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## Original Research Article

## Customers' Perception about electric vehicles

Souvik Adhikary<sup>1</sup>, Naman Jalan<sup>1</sup>, Nilesh Anute<sup>1,\*</sup><sup>1</sup>Dept. of Management, ASM'S IBMR, Pune, Maharashtra, India

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## ABSTRACT

The main goal of this study is to analyze the consumer perception of electric vehicles in India. It has been observed since 2015 that EV companies have taken a major step toward economic and environmental factors while producing their vehicles. In the current dynamic scenario, consumers are constantly looking for better eco-friendly products along with cost-efficiency to it. This study takes a quantitative approach (survey) to know the perception of the consumers to accept electric vehicles as a legitimate substitute for petrol/diesel vehicles. This research throws light on the positive and negative factors which affect the consumer's perception when approaching electric vehicles in India.

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## 1. Introduction

Globally Electric vehicles are growing at a rapid pace with a compounded annualized growth rate (CAGR) of 21.7 percent, by 2030 it is supposed to grow from 8.1 million units to 39.21 million units. The enormous growth has been influenced by several factors like efficiency, pollution, and environmental concerns. All over the planet governments have started to encourage EV industries by providing subsidies as the consumer continuously demands eco-friendly vehicles rather than petroleum or diesel vehicles.

Coming to the scenario, in India, the future of Electric Vehicles is still standing at a critical point. Whenever there is a hike in oil prices or a change in climate electric vehicles are the first solution to be discussed and approached. Indian companies entering the EV industry take a lot of risk and efforts to normalize the EV segment, but it has not happened yet. More than 15 years have surpassed but the EV industry has not hit the potential that was predicted. Today when we look at the roads, a small proportion of electric vehicles are spotted compared to traditional vehicles. Now in 2022, the

EV industry has all the tools to hit its highest potential and finally take off.

As the Government of India has been providing various schemes and benefits for EV manufacturers, collaborations between companies and the government have been beneficial in increasing EV production and market in India. Top CEOs of India's automobile industries praised the government's new "vehicle scrappage policy" introduced in Union Budget, 2021-22. As per budget 2023, for Fast Adoption and Manufacturing of Hybrid and Electric vehicles (FAME) has been projected at Rs. 2,908 crores which are three and a half times more than the budget year of 2022 (FAME) amounting to Rs. 827 crores.

Viewing the positive and the negative impacts, the consumer's perception of electric vehicles in India has drastically changed. Innovation has taken a quantum leap which encourages the consumer to think more about affordability, eco-friendliness, and excellent service for an e-vehicle. Constant promotion from the government has resulted in a better mindset and knowledge about e-vehicles in the minds of the consumers. This entertains EV companies like Tata Motors, Hyundai, Mahindra, and many

\* Corresponding author.

E-mail address: [nileshanute@gmail.com](mailto:nileshanute@gmail.com) (N. Anute).

more to improve their products eventually improving the perception of the e-vehicles in the minds of consumers.

## 2. Literature Review

1. Sajan acharya (2019), consumers perception towards electric vehicle industry- a study on the role of electrical vehicles in environmental sustainability: The researchers observed to focus on omitting greenhouse gases and upgrading the old and regular vehicles with new electric vehicles to maintain low levels of pollution.
2. Mr. Omkar Tupe, Prof. Shweta Kishore, and Dr. ArlophJohnvieira, (2020), consumers perception of electric vehicles in India: The researchers observed that the Government has taken initiative to fight the depletion of fossil fuels by introducing electric transition.
3. Ankita Nagpal (2020), consumers perception towards electric vehicles in India: The researcher observed to reduce the level of pollution and carbon emissions, ev's must be a regular medium across the country.
4. Prateek Bansal, Rajeev Ranjan Kumar, Alok Raj, Subodh Dubey, and Daniel J. Graham, willingness to pay and attitudinal preferences of Indian 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.
5. Ajex Thomas Varghese, V.S. Abhilash, 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 infrastructures for EVs.
6. Ajaysinh 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.
7. Vibhuti Pareek, 2022, Perception towards electric vehicles in the Indian market: The researcher observed that manufacturers of EVs need to work on their research and development to improve price range, cost of product, design, style, and branding to create a positive perception about electric vehicles in the Indian market.

