



ELECTRIC VEHICLES IN INDIA: BRIDGING THE GAP BETWEEN EXPECTATIONS AND EXPERIENCE

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ABSTRACT

The rapid shift towards electric vehicles (EVs) reflects a global commitment to sustainable and eco-friendly transportation solutions. This study investigates customer perception, satisfaction, and the key challenges associated with owning and maintaining EVs, with a specific focus on users in Kerala, India. Drawing from both primary data and a comprehensive literature review, the research explores critical factors influencing consumer attitudes, including battery performance, charging infrastructure, vehicle affordability, and technological features. Findings indicate that while most users perceive EVs as environmentally beneficial and appreciate features such as battery range and vehicle performance, major concerns persist regarding long

charging times, limited infrastructure, and driving range limitations. High upfront costs and maintenance uncertainties further affect buyer confidence. The study highlights the need for improved charging infrastructure, faster battery technology, and greater public awareness to enhance user satisfaction. By identifying gaps in user experience and technology adoption, the research provides actionable insights for manufacturers, policymakers, and stakeholders aiming to promote broader EV acceptance and optimize the ownership experience in the Indian context.

Keywords: Customer perception and preference, Electric vehicles, environmental advantages, technological features.

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1. Introduction

The global automotive industry is experiencing a transformative shift, with electric vehicles (EVs) taking centre stage as a sustainable alternative to internal combustion engine vehicles. This transition is primarily driven by growing concerns over climate change, deteriorating urban air quality, and the urgent need to reduce dependency on fossil fuels. EVs are increasingly being recognized as vital tools in achieving international climate targets and fostering sustainable transportation solutions (International Energy Agency [IEA], 2023). Governments, private sectors, and consumers worldwide are aligning their efforts to promote the adoption of EVs as part of a broader green mobility strategy.

While the environmental and economic benefits of EVs—such as reduced greenhouse gas emissions, lower fuel costs, and decreased noise pollution—are widely acknowledged, the long-term success and widespread adoption of EVs now hinge significantly on consumer satisfaction. Satisfied customers are more likely to promote adoption through positive word-of-mouth and brand loyalty, making it essential to understand their experiences and concerns.

Customer satisfaction in the EV domain is multifaceted, encompassing performance, affordability, reliability, vehicle design, and after-sales service. Unique advantages like instant torque, quiet driving experiences, and lower maintenance costs contribute to a generally positive reception of EVs. According to a recent survey by Consumer Reports (2023), approximately 85% of EV owners reported satisfaction with their vehicles, particularly

highlighting their performance, technological features, and economic benefits. Such findings underline the growing acceptance and enthusiasm for EVs, especially as technology continues to advance.

Historically, electric mobility dates back to the early 19th century, but the past two decades have seen its resurgence, spurred by significant improvements in battery technology, governmental policy support, and rising environmental consciousness. In the Indian context, electric mobility gained momentum with the launch of the Reva electric car in 2001, which marked a turning point in the nation's shift toward greener transport alternatives. Kerala, one of India's most progressive states, has emerged as a frontrunner in EV adoption. The state government has introduced proactive policies such as subsidies for EV purchases, incentives for manufacturers, and plans to expand charging infrastructure across major cities. Cities like Thiruvananthapuram and Kochi have witnessed increased EV registrations due to improved public awareness, supportive governance, and expanding infrastructure. This study seeks to evaluate customer satisfaction levels among EV users in Kerala by exploring key dimensions such as vehicle performance, affordability, charging infrastructure, and service experience. By analyzing user perceptions and challenges, the study aims to provide actionable insights for policymakers, manufacturers, and service providers to further enhance the EV ecosystem. Ultimately, understanding consumer satisfaction will be crucial in shaping strategies that promote EV adoption and ensure long-term success in the sustainable transportation movement.

2. Review of Literature

Electric vehicle (EV) adoption is influenced by a complex interplay of technological, infrastructural, behavioral, economic, and policy factors. These dimensions have been explored extensively in global and Indian contexts.

