

Consumer Perception of Electric Vehicles in India

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ABSTRACT:

With the current depletion of fossil fuels and its price hike, there is a need for another energy resource to run the vehicle. The automobile sector is considering Electric Vehicle as a solution to the industry and environment in India. However, the current market penetration of Electric Vehicle is relatively low in spite of governments implementing Electric Vehicle policies. Through this paper potential scope of Electric vehicle in India will be studied and Consumer perception for same will be analyzed.

Keywords: Electric vehicles, Consumer perception, Choice of vehicle, Environment, Conventional vehicle, Government policies

INTRODUCTION:

India is a country with the third-largest road network in the world. Road travel seemed to be a preferred choice in India with over 60% of the population used personal or shared vehicles to commute. (Statista, 2020)

Conventional vehicles are a major cause of global warming and environmental air pollution. All types of vehicles produce dust from brakes, tires, and road wear. The average diesel vehicle has worse effect on air quality than the average gasoline vehicle. But both gasoline and diesel vehicle pollutes more than the electric vehicle. (EEA, 2018)

Governments started using fiscal policies, such as road tax, to discourage the purchase and use of more polluting cars. Green tax is imposed while re-registering the vehicle after 15 years of use to make people discontinue the use of polluting vehicles and encourage them for fuel-efficient and less polluting vehicles. Fuel taxes may act as an incentive for the production of more efficient, less polluting, vehicle and the development of alternative fuels. High fuel taxes or cultural change may provide a powerful incentive for consumers to buy lighter, smaller, fuel-efficient cars, or to not drive. (transport policy)

The FAME India Scheme is an incentive scheme for promotion of electric and hybrid vehicles. It aims to promote electric mobility and gives financial incentives for enhancing Electric

Vehicle production and the creation of electric transportation infrastructure. In 2015 the Ministry of Heavy Industries and Public Enterprises launched FAME to incentivize the production and promotion of eco-friendly vehicles including Electric Vehicle and hybrid vehicles. The scheme is proposed for establishing charging infrastructure (Jose, 2018)

The National Electric Mobility Mission Plan (NEMMP) 2020, a National Mission document providing the vision and therefore the roadmap for the faster adoption of Electric Vehicles and its manufacturing. This plan has been designed to boost national fuel security, to supply affordable and environmentally friendly transportation, and to enable the Indian automotive industry to attain global manufacturing leadership. (Gulati, 2013)

SCOPE OF THE STUDY:

This study has focused on both primary and secondary data of electric vehicles in India. Though the research found a potential scope of Electric vehicles in India, still there is a scope for in-depth study with greater number of samples and more factors.

OBJECTIVE OF THE STUDY:

The objective of this paper is to understand consumer perception and the factors important for the purchase of Electric Vehicles in India.

RESEARCH METHODOLOGY:

Descriptive research methodology is used. Primary data of a sample population of 212 is collected using online questionnaire.

REVIEW OF LITERATURE:

A Synthesis of the Current Literature with a Focus on Economic and Environmental Viability by Marcello Contestabile, Dr Gregory Offer, Dr Robin North, 2012 A research concludes that the longer term uptake of Electric Vehicle s will depend heavily on progress in battery technology, to bring down costs and increase energy density, and on the provision of a suitable recharging infrastructure.

Potential Need for Electric Vehicles, Charging Station Infrastructure and its Challenges for the Indian Market by Praveen Kumar and Kalyan Dash, 2013 India should invest in small scale reinforcements to manage the load issues locally rather than going for an enormous change. Home charging should be encouraged. Proper planning of place, population, traffic density and safety should be considered before implementing the massive scale charging infrastructure. The integration of activities within the energy and transport fields is important. Development goals through different innovative policies and programs, for instance, drivers of electrical cars are offered a financial consumer incentive, like tax credits, purchase subsidies, discounted tolls, free parking, and access to restricted highway lanes will help the market to grow.

NavedShamim Malik and Asif Ali Syed (2013) studied that the growing need for evaluating drivers of retail shopping behaviour forms a subject for research and analysis as the retailing environment is continuously changing. Ramachandran and Gokila (2013) studied on understanding the customer preference and satisfaction towards retail stores with respect to Coimbatore city. The study stated that the customers have certain expectations like branded items of its quality, price and services.

