

The Electric Buzz: Consumer Satisfaction in Focus

Dr. Leena Neethu

Assistant Professor, Department of Economics, Aquinas College, Edacochin, Kerala, India

Abstract

The transportation sector is undergoing a significant transformation with the rise of electric vehicles (EVs). As governments worldwide set ambitious targets to reduce greenhouse gas emissions and promote sustainable transportation, EVs have emerged as a viable alternative to traditional internal combustion engine vehicles. This study is significant as it addresses the factors influencing consumer satisfaction with electric vehicles (EVs) in Palluruthy, a semi-urban region with unique socio-economic and geographic characteristics. Understanding consumer satisfaction in this localized context is essential for promoting sustainable mobility and accelerating the adoption of EVs. By focusing on Palluruthy, the study highlights region-specific challenges such as limited charging infrastructure, affordability concerns, and the need for tailored government incentives. These insights can guide manufacturers in designing vehicles and solutions that meet the specific needs of residents in similar regions. Policymakers can also use the findings to develop targeted interventions, such as expanding charging networks and providing localized subsidies, to address barriers to adoption. Additionally, the study contributes to a deeper understanding of how socio-economic diversity, community values, and environmental awareness influence consumer satisfaction. This knowledge is crucial for creating inclusive strategies that ensure the benefits of EVs are accessible to all sections of society. Ultimately, this research supports the broader goals of sustainability and clean energy by providing actionable insights to stakeholders, fostering greater EV adoption in Palluruthy, and serving as a model for addressing similar challenges in other semi-urban areas.

Key Words: Transportation, Consumer Satisfaction, Electric Vehicle, Ecosystem

Introduction

Electric vehicles (EVs) have emerged as a transformative solution in the global push towards sustainable transportation, addressing critical challenges such as environmental degradation, reliance on fossil fuels, and rising air pollution levels. The growing adoption of EVs is supported by advancements in battery technology, government incentives, and increasing consumer awareness of their environmental benefits. Despite these advancements, the success of EVs in replacing traditional internal combustion engine vehicles depends significantly on consumer satisfaction, which is shaped by various factors such as performance, cost-effectiveness, infrastructure availability, and regional characteristics.

This study focuses on the Palluruthy area, a unique region located in the southern part of Kochi,

*Corresponding Author Email: neethuleena170@gmail.com

Published: 22 August 2026

DOI: <https://doi.org/10.70558/SPIJSH.2026.v3.i8.45878>

Copyright © 2026 The Author(s). This work is licensed under a Creative Commons Attribution 4.0 International License (CC BY 4.0).

Kerala. Known for its blend of urban and semi-urban features, Palluruthy is a densely populated area characterized by narrow roads, moderate traffic density, and a mix of residential and commercial zones. Its proximity to water bodies and coastal conditions further add to its distinctiveness. The region is witnessing a gradual increase in environmental awareness, driven by state government initiatives promoting sustainability and green energy. However, the adoption of EVs in Palluruthy remains in its nascent stages, with several challenges that need to be addressed to improve consumer satisfaction and drive broader acceptance. One of the critical aspects influencing EV adoption in Palluruthy is the availability of adequate charging infrastructure. While the region has seen some development in this area, the limited number of charging stations and concerns over accessibility and reliability remain significant barriers. Additionally, the socio-economic diversity of Palluruthy means that affordability plays a crucial role in shaping consumer decisions. Many potential buyers weigh the high upfront costs of EVs against long-term savings, such as reduced fuel and maintenance expenses, but the lack of localized studies often leaves these factors inadequately addressed. Another important consideration is the role of cultural and community dynamics in influencing consumer behavior in Palluruthy. Residents of the region often base their decisions on shared values, environmental consciousness, and peer influence, which makes understanding local attitudes and motivations critical for promoting EV adoption. Furthermore, the unique geographic features and urban planning of Palluruthy necessitate a tailored approach to infrastructure development and vehicle design to ensure EVs meet the specific needs of the region's residents.