2.1. Battery Technology.

Battery efficiency and cost play a critical role in EV viability. Chan (2002) emphasized the significance of battery technology as a core component in EV adoption, while Hadley and Tsevotka (2008) warned of regional grid stress caused by increased electricity demand from EVs. Dow et al. (2010) proposed time-of-use pricing to alleviate peak-hour loads. In India, Aggarwal (2019) noted that battery issues—especially in two-wheelers—hamper widespread acceptance. Similarly, Mohamed et al. (2018) pointed to unpredictable demand and low battery efficiency as localized challenges. Infrastructure deficits, particularly the lack of public charging stations, are identified as major adoption barriers (Caperollo & Kurani, 2011; Liao et al., 2017), necessitating strategic investment in EV infrastructure.

2.2. Consumer Perceptions.

Consumer perceptions and knowledge significantly affect the willingness to transition to EVs. Kurani et al. (2009) and Egbue & Long (2012) found that a lack of understanding about electric and hybrid vehicles hinders consumer confidence. Similarly, Gyimesi and Viswanathan (2011) and Masurali (2018) highlighted how informed consumers are more likely to adopt EVs. Greater familiarity with EVs tends to improve acceptance (Larson et al., 2014), but subpar dealership experiences can have the opposite effect (Cahill et al., 2014). Educational campaigns and social norms play a vital role in shaping positive attitudes (Rezvani et al., 2015; Consumer Federation of America, 2015). Additionally, psychological traits, environmental concern, and community influence contribute to consumer decisions (Axsen et al., 2012; Krupa et al., 2020; Noel et al., 2019).

2.3. Policy Considerations.

Affordability is a critical factor in consumer choice. Tamor et al. (2013) and Carley et al. (2013) observed that plug-in hybrids (PHEVs) are often preferred over battery electric vehicles (BEVs) due to cost and range concerns. Financial incentives, including subsidies and tax benefits, are strong motivators for adoption (Jin & Slowik, 2017; Liao et al., 2017). Policy frameworks that combine incentives with infrastructure development have been shown to be highly effective (Sierzchula et al., 2014). California's success with its ZEV program (Nicholas & Hall, 2018) and China's EV market growth (Wang et al., 2019) are driven by supportive regulations and funding. Lutsey et al. (2020) found that consistent policy commitment, as seen in Norway and China, correlates with higher EV adoption.

2.4. Market Segmentation.

EV diffusion typically follows an S-curve, demanding sustained market and policy support (Gnann et al., 2015). Hardman et al. (2017) differentiate early adopters from mainstream consumers, advocating for targeted outreach strategies. Social norms and personal values strongly affect buying behavior (Rezvani et al., 2015; Javid & Nejat, 2017).

2.4. Limited Public Awareness

India faces distinct challenges and opportunities. Government schemes such as the National Electric Mobility Mission Plan (Kumar, 2019) and state-led procurement initiatives (Kesari, 2019) aim to catalyze EV adoption. However, persistent challenges—ranging from insufficient infrastructure and high costs to limited public awareness—remain. Studies by Gujarathi et al. (2018), Mohamed et al. (2018), and Masurali (2018) call for enhanced battery research, consumer education, and collaborative public-private approaches to make EVs more viable and appealing.

Electronic Vehicle adoption requires a holistic strategy that addresses technical, economic, behavioral, and policy-related barriers. In India, these strategies must be region-specific and inclusive to drive widespread transition toward sustainable mobility.

3. Research Gap

While extensive research has highlighted the environmental benefits and policy-driven growth of electric vehicles (EVs), there remains a significant gap in understanding customer perception and satisfaction, particularly within the Indian context. Most existing studies focus on technological advancements, infrastructure needs, and macroeconomic policy impacts, with limited emphasis on real-world user experiences and post-purchase challenges. Furthermore, few studies provide region-specific insights, such as from Kerala, where EV adoption is increasing but user feedback remains underexplored. There is a lack of comprehensive analysis addressing how consumers perceive EV performance, maintenance issues, infrastructure adequacy, and long-term reliability. This gap underscores the need for focused research to evaluate both the satisfaction levels and the practical difficulties faced by EV users, which is essential for informing policy, improving service delivery, and encouraging broader acceptance of electric mobility.

