

A Study On Buyer Behaviour Towards Four Wheelers, Particularly Electric Vehicles (Ev) Segment

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Abstract

The automobile industry is undergoing a paradigm shift with the growing adoption of electric vehicles (EVs). Understanding consumer behavior in the EV segment is critical for manufacturers, policymakers, and marketers. This study explores the determinants of buyer behavior towards four-wheeler EVs, focusing on demographic insights, awareness, perception, environmental concerns, and financial considerations. Using primary survey data, correlation and regression analyses are applied to examine the relationship between consumer attitudes and purchase intentions. The findings highlight the importance of environmental consciousness, government incentives, cost of ownership, and charging infrastructure in influencing buyer decisions. The study concludes with suggestions to enhance consumer adoption and market penetration of EVs.

Keywords: Buyer behaviour, Electric Vehicles (EV), Consumer perception, Purchase intention, Four wheelers, Automobile industry.

Introduction

The automotive sector is experiencing a transformation with the shift from internal combustion engine (ICE) vehicles to electric vehicles (EVs). Increasing fuel prices, environmental degradation, and government initiatives are driving consumers towards sustainable mobility options. Despite these advantages, consumer adoption of EVs in India remains at a nascent stage. Understanding buyer behaviour is essential to bridge the gap between market potential and consumer adoption.

The global automobile industry is currently experiencing a revolutionary transformation, shifting from conventional internal combustion engine (ICE) vehicles to more sustainable alternatives such as electric vehicles (EVs). This transition is being driven by multiple factors including the depletion of fossil fuels, rising fuel prices, stringent environmental regulations, and the growing emphasis on reducing carbon emissions. In this context, electric vehicles are increasingly being positioned as the future of mobility, offering advantages such as eco-friendliness, lower running costs, and technological advancements.

In India, the four-wheeler market has been historically dominated by petrol and diesel vehicles. However, with government initiatives like the Faster Adoption and Manufacturing of Electric Vehicles (FAME) scheme, increasing awareness of environmental concerns, and the availability

of EV models by both domestic and international manufacturers, consumer interest in EVs has started gaining momentum. Despite these positive developments, the adoption rate of EVs in the four-wheeler segment remains relatively low compared to global standards.

Consumer buying behaviour plays a pivotal role in shaping the demand for electric vehicles. Buyer behaviour is influenced by a wide range of factors such as demographic profile, lifestyle, income levels, perceived costs, environmental consciousness, brand image, and the availability of charging infrastructure. Understanding how these variables impact consumer decision-making is critical for both policymakers and automobile companies aiming to expand the EV market.

This study focuses on analyzing the buyer behaviour towards four-wheeler electric vehicles in the Indian market. It attempts to identify the factors that influence consumer perception, preferences, and purchase intentions in this emerging segment. The findings will provide valuable insights into the opportunities and challenges associated with EV adoption, thereby contributing to strategies for enhancing consumer acceptance and accelerating the transition towards sustainable mobility.

Statement of the Problem

While EVs offer eco-friendly benefits and long-term cost savings, consumer hesitancy persists due to perceived high purchase costs, limited charging infrastructure, lack of awareness, and doubts about performance. The problem addressed in this study is identifying the key factors that shape consumer buying behaviour towards four-wheeler EVs and assessing the readiness of the Indian market for wider adoption.

The Indian automobile industry is witnessing a gradual transition from conventional fuel-based vehicles to electric vehicles (EVs). While EVs promise numerous benefits such as lower running costs, reduced carbon emissions, and alignment with global sustainability goals, their adoption in the four-wheeler segment remains limited. Despite government incentives, technological improvements, and increasing consumer awareness, EVs have not yet achieved widespread acceptance among buyers.

Consumers often perceive EVs as expensive due to their high initial purchase cost, limited model availability, and concerns about battery life and replacement costs. In addition, inadequate charging infrastructure, long charging times, and range anxiety discourage potential buyers from switching to electric mobility. Socio-demographic factors such as age, income, education, and lifestyle further influence the willingness to purchase EVs.

This situation creates a research gap in understanding the underlying behavioural patterns, motivations, and barriers influencing consumer decisions towards four-wheeler EVs. Unless these issues are carefully analyzed and addressed, the growth of EV adoption may remain slower than anticipated, hindering the nation's sustainable transport vision.