This study aims to bridge the gap in understanding consumer satisfaction with EVs in Palluruthy by examining the factors that influence perceptions, expectations, and overall experiences. By focusing on this specific region, the research provides localized insights that can inform the strategies of EV manufacturers, policymakers, and other stakeholders. The findings will highlight the key drivers and barriers to EV satisfaction, enabling targeted interventions that address the unique challenges faced by Palluruthy's residents. Ultimately, this research seeks to contribute to the broader goal of sustainable urban mobility in Kerala, with Palluruthy serving as a model for similar semi-urban regions. By addressing the region's specific needs and challenges, this study aims to pave the way for a more inclusive and sustainable future in electric mobility, ensuring that the benefits of EVs are accessible and appealing to a wider population.

Significance of the study

This study is significant as it addresses the factors influencing consumer satisfaction with electric vehicles (EVs) in Palluruthy, a semi-urban region with unique socio-economic and geographic characteristics. Understanding consumer satisfaction in this localized context is essential for promoting sustainable mobility and accelerating the adoption of EVs. By focusing on Palluruthy, the study highlights region-specific challenges such as limited charging infrastructure, affordability concerns, and the need for tailored government incentives. These insights can guide manufacturers in designing vehicles and solutions that meet the specific needs of residents in similar regions. Policymakers can also use the findings to develop targeted interventions, such as expanding charging networks and providing localized subsidies, to address barriers to adoption. Additionally, the study contributes to a deeper understanding of

how socio-economic diversity, community values, and environmental awareness influence consumer satisfaction. This knowledge is crucial for creating inclusive strategies that ensure the benefits of EVs are accessible to all sections of society. Ultimately, this research supports the broader goals of sustainability and clean energy by providing actionable insights to stakeholders, fostering greater EV adoption in Palluruthy, and serving as a model for addressing similar challenges in other semi-urban areas.

Objectives of the study

1. To assess the satisfaction levels of EV users in Palluruthy
2. To evaluate the impact of charging infrastructure on consumer satisfaction
3. To analyze the role of cost factors in EV adoption and satisfaction
4. To explore the impact of socio-economic and demographic factors on EV satisfaction
5. To identify barriers to EV adoption specific to Palluruthy
6. To assess the role of environmental awareness in influencing satisfaction

Literature Review

The transportation sector is undergoing a significant transformation with the rise of electric vehicles (EVs). As governments worldwide set ambitious targets to reduce greenhouse gas emissions and promote sustainable transportation, EVs have emerged as a viable alternative to traditional internal combustion engine vehicles. However, the adoption of EVs is influenced by a complex array of factors, including technological, economic, environmental, and social considerations. Recent studies have investigated various aspects of EV adoption, including consumer behavior, charging infrastructure, policy frameworks, and environmental impacts. For instance, research has explored the role of hedonic and utilitarian values in shaping consumer purchase intentions, the impact of government incentives on EV adoption, and the potential of EVs to reduce carbon emissions in the transportation sector. This literature review aims to synthesize the existing body of research on EV adoption, focusing on the key factors that influence consumer behavior, the effectiveness of policy interventions, and the environmental benefits of EVs. By examining the current state of knowledge on EV adoption, this review seeks to identify gaps in existing research, provide insights for policymakers and industry stakeholders, and inform future studies on sustainable transportation solutions.

Khan et al. (2025) explores a multi-model machine learning approach to predict electric vehicle (EV) specifications and energy consumption, addressing the growing need for accurate performance estimation. The study integrates various machine learning algorithms to analyze factors such as battery capacity, driving range, power efficiency, and charging time. By leveraging large datasets, the authors develop predictive models that enhance EV performance forecasting, aiding manufacturers, and policymakers in optimizing vehicle design and energy management. Their findings indicate that hybrid modeling techniques improve prediction accuracy, offering a more comprehensive understanding of energy consumption patterns under different driving conditions. This research contributes to the advancement of intelligent EV systems, supporting more efficient and sustainable transportation solutions.

Shi et al. (2025) examine Chinese user satisfaction with electric vehicle (EV) battery performance by analyzing online reviews, providing valuable insights into consumer

perceptions and concerns. The study highlights key factors influencing satisfaction, such as battery range, charging speed, durability, and performance in extreme weather conditions. Their findings suggest that while advancements in battery technology have improved user experience, concerns about long-term performance and charging infrastructure remain prevalent. The study contributes to the broader understanding of consumer attitudes towards EVs, offering recommendations for manufacturers and policymakers to enhance battery reliability and user confidence.

