

Challenges and Opportunities for Marketing Electric Vehicles in India: An Analysis of Consumer Attitudes

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Abstract

Purpose: Electric Vehicles, or EVs for short have seen an increase in popularity over the past few years because of the prospect of reducing carbon emissions and the negative effects on the environment that are caused by the large numbers of Internal Combustion Engine (ICE) vehicles that have been driven across the world. This research intends to analyze the challenges and opportunities for marketing electric vehicles in the Indian market, with a specific focus on customer attitudes towards EVs so that their tastes, preferences, and other factors can be ascertained.

Study design/methodology/approach: The study is conducted using simple random sampling technique. The target population group for this study will be Indian consumers aged eighteen and above, since the only people who are legally allowed to obtain a driver's license. The primary data is collected using structured questionnaire.

Findings: More than 75% agreed that fuel expenses will be lower if they were to use an electric vehicle, while around 15% were neutral and the remaining responses disagreed, which can help corroborate the claim that shifting away from fossil fuels will be beneficial to consumer wallets. Also, more than 70% of respondents agreed that the maintenance costs of an electric vehicle would be lower.

Originality/value: People are sceptical yet optimistic when regarding the current and future state of the electric car market because of the current challenges and opportunities that affect consumer attitudes towards electric vehicles.

Research and practical implications: Factors such as government incentives, environmental concerns, and technological advancements are driving the growth of the EV market in many markets around the world, and the results from those markets can be replicated in India.

Introduction

(Sciarretta, A., & Guzzella, L., 2007), Other factors relating to the surge in the popularity of EVs include a push towards green energy so that there is less reliance on oil, along with the benefits that electric vehicles have over ICE vehicles, such as lower maintenance costs.

Countries and governments the world over is now starting to focus on the adoption of electric vehicles on a large scale, and India is no exception to this paradigm shift. The Government of India has set a target of 30% of all vehicles on Indian roads being electric powered by the year 2030. The push towards EVs by the world's governments has caused car manufacturers to start focusing on manufacturing electric cars, with Indian brands such as Mahindra and Tata, along with foreign brands such as Honda, Tesla, Mercedes-Benz, BMW, Volkswagen, Hyundai, and others launching various electric vehicles. Although there has been a big push towards EVs, the Indian market for EVs is still in its initial stage of growth and adoption and there are various challenges that exist in the Indian market, such as high costs, a lack of infrastructure for charging and low levels of awareness and acceptance among customer groups.

One of the main obstacles of marketing EVs in India is their high cost. Currently, electric vehicles are substantially more expensive than their gasoline-powered counterparts, making them unaffordable for many Indian buyers. (Hannan, Mahammad A., F. A. Azidin, and Azah Mohamed, 2014), The substantial import tax that is levied and the low manufacturing capacity in India are the main causes of this price difference between ICE and EVs. Another significant barrier for electric vehicles in India is the absence of a reliable charging infrastructure. Even while the Indian government has been attempting to create a charging network, it is still in its infancy and not sufficiently extensive to promote the use of electric vehicles.

Furthermore, the market for electric vehicles faces another substantial obstacle due to consumer sentiments in India about electric automobiles. (Thomas, C. S. 2012), Despite having knowledge of the advantages of electric vehicles, many Indian consumers are still cautious to switch to them. This resistance is explained by a lack of understanding and awareness of electric vehicles, worries about battery life, and a lack of faith in the technology. Due to the great price sensitivity and desire for value among Indian consumers, it is difficult for electric vehicles to compete with gasoline-powered automobiles based on price.

The ultimate purpose and aim of this research are to present a thorough examination of the consumers of the Indian EV market, and make suggestions for how the EV sector may surmount their prevailing challenges and maximize opportunities in a market that is expanding quickly in the context of India, which has a market that is drastically different from other countries. Additionally, this study will explore the factors that influence the decisions of Indian customers and will examine the strategies that car manufacturers can implement to increase the number of EVs in India.

