

A STUDY ON FACTORS AFFECTING CONSUMER SATISFACTION TOWARDS EVS**Dr. B. Swathi**

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ABSTRACT

The growing significance of electric vehicles (EVs) as a green alternative in the transport industry is based on attaining universal consumer satisfaction. This study explores the various determinants of consumer satisfaction with EVs, focusing on critical factors such as vehicle performance, the convenience and efficiency of charging stations, cost-saving advantages, the impact of government policies, and the influence of technological progress. The research concentrates on Hyderabad and Secunderabad geographic regions, both in Telangana, India, and it includes feedback from a sample of 70 users of EVs such as professional taxi drivers, owners of personal vehicles, and students to offer a broad overview of user experience and attitudes. Primary data were gathered by means of a survey using a questionnaire, and the quantitative research paradigm was used in analyzing and interpreting consumer responses.

The outcomes of the research underscore the overwhelming significance of cost-effectiveness, best battery life, and accessibility of convenient charging points in forming overall customer satisfaction. While the environmental benefits and lower running costs of EVs are appreciated by respondents generally, there remain major challenges to be overcome. These challenges include concerns related to lengthy charging times, the limited availability of charging stations, and the high initial investment required for EV acquisition. Against this background, the study identifies the need to enhance charging stations, promote improved battery technology, and develop conducive government policies towards speeding up EV uptake. The findings obtained through this study aim to provide informative insights that could guide policymakers, manufacturers, and service providers on how best to improve EV-associated services with the aim of promoting maximum customer satisfaction.

Keywords:

Electronic Vehicle, Satisfaction, Consumer attitude, Services

INTRODUCTION

Consumer satisfaction is at the heart of business success, the extent to which a product or service satisfies customer expectations. It has a direct impact on brand image, creates customer loyalty, and generates long-term profitability. Happy customers repeat purchases, give positive referrals, and create positive word-of-mouth publicity. Dissatisfaction, on the other hand, can cause negative reviews, reduced customer retention, and loss of market share. Companies today need to focus on consumer satisfaction and its improvement in order to keep their customers and ensure sustainable growth.

There are various drivers of consumer satisfaction. These are product quality, where consumers anticipate products performing as marketed; customer care, with speedy and efficient support being vital; value for money and price, demanding that the price of a product or service is seen as reasonable; convenience and accessibility, including ease of access and hassle-free buying; and brand reputation and word of mouth via online reviews, since consumer trust and peer feedback drive consumer behavior.

Companies use different approaches to gauge consumer satisfaction. Questionnaires and surveys give immediate feedback, whereas scores such as the Customer Satisfaction Score (CSAT) measure the level of satisfaction. The Net Promoter Score (NPS) measures customer loyalty. Customer reviews and ratings on websites like Google Reviews and online shopping websites give important information about customer experiences.

Consumer satisfaction is important on multiple levels. It generates customer loyalty, decreasing the necessity for expensive customer acquisition. Sustained high levels of satisfaction give a competitive edge to organizations, allowing them to differentiate themselves. Happy customers are likely to generate positive word-of-mouth, affecting potential consumers. Finally, satisfied customers drive higher revenue growth and profitability. Organizations that take proactive steps in measuring satisfaction and applying feedback to improve products and services firm up consumer confidence and establish long-term customer relationships.

Consumer satisfaction enhances brand reputation, as shown by the Tata Group's ethical practices. It facilitates adaptation and continuous improvement, with companies like Paytm evolving to meet consumer needs. High satisfaction levels facilitate regulatory compliance and risk reduction, as in the case of IRCTC ensuring better services. It also increases employee morale and productivity, as in the case of Infosys's customer-centric culture. Consumer satisfaction is ultimately crucial to sustainability in the long term, as in the case of HDFC Bank with persistent customer satisfaction and market supremacy. In India's fast-paced market, businesses need to focus on consumer satisfaction to guarantee prolonged success and loyalty.

