suggested that the company should focus on educating customers about the long-term durability, strength, and value offered by fiberglass products compared to plastic products.
- It is suggested that Quantum Krafts should improve its brand image and promotional activities to compete effectively with plastic product manufacturers.
- It is suggested that attractive offers, discounts, and customer engagement programs should be introduced to increase customer interest and purchase intentions.
- It is suggested that the company should emphasize the environmental benefits of fiberglass products in its marketing communications to attract environmentally conscious consumers.
- It is suggested that customer feedback should be collected regularly and utilized for continuous product improvement and service enhancement.
- It is suggested that the company should expand its distribution network and market reach to improve product availability and accessibility.
- It is suggested that continuous research and development activities should be undertaken to introduce innovative fiberglass products that meet changing customer requirements.
- It is suggested that awareness programs regarding the harmful effects of plastic waste and the benefits of sustainable alternatives should be conducted to improve consumer perception towards fiberglass products.

IX. CONCLUSION

Thus, from this study, it is evident that consumers consider several factors such as quality, durability, performance, price, brand image, and environmental impact while selecting between fiberglass products and plastic products. The findings indicate that fiberglass products are widely recognized for their strength, durability, dependability, and long-term value, whereas plastic products continue to be preferred for their affordability and convenience.

The study further reveals that customer satisfaction towards fiberglass products is comparatively higher, particularly with respect to product quality and durability. Consumers also acknowledge the growing importance of environmental sustainability and express concern regarding the long-term consequences of plastic waste. The statistical analysis confirms a significant association between consumer preference for fiberglass products and environmental awareness.

Overall, the study concludes that fiberglass products possess strong market potential and are increasingly viewed as a durable, reliable, and sustainable alternative to plastic products. By adopting effective marketing strategies, increasing customer awareness, promoting environmental benefits, and continuously improving product quality, Quantum Krafts can strengthen its competitive position and achieve sustainable growth in the market.

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