



A STUDY ON CONSUMER PERCEPTION TOWARDS ELECTRIC CARS IN COIMBATORE DISTRICT.

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ABSTRACT:

Electric vehicles (EVs) have emerged as a promising solution to reduce carbon emissions and dependency on fossil fuels. With the rising cost of petrol and diesel, government incentives, and advancements in battery technology, the EV market is expanding globally. However, in India, consumer adoption remains relatively low due to concerns about affordability, charging infrastructure, and vehicle performance.

Electric vehicles (EVs) have gained substantial attention as a sustainable alternative to conventional internal combustion engine (ICE) vehicles. With rising concerns about environmental pollution, carbon emissions, and depleting fossil fuel reserves, there has been a strong global push towards the adoption of EVs. Governments worldwide, including India, have implemented policies and financial incentives to promote EV adoption. However, despite these efforts, consumer acceptance remains a major hurdle, influenced by factors such as affordability, infrastructure limitations, battery life, and vehicle performance.

In India, the government has introduced initiatives such as the Faster Adoption and Manufacturing of Electric Vehicles (FAME) scheme, state-level EV policies, and tax incentives to encourage consumers to transition to electric mobility. Coimbatore, a rapidly developing industrial hub in Tamil Nadu, provides a unique case study for evaluating consumer perception towards EVs. As urbanization and vehicular pollution increase in the region, understanding public attitudes towards EV adoption is essential for designing effective policies and infrastructure improvements.

This study examines consumer awareness, preferences, and concerns regarding electric vehicles in Coimbatore district. Through a mixed-method research approach, it evaluates key factors affecting consumer decisions, including initial purchase costs, government incentives, range anxiety, availability of charging stations, and environmental consciousness. By analysing survey data and existing literature, the research aims to identify the barriers preventing widespread adoption and suggest possible strategies to overcome them.

Keywords: Electric Vehicles, Consumer Perception, Charging Infrastructure, Policy Incentives, Coimbatore, EV Adoption

INTRODUCTION

The world is very fast paced nowadays and in this fast-paced world automobiles plays a vital role in daily life. The automobiles help us in being productive, performance or coping with livelihood issues, vehicles save so much time and effort. Majority if Indians depend on vehicles like Two-wheelers and Four-wheelers for their mobility needs. However, the concerns over greenhouse gas emission and their ill effects and depletion of fuel make the mankind forced to look for alternative options. All major automobile industry is in transitional phase to launch electric bikes because of the recent Niti Aayog directive. Though the electric vehicles seem to be the best solution to the aforesaid issues, but when comes to customer making or decision-making process the transitional shift from petrol to Electric Vehicles is very hesitated.

Electric vehicles (EVs) use electricity as their primary fuel or to improve the efficiency of conventional vehicle designs. EVs include all-electric vehicles, also referred to as **Battery Electric Vehicles (BEVs)**, and **Plug-in Hybrid Electric Vehicles (PHEVs)**.

In colloquial references, these vehicles are called electric cars, or simply EVs, even though some of these vehicles still use liquid fuels in conjunction with electricity. EVs are known for providing instant torque and a quiet driver experience. Other types of electric-drive vehicles not covered here include hybrid electric vehicles, which are powered by a conventional engine and an electric motor that uses energy stored in a battery that is charged by regenerative braking, not by plugging in, and fuel cell electric vehicles, which use a propulsion system similar to electric vehicles, where energy stored as hydrogen is converted to electricity by the fuel cell.

An Electric Vehicle (EV) is one that operates on an electric motor, instead of an internal combustion engine that generates power by burning a mix of fuel and gases. Therefore, such a vehicle is seen as a possible replacement for current-generation automobile, in order to address the issue of rising pollution, global warming, depleting natural resources, etc. Though the concept of electric vehicles has been around for a long time, it has drawn a considerable amount of interest in the past decade amid a rising carbon footprint and other environmental impacts of fuel-based vehicles. This study is

conducted to determine how people feel about electric automobiles and to find which factors restricting customers from purchasing Electric Vehicles. The goal is to reduce vehicular pollution by switching to electric vehicles. The increasing popularity and use of electric vehicles. Wide spread adoption of Electric Vehicles (EVs) may contribute to the alleviation of problems such as environmental pollution, global warming and oil dependency. However, the current market penetration of IV relatively low in spite of many governments implementing strong promotion policies.