LITERATURE REVIEW

Xiaoli Sun et al (2020), in a comprehensive review of key technological advancements in electric vehicles, focused on battery technology, charging infrastructure, electric motors, and emerging innovations. The objective of the study is to summarize technological progress and challenges in EV development, highlighting future research directions. This paper is a literature review and does not include primary data collection or specify the number of respondents. Shafique ur Rehman et al (2024), in their study aimed to determine adoption intention for BEVs through environmental concerns, technophilic, social norms, price and battery cost, self-esteem, range confidence, satisfaction toward adopting BEV, financial incentives, non-financial policies, and status symbol by using the theory of planned behavior (TPB). The study collected data from 508 respondents through questionnaires using purposive sampling. The findings indicate that environmental concerns, technophilic, social norms, self-esteem, and range confidence significantly enhance satisfaction toward adopting BEVs, while price and battery cost significantly decrease customer satisfaction. Additionally, satisfaction towards adopting BEVs, government support (i.e., financial incentives, non-financial policies), and status symbols lead to the intention to adopt BEVs. Government support significantly moderates the relationship between satisfaction and adoption intention, whereas the status symbol does not. Julio et al, (2021) Kwon et al (2020), in their study aimed to evaluate the factors influencing BEV user satisfaction and its impact on intentions to repurchase and recommend these vehicles.

Jun Ma, et al (2017), aimed to analyze product quality characteristics influencing customer satisfaction in battery electric vehicles (BEVs). Using the Analytic Hierarchy Process (AHP), the study developed an evaluation system covering factors like design, driving performance, safety, and charging convenience. Data were collected from 3,413 respondents across 21 major cities in China. The findings emphasize that improving BEV design, energy efficiency, and charging infrastructure is critical to enhancing customer satisfaction and market acceptance. Rakesh Kumar et al (2019), analysed the opportunities and obstacles in the adoption of electric vehicles (EVs) in India. The study discusses critical factors such as charging infrastructure, battery technology, power electronics, and government policies like the National Electric Mobility Mission Plan (NEMMP) 2020.

Pritam et al, (2018), analyzed the Indian EV market, government policies, consumer perspectives, and challenges in EV adoption. The study presents a case study on consumer behavior and discusses factors such as charging infrastructure, battery costs, and tariff policies. The authors highlight that high initial costs, limited charging infrastructure, and range anxiety are key barriers to EV adoption. It provides insights into market trends, government initiatives, and policy recommendations to accelerate EV adoption in India. Haideri Ali Abbasi et al (2021), in their study "Consumer Motivation by Using Unified Theory of Acceptance and Use of Technology towards Electric Vehicles," aimed to assess consumer motivation and environmental knowledge towards electric vehicles (EVs) using the Unified Theory of Acceptance and Use of Technology (UTAUT) model. The study surveyed 199 respondents from Malaysia through convenience random sampling.

Nagaraj Navalagund et al, (2020), aimed to explore the attitudinal and behavioral factors driving the adoption of electric vehicles (EVs) in Karnataka, India. Udit Chawla et al (2023), analyzed key determinants affecting EV adoption in India, focusing on ecological awareness, affordability, and perceived usefulness.

Catherine et al, (2023), examined factors influencing consumer preference for electric vehicles (EVs) in India, focusing on fuel price, environmental consciousness, and financial incentives. Shweta Kishore et al, (2021), aimed to understand consumer perception and key factors influencing the purchase of EVs in India. Bhaskar et al (2020), analyzed consumer buying preferences and concerns regarding mid-segment electric vehicles (EVs) in India. Pretty Bhalla et al, (2018), aimed to analyze factors influencing consumer perception and adoption of electric vehicles (EVs) in India. Arpit Rastogi et al (2021), investigated the social factors affecting the slow adoption of electric vehicles (EVs) in India. Sriram et al, (2022), identified the key factors affecting consumer intention to adopt electric vehicles (EVs) in India. Mifzala Ansar et al (2018), evaluated consumer awareness and factors influencing the purchase intention of electric vehicles (EVs) in Bangalore, India.