Prakhar et al.'s (2024) explores tourist perceptions and behavioral intentions regarding electric vehicle (EV) use in tourism contexts through the theoretical framework of Technology Continuance Theory. The research likely employs survey methodology to examine how factors such as perceived usefulness, ease of use, satisfaction, and confirmation of expectations influence tourists' intentions to adopt EVs during travel experiences. The authors probably investigate how sustainability consciousness and environmental attitudes moderate these relationships, particularly in tourism destinations promoting eco-friendly mobility solutions. The study contributes to understanding the intersection of sustainable tourism and transportation by identifying key determinants of tourist EV adoption, helping destination managers and tourism operators develop more effective strategies for promoting electric mobility.

Bhat, Furqan A., Verma, Meghna, and Verma, Ashish (2024) conducted a case study on Transport Policy employs cluster analysis to segment young Indian consumers based on their propensity to purchase electric vehicles (EVs). The research likely collects survey data from young adults across India to identify distinct consumer segments with varying attitudes, preferences, and intentions toward EV adoption. The findings provide valuable market intelligence for automakers, policymakers, and infrastructure developers seeking to accelerate EV adoption in the Indian market by enabling targeted strategies for each consumer segment. This research contributes to the growing literature on EV market segmentation by providing culturally specific insights from an important developing economy with unique transportation challenges and opportunities.

Methodology

This study employed a descriptive research design to explore the perceptions and attitudes of 53 residents in Palluruthy, a rapidly growing urban suburb of Kochi, in the state of Kerala, selected through convenience sampling. This study utilized both primary and secondary data, where primary data was collected through a self-administered survey questionnaire administered via Google Forms, and secondary data was gathered through a review of relevant literature, including academic journals, on electric vehicle adoption. The data collected was analyzed and presented using tables, graphs, bar diagrams, and pie charts to gain insights into the perceptions and attitudes of Palluruthy residents towards electric vehicles.

Result and Discussion

As part of the state's commitment to reducing carbon emissions and achieving a greener future, the Kerala government has introduced various initiatives to promote EV adoption. These include tax exemptions, subsidies, and the development of a robust charging infrastructure

under the state's Electric Vehicle Policy. However, while urban centers like Kochi have witnessed faster adoption, semi-urban areas like Palluruthy face unique challenges that require focused attention. This study examines consumer satisfaction with EVs in Palluruthy, reflecting the distinct socio economic and infrastructural realities of semi-urban Kerala. In regions like Palluruthy, limited charging facilities, higher initial costs of EVs, and varying levels of awareness about the benefits of EVs present significant barriers to widespread adoption. At the same time, Kerala's strong public transport network, environmentally conscious population, and growing interest in renewable energy sources offer unique opportunities for promoting EV usage.

Table 1 showing the ownership status of Electric Vehicles

EV Ownership Status	Number of Respondents	Percentage
Yes	50	94.3%
No	3	5.7%
Total	53	100%

An overwhelming majority of respondents own an Electric Vehicle, only a small fraction does not own an EV. The survey sample is heavily skewed towards EV owners, which may influence the findings.

Table 2 showing respondents profile by length of EV ownership

Length of EV Ownership	Number of Respondents	Percentage
Less than 6 months	11	20.8%
6 months – 1 year	34	64.2%
1 – 3 years	7	13.2%
More than 3 years	1	1.9%
Total	53	100%

This table shows how long the surveyed people have owned their electric vehicles. The data reveals that EV ownership is still at a nascent stage among respondents, with 85 percent having purchased their vehicles within the last year. This indicates a recent surge in adoption and suggests that most users are in the early experience phase with electric vehicles.

Table 3 showing the frequency of Electric Vehicle use by respondents

EV Utilization rate	Number of Respondents	Percentage
Daily	25	47.2%

Few times a week	17	32.1%
Occasionally	11	20.8%
Rarely	0	0%
Total	53	100%

This table shows how often the 53 surveyed EV owners actually use their electric vehicles. The data indicates a high utilization rate among EV owners. With nearly 8 out of 10 respondents using their EV daily or several times a week, it shows strong user acceptance and integration of EVs into daily life. The absence of respondents in the ‘Rarely’ category suggests satisfaction with the vehicle’s performance for regular needs. However, the 20.8 percent occasional users point to a segment that still relies partly on conventional vehicles.

