DRIVING THE FUTURE: CUSTOMER PERCEPTION AND ADOPTION OF ELECTRIC VEHICLES IN COIMBATORE DISTRICT

Mrs. S. Sathyapriya[1], Dr. K. Singaravelu[2]

[1]Research Scholar, Post Graduate & Research Department of Commerce, CBM College, Kovaipudur, Coimbatore, Tamilnadu

[2]Principal & Research Guide, Post Graduate & Research Department of Commerce, CBM College, Kovaipudur, Coimbatore, Tamilnadu

Abstract

The transition towards sustainable mobility has accelerated the adoption of Electric Vehicles (EVs) across India. This study explores customer perception and adoption behaviour of EVs with reference to Coimbatore District. The research examines key factors such as cost, environmental awareness, infrastructure availability, and government incentives influencing consumer decisions. A structured questionnaire was administered to 120 respondents using a convenience sampling method. Statistical tools such as percentage analysis, weighted mean score, and correlation were applied. The findings reveal that environmental concern and fuel cost savings are major drivers, while charging infrastructure and high initial cost remain barriers. The study concludes with strategic recommendations to enhance EV adoption in emerging urban markets.

Keywords

Electric Vehicles, Customer Perception, Adoption Behaviour, Sustainable Mobility, Coimbatore

1. Introduction

The transportation sector is undergoing a profound transformation driven by the urgent need to address environmental sustainability, energy security, and economic efficiency. Conventional internal combustion engine (ICE) vehicles, which predominantly rely on fossil fuels, contribute significantly to air pollution, greenhouse gas emissions, and climate change. In this context, Electric Vehicles (EVs) have emerged as a promising alternative, offering a cleaner and more sustainable mode of transportation. Globally, governments and policymakers are actively promoting the transition toward electric mobility through regulatory frameworks, financial incentives, and infrastructure development. India, as one of the fastest-growing automobile markets, has recognized the importance of EV adoption in achieving its sustainability goals. Initiatives such as the Faster Adoption and Manufacturing of Electric Vehicles (FAME) scheme, state-level subsidies, and tax benefits have been introduced to accelerate this transition. These efforts are further supported by increasing fuel prices, growing environmental awareness, and advancements in battery technology. Despite these developments, the adoption of EVs in India is still at a nascent stage when compared to developed countries. Several challenges hinder widespread acceptance, including high initial purchase costs, limited charging infrastructure, concerns regarding battery life, and range anxiety. Moreover, consumer perception plays a crucial role in influencing the adoption decision. Perception is shaped by multiple factors such as awareness, socio-economic conditions, technological familiarity, and personal attitudes toward sustainability. In emerging urban centers like Coimbatore

District, the dynamics of EV adoption present a unique scenario. Coimbatore, often referred to as the "Manchester of South India," is known for its strong industrial base, educational institutions, and growing urban population. The district has witnessed rapid economic development and increasing vehicle ownership, which in turn has contributed to traffic congestion and environmental concerns. This creates a favourable environment for the introduction and adoption of electric mobility solutions. This study aims to explore the perception and adoption behaviour of customers toward electric vehicles in Coimbatore District. By analysing key influencing factors such as cost, infrastructure availability, government support, and environmental awareness, the research seeks to provide insights into the opportunities and challenges associated with EV adoption in an emerging urban market. The significance of this study lies in its contribution to both academic research and practical policymaking. It provides a localized perspective on EV adoption, which is often overlooked in broader national-level studies. The findings can assist stakeholders in developing targeted interventions to promote sustainable transportation and support India's transition toward a greener future. In conclusion, as the world moves toward a low-carbon economy, the adoption of electric vehicles is no longer an option but a necessity. Understanding customer perception and behaviour is a critical step in ensuring the successful implementation of this transition. This research, therefore, attempts to provide a comprehensive analysis of these aspects with specific reference to Coimbatore District.

2. Review of Literature

Shivam Sakshia, Sumithra S & Sabari Shankar Ravichandran (2025),This study explored EV adoption using behavioural constructs such as green self-identity and task-technology fit. The findings indicate that consumer environmental identity and brand engagement strongly influence EV adoption, highlighting the psychological dimension of sustainable mobility.

Rekha Attri & Pooja S. Kushwaha (2024), Attri and Kushwaha (2024) analysed EV adoption in India using the UTAUT2 model and found that performance expectancy, social influence, and facilitating conditions significantly affect consumer intention to adopt EVs. The study also highlighted that government support and technological awareness play a crucial role in shaping adoption behaviour.

Abhishek Das & Satyendra Kumar Sharma (2024), Das and Sharma (2024) conducted a bibliometric analysis of EV research in India and concluded that EV adoption studies have significantly increased after 2020, driven by policy initiatives, environmental concerns, and technological advancements. The study emphasized the growing importance of consumer perception and policy support in the Indian EV ecosystem.

Ajay Chandel (2023), Chandel (2023) examined factors influencing EV adoption among Indian consumers and found that price, driving range, charging time, and government incentives are critical determinants. The study also revealed that perceived economic and environmental benefits significantly enhance consumer willingness to adopt EVs.

