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"A Study On Customer Perception Towards Wheel Products Of India's Wheel Manufacturers"

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Abstract: In today's highly competitive business environment, understanding how customers perceive products is essential for any industry's growth — especially in automotive manufacturing. This study delves into how customers perceive wheel products produced by India's wheel manufacturing industry, focusing on factors like performance, reliability, durability, design, and after-sales service. Feedback was collected from 140 respondents from diverse backgrounds. The analysis reveals that product performance and reliability significantly influence customer perception, while aspects like design and after-sales service play a secondary role. Most participants hold a positive opinion of the brand, largely shaped by available product information and word-of-mouth. This study underscores the importance of maintaining product quality and clear communication to earn and retain customer trust.

Keywords: Customer Perception, Product Quality, Automotive Wheels, Satisfaction, Brand Loyalty

1. INTRODUCTION

Customer perception plays a crucial role in shaping a brand's reputation and long-term success, especially in industries like automotive manufacturing where both performance and aesthetics matter. In India's wheel manufacturing industry, companies must now meet rising customer expectations that go beyond basic functionality. While traditional strengths such as durability and reliability remain vital, today's buyers also seek innovation, sustainability, and thoughtful design. With increasing access to global products and information, Indian consumers are becoming more discerning, placing equal value on product performance and emotional appeal. This dynamic shift requires manufacturers to refine their strategies, placing greater emphasis on consistent service quality, modern design, and customer engagement to remain relevant in an evolving marketplace.

2. OBJECTIVES OF THE STUDY

- To identify the key factors influencing customer perception towards wheel products offered by India's automotive market
- To evaluate the performance, reliability, and durability of wheel products as experienced by existing customers.
- To assess the level of customer satisfaction with after-sales service and support provided by the company.
- To study the role of product design and aesthetics in shaping customer preferences for wheel products.

3. SCOPE OF THE STUDY

This study focuses on understanding how customers view wheel products made by India's wheel manufacturing industry. It explores key aspects such as product quality, performance, aesthetics, brand value, price, and after-sales service. The research is based on feedback from a broad range of individuals including vehicle owners, dealers, and service experts across various income levels. It covers different types of vehicles—passenger, commercial, and agricultural. The study primarily concentrates on urban and semi-urban markets where wheel products have a strong presence, and where consumer awareness and product expectations are relatively high. However, feedback from rural or remote regions where the brand has limited reach was not part of the study.

4. REVIEW OF LITERATURE

- **Reddy Kukkala Lohit (2024)[1]** – Analyzes consumer perceptions of Hero Motors and TVS in India, highlighting differences in brand image and consumer loyalty based on reliability, affordability, and urban/rural market segmentation.
- **Youkta Yadav (2024)[2]** – Examines the adoption of electric two-wheelers in Delhi, identifying key motivators and barriers such as technology, safety, cost, and infrastructure issues.
- **Subburaj P. (2022)[3]** – Analyzes factors affecting customer satisfaction with TVS motorcycles, focusing on after-sales service and part availability.

5. RESEARCH METHODOLOGY

This study employs a descriptive research design to observe and comprehend client impressions without changing factors, emphasizing the "what," "where," "when," and "how." A probability sampling technique, namely simple random sampling, was employed to ensure that each participant had an equal chance of being chosen, resulting in objectivity and representation. When the population size is unknown, a pilot study helps estimate key parameters. The sample size is calculated using the formula:

$$n = \frac{Z^2 \cdot p \cdot q}{e^2}$$

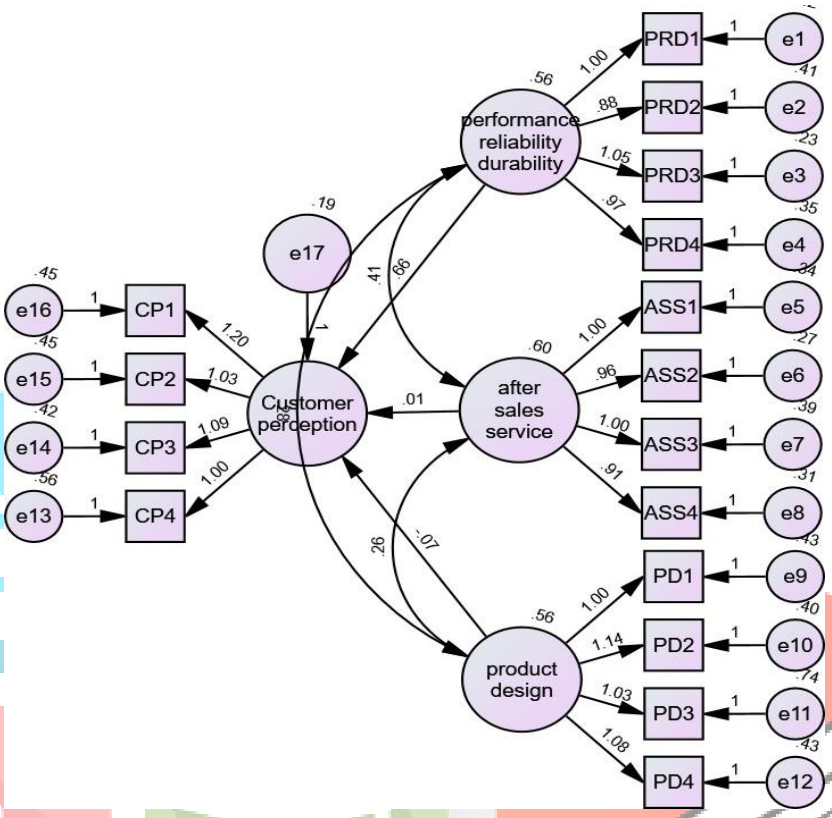
With Z = 1.96, p = 0.9, q = 0.1, and e = 0.05, the sample size comes out to 140 respondents.