Even though most owners are new (85 percent owned EVs < 1 year as per table 2), their utilization rate is already high. This suggests that once people buy an EV, they quickly adapt to using it regularly.

Table 4 showing the satisfaction with battery life and charging time of respondents

Satisfaction with Battery Life and Charging Time		Number of Respondents	Percentage
Very Satisfied		9	17%
Satisfied		32	60.4%
Neutral		12	22.6%
Dissatisfied		0	0%
Very Dissatisfied		0	0%
Total		53	100%

This table shows how satisfied the EV owners are with key performance factors: battery life and charging time. The data reflects a favourable perception of battery performance and charging time among current EV users. The complete absence of dissatisfaction shows that existing technology is meeting basic user needs for daily use. However, the 22.6 percent neutral response indicates an opportunity: manufacturers and charging infrastructure providers can convert this group to ‘Satisfied’ by improving range or reducing charging time.

Even though 85 percent of respondents are new owners (Table 2), and 79.3 percent use their EVs daily/ few times a week (Table 3), their satisfaction with battery life and charging time is high. This suggests that current EV models are delivering practical, real-world usability for new adopters.

Table 5 showing the problems encountered by respondents in using EVs

Challenges face by EV Owners	Number of Respondents	Percentage
Limited charging infrastructure	9	17%
High initial cost	10	18.9%
Limited driving range per charge	13	24.5%
Long charging time	12	22.6%
Battery performance issues	3	5.7%
Lack of awareness about EV benefits	3	5.7%
Limited availability of service center	3	5.7%
Others	0	0%
Total	53	100%

While overall satisfaction with battery life / charging time is high at 77.4 percent (Table 4) the specific challenges show users still want better range and faster charging. Infrastructure and upfront cost remain barriers to wider adoption. However, technical reliability and after-sales service are not major problems yet for this sample. Respondents are mostly new owners, using EVs heavily, broadly satisfied with battery/charging, but still flag range and charging speed as the main pain points. This suggests EVs are practical for daily use now, but improvements in range and charging will drive the next level of satisfaction and adoption.

Table 6 showing the difficulty faced by respondents in finding charging stations in Palluruthy

Difficulty for Finding Charging Station in Palluruthy	Number of Respondents	Percentage
Yes	24	45.3%
Sometimes	28	52.8%
No	1	1.9%
Total	53	100%

The data highlights that charging infrastructure in Palluruthy is inadequate and inconsistent. Even though 79.3 percent of respondents use their EVs daily or few times a week and 77.4 percent are satisfied with battery / charging time, finding a public charger remains a major

problem. This aligns with the earlier table where 17 percent listed ‘Limited charging infrastructure’ as a key challenge. For EV adoption to grow in Palluruthy, expanding the number of reliable, publically accessible charging points is critical. The ‘Sometimes’ response also indicates a need for real-time charger location apps or better signage.

Table 7 showing the factors influencing EV adoption in Palluruthy as perceived by respondents

Factors influencing EV adoption in Palluruthy	Number of Respondents	Percentage
More charging stations	14	26.4%
Better government incentives	8	15.1%
Low initial costs	17	32.1%
Improved battery technology	12	22.6%
Awareness programs on EV benefits	2	3.8%
Others	0	0%
Total	53	100%

The data indicates that EV adoption in Palluruthy is primarily price sensitive. Reducing upfront cost would have the biggest impact, followed by expanding charging infrastructure and advancing battery technology for better range and faster charging. Since 85 percent of respondents are new owners using EVs regularly, their views reflect actual user experience: people will buy EVs if they are affordable and convenient to charge. Government incentives can bridge the cost gap, while infrastructure investment would address the ‘Sometimes/Yes’ difficulty seen in table 6. Thus users are adopting EVs recently, using them heavily, broadly satisfied with current battery/charging, but still want lower costs, more chargers, and better range to drive mass adoption.

Conclusion

The study indicates that EV users in Palluruthy are early adopters who have integrated EVs into regular use and are broadly satisfied with vehicle performance. However, the local ecosystem has not yet caught up with user needs. The growth of EV adoption in Palluruthy is currently constrained by three main factors: high initial purchase cost, insufficient and unreliable charging infrastructure, and expectations for better range and faster charging. Since technical reliability, service availability, and awareness are not major concerns for this group, addressing cost and infrastructure will likely convert the large ‘neutral’ and ‘occasional user’ segments into strong, long-term EV advocates. The data suggests Palluruthy has a willing user base; the next phase of adoption depends on making EV ownership cheaper and charging more convenient.