4. Statement of the Problem

In Kerala the adoption of electric vehicle is growing in an increasing rate. Despite the increasing adoption of electric vehicles (EVs) as a sustainable mobility solution, understanding customer perception and satisfaction remains essential for their continued growth. EV users often encounter challenges related to vehicle maintenance, limited charging infrastructure, high initial costs, and concerns about battery life and long-term reliability. These issues can significantly affect ownership satisfaction and influence purchasing decisions. This study aims to assess the perceptions and satisfaction levels of EV users, while also evaluating the key problems and challenges associated with owning and maintaining electric vehicles. By identifying the factors that enhance or hinder the EV ownership experience, the research seeks to provide valuable insights for policymakers, manufacturers, and stakeholders to improve customer experience and support wider EV adoption.

5. Objectives of the Study

The specific objectives of the study are:

1. To assess customer perception and level of satisfaction of EV users.

2. To evaluate the problems and challenges regarding owning and maintaining EVs.

6. Significance of the Study

This study is significant as it explores customer satisfaction in the emerging electric vehicle (EV) market in India, a key factor influencing adoption. Understanding customer experiences and expectations can help manufacturers improve EV design, performance, and reliability. Satisfied customers drive word-of-mouth promotion, enhancing brand trust and market growth. The insights from this study can guide companies in aligning their offerings with consumer needs and support policymakers in framing effective incentives and infrastructure development. Ultimately, the study contributes to promoting EV adoption, reducing emissions, and supporting India's environmental and sustainable transportation goals.

7. Methodology

The present study is descriptive and analytical in nature, focusing on customer satisfaction among electric vehicle (EV) users in Kerala. The population comprises all EV users within the state, with a sample of 100 respondents selected specifically from the Thiruvananthapuram district. A convenience sampling method was employed to select participants. Both primary and secondary sources of data were utilized; primary data were collected directly from respondents through a well-structured questionnaire, while secondary data were obtained from books, newspapers, and journals. For data analysis and inference, simple statistical tools such as percentages and averages were applied.

8. Data Analysis and Discussion

8.1. Sample Profile of Respondents

Variable	Classification	Frequency	Percentage
Gender	Male	42	42
	Female	58	58
Age	18-25	64	64
	26-35	14	14
	36-45	12	12
	46-55	10	10
Occupation	Govt Employee	34	34
	Pvt. Employee	42	42
	Student	24	24

Monthly Income (IRS)	Below 20,000	42	42
	20,000-50,000	18	18
	50,000-1,00,000	16	16
	Above 1,00,000	24	24
Area of Residence	Urban	46	46
	Semi	30	30
	Rural	24	24

Table 1 presents the demographic distribution of the 100 survey respondents. Females constituted 58%, indicating a higher level of female engagement, possibly due to increased interest or accessibility in EV-related topics. Age-wise, 64% of participants were aged 18–25, reflecting a youthful demographic more open to sustainable and technologically advanced transportation. Employment data shows that private sector employees made up the largest group (42%), followed by students (34%) and government employees (24%). This may suggest that financial independence and income stability influence interest in EVs, particularly due to their long-term cost benefits and available incentives. In terms of income, 42% of respondents earn below ₹20,000 per month, highlighting affordability as a key concern. Higher-income groups were also represented, with 24% earning above ₹100,000, and the remaining 34% distributed across mid-level brackets. This income diversity underlines the need for tiered incentives and financing solutions. Geographically, 46% of respondents were from urban areas, 30% from semi-urban, and 24% from rural regions. The urban dominance suggests that EV awareness and infrastructure are concentrated in cities, pointing to the necessity of expanding outreach and infrastructure development in rural and semi-urban areas for equitable EV adoption.

8.2. Perception towards EVs

Table 2 Perception towards EVs

Perception	Percentage
Environmentally friendly	82
Cost-effective in the long run	44
High maintenance	24
Limited range	22

Table 2 reveals that a large majority of respondents (82%) perceive electric vehicles (EVs) as environmentally friendly, indicating strong awareness of their ecological benefits.

Nearly half (44%) believe EVs are cost-effective over time, suggesting moderate confidence in their economic value. However, 24% of users associate EVs with high maintenance needs, and 22% express concerns about limited driving range. These concerns highlight persistent challenges related to practicality and performance that may affect long-term adoption and satisfaction.