OBJECTIVES AND METHODOLOGY

This research ventures into the foremost determinants affecting customer satisfaction in electric vehicles (EVs) based on consumer experiences and dilemmas. The research assesses aspects such as vehicle performance, charging facilities, cost, government policies, environmental effects, and technology. Utilizing a quantitative, descriptive survey design with a structured questionnaire, data were gathered from 70 respondents using convenience sampling. Primary data was collected using online and offline surveys, while secondary data was obtained from sources such as company websites and journals. Data analysis was conducted using descriptive statistics with software such as Microsoft Excel and Google Sheets.

DISCUSSION:

The challenge of global warming and increasing levels of greenhouse gas emissions has emerged as a mandate over the past decades, with Internal Combustion Engine (ICE) vehicles identified as leading perpetrators. The vehicles produce significant amounts of carbon dioxide (CO₂) and other harmful substances, which accelerate climate change and air pollution. Lowering emissions from ICE vehicles is necessary to encourage environmental sustainability and facilitate the transition to eco-friendly transport options, such as Electric Vehicles (EVs). Such context forms an essential foundation of knowledge about consumer behavior and satisfaction in transitioning to EV uptake. The growing need for Electric Vehicles (EVs) is a radical shift in the transport model of the world, driven by the need to reduce carbon emissions and combat climate change. As nations across the globe commit to achieving sustainable development goals, EVs have emerged as a viable alternative to Internal Combustion Engine (ICE) vehicles, offering cleaner and more efficient transport. The mass adoption of the vehicles is essential not only to reduce greenhouse gas emissions but also to improve air quality in cities and improve public health. For India's case, the applicability of electric vehicles (EVs) is particularly significant. India boasts some of the world's most polluted cities, with air quality index (AQI) levels frequently breaching acceptable standards. The tailpipe emissions of the internal combustion engine (ICE) vehicles are one of the major causes of air pollution, which in turn leads to respiratory ailments as well as environmental degradation. The expansion of EVs is, therefore, a chance to eradicate these ill effects by suppressing tailpipe emissions and minimizing dependence on fossil fuel. In addition, growing numbers of city residents in India, along with growing industrialization, have further strained clean transportation. Government actions, such as the FAME (Faster Adoption and Manufacturing of Hybrid and Electric Vehicles) program, reflect the nation's commitment to fostering the use of electric vehicles (EVs).

As India goes green in the coming years, electric vehicles are expected to make significant contributions toward enhancing energy security, lowering greenhouse gas emissions, and promoting economic as well as environmental well-being. Electric vehicles (EVs) play a vital role in environmental pollution mitigation as they produce no tailpipe pollution, which plays an important role in reducing the emission of harmful gases like nitrogen oxides and particulate matter in urban areas. Compared to internal combustion engine (ICE) vehicles, EVs produce much less greenhouse gas emission, particularly when powered with renewable energy. Moreover, their higher energy efficiency and reduced noise pollution also help in lowering noise pollution, thus improving the quality of urban life. Also, the production-to-end-of-life disposal lifecycle emissions of EVs are continually optimized by improvements in battery recycling and sustainable manufacturing practices. Because governments around the world encourage clean transport, demand for EVs keeps rising. Consumer satisfaction is, however, impacted by a few crucial factors such as driving range, charging facilities, battery durability, cost of ownership, and after-sales service. Perceived reliability and level of technology in EVs also play crucial roles in determining people's attitude.

