A Study on Customer Perception towards Electric Cars in India.

Abstract

(The rapid growth of the electric vehicle (EV) market in India reflects a significant shift in customer behaviour driven by rising fuel costs, environmental concerns, and supportive government policies; however, the adoption of electric cars varies among consumers due to differences in preferences, awareness, and perceptions. This study examines customer behaviour towards electric cars by analysing key factors such as price, battery performance, driving range, charging infrastructure, brand image, design, safety features, and after-sales services. The research adopts a descriptive design and is based on both primary and secondary data, with primary data collected through a structured questionnaire from 350 respondents using convenience sampling, and secondary data gathered from journals, reports, and online sources. Simple statistical tools such as percentage analysis, tables, and graphs were used for data interpretation. The findings reveal that customer purchasing decisions are largely influenced by factors like price, driving range, and charging infrastructure, while major challenges include high initial cost, limited charging facilities, battery concerns, and uncertainty regarding long-term reliability. The study also highlights variations in brand preference and awareness levels among consumers. Overall, the study provides valuable insights for manufacturers, marketers, and policymakers to better understand customer expectations and develop effective strategies to promote electric cars, while also contributing to the advancement of sustainable and eco-friendly transportation in India)

(Keywards: Perception ,Perception Models,Product,Price,Place,Promotion, Customer Awareness, Factors for Preference)

Introduction

The automobile industry in India is undergoing a significant transformation with the growing adoption of electric vehicles (EVs), particularly electric cars. This shift is largely driven by rising fuel prices, increasing environmental concerns, and strong government initiatives aimed at promoting sustainable transportation. Conventional fuel-based vehicles contribute heavily to air pollution and carbon emissions, which has led to a greater emphasis on eco-friendly alternatives. In this context, electric cars have emerged as a promising solution due to their lower environmental impact, reduced dependence on fossil fuels, and potential for long-term cost savings. Government policies such as subsidies, tax benefits, and investments in charging infrastructure have further accelerated the growth of the electric vehicle market in India.

Despite these advantages, the adoption of electric cars among consumers is not uniform and continues to evolve gradually. Customer behaviour towards electric cars is influenced by a wide range of factors including economic, technological, and psychological aspects. Factors such as the high initial cost of electric vehicles, concerns about battery life and performance, limited availability of charging stations, and long charging time often create hesitation among potential buyers. At the same time, aspects like brand image, vehicle design, driving range, safety features, and after-sales service also play a crucial role in shaping customer preferences and purchase decisions. The level of awareness and knowledge about electric vehicles further impacts consumer attitudes, as many customers still lack clear information regarding the benefits and practicality of using electric cars.

Understanding customer behaviour is therefore essential for the successful adoption and expansion of electric cars in the Indian market. Analysing customer preferences, perceptions, and decision-making patterns helps manufacturers and marketers design better products and develop effective marketing strategies. It also enables policymakers to frame appropriate policies and infrastructure plans that address consumer concerns and encourage wider adoption. Moreover, studying customer behaviour provides insights into the challenges faced by users, such as maintenance issues, resale value, and long-term reliability, which are critical for improving customer satisfaction and trust.

In this context, the present study focuses on analysing customer behaviour towards electric cars, with special reference to selected respondents in Kerala. The study aims to identify the key factors influencing customer preferences, examine the challenges faced by consumers, and understand their level of awareness and satisfaction regarding electric cars. By doing so, the research contributes to a better understanding of the evolving consumer mindset in the electric vehicle segment and supports the development of strategies to promote sustainable mobility in India.

Literature Review

The review of literature on customer preference towards electric vehicles (EVs) reveals a growing body of research focusing on the diverse factors influencing consumer behaviour, adoption intentions, and market acceptance across different regions and contexts. Poonam Adsule and M Manoj (2026), in their study *An Assessment of Consumer Preferences for Electric Cars – Case Delhi, India*, highlighted the variation in individual preferences using a latent class multinomial logit model. Their findings emphasized that financial incentives, loan interest rates, and psychological attitudes significantly influence EV adoption, suggesting the need for targeted policy interventions. Similarly, M Balasubramanian and S Sharif (2025), along with S Mohamed Imran Sharif (2025), found that perceived cost savings play a crucial mediating role between customer preference and buying attitude, indicating that long-term economic benefits are key drivers of EV adoption.