8.3. Concerns about purchasing an EV

Table 3: Concerns regarding the purchase of an EV

Concern	Percentage
High upfront cost	34
Limited driving range	48
Lack of charging infrastructure	52
Long charging time	56
High maintenance costs	32
Limited model options	30

Table 3 shows that the most concerning factor in purchasing an EV is its long charging time (56%) followed by lack of charging infrastructure (52%). The table highlights the primary concerns that prospective EV buyers face, based on respondent feedback. The concerns span financial, technological, and infrastructural barriers, indicating multifaceted hesitations about EV adoption.

8.4. Features important to customers

Table 4 Features important to EV customers

Feature	Percentage
Battery range	70
Charging speed	46
Performance(speed/power)	60
Safety features	50
Technology	32
Design/aesthetics	14

Table 4 shows that the majority of the EV users give importance to battery range (70%) and performance(speed/power) (60%) of EV. EV users also give importance to safety features (50%) and charging speed (46%). The table reveals customer priorities when evaluating electric

vehicles. It shows that **battery performance and driving experience** rank higher than design or visual appeal. This implies consumers are more function-oriented when considering EVs, focusing on **practicality, safety, and reliability** over aesthetics.

8.5 Customer Satisfaction

8.5.1. Level of Satisfaction

Table 5 Level of satisfaction of EV users on various features

Level of satisfaction on different features	Very Satisfied	Satisfied	Neutral	Dissatisfied	Very Dissatisfied
Range and Battery life	16	46	30	2	6
Cost savings	24	42	28	4	2
Maintenance and servicing	12	26	44	14	4
Environmental impact	26	48	22	2	2

Table 5 presents the level of satisfaction of EV users across four key features: range and battery life, cost savings, maintenance and servicing, and environmental impact. For range and battery life, the majority of respondents were satisfied (46), followed by a significant number who were neutral (30). A smaller portion reported dissatisfaction (2 dissatisfied and 6 very dissatisfied), indicating a moderate level of concern regarding EV range performance. In terms of cost savings, most users expressed satisfaction (42 satisfied and 24 very satisfied), highlighting that EV users largely perceive electric vehicles as financially beneficial. Very few respondents showed dissatisfaction (4 dissatisfied and 2 very dissatisfied), confirming strong positive sentiment toward cost efficiency. Regarding maintenance and servicing, satisfaction levels were lower compared to other features, with only 12 very satisfied and 26 satisfied respondents. A relatively high number of users (44) remained neutral, and notable dissatisfaction was recorded (14 dissatisfied and 4 very dissatisfied), suggesting mixed experiences or a lack of awareness regarding EV maintenance advantages. For environmental impact, EV users showed the highest satisfaction, with 48 satisfied and 26 very satisfied respondents. Only minimal dissatisfaction was reported (2 dissatisfied and 2 very dissatisfied), indicating that environmental benefits are a strong motivating factor for EV ownership. Overall, the analysis reveals that while cost savings and environmental impact are major satisfaction drivers among EV users, maintenance and servicing still presents an area with room for improvement.

8.5.2 Rating on features of EV

Table 6 Rating on various features of EV

Rating on different features	Excellent	Good	Fair	Poor	Very poor
Availability of Charging stations	10	32	36	16	6
Performance and Driving experience	24	52	22	0	2
Customer service and support	10	36	40	6	8
Build quality and reliability	14	38	42	4	2

Table 6 shows how EV users rated various features including the availability of charging stations, performance and driving experience, customer service and support, and build quality and reliability. For availability of charging stations, ratings were mixed: while 32 users rated it as good and 10 rated it as excellent, a large portion (36) rated it as fair, and a notable number (16 poor, 6 very poor) expressed dissatisfaction. This indicates that charging infrastructure is still a concern among EV users. Performance and driving experience received the highest positive feedback, with 52 users rating it as good and 24 rating it as excellent. Very few users expressed dissatisfaction (only 2 very poor ratings and none in poor), suggesting that users are highly satisfied with EV performance. Customer service and support showed a more balanced distribution: 36 users rated it good, 40 rated it fair, while some dissatisfaction was also observed (6 poor and 8 very poor). This suggests that customer service is an area needing improvement for EV companies. In terms of build quality and reliability, most users had a neutral to positive outlook: 38 rated it good, 42 fair, and 14 excellent. Only 4 users rated it poor and 2 very poor, indicating that while build quality is acceptable for many, there is still scope for strengthening user confidence. Overall, the analysis highlights strong satisfaction with EV performance, moderate satisfaction with build quality, concerns about charging station availability, and mixed experiences with customer support.

