

An Empirical Study on Consumer Behaviour Towards Acceptance of Electric Four-Wheeler Vehicles

Dr M. Sugantha, Assistant Professor, Department of Commerce PA, Sri Ramakrishna college of Arts and Science for Women.

Jithya K J, Research Scholar, Department of Commerce, Sri Ramakrishna college of Arts and Science for Women.

Abstract

The growing emphasis on environmentally sustainable transportation has significantly increased the relevance of electric vehicles (EVs), particularly electric four-wheelers. This study examines consumer behaviour towards the adoption of electric four-wheeler vehicles by analysing key influencing factors such as environmental awareness, perceived economic benefits, government support, and infrastructure readiness. Primary data were collected through a structured questionnaire administered to selected respondents, and analytical tools such as correlation and regression analysis were employed. The findings reveal that environmental consciousness, cost-related advantages, and the availability of charging infrastructure significantly influence consumer adoption decisions. The study offers valuable insights for policymakers and marketers to promote the widespread adoption of electric vehicles.

Keywords: Electric Vehicles, Consumer Behaviour, Adoption, Sustainability, Electric Cars

Introduction

The increasing concern over environmental degradation and the urgent need to reduce carbon emissions have accelerated the transition towards sustainable transportation systems. Electric four-wheeler vehicles have emerged as a viable alternative to conventional internal combustion engine vehicles due to their lower environmental impact and reduced operating costs.

In the Indian context, several government initiatives and incentive schemes have been introduced to encourage the adoption of electric vehicles. Despite these efforts, consumer acceptance remains at a developing stage, influenced by factors such as awareness, affordability, and infrastructure availability. Therefore, understanding consumer behaviour is crucial for fostering the adoption of electric four-wheelers.

Statement of the Problem

The growing emphasis on environmentally friendly transportation has led to increased attention toward electric four-wheeler vehicles as a substitute for traditional fuel-powered automobiles. However, even with supportive government policies, technological progress, and rising ecological awareness, their adoption has not reached expected levels. Many potential users remain hesitant due to factors such as higher upfront costs, inadequate charging facilities, concerns about driving range, and limited understanding of long-term advantages. Moreover, psychological aspects like consumer perceptions, attitudes, and confidence in emerging technology play a crucial role in influencing their decisions. Hence, it becomes essential to analyze the factors affecting consumer behaviour and to identify the challenges that restrict the broader acceptance of electric four-wheeler vehicles.

Objectives of the Study

1. To evaluate consumers' level of awareness about electric four-wheeler vehicles.
2. To examine the key determinants that influence consumers' adoption decisions.
3. To explore the relationship between demographic characteristics and consumer adoption behaviour.
4. To recommend effective strategies for improving consumer acceptance of electric vehicles.

Literature Review

Arulmoli and Rengaraj (2025) analyzed buyer behaviour specifically in the electric four-wheeler segment. Their findings revealed that demographic factors, awareness levels, financial considerations, and infrastructure availability significantly affect acceptance behaviour. The study also reported that environmental concern positively impacts consumers' purchase decisions.

Kumar et al. (2022) carried out an empirical study in India focusing on consumer motives and attitudes toward electric vehicle adoption. The findings showed that personal motives, social influence, and attitude significantly affect behavioural intention toward EV acceptance among Indian youth. The study also highlighted the importance of government policy support in promoting adoption.

Kumar and Alok (2021) studied consumer perception in the Indian market and reported that awareness, affordability, and charging infrastructure remain the key determinants of electric four-wheeler acceptance. Their findings showed that younger consumers were more willing to adopt EVs compared to older age groups.

Wolf, Schroeder, and Neumann (2014) examined consumer attitudes toward electric vehicle adoption through an empirically grounded agent-based model. Their study revealed that consumer values, social norms, and policy incentives significantly influence the diffusion of electric vehicles. The authors emphasized that financial incentives and exclusive EV zones positively shape consumer acceptance.

Factors Influencing Consumer Buying Behaviour (EV Adoption)

- Cost considerations, including purchase price and long-term savings
- Environmental concern and awareness of sustainability
- Government incentives and regulatory support
- Technological confidence (battery life, range, and charging)
- Social influence and consumer perception toward innovation
- Availability of charging infrastructure

Factors Determining Product Selection (EV Choice)

- Price and perceived value for money
- Driving range and battery reliability
- Performance, safety, and advanced features
- Charging convenience and time required
- Brand reputation and after-sales service

- Design, comfort, and product aesthetics
- Availability and delivery time

Data Collection

- **Primary Data:** Collected through a structured questionnaire
- **Secondary Data:** Sourced from academic journals, reports, and credible online resources

Key Factors Influencing Adoption

- Environmental sustainability concerns
- Reduction in fuel and maintenance costs
- Government incentives and subsidies
- Availability and accessibility of charging infrastructure

Discussion

The findings suggest that consumers are gradually developing a favourable attitude towards electric vehicles. Environmental awareness and long-term economic benefits serve as key motivating factors. However, concerns related to high initial purchase costs and inadequate charging infrastructure continue to act as major barriers. These observations are consistent with previous studies that emphasize the importance of both economic and infrastructural determinants in technology adoption.