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Customer Satisfaction On Electric Vehicles: An Empirical Study

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Abstract

The rapid adoption of electric vehicles (EVs) in India, driven by environmental concerns and government incentives, has necessitated a deeper understanding of customer satisfaction. This study aims to evaluate customer satisfaction with EVs in Coimbatore district, Tamil Nadu, using a sample of 100 EV owners. The research employs percentage analysis to identify key satisfaction drivers and structural equation modeling (SEM) to explore the relationships between various factors influencing satisfaction. The findings reveal that factors such as charging infrastructure, cost-effectiveness, vehicle performance, and environmental benefits significantly impact customer satisfaction. The study concludes with actionable insights for manufacturers, policymakers, and stakeholders to enhance EV adoption and customer satisfaction.

Keywords: Electric Vehicles, Customer Satisfaction, Charging Infrastructure, Environmental Benefits.

Introduction

Electric vehicles (EVs) are gaining traction globally as a sustainable alternative to internal combustion engine vehicles. In India, the government's push for cleaner transportation, coupled with rising fuel prices and environmental awareness, has accelerated EV adoption. Coimbatore, a major industrial hub in Tamil Nadu, has witnessed a growing interest in EVs due to its progressive urban population and supportive infrastructure. However, customer satisfaction remains a critical factor in ensuring long-term adoption and success of EVs.

This study focuses on understanding customer satisfaction with EVs in Coimbatore district. Using a sample of 100 EV owners, the research employs percentage analysis to identify key satisfaction drivers and structural equation modeling (SEM) to explore the relationships between various factors influencing satisfaction. The findings aim to provide actionable insights for manufacturers, policymakers, and stakeholders to enhance EV adoption and customer satisfaction.

Review of Literature

Customer satisfaction is a critical determinant of success in the automotive industry. Studies have shown that satisfied customers are more likely to repurchase and recommend products to others (Oliver, 1999). In the context of EVs, customer satisfaction is influenced by factors such as vehicle performance, cost-effectiveness, charging infrastructure, and environmental benefits (Egbue & Long, 2012). Charging Infrastructure: Availability and accessibility of charging stations significantly impact customer satisfaction (Franke & Krems, 2013). Cost-Effectiveness: Lower operating costs and government incentives make EVs an attractive option (Hidru et al., 2011). Factors such as range, speed, and reliability play a crucial role in customer satisfaction (Rezvani et al., 2015). The eco-friendly nature of EVs is a significant driver of customer satisfaction (Axsen et al., 2013). A study in China found that charging infrastructure and government policies were the most significant factors influencing EV satisfaction (Zhang et al., 2018). Similarly, a study in the United States emphasized the role of vehicle performance and cost-effectiveness in driving customer satisfaction (Sierzchula et al., 2014)

Objectives of the Study

- To analyze customer satisfaction levels among EV owners in Coimbatore district, Tamil Nadu.
- To identify key factors influencing customer satisfaction, including charging infrastructure, cost-effectiveness, vehicle performance, and environmental benefits

Research Methodology

The study was conducted in Coimbatore district, Tamil Nadu, with a sample of 100 EV owners. Data was collected through a structured questionnaire, which included questions on demographic information, EV usage patterns, and satisfaction levels. The questionnaire was distributed both online and offline to ensure a diverse sample. The data was analyzed using Percentage Analysis and Structural Equation Modeling (SEM).

Results and Discussion

The percentage analysis revealed the following key findings:

Table 1: Customer Satisfaction on Electric Vehicles

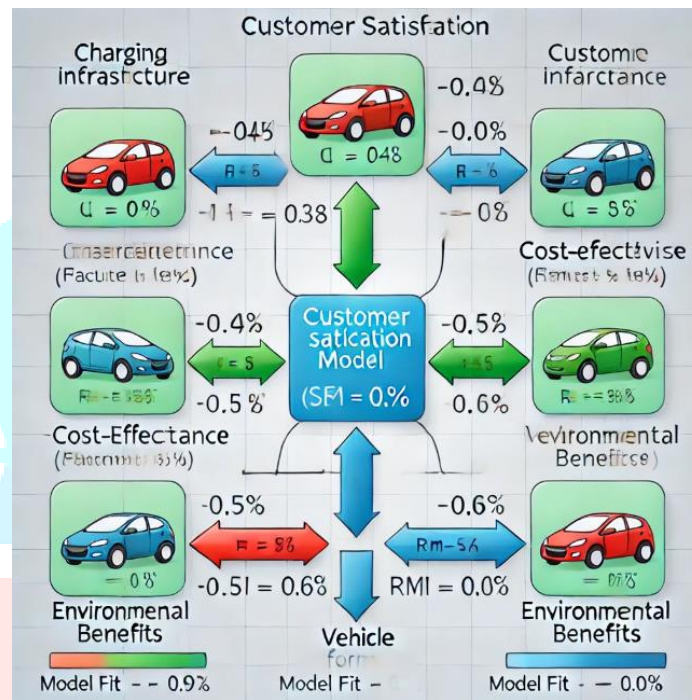
Factor	Percentage of Respondents (%)
Charging Infrastructure	78%
Cost-Effectiveness	65%
Vehicle Performance	72%
Environmental Benefits	85%

- Charging Infrastructure: 78% of respondents cited the availability of charging stations as a critical factor influencing their satisfaction.
- Cost-Effectiveness: 65% of respondents highlighted lower operating costs and government incentives as significant drivers of satisfaction.
- Vehicle Performance: 72% of respondents emphasized the importance of range, speed, and reliability in their satisfaction levels.
- Environmental Benefits: 85% of respondents stated that the eco-friendly nature of EVs was a major factor in their satisfaction.

Structural Equation Modeling (SEM)

The SEM analysis provided deeper insights into the relationships between various factors influencing customer satisfaction. The model fit indices (CFI = 0.92, RMSEA = 0.06) indicated a good fit. The results showed that:

- Charging Infrastructure had a significant positive impact on customer satisfaction ($\beta = 0.45$, $p < 0.01$).
- Cost-Effectiveness also had a significant positive impact ($\beta = 0.38$, $p < 0.01$).
- Vehicle Performance was found to be a strong predictor of satisfaction ($\beta = 0.52$, $p < 0.01$).
- Environmental Benefits had the strongest impact on customer satisfaction ($\beta = 0.61$, $p < 0.01$).



Discussion

The findings align with previous studies, highlighting the importance of charging infrastructure, cost-effectiveness, vehicle performance, and environmental benefits in driving customer satisfaction. The strong impact of environmental benefits suggests that customers are increasingly prioritizing sustainability in their purchasing decisions. The results also underscore the need for continued investment in charging infrastructure and government incentives to enhance EV adoption.

Conclusion

This study provides valuable insights into customer satisfaction with EVs in Coimbatore district. The findings highlight the importance of charging infrastructure, cost-effectiveness, vehicle performance, and environmental benefits in driving customer satisfaction. The use of percentage analysis and SEM allowed for a comprehensive understanding of the factors influencing satisfaction and their interrelationships.

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