ISSN No: 2348-4845
International Journal & Magazine of Engineering, Technology, Management and Research
A Peer Reviewed Open Access International Journal

Evaluation of Consumer Behaviour Towards Electric Vehicles in Kerala

Dr. Ramakrishna Bandaru
Assistant Professor
Department of Commerce & International Business
Central University of Kerala
rkbandaru@cukerala.ac.in

Abstract

The world's third-largest road network is found in India. In India, more than 60% of the people commuted by road in their own or shared vehicles, suggesting that road travel was a preferred option. One of the main contributors to air pollution and global warming is conventional car use. Road wear, tires, and brakes on all kinds of vehicles produce dust. Compared to average, the average diesel car has a worse impact on air quality. gasoline-powered car. Nonetheless, automobiles powered by gasoline or diesel emit more pollutants than electric vehicles. The primary source of air pollution in our city is conventional automobiles, which also contribute significantly to global warming and its effects through carbon emissions. People started in order to have safe air and lessen global warming. The present study is focused on identify the customer behavior towards electronic vehicles in Kerala. The sample size is 150 and the results and limitations are given below.

Keywords: ***Electric vehicle, Kerala, customers, Behavior.***

Introduction

The world's third-largest road network is found in India. In India, more than 60% of the people commuted by road in their own or shared vehicles, suggesting that road travel was a preferred option. One of the main contributors to air pollution and global warming is conventional car use. Road wear, tires, and brakes on all kinds of vehicles produce dust. Compared to average, the average diesel car has a worse impact on air quality. gasoline-powered car. Nonetheless, automobiles powered by gasoline or diesel emit more pollutants than electric vehicles.The primary source of air pollution in our city is conventional automobiles, which also contribute significantly to global warming and its effects through carbon emissions. People started in order to have safe air and lessen global warming.

In addition to being the primary source of air pollution in our city, carbon emissions from automobiles are the primary cause of global warming and its detrimental impacts. In an effort to prevent global warming and provide safe air, individuals began to consider alternate sources to replace traditional vehicles. As an affordable and widely accepted alternative to traditional vehicles, electrical vehicles are highly recommended.

Cite this article as: Dr. Ramakrishna Bandaru, "Evaluation of Consumer Behaviour Towards Electric Vehicles in Kerala", International Journal & Magazine of Engineering, Technology, Management and Research (IJMETMR), ISSN 2348-4845, Volume 12 Issue 1, January 2025, Page 13-18.

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Purchasing electricity vehicles rather than conventional ones is becoming a more popular thought these days. People are substituting internal combustion engine (ICE) automobiles with electric vehicles (EVs) more frequently for a variety of reasons.

An Incentive programme called FAME India Scheme is designed to encourage the use of hybrid and electric cars. Its goal is to encourage the use of electric vehicles and provides financial incentives for increasing EV manufacturing and building infrastructure for electric vehicles. The Ministry of Heavy Industries and Public Enterprises introduced FAME in 2015 as a means of encouraging the manufacture and marketing of environmentally friendly automobiles, such as electric and hybrid vehicles. The plan is to provide infrastructure for charging.

2. REVIEW OF LITERATURE

Pooja Goel ,Nitika Sharma, K. Mathiyazhagan ,Vimal KEK (2021) This research underscores the significance of electric vehicles (EVs) in mitigating global carbon emissions, particularly within the Indian market. It acknowledges the escalating concerns regarding carbon emissions and the initiatives undertaken by countries like India to address this issue in accordance with international agreements such as the Paris Agreement of 2015.

Jani Das (2022) This research paper examines the environmental effects of transportation technologies, particularly the greenhouse gas emissions of conventional and electric vehicles in India. It highlights the transportation sector's substantial role in global CO2 emissions, emphasizes the need for location-specific analyses, and discusses factors impacting the environmental footprint of electric vehicles versus internal combustion engine vehicles.

Khalid A.M,Khuman Y.S.C. (2022) This research delves into factors impacting EV adoption in India, encompassing economic, technical, and behavioral considerations. It underscores the use of theoretical frameworks like TPB and TAM to assess consumer behavior. Barriers to EV adoption, such as power availability and battery life, are highlighted. Recommendations propose utilizing policy targets and public-private partnerships to boost EV adoption.

Sreena V A,Dr.K.Vijaya Venkateswari (2023) The literature review in the provided document encompasses a range of studies related to electric vehicles in India. It covers research on the challenges of electric vehicles, their commercial viability, opportunities and scope for adoption, the Indian scenario, growth of green eco-automobiles, and the impact of smart charging on the grid.

Dr. Joy Karmarkar, Dr. Aparajita Mukherjee (2021) The literature review delves into the policy initiatives and challenges for EV adoption in India. It also compares the fuel savings, maintenance costs, and CO2 emissions of Electric Vehicles (EVs) and Internal Combustion Engine (ICE) vehicles. Additionally, it addresses the infrastructure challenges, financial constraints, and raw material shortages for EV batteries in India.

Ashok Jhunjhunwala, Prabhjot Kaur,And Sushant Mutagekar(2018) The article talks about the rising popularity of electric cars (EVs) both generally and in India. It draws attention to India's distinct strategy for increasing electrification, which emphasizes

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battery swapping, energy saving, and the creation of a charging infrastructure. Increasing vehicle energy economy, offering battery switching choices, and digitizing the battery swapping process are all part of the plan.

Jordi Perdiguero, Juan Luis Jiménez (2012). The article covers various research papers and working papers from the Institut de Recerca en Economia Aplicada Regional I Pública. It discusses topics such as urban transport governance reform, price rivalry in airline markets, and the reform of labor market contracting. Additionally, it delves into the challenges and measures related to the recharge system for electric vehicles.