Consumer preferences for electric vehicles by Fanchao Liao, Eric Molin & Bert van Wee, 2017 Widespread adoption of Electric Vehicles may contribute to lessening of problems like environmental pollution, global warming and oil dependency. However, this penetration of Electric Vehicle is comparatively low in spite of governments implementing strong promotion policies. They presented a comprehensive review of studies on consumer preferences for Electric Vehicle aiming to convey policy-makers and give direction to further research. They compared the economic and psychological approach towards consumer preference for Electric vehicle. The impact of financial and technical attributes of Electric Vehicle on its utility is generally found to be significant, including its purchase and operating cost, driving range, charging duration, vehicle performance and brand diversity on the market. The density of charging stations also positively affects the utility and promotion of Electric Vehicle. The impact of incentive policies, tax reduction is quite effective.

International Council on Clean Transportation by Lingzhi Jin, Peter Slowik, 2017 The early market growth for electric vehicles continues, but a number of barriers prevent their widespread uptake. These barriers include the additional cost of the new technology, relative inconvenience of technology considering range and charge times, and consumer understanding about the availability and viability of the technology. This last point, typically referred to as “consumer awareness,” is crucial.

A Study on Electric Vehicles in India Opportunities and Challenges by Mohamed M, G Tamil Arasan, and G Sivakumar, 2018 The replacement of ICE with electric engines will reduce pollution to a great extent and be profitable to consumers. Many countries have implemented this technology and are contributing to the improvement of the environment. The researcher saw the opportunities and challenges faced in India over implementing Electric Vehicles. Opportunities like Government Initiatives, Batteries, Industries, and Environment have been considered. With these challenges like cost of Electric Vehicles, efficiency of Electric Vehicles in India and demand for Electric Vehicles were taken into consideration. The implementation of Electric Vehicles in India aims primarily to scale back greenhouse emissions and cut oil expenses. The govt. should make the foremost out of the opportunities available and find suitable ways to tackle the challenges.

Market Analysis with Consumer Perspective, Policies and Issues by Pritam K. Gujarathi, Varsha A. Shah, Makarand M. Lokhande, 2018 Indian Scenario is different because the current market share of EV/PHEV is around 0.1%. Presently almost all vehicles consider fossil fuel-based transportation. These pollute the atmosphere by the emission of greenhouse gases & causes global warming. The gap between domestic petroleum production and consumption is widening. India imports around 70% of oil required per annum. Hence there's an urgent need to investigate factors and challenges for sustainable and cleaner alternatives.

Perception and Awareness Level of Potential Customers towards Electric Cars by Masurali.A, Surya P, 2018 India contributes around 18% in transport sector alone in terms of carbon emission. The Electric Vehicle is one of the foremost feasible alternative solutions to beat the crises. Several automotive companies are introducing Electric Vehicles and are expanding their portfolio. Promoting Electric Vehicles can help reduce fuel dependence and pollution and beneficial for both consumers and the nation. The education of people has significantly higher influence over their awareness level on Electric Vehicles. Apart from manufacturers, Government should strive hard to spread awareness and influence positive perception among potential customers.

A Study of Consumer Perception and Purchase Intention of Electric Vehicles by Pretty Bhalla, Inass Salamah Ali, Afroze Nazneen, 2018 Choice of cars depends upon environmental concern, cost, comfort, trust, technology, social acceptance, infrastructure availability. These arguments have been tested for both conventional cars and Electric Vehicles. They assume that these factors have direct influence on individual choice of vehicle. They found that Electric Vehicle manufacturers and Government have to invest more in social acceptance of the vehicle by creating more infrastructural facilities, putting more thrust on technology to create trust. The analysis depicts that the population is well aware of the environmental benefits. The responsibility lies on the shoulders of the Government and manufacturers to investing in the manufacturing of vehicles.