Further expanding on behavioural aspects, Samar Rahi et al. (2025) integrated the Theory of Planned Behaviour and identified factors such as environmental attributes, financial incentives, subjective norms, and green self-identity as significant determinants of purchase intention. Likewise, Deepak Jaiswal, Rishi Kant, and Babeeta Mehta (2025) emphasized the importance of techno-psychological factors under the UTAUT framework, revealing that perception–attitude–intention linkages strongly influence adoption, with gender differences also playing a moderating role. In addition, MA Jabbar et al. (2024) highlighted the role of battery technology and charging innovations in shaping consumer acceptance, pointing out that advancements such as wireless charging and improved battery capacity can significantly enhance EV adoption.

Brand-related factors also play a vital role in influencing customer preferences. Kanittha Seskhumbong (2024) found that perceived brand value, including reputation, innovation, and environmental commitment, significantly affects purchase decisions. Similarly, Mohammed Samir M Alsuwaidan (2024) identified green self-identity, perceived value, innovativeness, and environmental concern as major factors influencing purchase intention and actual buying

behaviour. Supporting these findings, Udit Chawla et al. (2023) identified six key determinants—charging time, innovation, perceived quality, affordability, awareness, and comfort—that moderately influence EV adoption in India.

Earlier studies also provide important insights into consumer perceptions and challenges. Suneel Sankala et al. (2022) observed that consumers generally have a positive perception of EVs due to environmental benefits, while Randy Vinstein Silaen and Nila Armelia Windasari (2022) identified price as the most influential factor in purchasing decisions, followed by government policies and emissions. Similarly, M Prabaharan and M Selvalakshmi (2020) found that perceived usefulness, ease of use, and affordability significantly influence purchase intention, while Omkar Tupe et al. (2020) emphasized the importance of awareness, infrastructure, and policy support in shaping consumer perception. Studies by M G Bhaskar et al. (2020) further revealed that EVs are often preferred as secondary vehicles due to limitations in range and performance.

From a behavioural and emotional perspective, Jay P Trivedi and Kaushal Kishore (2020) highlighted the importance of brand attitude and brand love in influencing purchase intention, while Milad Ghasri et al. (2019) found that design, safety, and environmental benefits significantly shape consumer preferences across generations. The study by Steven Beggs et al. (2019) confirmed that consumer preferences vary widely, indicating the need for personalized strategies. In addition, Christoph Mazur et al. (2018) highlighted that policy support and technological advancements alone are insufficient without changes in user preferences, while Scott Hardman et al. (2018) emphasized the critical role of charging infrastructure, particularly home and workplace charging, in promoting EV adoption.

Other significant contributions include Pretty Bhalla et al. (2018), who identified environmental awareness and trust in technology as positive drivers, and Roger Bennett and Rohini Vijaygopal (2018), who explored the role of self-image congruence and stereotypes in shaping attitudes. The comprehensive review by Fanchao Liao et al. (2017) concluded that financial, technical, psychological, and social factors collectively influence EV adoption. Earlier foundational studies by Wonsuk Ko and Tae-Kyung Hahn (2013) emphasized the importance of battery technology and subsidy design, while Nadine Bessenbach and Sebastian Walirapp (2013) highlighted consumer resistance due to negative perceptions and lack of acceptance.

Overall, the literature indicates that customer preference towards electric vehicles is influenced by a complex interaction of economic, technological, psychological, environmental, and social factors. While factors such as price, battery performance, charging infrastructure, and government incentives remain critical, emerging aspects like brand value, green identity, and techno-psychological perceptions are increasingly shaping consumer behaviour. Despite extensive research, gaps remain in understanding localized consumer preferences and the relative importance of these factors in specific contexts, thereby justifying the need for further empirical studies on customer preference towards electric cars.