Literature Review

(Anil Khurana et.al, 2020), talks about how environmental pollution and toxic emissions from internal combustion engines (or ICEs) have caused governments around the world to start adopting electric vehicles at a rate that has never been seen before, along with stating the reasons for the historically low rate of electric vehicle adoption, including the higher buying price of an electric car, the absence of infrastructure for charging, range, along with other problems. It also mentions the targets of the Government of India regarding the adoption of EVs.

To circumvent the shortcomings of electric vehicles, it has been suggested through studies that offering incentives can support the acceptance of an electric vehicle. Offering tax benefits can counter the higher cost of buying an EV and the lower running costs in regard to energy consumption, along with paying less for charging EVs when compared to buying fuel can help in EVs being adopted at a faster rate.

Social influence is a very important factor to consider when talking about consumer attitudes. As a concept, social influence includes peer pressure, subjective norms, neighborhood impact, and cultural influence. People look for approval, along with validation from family, friends, and other peers when deciding to purchase a product. Their opinions and behavior influence the purchase decisions of consumers. This influence is vital when determining whether someone will buy an electric vehicle promotion and the impact of social networks is very important to adoption.

Another factor in determining purchase decisions is the self-image of a particular individual. It captures how customers feel about a product, which may be how they anticipate others to feel about them. Consistency in a product's image can indicate a favorable attitude towards the product, which may encourage further consumer adoption. The evaluation of cars by customers will be done using factors such as performance attributes that include comfort and efficiency.

Additionally, self-image and the social status that people aspire to have and compare to others is another deciding factor that can make people more inclined to purchase an electric vehicle, as it means that having an EV shows that one has a high social status. In conclusion, the self-perception of people when buying products can impact purchasing decisions.

When assessing and judging a good or service, attitude refers to a persistent reaction to a certain situation, thing, or group of things. In the context of literature, attitude is defined as a person's evaluation of a company, good, or service. Attitude is divided into three parts: cognitive, affective, and behavioral.

(Li, Z., Khajepour, A., & Song, J., 2019) The cognitive component has to do with a person's opinions, ideas, and the characteristics of a thing or problem. For instance, when thinking about an electric vehicle, the cognitive aspect of attitude may involve the perception of whether an electric vehicle is ecologically beneficial. Consumer attitudes towards the adoption of vehicles

with new technologies are significantly shaped by interpersonal influence and societal expectations.

When determining views towards electric vehicles, emotional aspects such as identity and motivation may help the environment might and it also might be quite important, and it is better than demographic and environmental characteristics. Lastly, attitude is a predictor of behavior and a useful predictor of intentions to acquire an electric vehicle.

The degree to which a person intends to engage in a particular behavior is known as their behavioral intention. Several studies have shown that psychological variables influence people's inclinations to adopt greener vehicles (Gärling, A., & Thøgersen, J., 2001).

(Jeykishan Kumar K, Sudhir Kumar and Nandakumar V.S.,2020), this paper suggests the basis and understanding the attitudes of consumers in regard to the infrastructure for electric car charging, which can have an impact on their purchasing decision. the situation of the infrastructure for electric car charging, in the context of a global scenario, with how this is existing in India at present and how it will have a transformative effect on the transport sector. There are already a number of electric vehicles on Indian roads, which include the Mahindra e2O, REVA and Ather bikes to name a few. The rationale behind transitioning towards electrically powered vehicles that are mentioned in the report include previously mentioned reasons of attempting to reduce the amount of fuel imports, climate change and reducing air pollution, along with other issues.

Indian scenario when discussing the electric vehicle market, and it mentions how electric vehicles and electric vehicle charging stations are related and how they are essentially inseparable from one another. As of April 2020, there were around 64 original equipment manufacturers (OEMs) and 112 electric vehicle (EV) producers worldwide, with a total of 17 EV component producers in India.