Indukala M.P, Bincy M. Mathew (2019). The research provides a comprehensive overview of electric vehicle (EV) battery technologies, covering the classification of batteries based on application, viable EV battery technologies, and the latest trends and challenges in battery technology. It discusses the importance of battery technologies in the context of EVs and their evolution over time, emphasizing key technical parameters such as safety, life span, performance, specific energy, specific power, and charging time.

1.3 RESEARCH GAP

There are several studies which examine the public attitude and consumer's Behaviour towards the electric vehicle in India. But there are only few studies analyse the consumers behaviour towards of electric vehicle from Kerala. A detailed analysis of people's view of electrical vehicles will help to forecast the vehicle market trends in future. The present study attempts to know about the Consumer behaviour towards electric vehicles in Kerala.

1.4 SIGNIFICANCE OF THE STUDY

There is a great chance that tastes and preferences will change, and that awareness of environmental issues will grow. The purpose of this study is to estimate the future of the electric vehicle (EV) market and customer behaviour in order to get insight into the rise of market participation in this segment. The study will be helpful to scholars and students who want to conduct research in this area.

1.5 OBJECTIVES

1. To present the electric vehicles Markert scenario in India.
2. To evaluate the awareness level of consumers on electric vehicle

1.6 HYPOTHESIS

- $H0_1$: There is no association between age and types of electric Vehicle usage .
- $H0_2$: There is no significant association between gender and types of electric vehicles usage.
- $H0_3$: . Marital status has no significant impact on the perception of the cost justification of owning an electric vehicle.
- $H0_4$: Occupation Is not associated with the perception of electric vehicles having sufficient range for daily transportation needs.

1.7 RESEARCH METHODOLOGY

Sampling size: The stipulated sample size of the study is 150 from the area of study conducted.

Source of the data: Two types of data are collected primary and secondary data to facilitate this study.

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A primary data is data which is collected for the first time for particular interest to have more relevant information. In this study, a questionnaire is used together sufficient information.

Secondary data is from Various journals, research papers, thesis and articles were searched for the purpose of getting desires information in the context if India and Kerala. Data collected serves as an important source of evident statistical measures and statements.

Sampling area

The study is based on the consumers of Kerala state; where study covers the consumers of 14 districts of Kerala state and their perception and attitudes towards electric vehicles.

1.8 ELECTRONIC MARKET IN INDIA

India's EV market is poised for rapid expansion, especially in 2W, 3W, and commercial fleet segments. While infrastructure and affordability remain challenges, policy support, local manufacturing, and innovation are key enablers. The transition is well underway, and by the end of the decade, EVs are expected to be a mainstream choice across urban and semi-urban India. The electric vehicle (EV) market in India is undergoing significant transformation, driven by government initiatives, growing environmental awareness, and the push for energy independence. Here's a comprehensive overview of the EV market scenario in India as of mid-2025.

Growth & Size

The Indian EV market is expected to grow at a CAGR of over 40% between 2024 and 2030. As of 2024, EVs accounted for around 6-7% of total vehicle sales, with projections aiming for 30% market share by 2030.

Segment Breakdown

- Electric Two-Wheelers (E2Ws): The most dominant segment (~60-70% of EV sales).
- Electric Three-Wheelers (E3Ws): Rapidly electrifying last-mile delivery and passenger transport.
- Electric Passenger Cars (E4Ws): Still a smaller portion (~2-3% of total car sales), but growing steadily.
- Electric Buses & Commercial Vehicles: Gaining traction through state transport and logistics fleets.

1.9 HYPOHTESES TESTING

H_{01}: There is no association between gender and usage of electric vehicle

TABLE 1

Gender and Vehicle type

Gender	Two-wheeler	Four-wheeler	Commercial vehicle	Others	Total
Male	29	20	6	52	107
	33.5	15.7	6.4	51.4	107.0
Female	18	2	3	20	43
	13.5	6.3	2.6	20.6	43.0
Total	47	22	9	72	150
	47.0	22.0	9.0	72.0	150.0

Source: primary data

The analysis shows vehicle ownership by gender. Males own more two-wheelers, four-wheelers, and commercial vehicles, while females own fewer vehicles overall. The total number of vehicles owned is 150.

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TABLE 1 (a)

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	6.378a	3	.095
Likelihood Ratio	7.242	3	.065
Linear-by-Linear Association	.524	1	.469
N of Valid Cases	150		

Source: primary data

H02: There is no significant difference between occupation and purchase of electric vehicle.

TABLE 2
ANOVA

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	5.048	4	1.262	.976	.423
Within Groups	187.546	145	1.293		
Total	192.593	149			

The ANOVA results show that the variation between groups (perceptions on the justification of electric vehicle costs) is not statistically significant ($F = 0.976$, $p = 0.423$). Therefore, there is no strong evidence to suggest that perceptions significantly differ among the groups surveyed

1.10 CONCLUSIONS

The study indicates that most consumers think that switching to electric cars is a necessary first step toward a more sustainable future because they are ecologically beneficial and pollutant-free. India must switch to new sources of energy for automobiles due to the depletion of fossil fuel supplies and the ongoing rise in fuel prices. To reduce pollution, the government has subsidized the purchase of electric vehicles and promoted them. Reducing FDI regulations was one way the administration promoted output. In India, a number of new brands are launching EVs. Governments and automakers should work together to build the required infrastructure and create an atmosphere that is conducive to the use of electric vehicles. The responders are ready to make changes and are aware of the current situation of the climate worldwide. The cost of an EV is a crucial factor to take into account.

In the future, respondents are willing to consider buying EVs if sufficient infrastructure is available. The cost of the initial purchase, the dearth of charging stations, and the duration of battery recharge all limit consumer trust.

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