Research Gap

Despite a growing body of literature on electric vehicles, there remains a lack of clear understanding regarding the most influential factors shaping customer preference and purchase decisions toward electric cars. While previous studies have identified various determinants such as price, driving range, charging infrastructure, technological advancements, government incentives, environmental awareness, and psychological attitudes, the relative importance of these factors varies across different consumer groups and contexts. Moreover, although consumers generally exhibit a positive perception towards electric vehicles, significant barriers such as high initial cost, limited charging infrastructure, lack of awareness, and concerns about battery performance and reliability continue to hinder widespread adoption. In addition, the interplay between economic benefits, environmental concerns, and brand perception in influencing consumer behaviour is not fully understood. Therefore, the research problem lies in identifying and analysing the key factors that significantly influence customer preference towards electric cars and understanding the challenges faced by consumers in adopting this emerging mode of transportation, particularly in a specific regional context.

Objectives of the study

- To explore the factors influencing customer Perception towards Electric Car.
- To analyze the factors influencing customer Perception towards Electric Car.
- To identify the most influencing factor for customer Perception.
- To identify the most preferred brand.

Hypothesis

I. Ho: Customers Perception towards electric Cars are same

H1: Customer Perception towards electric Cars are not same

II. Ho: There is no significant influence of Marketing Mix variables on Customer Perception

H1: There is significant influence of Marketing Mix variables on Customer Perception

Research Methodology

The research methodology adopted for this study is descriptive in nature and focuses on analysing customer preference towards electric cars. The study is based on both primary and secondary data. Primary data were collected from 350 respondents using a structured questionnaire to understand their preferences, awareness levels, perceptions, and challenges related to electric cars, while secondary data were gathered from journals, research articles, industry reports, and reliable online sources. The respondents were selected using a convenient sampling method from the study area. The collected data were systematically analysed using

appropriate statistical tools such as the Chi-square test to examine the association between variables and Regression Analysis to identify the impact and significance of various factors influencing customer preferences towards electric cars. The analysis aims to identify key determinants such as price, driving range, charging infrastructure, technological features, environmental concerns, and government incentives, while also addressing the existing research problem of understanding the relative importance of these factors and the barriers affecting the adoption of electric vehicles. The findings are presented using tables and graphs for clear interpretation and meaningful conclusions.

Analysis and Result

I. Ho: Customers Preference towards electric Cars are same

H1: Customer Preference to towards electric Cars are not same

9.Which brand do you prefer most?

	Observed N	Expected N	Residual
Tata Motors	189	70.0	119.0
M G Motors India	35	70.0	-35.0
BYD	35	70.0	-35.0
Mahindra&Mahindra	63	70.0	-7.0
Hundai	28	70.0	-42.0
Total	350		

Test Statistics

	9.Which brand do you prefer most?
Chi-Square	263.200[a]
df	4
Asymp. Sig.	.000

The analysis indicates that respondents have varying opinions regarding different brands. Since the p-value is less than 0.05, (ie .001)the Chi-square result is statistically significant, implying that there is a significant difference in respondents' preferences across the brands. Tata motors have significant influence in sales

II Ho: There is no significant influence of Marketing Mix variables on Customer Perception

H1: There is significant influence of Marketing Mix variables on Customer Perception

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.819[a]	.671	.668	.63989

a. Predictors: (Constant), Promotion_mean1, Product_Mean, Place_mean1, Price_mean1

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	288.611	4	72.153	176.215	.000[b]
	Residual	141.263	345	.409		
	Total	429.874	349			

a. Dependent Variable: Perception_Mean

b. Predictors: (Constant), Promotion_mean1, Product_Mean, Place_mean1, Price_mean1

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.622	.093		6.671	.000
	Price_mean1	.724	.066	.718	10.999	.000
	Place_mean1	.022	.051	.022	.431	.667
	Product_Mean	.079	.058	.077	1.362	.174
	Promotion_mean1	.027	.068	.024	.399	.690

a. Dependent Variable: Perception_Mean

Interpretation: Since the Adjusted R^2 value is .66 means that all marketing mix factors have .66% influence on Percepton. ie 1% change in Marketing Mix variables leads to .66% change in Perception Levels. Here the price (p value .001 which is less than .05) has significant influence on Perception of EV vehicles.