8.5.3 Recommendation of EV to others

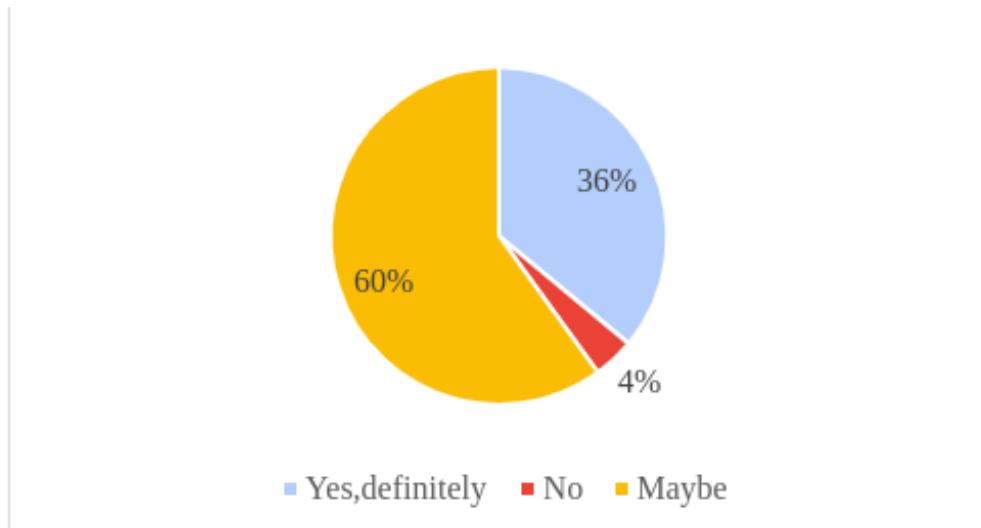


Fig: 1: Recommending EV to others

Figure 1 shows that 36% of the respondents would definitely recommend electric vehicles (EVs) to others, while 60% are uncertain and chose "Maybe". Only 4% of users said they would not recommend EVs. This suggests that while a good number of users are positive, a majority still have hesitations, highlighting the need for improvements in certain areas to boost user confidence.

8.5.4. Perceptions regarding Issues on Charging.

Table 7: Issues while charging EV

Issues	Percentage
Lack of charging stations	72
Inconsistent charging speeds	34
Broken or out-of-order chargers	6
Long waiting times	56
Charging cost variability	8

Table 7 shows that Lack of Charging Stations (72%) is the most common issue, affecting nearly three-quarters of respondents. It highlights that there is Inadequate charging infrastructure, especially in semi-urban and rural areas, difficulty finding conveniently located or publicly accessible stations and a major barrier to widespread EV adoption, contributing to range anxiety. As the case of Long Waiting Times, over half of users reported excessive waiting

times at charging points, which could result from too few chargers relative to the number of EVs. Slow charging speeds, leading to backlogs and lack of reservation systems or queue management which undermines the efficiency and convenience that EVs promise.

9. Observations and Findings

9.1. Demographic Features of Sample

Gender Distribution

- Female respondents dominate the sample (58%), indicating growing female interest and influence in EV purchasing decisions, a shift from traditional male dominance in automotive sectors.

Age Group:

- Majority (64%) are young adults (18–25), showing strong interest among younger, environmentally conscious, and tech-savvy consumers.
- Middle-aged respondents make up 26%, indicating moderate interest in older demographics.

Occupational Profile:

- Private sector employees form the largest group (42%), likely due to stable incomes and financial independence enabling EV purchase.
- Students (34%) and government employees (24%) follow, reflecting mixed income and interest levels.

Income Levels:

- 42% of respondents earn below ₹20,000 monthly, highlighting a significant low-income segment.
- 24% earn over ₹100,000, indicating presence of high-income EV buyers.
- Income disparity suggests affordability is a key factor for many potential buyers.