The Indian automobile market during the financial year of 2022 primarily comprises of two wheelers, which make up roughly 75% of the market, with passenger vehicles making up roughly 18% of the market, while commercial vehicles making up around 4% and three wheelers making up slightly more than 1% of the total market share. This figure can tell that a majority of the infrastructure for charging stations will need to be made for two-wheelers and passenger vehicles.

There are only a few companies that are currently in existence in India that produce electric vehicle charging stations, and they consist of the following companies: Ather Grid , SBD Green Energy and Infra , BHEL, Exicom, Delta Electronics, Mass-Tech, ABB, EVQ Point, BrightBlu, Magenta Group, RRT Electro Power. The fact that the prospective market for electric vehicles in India is very large, with India being the most populous country with a population group that is increasingly being able to purchase vehicles, it will be imperative for more companies to be set-up or for the existing list of electric vehicle charging station companies in India to massively step

up their production in order to be able to meet the future boom in demand for electric vehicle infrastructure.

(Sanguesa, J. A., et al 2021), Battery electric vehicles (BEVs) are frequently marketed as a crucial element of initiatives to lessen the dependence of the transportation industry on fossil fuels. Nonetheless, despite its promoted advantages, BEVs suffer adoption challenges, such as high upfront prices in comparison to conventional vehicles and consumer anxiety over dependability, range, and new technology. These obstacles are brought on by the fact that BEV technology differs significantly from that of conventional internal combustion engine technology.

(Sun, Xiaoli, Zhengguo Li, Xiaolin Wang, and Chengjiang Li, 2019), Policy Incentives for the Adoption of Electric Vehicles across Countries” and authored by (Xingping Zhang, Jian Xie, Rao Rao and Yanni Liang 2021), discusses the possibility of policies that can incentivize consumers who might buy electric cars to make a purchase. The abstract explains how electric vehicles various benefits have, including lowering CO2 emissions and reducing the transportation sector's reliance on fossil fuel usage.

As a result, many nations have recently established EV development goals and implemented a variety of regulations to meet environmental goals and ease the burden of energy. Even though EV use has grown over the past few years, governments should implement more policies to encourage EV use across a wider range of applications. These policies could include financial incentives, technology support, or charging infrastructure. The authors of this study examine the pertinent policies that various nations may adopt to boost the market for EVs. Based on this, they examine, using America as an example, how policy and the uptake of EVs are related.

Research Methodology

Research Objectives:

- Identifying the challenges and opportunities for marketing electric vehicles in India
- Analyzing the attitudes of Indian consumers towards electric vehicles
- Examining the factors that influence Indian consumers' decision making when it comes to purchasing electric vehicles.

Sampling Design

The researcher used a simple random sampling approach as a research design. The target population group for this study will be Indian consumers aged eighteen and above, since the only people who are legally allowed to obtain a driver's license drive a vehicle are people of that age group. The strata will be based on geographic regions and a proportional sampling approach will be utilized to ensure that the sample is representative of the population.

Sample Size

The sample size for this study will be fifty or more respondents, and this sample size is adequate. Although fifty is not a huge number, it can give a good insight to customer attitudes as the parameters for judgment are not extremely wide and the results can easily be stratified to a larger level. The sample will consist of Indian car market consumers who are aged 18 and above who are potential buyers of electric vehicles. The sample will be based on geographic regions, age range, income level and tastes and preferences, and it will be stratified based on these parameters.

Sources of Data

The primary data for this study will be collected using a Google Form, which will contain questions that contain multiple choices for answers, and respondents will have to choose the answer that suits them the most. Google Forms are a highly effective and efficient way of collecting primary data as they can easily be disseminated to a large number of people in a quick manner, irrespective of their physical location. Additionally, every response is collected digitally, which makes it easier to conduct an analysis of the data that is collected. Secondary data for this report will be collected from a variety of sources that are accessible using the internet, such as Scholarly articles, reports, articles, forums, and other avenues of information.