Impact

Previous studies indicate that customer preference toward electric vehicles (EVs) has a significant impact on the growth and transformation of the automobile industry. Research findings reveal that factors such as environmental awareness, cost efficiency, technological advancement, and government incentives strongly influence consumer inclination toward EVs. As customer preference shifts from conventional fuel vehicles to electric cars, it accelerates market demand, encourages innovation among manufacturers, and promotes the expansion of charging infrastructure. Moreover, positive consumer perception and willingness to adopt EVs contribute to reduced carbon emissions and support sustainable development goals. Studies also highlight that socio-demographic factors and psychological attitudes play a crucial role in shaping preferences, thereby influencing purchase decisions and long-term adoption. Overall, customer preference acts as a driving force that not only determines the success of electric vehicles in the market but also shapes future mobility trends and policy formulations.

Recommendations

Based on the findings of the study on customer preference toward electric vehicles (EVs), several important recommendations can be proposed to enhance adoption and customer satisfaction. Firstly, automobile manufacturers should focus on improving key vehicle attributes such as battery performance, driving range, and charging time, as these factors strongly influence customer preference. Secondly, pricing strategies need to be made more attractive through cost reductions, flexible financing options, and collaboration with financial institutions to make EVs affordable to a wider segment of consumers.

Further, the government should strengthen policy support by expanding subsidies, tax benefits, and incentives, while also investing in the development of widespread and reliable charging infrastructure to reduce range anxiety among users. Awareness campaigns and customer education programs should be conducted to improve knowledge about the long-term economic and environmental benefits of EVs.

In addition, companies should enhance after-sales services, including maintenance support and battery warranties, to build customer trust and satisfaction. Integration of advanced technologies such as smart connectivity features and mobile applications can further improve user experience. Finally, targeting different demographic segments with customized marketing strategies will help in better addressing diverse customer needs and accelerating the adoption of electric vehicles in the market.

Originality and Value of the study

The present study offers significant originality and value by focusing specifically on customer preference toward electric vehicles (EVs) within a localized context, thereby providing insights that are more relevant and practical for policymakers, marketers, and manufacturers. Unlike many previous studies that broadly examine EV adoption, this study emphasizes the role of multiple influencing factors such as vehicle attributes, pricing, infrastructure, and consumer attitudes in shaping preference and purchase intention. It integrates both demographic and

psychological dimensions, thereby presenting a more comprehensive understanding of consumer behavior.

The value of the study lies in its empirical approach, using statistical tools such as Chi-square test and regression analysis to establish the relationship between customer preference and key determinants of EV adoption. The findings contribute to existing literature by bridging the gap between theoretical perspectives and real-world consumer behavior, particularly in emerging markets. Moreover, the study provides practical implications for automobile companies to design customer-centric strategies and for governments to frame effective policies that encourage sustainable transportation. Overall, the research adds meaningful insights to the growing field of EV studies and supports the transition toward environmentally friendly mobility solutions.

Practical Implications

The study on customer preference toward electric vehicles (EVs) provides several practical implications for key stakeholders, including automobile manufacturers, policymakers, and marketers. For manufacturers, the findings highlight the need to focus on improving core product attributes such as battery efficiency, driving range, safety features, and overall vehicle performance, as these significantly influence customer preference and purchase decisions. Companies should also adopt competitive pricing strategies and offer flexible financing options to make EVs more accessible to a broader customer base.