OBJECTIVES OF THE STUDY:

- A study on customer awareness and attitude towards Electric Vehicles. • To know the customer awareness level and customer satisfaction towards the Electric Vehicles.
- To identify the factors that promotes customer shifting to Electric Vehicles. • To identify the level of satisfaction of customer.
- To understand most preferred company of Electric Vehicles.
- To make consumers aware and to fight against unfair and unjust trade practice of producers or traders and sellers.

SCOPE OF THE STUDY:

- The study aims at finding the customer satisfaction towards E-Vehicles with respect to Coimbatore district. A recent survey shows that 2021 and 2022, the number of E Vehicles sold in India jumped by a whopping 210 percent. The study also aims to find out the customer's perception towards Electric Vehicles. The study by ascertaining the factors that motivate end users to purchase Electric Vehicles is expected to enable respective companies to improve their services, sales, promotions etc.
- The study also aims at analysing the level of customer satisfaction with respect to the E- Vehicles and their dealers. As environmental concerns, technological advancements, infrastructure development, and policy support converge, Electric Vehicles are set to become the mainstream mode of transportation.

STATEMENT OF THE PROBLEM:

- The Electric Vehicles are necessary in the current stage of life because the population of the country is increasing rapidly. This will create need for more vehicles and the need for more vehicles will increase the demand for fuel.
- The continuous use of fuel will make the shortage in supply of it. All these aspects provide a way for the introduction of Electric Vehicles. The introduction of Electric Vehicles also an Eco-friendly invention this will reduce the pollution in the environment.
- The Rapid increase in Electric Vehicles leads to heavy competition in the market. By considering the above elements the study is made to identify the consumer preference and satisfaction towards Electric Vehicles in Coimbatore city.

LIMITATION OF THE STUDY:

1. The study may be limited by the size of the sample population, affecting the generalizability of the findings to the entire population of Coimbatore district.
2. The study may not adequately represent the diverse demographics within Coimbatore district, such as age, occupation and education. Which could influence consumer perceptions.
3. The study's methodology, such as survey design or data collection techniques, could introduce biases or limitations that affect the validity and reliability of the results.

EXSISTING SCENARIO

Electric vehicle adoption in India is still at a nascent stage compared to global markets such as China, the United States, and Europe. While EV sales have increased in recent years, they still constitute a small percentage of total automobile sales.

The Indian government has taken steps to boost EV adoption through subsidies, tax benefits, and investment in charging infrastructure. Schemes like FAME-II offer financial incentives for both manufacturers and consumers to reduce the overall cost of ownership. Despite these efforts, challenges remain, including inadequate charging networks, concerns over battery durability,

and the relatively higher cost of EVs compared to traditional petrol and diesel cars. In Coimbatore, the awareness and acceptance of electric two-wheelers are growing due to their affordability and ease of use. However, four-wheeler EVs face challenges such as high upfront costs and a lack of sufficient fast-charging stations. Addressing these barriers is crucial for increasing EV adoption in the city

PRIMARY OBJECTIVES OF THE STUDY

The primary objectives of this study are:

1. To assess consumer awareness and knowledge about electric vehicles in Coimbatore – Understanding public familiarity with EV technology, its benefits, and potential drawbacks.

2. To identify key factors influencing consumer purchase decisions-Evaluating cost, charging infrastructure, maintenance, government incentives, and brand perception.
3. To examine the role of government policies and incentives in promoting EV adoption– Analysing the impact of FAME-II subsidies, tax reductions, and financial schemes in shaping consumer choices.
4. To evaluate consumer concerns regarding EV ownership – Investigating issues such as range anxiety, battery life, charging time, resale value, and long-term cost- effectiveness.
5. To analyse the impact of charging infrastructure on EV adoption – Assessing the availability, accessibility, and efficiency of public and private charging stations in Coimbatore.
6. To explore the environmental and sustainability perspective of EV adoption – Understanding how consumers perceive EVs as a means to reduce carbon emissions.
7. To compare consumer perception between electric two-wheelers and four- wheelers –Evaluating differences in adoption rates, preferences, and barriers for different types of EVs.
8. To examine the influence of demographic factors on EV adoption – Studying how age, income levels, occupation, and education impact consumer attitudes towards EVs.
9. To analyse consumer trust in EV technology and after-sales support – Understanding perceptions related to maintenance, repair facilities, battery warranties, and the overall reliability of EVs.
10. To provide recommendations for increasing EV adoption in Coimbatore – Suggesting policy measures, marketing strategies, and infrastructure improvements to accelerate EV penetration in the region.