Research Instrument

The research instrument for this report will be a structured questionnaire that will consist of closed-ended questions, along with an option to give open-ended suggestions if the respondent wants to do so. The questionnaire will be tested before sending it to potential respondents in order to ensure that it is concise, clear and easy to understand. The questionnaire will be administered online using the Google Forms survey tool.

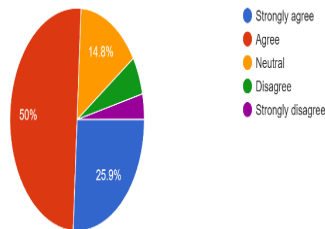
In conclusion, this research methodology lays out the approach that will be used in this report to investigate the challenges and opportunities for marketing electric vehicles in the Indian market. The use of a quantitative research approach, along with structured questionnaires and simple sampling will provide a strong and reliable analysis of the Indian electric vehicle market and the attitudes of the Indian customer base.

Data Analysis and Findings

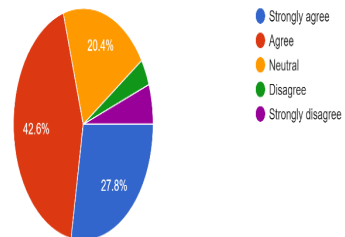
The researcher received a total of 54 responses from a variety of people of different age groups, income levels and other demographics. Online platforms were also searched such as reddit to look for potential respondents. A large majority of the age of respondents (~74%) were people between the ages of 18 and 35, with the rest of the respondents having an age of more than 35 years. 63% of the respondents were males and 37% of the respondents were female and the four levels of education that were available to choose from were mostly distributed evenly.

More than 75% agreed that fuel expenses will be lower if they were to use an electric vehicle, while around 15% were neutral and the remaining responses disagreed, which can help corroborate the claim that shifting away from fossil fuels will be beneficial to consumer wallets. Also, more than 70% of respondents agreed that the maintenance costs of an electric vehicle would be lower.

1) I will save on fuel expenses because the running cost should be lower in the case of an electric vehicle
54 responses

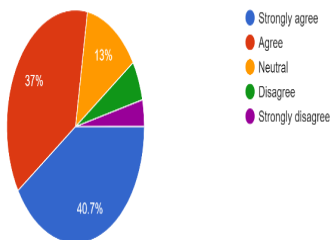


2) The maintenance cost of an electric vehicle is relatively lower than a conventional car
54 responses

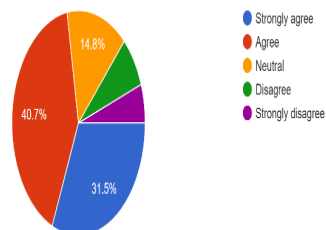


Furthermore, a large majority of respondents do seek an interest in adopting an electric vehicle because of increasing air pollution and other environmental issues. A similar trend can be seen when asking if electric vehicles can save future generations through environmental contributions.

3) I would consider buying an electric vehicle if the charging infrastructure in India was better
54 responses



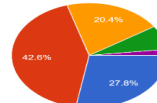
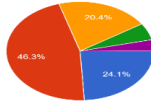
4) I want to adopt an electric vehicle because of increased air pollution and other environmental issues
54 responses



5) Electric vehicles can contribute to the environment which will be saving future generations 6) I would consider buying an EV if they had a higher range

54 responses

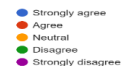
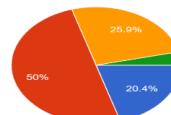
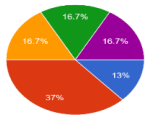
54 responses



7) The government should eventually phase out all petrol and diesel cars from the road in the future 8) People will react positively if they see an electric vehicle on the road

54 responses

54 responses

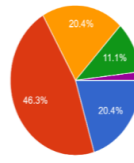
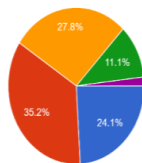


13) I am inclined to switch to an electric vehicle

54 responses

14) Driving an electric vehicle will be a wise decision

54 responses

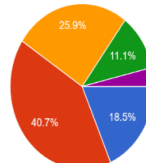
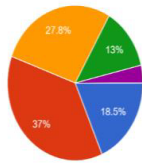