Data was acquired from both primary and secondary sources. Structured questionnaires were used to collect primary data, and secondary data came from published publications, firm records, and websites.

6. DATA ANALYSIS AND INTERPRETATION

CONFIRMATORY FACTOR ANALYSIS

The objective of conducting Confirmatory Factor Analysis (CFA) was to validate the measurement model by assessing how well the observed variables represented their respective latent constructs. The analysis aimed to examine the reliability and convergent validity of each construct, remove items with low factor loadings, and improve the overall measurement model's fit, ensuring that the underlying structure was theoretically sound and empirically robust.



Model Fit Summary

CMIN

Model	NPAR	CMIN	DF	P	CMIN/DF
Default model	38	262.607	98	.000	2.680
Saturated model	136	.000	0		
Independence model	16	1317.210	120	.000	10.977

RMR, GFI

Model	RMR	GFI	AGFI	PGFI
Default model	.069	.813	.741	.586
Saturated model	.000	1.000		
Independence model	.347	.303	.210	.267

Baseline Comparisons

Model	NFI Delta1	RFI rho1	IFI Delta2	TLI rho2	CFI

Default model	.801	.756	.865	.832	.863
Saturated model	1.000		1.000		1.000
Independence model	.000	.000	.000	.000	.000

RMSEA

Model	**RMSEA**	**LO 90**	**HI 90**	**PCLOSE**
Default model	.110	.094	.126	.000
Independence model	.268	.255	.281	.000

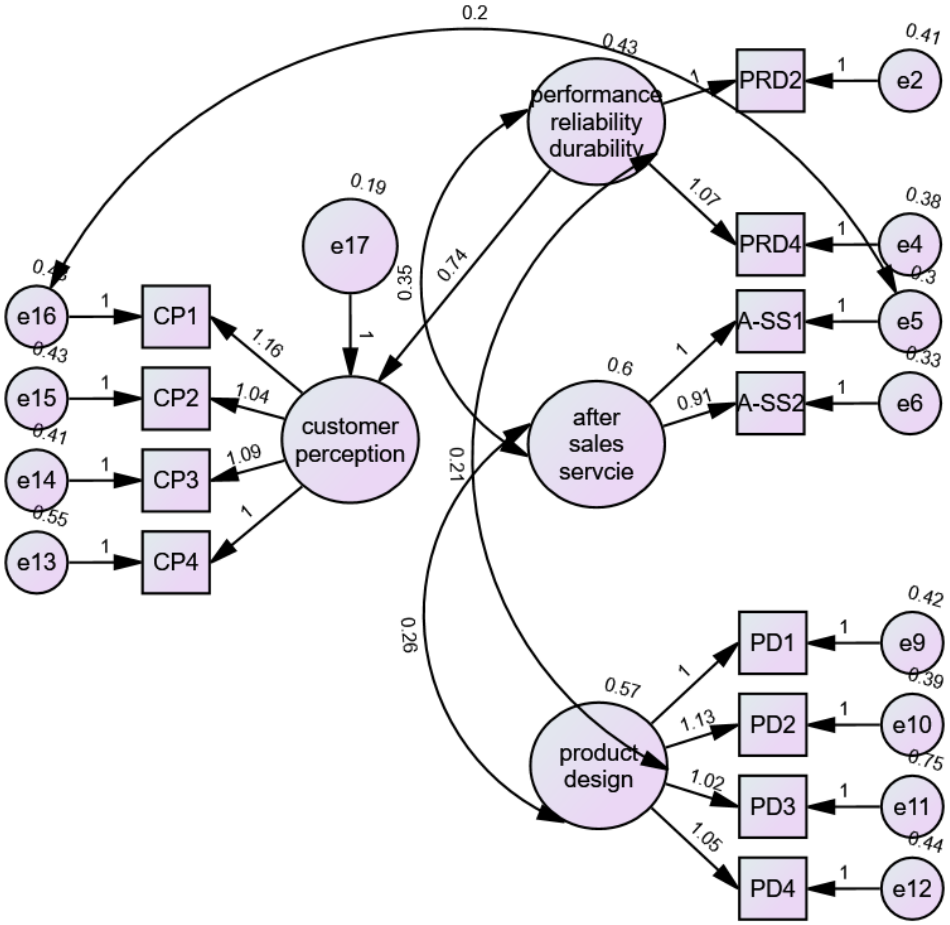
AIC

Model	**AIC**	**BCC**	**BIC**	**CAIC**
Default model	338.607	349.197	450.390	488.390
Saturated model	272.000	309.902	672.063	808.063
Independence model	1349.210	1353.669	1396.276	1412.276