Location:

- Urban residents dominate (46%), followed by semi-urban (30%) and rural (24%). This suggests greater EV awareness and infrastructure in cities, with rural areas lagging behind.

9.2. Environmental Perception:

A significant majority (82%) of respondents view electric vehicles as environmentally friendly, highlighting strong awareness of the ecological benefits associated with EV adoption.

This finding suggests that environmental consciousness is a major positive driver in shaping public attitudes toward EVs.

9.3. Cost-Effectiveness:

Half of participants perceive EVs to be cost-effective in the long run, indicating that while nearly half see financial benefits, there is still some skepticism regarding the economic viability of EV ownership, especially upfront costs and battery replacement expenses.

9.4. Maintenance Concerns:

A quarter of respondents believe EVs have high maintenance requirements. This reflects a perception gap, as EVs typically have fewer moving parts and lower servicing needs compared to internal combustion engine vehicles. The concern may stem from unfamiliarity with EV technology or lack of service infrastructure.

9.5. Range Anxiety:

More than one fifth expressed concern about limited driving range, showing that range anxiety remains a notable barrier to adoption, particularly in areas where charging stations are sparse or where long-distance travel is common.

9.6. Overall Perception:

While the positive perception of EVs in terms of environmental friendliness is strong, cost, maintenance, and range-related concerns still affect customer confidence. Addressing these challenges through awareness campaigns, improved infrastructure, and user education could significantly enhance public acceptance and satisfaction.

9.7. Major concerns

Long Charging Time (56%): Over half of the respondents consider long charging time a major deterrent. This indicates the need for faster-charging solutions and may reflect dissatisfaction with current battery technologies or limited access to fast-charging stations.

Lack of Charging Infrastructure (52%): The second most reported concern, showing that inadequate public charging stations remains a critical barrier to EV adoption. Consumers may feel uncertain about long trips or daily usability without convenient, reliable charging access.

Limited Driving Range (48%): "Range anxiety" continues to be a major concern, nearly half of the respondents fear that EVs can't support long-distance travel or irregular commuting needs without frequent recharging.

High Upfront Cost (34%): More than one-third of participants find the initial purchase price prohibitive. This reflects the affordability challenge, especially when compared to similarly priced conventional vehicles.

High Maintenance Costs (32%): A portion of users (perhaps due to lack of knowledge) incorrectly perceives EVs as costly to maintain, despite their fewer moving parts and lower long-term servicing needs.

Limited Model Options (30%): A notable number of respondents believe the market lacks diverse EV models, particularly in terms of size, performance, and price range, limiting choice for consumers with specific preferences.

9.8. Observations- regarding features

Battery Range (70%): The most critical feature for customers is how far the EV can travel on a full charge. This reflects persistent range anxiety, especially in regions with underdeveloped charging infrastructure.

Performance (Speed/Power): A significant majority value vehicle performance, indicating expectations that EVs should match or exceed internal combustion vehicles in acceleration and speed.

Safety Features: Half of the respondents prioritize safety, highlighting a growing consumer demand for advanced safety technologies such as airbags, ABS, ADAS (Advanced Driver Assistance Systems), etc.

Charging Speed: Nearly half the respondents are concerned with how quickly the EV charges, reinforcing the need for fast-charging technologies and infrastructure.

Technology: About one-third consider in-vehicle tech, such as infotainment, smart displays, and connected systems, to be important, indicating a moderate interest in smart features.

Design/Aesthetics: Only a small portion care about the visual appeal of the EV, suggesting Indian consumers are currently more utility-driven in their EV choices.

9.9. Customer Satisfaction- Satisfaction Levels:

Range and Battery Life: Most users are satisfied (46%) or neutral (30%) about EV range and battery life, but around 8% expressed dissatisfaction. This indicates moderate concern over driving range.

Cost Savings: A strong majority feel positively about cost savings, with 66% satisfied or very satisfied. This highlights that financial benefits are a major driver of satisfaction.

Maintenance and Servicing: Satisfaction is comparatively lower, with only 38% satisfied or very satisfied, and a high neutral response (44%). Dissatisfaction (18%) shows mixed or unclear experiences regarding maintenance.