### 2.1. Statement of research problem

As environmental issues are recorded high in India, people are starting to think about saving the environment as much as possible. It is common knowledge that petrol and diesel vehicles cause most of the environmental damage due to which people are shifting to electric vehicles. Although the

EV concept is well proven nowadays, people still lack the knowledge or trust in it. They are skeptical about the safety and reliability of electric vehicles. Therefore, this research has been conducted to analyze people's perceptions as per the negatives and positives for electric vehicles and the technology included within.<sup>1-3</sup>

## 3. Research Methodology

### 3.1. Objectives of the study

1. To study customers perception about electric vehicles in India.
2. To study awareness of customers about electric vehicles in the Indian market.
3. To study the factors influencing customer while purchasing elective vehicles.
4. To study the factors restricting customers from purchasing electric vehicles.

### 3.2. Research design

The study portrays how consumers indulge in the advancement of the EV movement all over the country. The following facts have the potential to upgrade EV companies and their products according to the consumer's needs. A descriptive research methodology has been taken into consideration to carry out this research.<sup>4-6</sup>

### 3.3. Sampling method

The sampling method used in this study is non probability convenience sampling method where a sample size of 100 respondents was taken.

### 3.4. Method of data collection

The primary data process was approached in the survey to create a questionnaire without being biased toward the male or female population, gathering respondents' perceptions about the pros and cons of electric vehicles in India along with a brand image of various EV companies in India. The questionnaire carries 8 questions which help to deliver the most accurate responses.<sup>7</sup>

### 3.5. Data analysis

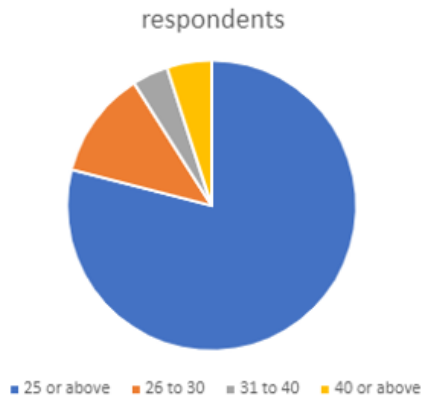
A number of 100 responses were taken while analyzing consumers' perceptions about electric vehicles in India. A questionnaire was circulated to collect qualitative and quantitative data. The primary objective of the questionnaire was to perceive factors like pricing, positive environmental factors, financial gains, references, and low noise levels affecting consumers' perception in a positive manner, while factors like limited range, long recharging time, limited consumer choice, trust over new technology and unwillingness to change the lifestyle affecting consumers'

perception in a negative manner, simultaneously affecting their buying decision.

Detailed analysis of the surveyed responses from the questionnaire:

**Table 1:** Age of the respondents.

25 or younger	79%
26 to 30	12%
31 to 40	4%
41 or above	5%
Total	100%

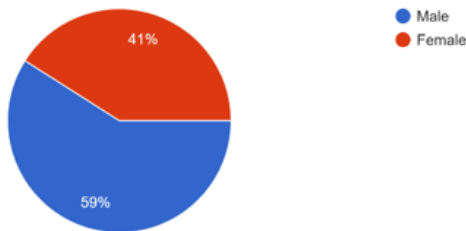


Graph 1: Age of the respondents.

**Table 2:** Gender of the respondents.

Male	59%
Female	41%
Total	100%

What is your gender?  
100 responses

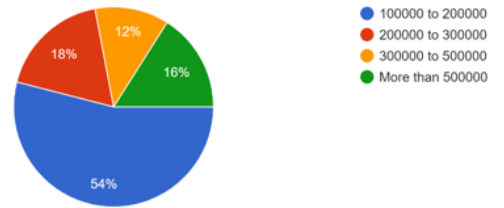


Graph 2: Gender of the respondents.