Overview and Challenges by Mr. A. Rakesh Kumar, Dr. Sanjeevikumar Padmanaban, 2019 Global pollution is on the rise and each effort made, is to cut back the CO₂ emissions and save the earth. One such effort is the introduction of Electric Vehicles. The transport sector is one in all the largest emitter of CO₂ and hence it's important to reduce it. The government has come up with ambitious plans of introducing Electric Vehicles to the Indian market and confine pace with the event of Electric Vehicles globally. The National Electric Mobility Mission Plan 2020 has included an in-depth report on the Electric Vehicles. India encompasses a huge challenge in shifting the transportation sector from ICE engines to Electric Vehicles. This needs lots of planning along with R&D. Charging infrastructure must be adequately build to deal with range anxiety. It's vital to form demand generation by making all government buses electric and offering tax exemptions for personal Electric Vehicle owners.

Opportunities and Scope for Electric Vehicles in India by Janardan Prasad Kesari, Yash Sharma, Chahat Goel, 2019 Developing an aggressive strategy for the adoption of Electric Vehicles in India and ensuring a well executed implementation is a challenge but vital for government. The geography and diversity of India will present problems that require thoughtful solutions. Public procurement is expected to be an important driver of growth of Electric Vehicles, with the purchase of four-wheeled vehicles for government offices, three wheeled vehicles and buses for public transport. Investments by fleet operators such as Ola and Uber, and operators of food distribution services, are also expected to boost the initial growth of two- and four wheeled electric vehicles. However, the private Electric Vehicles may take 5-6 years to gain popularity and acceptance.

Indian Electric Vehicles Storm in a teacup by Yogesh Aggarwal, Vivek Gedda and Kushan Parikh, 2019 Users of scooters, who need only to travel short distances, may consider an Electric Vehicle, but those, who need to travel longer distances and already own bikes like a Hero Splendor, may find it difficult to move to an e2W. For cars, it is relatively simple to improve the range with increased battery size. For electric 2Ws though, every increase in kWh may provide an extra 30km in range, but the increase in weight is around 10kg, approximately a 10% increase in the total weight of the bike. This weight issue is even more pronounced in smaller bikes (less than 150cc).

DATA ANALYSIS AND INTERPRETATION:

The sample size is 212 out of which 60.4% are male and 39.6% are female. 7.5% of respondents fall under age group of 18-23 yrs, 55.7% in 24-40 yrs, 27.8% in 41-55 yrs and 9% are 56 yrs & above. 90.1% were in favour of eco-friendly vehicles and 9.9% favored conventional vehicle. Respondents are aware of climate conditions and ready to change their preference to eco-friendly

cars. When asked regarding choice of vehicle, respondents majorly selected hybrid vehicles. Cost being an important factor, customer expects Electric Vehicles in 5-10 lakhs range.

To find the consumer perception it's important to find out the factors for selecting Electric Vehicle. Respondents consider less carbon emissions, less dependency on fossil fuels, inexpensive to run as important factors. Respondents considers recharging time, limited charging stations, difficulty in charging as major drawback/limitation to consider Electric Vehicles in current situation.

Considering the current infrastructure and development of electric vehicle in India, majority of respondents considers that it is early for Electric Vehicles to launch. Respondents were being asked about the various factors which influences the purchase decision of a vehicle. Majority of respondents consider performance, fuel efficiency, price, technical features and environment friendly as very influential, whereas they consider style, size and brand as moderately influential factors.

CONCLUSION:

With the depletion of fossil fuels and constant hike in fuel prices, there is a need for energy transition in vehicles in India. Government has taken initiative to fight pollution levels by promoting Electric Vehicles and giving subsidies on purchase. To boost its production, Government has eased the FDI norms. Various emerging brands are launching Electric Vehicles in India. The Government and manufacturers should join their hands to build the infrastructure and create positive environment for Electric Vehicles.

The respondents are aware of global climate conditions and are ready to change their preference from conventional to eco-friendly vehicles. Cost is an important factor while considering the purchase of Electric Vehicle.

Respondents are willing to consider Electric Vehicles as their future purchase option, if proper infrastructure is available. Initial cost of purchase, less number of charging stations and the time required to recharge the battery is creating limitation in boosting consumer confidence.

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