15) I would recommend the adoption of electric vehicles to others

54 responses

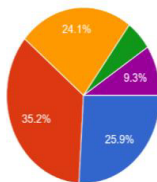
16) I speak positively of electric vehicles to other people

54 responses



17) I would definitely buy an electric vehicle in the immediate future

54 responses



More than 75% agreed that fuel expenses will be lower if they were to use an electric vehicle, while around 15% were neutral and the remaining responses disagreed, which can help corroborate the claim that shifting away from fossil fuels will be beneficial to consumer wallets. Also, more than 70% of respondents agreed that the maintenance costs of an electric vehicle would be lower.

Furthermore, a large majority of respondents do seek an interest in adopting an electric vehicle because of increasing air pollution and other environmental issues. A similar trend can be seen when asking if electric vehicles can save future generations through environmental contributions.

Statements such as considering buying an electric vehicle if they had a higher range was met with strong agreement, however asking if the government should eventually phase out all petrol and diesel cars from the road in the future was met with mixed results, with respondents being somewhat in agreement but hesitant to have a unanimous consensus.

Most respondents either agree or strongly agree that people will have a positive reaction to seeing an electric vehicle on the road, which can show that people are likely to welcome the introduction of electric vehicles due to the perceived benefits that EVs bring forward. There is a similar sentiment towards agreeing that driving an electric vehicle being a wise decision.

The respondents seemed torn on recommending the adoption of electric vehicles, with roughly 19% of respondents strongly agreeing and 37% agreeing, while roughly 28% having a neutral response to this statement, with the rest being in disagreement. This could be explained due to the fact that electric vehicles have not been mainstream for long enough for people to have so much faith in them to the point that respondents can recommend EVs without any second guesses.

Most respondents say that they speak positively of electric vehicles to other people, with more than half of the respondents agreeing with the statement. However more than 25% of respondents are neutral, which could mean that they are reluctant to say whether if the benefits of EVs outweigh their drawbacks. The last statement shows that most respondents have a positive outlook on electric vehicles and their future as more than 60% of respondents are sure that they would consider purchasing an EV in the immediate future, which can possibly be due to the large leaps and bounds that are being made in the electric vehicle sector.

Overall, analyzing the findings can tell that most respondents were younger people who were earning less money, so they recognized that the cost benefits provided by electric vehicles, which can greatly boost its share in the price sensitive market of India.

Discussion and Conclusion

In conclusion, after conducting an in-depth analysis of the Indian electric vehicle market and consumer attitudes towards EVs, it can be concluded that there is a growing interest and demand for electric vehicles among consumers. Research has shown that

Moreover, it was found that the marketing strategies used by EV manufacturers play a crucial role in shaping consumer attitudes towards EVs. Effective marketing campaigns that highlight the benefits of EVs, such as lower operating costs and reduced environmental impact can significantly influence consumer perceptions and increase the likelihood of purchases. The Google form showed that most respondents had a positive outlook towards electric vehicles based on their perceived benefits, which brands can use to their advantage. Despite the increasing popularity of electric vehicles there are certain barriers that still exist, such as range anxiety, high upfront costs, and limited charging infrastructure. However, with continued advancements in technology and government support, these barriers are expected to be overcome in the near future.

Overall, it can be concluded that the electric vehicle market has a significant potential for growth, and it presents a valuable opportunity for manufacturers to capitalize on consumer demand and contribute to a more sustainable future. Automobile companies that are operating in India will have to make sure that they can effectively adapt the benefits of EVs to a growing market that is very price sensitive. Furthermore, they will also have to consider other types of vehicles such as two-wheelers as they hold a large market share of vehicles. Lastly, both primary and secondary sources of data show that despite the many challenges in the Indian EV market, there are many opportunities for growth soon if governments and manufacturers can work to improve consumer attitudes and markets.

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