**Table 3:** Income of the respondents.

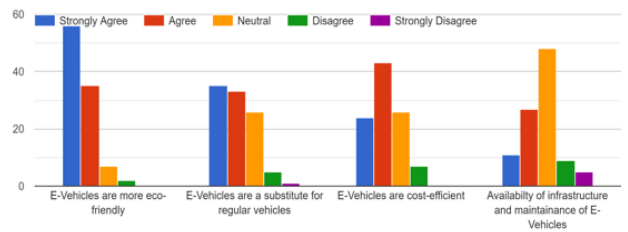
100000 to 200000	54%
200000 to 300000	18%
300000 to 500000	12%
More Than 500000	16%
Total	100%

What is your approximate yearly income?  
100 responses

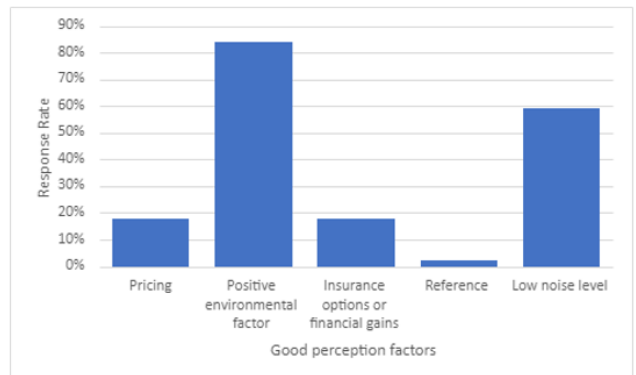


Graph 3: Income of the respondents.

What do you think about the following statement?



Graph 4: Perception of the respondents.



Graph 5: Positive factors influencing the respondents.

**4. Findings**

1. In this research, most of the respondents were Gen Z population indicating that they are much more

**Table 4:** Perception of the respondents.

	Strongly agree	Agree	Neutral	disagree	Strongly disagree
E-vehicles are more eco-friendly	56%	35%	7%	2%	0%
E-vehicles are a substitute for regular vehicles	35%	33%	26%	5%	1%
E-vehicles are cost efficient	24%	43%	26%	7%	0%
Availability of infrastructure and maintenance of E-vehicles	11%	27%	48%	9%	5%

**Table 5:** Positive factors influencing the respondents.

Pricing	18%
Positive environmental factor	84%
Insurance options or financial gains	18%
	2%
Low noise level	59%

**Table 6:** Negative factors influencing the respondents.

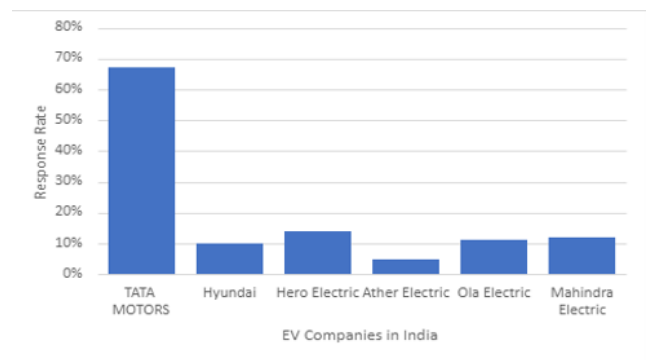
Limited range	65
Long recharging time	52%
Limited consumer choice	30%
Trust over new technology	25%
Unwillingness to change the lifestyle	14%



**Graph 6:** Negative factors influencing the respondents.

**Table 7:** EV Company preferred most.

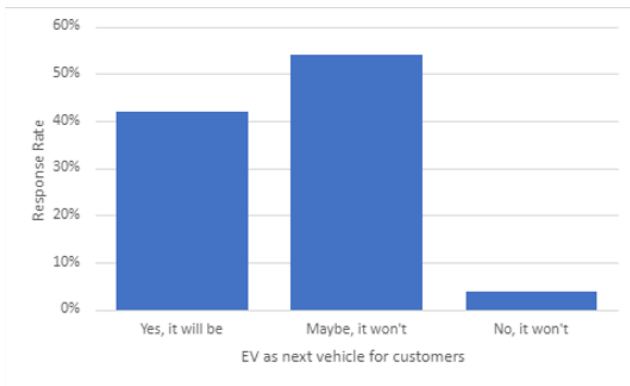
Tata motors	67%
Hyundai	10%
Hero electric	14%
Ather electric	5%
Ola electric	11%
Mahindra electric	12%
Total	100%