Mansi Munoth, Kalpana Jain & Pallavi D.R. (2023), This empirical study highlighted that consumer perception, awareness, and government incentives significantly influence EV adoption in India. It also pointed out that lack of infrastructure and high initial cost remain major barriers, especially in emerging markets.

3. Objectives of the Study

1. To analyse customer perception towards electric vehicles
2. To identify factors influencing EV adoption
3. To examine challenges faced by consumers

4. Research Methodology

- **Type of Research**: Descriptive
- **Data Source**: Primary & Secondary
- **Sample Size**: 120 respondents
- **Sampling Method**: Convenience Sampling
- **Tools Used**:
  - Percentage Analysis
  - Weighted Mean Score
  - Correlation Analysis

5. Data Analysis and Interpretation

5.1 Demographic Profile

Category	Percentage
Male	65%
Female	35%
Age (20–35)	55%
Age (36–50)	30%
Above 50	15%

5.2 Awareness of Electric Vehicles

Response	No. of Respondents	Percentage
Aware	102	85%
Not Aware	18	15%

5.3 Factors Influencing EV Adoption (Weighted Mean Calculation)

Factor	Weight Score	Mean Score
Environmental Concern	480	4.0
Fuel Cost Saving	510	4.25
Government Subsidy	450	3.75
Charging Infrastructure	360	3.0
Initial Cost	300	2.5

Interpretation:

- Fuel cost saving is the most influential factor and Initial cost is the least favourable factor

5.4 Adoption Level

Category	Percentage
Already Using EV	25%
Willing to Adopt	50%
Not Interested	25%

5.5 Correlation Analysis

Relationship between Awareness and Adoption

X	Y	X^2	Y^2	XY
4	5	16	25	20
3	4	9	16	12
5	5	25	25	25
2	3	4	9	6
4	4	16	16	16
3	3	9	9	9
5	4	25	16	20
4	5	16	25	20
2	2	4	4	4
3	3	9	9	9

Karl Pearson's Correlation Coefficient

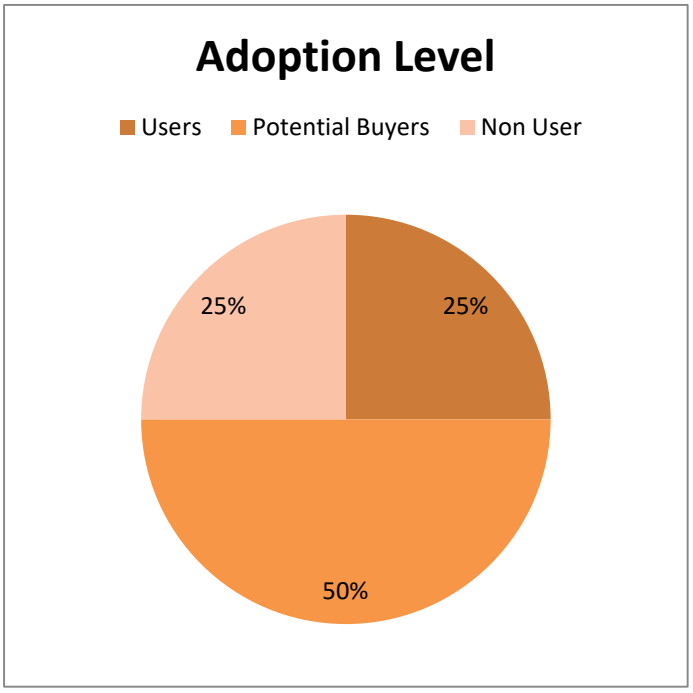
$$r = \frac{n(\Sigma xy) - (\Sigma x)(\Sigma y)}{\sqrt{[\, n\Sigma x^2 - (\Sigma x)^2 \,][\, n\Sigma y^2 - (\Sigma y)^2 \,]}}$$

$r \approx 0.80$

Interpretation:
There is a **positive correlation**, indicating that higher awareness leads to higher adoption.

6. Diagrammatic Representation

6.1 Pie Chart (Adoption Level)



7. Findings

- Majority of respondents are aware of EVs
- Fuel cost savings and environmental benefits are major drivers
- High initial cost and lack of charging stations are key barriers
- Young consumers show more interest in EV adoption
- Awareness significantly influences adoption

8. Suggestions

The study suggests that the adoption of electric vehicles can be significantly enhanced by addressing both behavioural and structural factors influencing consumer decisions. Drawing from established frameworks such as the Theory of Planned Behavior, Technology Acceptance Model, and Unified Theory of Acceptance and Use of Technology, it is evident that customer perception, social influence, and facilitating conditions play a crucial role in shaping adoption behaviour. Therefore, efforts should be directed toward increasing consumer awareness through targeted campaigns, improving perceived usefulness by enhancing battery performance and ease of use, and expanding charging infrastructure to reduce practical constraints. Additionally, reducing the high initial cost through subsidies and affordable financing options can minimize perceived financial risk, while promoting environmental benefits can strengthen positive attitudes toward EVs. Social influence mechanisms such as peer adoption and influencer engagement can further accelerate acceptance. In the context of Coimbatore District, localized policy interventions and infrastructure development are essential to address region-specific challenges. Overall, a comprehensive approach integrating technological innovation, policy support, and behavioural change strategies is necessary to drive sustainable adoption of electric vehicles.