The transition to electric vehicles (EVs) is still in its early stages in India, and there is substantial scope for further research and development to accelerate adoption. Future studies should focus on a more granular analysis of consumer behaviour, technological advancements, and policy interventions to make EVs more accessible and convenient for users.

One of the key areas for future research is the long-term impact of EV adoption on urban infrastructure and energy consumption. With increased EV penetration, there will be a rising demand for charging stations, grid stability solutions, and energy-efficient battery technologies. Studying how Coimbatore's urban planning can integrate EV-friendly infrastructure will be essential for ensuring sustainable growth.

Another critical area for further study is the economic viability of EVs over an extended period. Research should focus on total cost-of-ownership (TCO) comparisons between EVs and traditional internal combustion engine (ICE) vehicles, factoring in fuel savings, maintenance costs, government incentives, and depreciation trends. Additionally, exploring how financial institutions can develop better financing models, such as low-interest EV loans, will play a crucial role in driving adoption.

Battery technology remains a crucial challenge in the widespread adoption of EVs. Future research should examine advancements in solid-state batteries, ultra-fast charging systems, and second-life battery applications to improve battery longevity and sustainability. The recyclability of EV batteries and efficient disposal methods should also be studied to minimize environmental impact.

Finally, research on consumer mindset and regional differences in EV adoption will provide valuable insights for both policymakers and automakers. Comparing EV acceptance in urban versus rural areas, analysing consumer trust in EV technology, and studying post-purchase experiences of EV owners can help refine marketing strategies and product designs.

REVIEW OF LITERATURE :

Udit Chawla, Rajesh Mohnot (2023) This study examines the impact of ecological awareness on Electric Vehicles (EV) acceptance and usage in light of the ecosystem advantages, and its changing focus from “Traditionally perceived usefulness” to “Green perceived usefulness”. The purpose of this study is to analyse public perceptions of autonomous driving and automotive tracking systems. Furthermore, it helps to comprehend why people adopt new technology and offers some recommendations for the global growth of EVs. We used factor analysis considering six distinct factors including Charging time, Innovation, Perceived Quality, Perceived Affordability, Awareness and Comfort. Our results indicate the elements including customer loyalty, power efficiency, charging system, and consumer acceptance have a moderate effect, indicating that these factors do play an important role in influencing consumer behaviours when it comes to adopting EVs.

Sivakumar Palaniswamy, Sandhya Devi R Subbu raj, M Saravanan (2022) This study gives a general overview of the social, economic, and environmental impacts of electric vehicles (EVs) in India. The growing threats of global warming, excessive petrol dependence, ever increasing prices of fuel, and driving trends are just a selection of reasons which have accelerated the development of EV since the transport sector also represents a critical percentage of greenhouse gas emission. The aim of this study is to compare and analyse the development of the EV market and the government support in making the trend and accelerating it to save the nation and the world from the pollution in India. Electric Vehicles have huge potential from a user perspective. In the coming years, EVs will have a very important role in smart transportation and smart cities, along with shared mobility, mass transport, etc. Therefore, more efforts to facilitate the charging process and to improve batteries are needed. In a thrust towards incentivizing new age technologies and reducing its carbon emission to net-zero by the year 2070, India is aggressively promoting the adoption of EVs. India aims to switch 30% of private cars, 70% of commercial vehicles, and 80% of Two and Three-wheelers to EVs by the year 2030. Increase the percentage of renewable

energy in the electricity mix and prevent air pollution caused by the battery manufacturing. The recommended policies can be accepted by any market globally for considerations of electric mobility challenges exist in terms of environmental impacts generated by the rising demand for Electric Vehicles.

Nombulelodilotsothe (2022) Determinants of consumers purchase intentions of electric vehicles: The paper uses the consumption values theory to predict the purchase intention for Plug-in-Hybrid Electric Vehicles (PHEVs) in Gauteng, South Africa. Data was collected from

286 respondents using the structured questionnaire and convenience sampling. Result indicate that functional, social, emotional and conditional values positively relate to customer's purchase intention of PHEVs, while the epistemic value was not positively related. The study provided helpful information to electric vehicle manufactures, car dealership, marketing managers and the government in developing strategies to encourage PHEV adoption.