Environmental Impact: This is the most positively rated feature, with 74% satisfied or very satisfied, reflecting strong environmental motivation among users.

9.10. Customer Satisfaction- Feature Ratings:

Charging Station Availability: Ratings are mixed, with a significant number rating it as fair or poor, confirming ongoing infrastructure issues.

Performance and Driving Experience: This received the highest satisfaction, with 76% rating it excellent or good, showing EVs meet or exceed user expectations in this area.

Customer Service and Support: Ratings are moderate but lean toward average to below average (40 fair, 14 poor/very poor), indicating room for improvement in customer relations and after-sales service.

Build Quality and Reliability: Most users rate it fair to good, with only a small minority dissatisfied, suggesting generally acceptable but improvable product quality.

9.11. Recommendation Willingness:

Only 36% would definitely recommend EVs, while a majority (60%) are uncertain ("Maybe"), reflecting hesitation likely tied to concerns over maintenance, charging infrastructure, and service support. Just 4% outright do not recommend EVs, indicating overall positive potential if issues are addressed.

10. Suggestions regarding concerns

10.1 To Reduce concerns of Customers

1. Encourage public-private partnerships to expand the network of fast and ultra-fast charging stations, especially in semi-urban and highway areas. Incentivize real estate and commercial centers to host EV chargers.
2. Provide purchase incentives, interest-free EV loans, or tax exemptions to reduce high upfront costs, especially for first-time buyers and middle-income segments.
3. Launch awareness campaigns to clarify the low maintenance needs of EVs compared to conventional vehicles. Promote transparent information about service costs and battery life.
4. Support R&D and partnerships to develop higher-range battery technologies. Encourage manufacturers to integrate range estimators and real-time charging location apps in vehicles.
5. Encourage local and international manufacturers to launch more variants suited to Indian conditions (e.g., small city cars, electric two-wheelers, affordable SUVs).
6. Accelerate research in solid-state batteries and faster charging systems to minimize downtime and enhance consumer confidence.

10.2. To improve Features to create more satisfied consumers

1. Manufacturers should focus R&D efforts on improving battery range and efficiency to meet the top customer expectation. Promoting real-world range testing data can also build trust.
2. Introduce powerful electric motors even in affordable variants to meet the demand for speed and responsiveness. Highlight EVs' instant torque advantage in marketing.
3. Equip vehicles with essential passive and active safety features. Offer safety certifications and crash-test ratings to improve consumer confidence.
4. Collaborate with energy providers to expand fast-charging networks. Also offer home-charging kits with fast-charging capability.
5. Integrate Smart Technologies- Equip EVs with connectivity features, voice assistants, app integration, and real-time navigation tools. Highlight energy-efficient driving tips and live charge monitoring via apps.
6. Although aesthetics ranked low, some niche users may value customization. Allow optional upgrades (colors, interior trims, wheels) for premium segments.
7. Implement Smart Queue and Booking Systems. For that use mobile apps or digital platforms to enable real-time charger availability and advance reservations.
8. Promote pricing awareness to encourage more predictable usage costs. Implement unified or capped tariffs to reduce cost variability.
9. Focus on Maintenance and After-Sales Service. In this connection, Increase transparency about maintenance requirements and costs to better manage user expectations. Train and expand skilled technician networks to improve service quality and reduce waiting times. Improve customer support responsiveness and communication to elevate the user experience.

CONCLUSION

The survey highlights strong interest in electric vehicles (EVs), particularly among younger, urban, and female consumers. However, challenges like limited charging infrastructure, long charging times, high upfront costs, and maintenance concerns persist. Environmental and cost-saving benefits are key motivators, though issues like battery range and service availability remain. For customers, it's essential to consider long-term benefits, take advantage of government incentives, and prioritize reliable after-sales support. Engaging with the EV community and testing models can lead to more informed choices. Dealers and manufacturers must focus on improving infrastructure, expanding service networks, and

addressing customer concerns about charging and maintenance. Innovations in battery performance and charging speed will be key to making EVs more affordable and efficient. In conclusion, while EV adoption is growing, overcoming these barriers will accelerate the transition to sustainable transportation. Continued efforts from all stakeholders will shape the promising future of EVs.

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