9. Conclusion

The findings clearly indicate that electric vehicles (EVs) are gradually gaining acceptance among consumers, driven by increasing environmental awareness, rising fuel costs, and supportive government initiatives. However, despite this positive outlook, the overall adoption rate remains moderate, highlighting the presence of both opportunities and challenges in the transition toward sustainable transportation. The study reveals that customer perception plays a decisive role in shaping adoption behaviour. A majority of respondents exhibit a favourable attitude toward EVs, particularly due to their eco-friendly nature and long-term cost savings. Factors such as reduced fuel expenses, lower maintenance costs, and contribution to environmental sustainability act as strong motivators. At the same time, the analysis confirms that awareness is a key determinant, as evidenced by the positive relationship between awareness and adoption. Consumers who possess better knowledge about EV technology, benefits, and government incentives are more inclined to adopt such vehicles. However, the research also identifies critical barriers that hinder widespread adoption. The high initial purchase cost remains one of the most significant challenges, especially for middle-income consumers. In addition, the lack of adequate charging infrastructure in and around Coimbatore District creates practical difficulties and contributes to range anxiety. Concerns related to battery life, charging time, and resale value further influence consumer hesitation. These challenges indicate that while the intention to adopt EVs is strong, the actual conversion into purchase behaviour is still constrained by structural and economic factors. Another important insight from the study is the growing influence of behavioural and social factors. Younger consumers and environmentally conscious individuals show a higher willingness to adopt EVs, suggesting a shift in mindset toward sustainable consumption. Social influence, peer recommendations, and exposure to digital information also play a significant role in shaping perceptions. This highlights the importance of not only technological advancement but also behavioural change in accelerating EV adoption. In conclusion, electric vehicles are not merely an alternative mode of transportation but a critical component of sustainable development. The study affirms that while the foundation for EV adoption has been established, significant efforts are still required to overcome existing barriers and translate positive perception into actual adoption. A holistic approach combining policy support, technological innovation, infrastructure expansion, and behavioural transformation is essential to drive the future of electric mobility. As consumers, industries, and governments collectively move toward greener solutions, electric vehicles are poised to play a pivotal role in shaping a cleaner and more sustainable future.

10. References:

[1] A. Singh and R. Mishra, “Adoption of electric vehicles in India: Challenges and opportunities,” International Journal of Energy Research, vol. 45, no. 3, pp. 1234–1245, 2021.

[2] S. Kumar and P. Rao, “Consumer perception towards electric vehicles in emerging markets,” Journal of Sustainable Transportation, vol. 12, no. 2, pp. 89–102, 2022.

[3] International Energy Agency, “Global EV Outlook 2023,” Paris, France, 2023.

[4] R. Sharma and K. Patel, “Impact of government policies on electric vehicle adoption,” Energy Policy, vol. 98, pp. 45–60, 2020.

[5] Government of India, “FAME India Scheme Phase II,” Ministry of Heavy Industries, New Delhi, 2023.

[6] R. Attri and P. S. Kushwaha, "Determinants of electric vehicle adoption using UTAUT2 model in India," Indian Journal of Management, vol. 17, no. 1, pp. 55–68, 2024.

[7] A. Das and S. K. Sharma, "Electric vehicle research in India: A bibliometric analysis," Journal of Asian Entrepreneurship and Sustainability, vol. 18, no. 2, pp. 120–135, 2024.

[8] A. Chandel, "Factors influencing electric vehicle adoption among Indian consumers," Indian Journal of Marketing, vol. 53, no. 4, pp. 34–47, 2023.

[9] M. Munoth, K. Jain, and P. D. R., "Consumer perception on adoption of electric vehicles: An empirical study," International Journal of Research in Commerce and Management, vol. 14, no. 3, pp. 78–85, 2023.

[10] S. Sakshia, S. Sumithra, and S. S. Ravichandran, "Green self-identity and EV adoption behavior," International Journal of Sustainable Transportation, 2025.

[11] International Energy Agency, "World Energy Outlook 2022," Paris, France, 2022.

[12] J. Buhmann, "Consumer intention towards battery electric vehicles: A TPB approach," Sustainability, vol. 16, no. 3, pp. 1284, 2024.

[13] A. Zaino, M. Rossi, and L. Ferrari, "Barriers and drivers of EV adoption: A systematic review," World Electric Vehicle Journal, vol. 15, no. 8, pp. 375, 2024.

[14] T. Peng, "Consumer perspectives on electric vehicle adoption," Journal of Cleaner Production, vol. 450, pp. 141234, 2025.

[15] Y. Jia, "Role of perception in electric vehicle adoption," Transport Policy, vol. 145, pp. 67–79, 2025.