Aman Mahajan, Neetu Kumari, Dr Rashmi Mahajan (2021) A study on factors influence buying behaviour of Four-Wheeler electric vehicle in Madhya Pradesh: The research was to find the perception of potential buyers who will be in the position to buy their four-wheeler electric car. Objective of the paper is to identify the relationship between the customer preference and factors. The factors considered in the paper are like price, mileage, purpose, color, seating capacity, charging location, brand name etc. The research paper consists of 201 responses from Madhya Pradesh region. The result indicated that availability of charging points, cost of maintenance, mileage are the factors that have a significant relationship with the consumer preference.

Ajay Sinh Parmar and prof. Tushar Pradhan (2021) A study on consumers perception towards electric vehicles in Vadodara city. The researchers observed that consumers are not much inclined toward electric vehicles.

Ajex Thomas Varghese, V.S. Abilash, and Sini V. Pillai (2021) A study on consumer perception and purchase intention of electric vehicles in India: The researchers observed how the government must play an important role in developing infrastructure for EVs.

Prateek Bansal, Ranjan Kumar, and Daniel J. Graham (2021) Willingness to pay and attitudinal preferences of India consumers for electric vehicles: The researchers observed that using the data of 1000 respondents, the willingness to spend on electric vehicles has been studied here. Also, different attributes are considered to know the preferences of the consumer.

Key Areas for Future Research:

1. Urban Infrastructure and Charging Networks – Studying the integration of public and private charging stations in Coimbatore.
2. Energy Grid Management – Analysing the impact of EV adoption on electricity demand and potential solutions for grid stability.
3. Economic Feasibility and Financial Models – Evaluating TCO comparisons between EVs and ICE vehicles and exploring new financing models.
4. Battery Technology Advancements – Researching solid-state batteries, fast-charging solutions, and battery recycling methods.
5. Environmental Impact Studies – Assessing the long-term ecological benefits of large-scale EV adoption in Coimbatore.
6. Consumer Behaviour and Regional Trends – Examining EV adoption differences between urban and rural consumers and the role of cultural perceptions.
7. Government Policy Effectiveness – Evaluating the impact of existing incentives and recommending new policy measures for boosting EV sales.
8. EV Resale Market and Lifecycle Studies – Analysing the resale value trends of EVs and their long-term viability in the automobile market.
9. Smart Mobility Integration – Exploring how EVs can integrate with smart city initiatives and autonomous driving technologies.
10. Post-Purchase Consumer Satisfaction – Studying real-world user experiences, maintenance concerns, and overall reliability of EVs.

SUGGESTIONS

According to the above study the consumer suggested increasing the charge station for Electric Vehicles. The increase in charging station will improve the satisfaction level of the consumers. The study conveys that the quality of Electric Vehicles needs to improve because quality is the major disadvantage in the Electric Vehicle according to the study. The capacity of the Electric Vehicles is less compared to the Fuel Vehicles. The battery lifetime varies based on the price of the vehicle. The lower priced E-Vehicles have very less battery life. So, the manufacturers will take some measure to overcome it.

To study consumer perception towards Electric Vehicles (EVs) in Coimbatore district, conduct a survey focusing on awareness, attitudes, preferences, and barriers related to EV adoption. Ensure diverse sampling to capture the district's population accurately. Explore factors influencing EV consideration, such as cost, range, charging infrastructure, and government incentives. Provide actionable recommendations to policymakers and industry stakeholders for promoting EV adoption, tailored to the local context of Coimbatore District.

CONCLUSION

In conclusion, the study delving into consumer perceptions towards electric vehicles in Coimbatore district illuminates a promising trajectory towards sustainable mobility. With an increasing awareness of environmental issues and the economic benefits of electric vehicles, consumers are gradually warming up to the idea of adopting them. Nonetheless, infrastructural concerns and range anxiety remain pivotal obstacles that necessitate collaborative efforts from government bodies, businesses and communities. Overcoming these hurdles through the expansion of charging infrastructure, incentivizing adoption and fostering public awareness campaigns will be instrumental in fostering a thriving electric vehicle market in Coimbatore. By harnessing the momentum of positive consumer sentiment, the district can pave the way towards a greener, more energy-efficient future while simultaneously bolstering its position as a leader in sustainable transportation innovation. The current state of the EV industry is in a great position with future prospects and a huge market share as the quality of products has evolved a lot since the beginning of the EV in India. The perception of the Indian consumers has started to adopt technological improvements where Electric Vehicles gain an upper hand over Traditional Vehicle. The findings of the study established that there is good perception towards buying an Electric Vehicles.

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