**Graph 7:** EV Company preferred most.

**Table 8:** Possibility of the respondents' next EV vehicle.

Yes, it will be	42%
Maybe, it will	54%
No, it won't	4%
Total	100%

**Graph 8:** Possibility of the respondents' next EV vehicle.

aware and take a special interest in the EV sector. Alternatively, a very smaller number of respondents were involved in the age group of 40 plus while having more purchase power.

- It can also be inferred from the study that male respondents were just slightly above female respondents. This shows that females are keeping up with the male population regarding perception about electric vehicles.
- As electric vehicles are getting more and more affordable, younger age groups are having easy access to quality electric vehicles, along with the Government of India introducing various schemes and subsidies.
- A wide number of respondents had shown a positive perception of the seriousness of environmental danger and the need to act upon it. Most people perceived electric vehicles as their go-to solution. While many agree that the infrastructure is not yet fully developed, many accept e-vehicles as cost-efficient and a better substitute for traditional petrol/diesel vehicles.
- E-vehicles have been perceived as an environmentally friendly option for most of the respondents and the environment is a major reason to switch over to e-vehicles. Noise pollution in India is very high now, especially in traffic areas and e-vehicles will help reduce that also.
- Though e-vehicles have been developed a lot at current considering their arrival in the early, e-vehicles have not yet solved the problem of long-range miles that regular vehicles do not have. Most people have issues like limited range and long recharging time which plays a crucial factor for consumers and distinct the most favorable point for traditional vehicles.

- Seeing the current EV market and dominance of one company in general over all others, TATA MOTORS has been the first choice for every respondent, showing the quality and durability the company is known for in Indian market, other top companies like Hyundai and Mahindra electric have also respectable market share but TATA MOTORS is ahead from any of them.
- Looking at the past present and future of the EV market in India it can be easily said that the market is set to be growing at an extreme pace and forecasting a huge automobiles revolution in the coming 5 years both in terms of Consumer Perception and infrastructural changes.

## 5. Suggestions for the study

After conducting the research and looking into the current scenario, it is suggested to make a proper availability of infrastructure from the companies so that they can cater to the requirements of the E-Vehicles all over the country. More companies need to diversify into the EV segment due to a lack of options for consumers which in turn will create a high purchase demand. Companies must manufacture such e-vehicles which can align with the perception of the consumers.

## 6. Limitations of The Study

- Any new entry of a company into the EV market in India will not be possible before studying the Indian consumer, their requirement, and their purchasing power.
- Companies have not been able to develop proper infrastructure for e-vehicle owners with regards to charging points, repair stations and availability of batteries.
- The credibility of the research could vary in the future as primary data was taken into consideration while doing this research on electric vehicles.

### 6.1. Scope for further research

As the EV market is getting higher year by year, there is a lot of scope for researchers to deep dive into the market and know its consumer much more. The researcher will have ample data for the market from the Government and the consumers both. The future of e-vehicles looks promising and is to be normalized. This will help the researchers to access more primary and secondary data. If the questionnaire is broadened along with respondents and an in-depth study is conducted, the results of the research will be more accurate.

## 7. Conclusion

The current state of the E-V Industry is in a great position with future prospects and an enormous market share as the quality of products has evolved a lot since the beginning of the EV revolution in India. The perspective of the Indian consumers has started to adopt technological improvements where electric vehicles gain an upper hand over regular vehicle. People are now more aware of the insights of EV brands and their ability to deliver required products. Summarizing the whole research, it can be concluded that consumers are much more looking for eco-friendly and sustainable products. The government themselves started taking initiatives for developing proper infrastructures and facilities which can normalize electric vehicles in the Indian market.

## 8. Source of Funding

None.

## 9. Conflict of Interest

None.

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## Author biography

**Souvik Adhikary**, Research Scholar

**Naman Jalan**, Research Scholar

**Nilesh Anute**, Research Scholar

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