References

- An, Fulai, et al. (2021). State of energy estimation for lithium-ion battery pack via prediction in electric vehicle applications. *IEEE Transactions on Vehicular Technology* 71.1:184-195.
- Bhat, Furqan A., Meghna Verma, and Ashish Verma. (2024). Who will buy electric vehicles? Segmenting the young Indian buyers using cluster analysis. *Case Studies on Transport Policy* 15: 101147.
- Boonchunone, Surasidh, et al. (2023). Exploring the effects of perceived values on consumer usage intention for electric vehicle in Thailand: the mediating effect of satisfaction. *Acta logistica* 10.2: 151-164.
- Gerber Machado, Pedro, et al. (2023). Electric vehicles adoption: A systematic review (2016–2020)." *Wiley Interdisciplinary Reviews: Energy and Environment* 12.5 : e477.
- Ghosh, Aritra. (2020). Possibilities and challenges for the inclusion of the electric vehicle (EV) to reduce the carbon footprint in the transport sector: A review. *Energies* 13.10: 2602.
- Hasan, Saiful. (2021). Assessment of electric vehicle repurchase intention: A survey-based study on the Norwegian EV market. *Transportation Research Interdisciplinary Perspectives* 11: 100439.
- Isaac, Aswin Philip, Asish Oommen Mathew, and K. V. Sriram. (2022) "Drivers of purchase intention-hedonic or utilitarian values? A case of Indian electric car market." *International Journal of Business Excellence* 27.2: 202-219.
- Khalid, Ahmad Mohd, and Y. S. C. Khuman. (2022). Electric vehicles as a means to sustainable consumption: Improving adoption and perception in India. *Socially responsible consumption and marketing in practice: Collection of case studies*. Singapore: Springer Nature Singapore. 325-345.
- Khan, Ajmal, et al. (2025). A multi-model approach for predicting electric vehicle specifications and energy consumption using machine learning. *The Journal of Supercomputing* 81.1: 1-32.
- Lee, Seojin Stacey, Yaeri Kim, and Taewoo R. (2023). Pro-environmental behavior on electric vehicle use intention: Integrating value-belief-norm theory and theory of planned behavior. *Journal of Cleaner Production* 418: 138211.
- Moeletsi, Mokhele Edmond. (2021). Socio-economic barriers to adoption of electric vehicles in South Africa: Case study of the gauteng province. *World Electric Vehicle Journal* 12.4: 167.
- Pamidimukkala, Apurva, et al. (2023). A review on shared mobility and electric vehicles. *International Conference on Transportation and Development*.
- Pareschi, Giacomo, et al. (2020). Are travel surveys a good basis for EV models? Validation of simulated charging profiles against empirical data. *Applied Energy* 275 (2020): 115318.

- Prakhar, Prakhar, et al. (2024). Decoding tourist perceptions and behavioral intentions to use electric vehicles for sustainable tourism with the lens of technology continuance theory. *International Journal of Tourism Cities*.
- Raj, Abhishek, Gouri Anand, and T. S. Sujith. (2023). Factors influencing the adoption of electric vehicles: A study with special reference to Kerala. *European Chemical Bulletin* 12: 5165-5183.
- Rehman, Shafique Ur, et al. (2024). Customer satisfaction leading the intention to adopt battery electric vehicles with the moderating role of government support and status symbol. *Journal of Cleaner Production* 456: 142371.
- Shahriar, Sakib, et al. (2021). Prediction of EV charging behavior using machine learning. *Ieee Access* 9: 111576-111586.
- Shi, Lanxin, et al. (2025). Assessing Chinese user satisfaction with electric vehicle battery performance from online reviews. *Transportation Research Part D: Transport and Environment* 141: 104644.
- Zhu, Shao Xuan, Danting Zhao, and Yihao Li. (2024). Comparing Mini and full-size electric vehicles in China: Evidence from user heterogeneity and satisfaction asymmetry. *Journal of Cleaner Production* 449: 141839.