Inference:
This model represents a **moderate fit.** During the Confirmatory Factor Analysis (CFA), certain observed variables—PRD1, PRD3, ASS3, and ASS4—were removed to improve the overall measurement model's validity and reliability. These items were excluded based on their low standardized factor loadings, which fell below the generally accepted threshold of 0.5–0.6, indicating weak associations with their respective latent constructs. Their inclusion would have compromised convergent validity and potentially inflated model error, thereby reducing the overall model fit.
Additionally, the structural paths from "Product Design" and "After Sales Service" to "Customer Perception" were removed due to non-significant regression weights, which suggested that these latent constructs did not meaningfully predict customer perception in this model. Removing these insignificant paths contributed to a more parsimonious model and helped improve the fit indices, as seen in the model's RMSEA (.110), CFI (.863), and GFI (.813). Although some indices remain marginal, these changes collectively enhanced the theoretical coherence and empirical robustness of the measurement model.

STRUCTURAL EQUATION MODEL (SEM):
The objective of conducting Structural Equation Modelling was to examine the direct relationships between the independent variables (performance, reliability, durability, after sale service, product design) and the dependent variable (customer perception) and the overall model fit.
A good model fit in SEM is achieved when the observed data align well with the model structure specified by the researcher. This is typically indicated by:

- CMIN/DF < 3.0 (preferably < 2.0)
- RMSEA < 0.06
- CFI, TLI, IFI > 0.95
- GFI/AGFI > 0.90
- PCLOSE > 0.05



Inference:

A structural equation model was tested using the sample data. The Chi-square to degrees of freedom ratio (CMIN/DF) was found to be 1.207, which is well within the acceptable range (< 3), and the RMSEA value was 0.039, indicating a close and reasonable fit. Other key fit indices such as CFI (0.976), TLI (0.980), and GFI (0.904) were all above the recommended threshold of 0.90, suggesting strong model adequacy. Hence, the model demonstrates a statistically significant and well-fitting structure that effectively explains the relationship between the independent variables (Performance, After Sales Service, Product Design) and the dependent variable (Customer Perception). The test confirms that the overall model fit is excellent.

7. SUMMARY OF FINDINGS

- Confirmatory Factor Analysis (CFA) led to the removal of PRD1, PRD3, ASS3, and ASS4 due to low factor loadings. Structural paths from Product Design and After-Sales Service to Customer Perception were also removed due to insignificance. These refinements improved the model's validity, reliability, and fit (RMSEA = 0.110, CFI = 0.863, GFI = 0.813).
- Structural Equation Modelling (SEM) demonstrated excellent model fit (CMIN/DF = 1.207, RMSEA = 0.039, CFI = 0.976, GFI = 0.904), validating the positive influence of performance-related variables on customer perception.

8. SUGGESTIONS

To enhance customer perception and loyalty, India's wheel manufacturing industry should consider making strategic improvements in key areas. First, investing in more visually appealing product designs could attract style-conscious consumers, especially younger buyers who value aesthetics alongside functionality. While performance and reliability remain strong, improving the appeal of wheel designs may provide an added competitive edge. Second, after-sales service needs focused attention. Customers expect prompt, professional, and helpful service experiences; companies can achieve this by training staff, streamlining service processes, and ensuring responsive customer support. Furthermore, companies should actively encourage satisfied customers to share their experiences online or through testimonials, as many new buyers rely heavily on peer recommendations. Marketing strategies should also be tailored to younger, salaried consumers, who are more likely to be influenced by digital media and branding efforts. Finally, maintaining consistent product quality is essential, as it continues to be the foundation of customer trust and brand credibility in this sector.

9. CONCLUSION

This study provides a comprehensive look at how customers perceive wheel products made by manufacturers in India's automotive sector. It is clear that key factors such as product performance, reliability, and durability are major contributors to positive customer perception and satisfaction. These strengths have helped companies establish a strong position in the market. However, areas like design aesthetics and after-sales service still present opportunities for growth and improvement. Many customers also appear to rely on product information and peer feedback before making a purchase, indicating that brand communication and online presence are becoming increasingly influential. By continuing to uphold product quality while addressing evolving customer expectations in service and design, companies in India's wheel manufacturing industry can further strengthen their brand image, enhance customer loyalty, and sustain long-term success.

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