For policymakers, the study emphasizes the importance of strengthening supportive measures such as subsidies, tax incentives, and investment in charging infrastructure to reduce barriers to adoption. Expanding public charging networks, especially in semi-urban and rural areas, can enhance consumer confidence and reduce range anxiety.

From a marketing perspective, firms should design targeted awareness campaigns and customer education programs to increase knowledge about the economic and environmental benefits of EVs. Enhancing after-sales services, including maintenance facilities and battery replacement support, can further build trust and long-term customer satisfaction. Additionally, leveraging digital platforms and smart technologies can improve customer engagement and overall user experience.

Overall, the study provides actionable insights that help stakeholders develop effective strategies to accelerate EV adoption, improve customer satisfaction, and support the transition toward sustainable mobility.

Conclusions

In conclusion, the study on customer preference toward electric vehicles (EVs) reveals that consumer attitudes, vehicle attributes, pricing, and infrastructural support play a crucial role in influencing purchase decisions and adoption levels. The findings indicate a growing awareness and positive inclination toward EVs, driven by environmental concerns, cost savings, and

technological advancements. However, certain challenges such as high initial cost, limited charging infrastructure, and range anxiety continue to affect consumer decisions.

The study confirms that customer preference is a key determinant in shaping the future demand for electric vehicles, thereby influencing market trends and industry growth. The application of statistical tools like Chi-square test and regression analysis further validates the relationship between various influencing factors and customer preference. Overall, the research highlights the need for coordinated efforts from manufacturers, policymakers, and marketers to address existing barriers and enhance adoption. The transition toward electric mobility is not only a technological shift but also a behavioral change, and understanding customer preference is essential for achieving sustainable and long-term growth in the EV sector.

Limitations of the study

The study has certain limitations with respect to area and place, which may influence the interpretation of the results. Firstly, the research is confined to a specific geographical region, particularly within a limited area, and therefore the findings may reflect only the preferences and perceptions of customers in that locality. Consumer behavior toward electric vehicles (EVs) can vary significantly across different regions due to differences in infrastructure availability, income levels, urbanization, and awareness. Hence, the results cannot be generalized to the entire state or country.

Secondly, the availability of charging infrastructure and government support varies from place to place, which directly affects customer preference. Areas with better charging facilities and policy support may show higher acceptance of EVs compared to regions where such facilities are limited.

Thirdly, cultural and social factors specific to the study area may also influence consumer attitudes and buying behavior, making the findings location-specific. Additionally, urban and rural differences are not fully captured if the sample is concentrated more in one type of area.

Overall, these place-based limitations suggest that future studies should include a wider geographical coverage, incorporating multiple regions and diverse demographic groups to obtain more comprehensive and generalizable results.

Scope for future Research

The present study opens several avenues for future research in the area of customer preference toward electric vehicles (EVs). Firstly, future studies can expand the geographical scope by covering multiple regions, states, or even conducting cross-country comparisons to understand variations in consumer behavior across different markets. This would improve the generalizability and depth of findings.

Secondly, researchers can increase the sample size and include a more diverse group of respondents, incorporating rural and semi-urban populations along with urban consumers to gain

a more comprehensive perspective on EV adoption. Thirdly, future research can include additional variables such as brand image, government policy awareness, technological trust, environmental consciousness, and social influence, which may further explain customer preference and purchase intention.

Moreover, longitudinal studies can be conducted to examine how customer preferences change over time with advancements in technology, reduction in prices, and improvement in infrastructure. Comparative studies between electric vehicles and conventional vehicles can also provide deeper insights into shifting consumer attitudes.

Further research may also explore the role of financial institutions in promoting EV adoption through innovative financing schemes, leasing models, and green loans. In addition, qualitative studies such as interviews and focus group discussions can be undertaken to gain deeper insights into consumer perceptions and behavioral motivations. Overall, future research can build upon the present study to develop a more holistic understanding of the evolving EV market and support effective decision-making for sustainable mobility.

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