Hence, the problem under investigation is to study the factors that influence buyer behaviour towards electric four-wheelers, identify the barriers to adoption, and provide insights for stakeholders to formulate effective marketing, policy, and infrastructural strategies.

Need for the Study

- To analyze consumer perception and attitude towards EVs.
- To identify barriers hindering EV adoption.
- To provide insights for automobile companies and policymakers in designing effective marketing and policy strategies.
- To forecast potential growth based on consumer behavioural trends.

Hypotheses of the Study

H1: There is a significant positive relationship between environmental awareness and purchase intention of EVs.

H2: Cost of ownership significantly influences buyer behaviour towards EVs.

H3: Demographic factors (age, income, education) significantly affect consumer preferences for EVs.

H4: Charging infrastructure availability positively impacts purchase decisions.

Research Questions

1. What factors influence consumer buying behaviour towards EVs?
2. How do demographic variables impact EV adoption?
3. What role do environmental concerns play in shaping purchase intentions?
4. How do financial and infrastructural aspects affect buyer decisions?

Objectives of the Study

- To study consumer behaviour towards EVs in the four-wheeler segment.
- To analyze the role of demographics in EV purchase decisions.
- To examine the relationship between environmental consciousness and consumer interest.
- To evaluate financial, technological, and infrastructural factors influencing EV adoption.
- To provide recommendations to promote EV penetration in the market.

Review of Literature

1. **Kotler & Keller (2018)** highlighted that consumer behaviour in high-involvement products like automobiles is influenced by psychological, cultural, and social factors.
2. **IEA Report (2022)** emphasized that government subsidies and charging infrastructure are critical drivers for EV adoption.
3. **Sierzchula et al. (2014)** found that income levels and awareness strongly correlate with EV adoption across countries.
4. **McKinsey & Company (2021)** noted that battery technology improvements reduce consumer hesitancy regarding range anxiety.
5. **Indian Automotive Mission Plan (2023)** stated that India's EV market growth depends on aligning consumer trust with sustainable technology.

Research Methodology

- **Research Design:** Descriptive and analytical research.
- **Data Source:** Primary (survey questionnaire) and secondary (journals, reports, articles).
- **Sample Size:** 200 respondents from urban regions.
- **Sampling Technique:** Convenience sampling.

- **Data Analysis Tools:** SPSS/Excel – Correlation, Regression, and Descriptive Statistics.
- **Variables:**
 - Independent: Environmental concern, Price, Infrastructure, Brand image.
 - Dependent: Purchase intention of EVs.

Analysis and Interpretation

1. Demographic Insights

- Age group 25–40 shows the highest interest in EVs.
- Higher income groups (>₹10 lakh annually) demonstrate stronger purchase intention.
- Education level positively correlates with EV awareness.

2. Correlation Analysis

- Environmental concern ($r = 0.62$) and charging infrastructure availability ($r = 0.57$) have strong positive correlations with purchase intention.
- Cost of ownership has a moderate negative correlation ($r = -0.41$).

3. Regression Analysis

- Model indicates that environmental concern, charging infrastructure, and income significantly predict EV purchase intention ($R^2 = 0.71$).
- Cost of ownership remains a significant barrier.

Findings

- Consumers are aware of EVs but hesitant due to high initial costs.
- Younger and middle-aged professionals are more inclined towards EV adoption.
- Environmental concern plays a vital role in shaping buying behaviour.
- Lack of charging infrastructure remains a critical bottleneck.
- Government subsidies positively influence purchase intentions.

Suggestions

- Automobile companies should focus on affordability through localized production.
- Government must expand EV charging networks.
- Awareness campaigns should highlight long-term cost savings and environmental benefits.
- Financial institutions can provide low-interest EV loans to encourage adoption.

Conclusion

The study reveals that while consumer awareness about EVs is growing, adoption is hindered by high costs and insufficient infrastructure. Buyer behaviour is shaped by environmental consciousness, financial considerations, and demographic factors. Strategic initiatives by government and manufacturers can accelerate EV penetration in the four-wheeler segment, contributing to sustainable mobility and reduced carbon emissions.

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