FINDINGS

The findings reflect significant demographic, economic, and experiential patterns among respondents. The population was comprised of 70 subjects, which were largely defined as young, male, and living in urban cities, with over half of the subjects under 25 years and over half reporting less than ₹25,000 per month as income. Demographic patterns like these suggest an educated, youthful, and frugal consumer demographic that could manifest a forward-looking attitude towards innovative technologies, including electric vehicles (EVs). However, the lack of substantial representation of elderly populations and rural residents could insert specific biases and thus limit generalizability to broader populations. Usage patterns and brand choice point to a comparatively new but rising interest in EVs, with most respondents having used their vehicle for less than a year and primarily for private use. Two-wheelers constitute by far the majority of users, and mass-market players such as Ultraviolette, Tata Motors, and Ola are most dominant. While owners of EVs find home charging convenient, and rate their vehicle highly for range, acceleration, and battery, there are challenges. These

span from inadequate charging infrastructure, moderate to high charging times, and occasional technical defects—problems that are likely to impact long-term satisfaction and levels of adoption.

In Secunderabad and Hyderabad, electric vehicle (EV) users reported a clear lack of publicly available charging stations. Survey data indicate that about half of all respondents ranked locally available charging-station counts as very low or low, which reflects widespread concern. Such a shortage of publicly available charging points is likely limiting the uptake of EVs since vehicle users need some level of access to recharging the cars. It is thus of prime importance that urban and government authorities expand the charger network e.g. through subsidising additional construction of publicly available charging points across the city in order to overcome this infrastructure deficiency and encourage EV uptake.

However, areas that need to be improved were noted by the study: 65.7% need greater numbers of charging points, 60% request more rapid charging procedures, and 57.1% await increased vehicle range. These results highlight the role of infrastructure and technological improvements in influencing consumer satisfaction. In spite of some misgivings, the large recommendation rate (82.9%) indicates an overall positive perception of EVs, suggesting word-of-mouth and consumer recommendations to propel future development. Overall, this research offers a balanced picture of consumer acceptance of EVs. Although the existing user experience is predominantly positive, with a majority of users accepting the economic and environmental advantages, progress in the charging infrastructure and batteries is essential to the system. Progress in these areas could bridge the gap between pioneers and the mass market and thereby encourage wider acceptance and long-term viability of electric mobility in India.

The speed of rapid charging remains comparatively restricted; therefore, the majority of users have charging times of a few hours. Based on the research, only 21.8% of users can be charged to their full capacity within less than two hours, and the largest percentage has a two-to-six hour charging time. This means that lengthy charging times remain common, which could discourage some potential purchasers. To combat this, additional investment in improved rapid charging technology and higher capacity chargers would be beneficial in lowering charging times and making electric vehicle ownership more convenient. Battery performance is positively received by existing EV owners, overall: a total of 74.3% of drivers gave battery performance a rating of 4 or 5 out of 5, indicating unqualified satisfaction at battery reliability. However, the minority of responders gave lower marks and reported current concerns regarding battery performance aspects of degradation and efficiency. Further attempts to enhance battery technology – e.g., to its lifespan as well as efficacy of its recharge – will prove necessary if the confidence of customers and the speed of adoption of electric vehicles is to grow.

CONCLUSION

Customer satisfaction is the key to business success, particularly in a multicultural market such as India. It fuels loyalty and retention, as evident in the telecommunication industry through Reliance Jio's emphasis on cost-effective services. Word-of-mouth and brand advocacy are key, as reflected in Amul's quality products and Tata Motors' Nexon EV's positive reviews online. A focus on customer satisfaction provides a competitive advantage, furthermore, satisfied customers reduce marketing and acquisition costs. On the issue of satisfaction, an overwhelming proportion of respondents communicated their satisfaction with their experience with electric vehicles (EVs), particularly in areas such as operating costs, performance measures, and maintenance requirements.

LIMITATIONS OF THE STUDY.

Firstly, Geographical scope of the study in terms of locations is confined to Hyderabad and Secunderabad only, which will restrict the scope of generalizing the findings for other areas.

Secondly, convenience sampling may bring with it possible biases and further limit the scope of applying the findings to a larger population. To overcome these shortcomings, subsequent research studies could extend the scope to other regions of India and perhaps even international settings. It is also recommended that subsequent studies use larger and more representative samples to gain more in-depth understanding of the changing patterns of EV consumer satisfaction.

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