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## **A comprehensive review on the growth of electric vehicles in India**

**D. Duggal\***

Bharati Vidyapeeth Deemed University, Pune

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**\*Corresponding author e-mail:** [dduggal1970@gmail.com](mailto:dduggal1970@gmail.com)

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### **ABSTRACT**

*India is an emerging country with a huge market. With the fast-developing infrastructure, the economy is growing rapidly. India is also facing a lot of problems such as air pollution, traffic congestion and accidents, and expensive energy costs. As a result, the Indian government has set a goal to reduce the country's dependence on fossil fuels by increasing the share of electric vehicles in the country's car fleet from less than 1% now to 7% by 2022. To achieve this goal, three types of EV models are available for sale in India: hybrid electric vehicles (HEVs); plug-in hybrid electric vehicles (PHEVs); and battery electric vehicles (BEVs). The BEV is the most advanced technology, with a high-capacity lithium-ion battery that can be recharged from an external source. The objective of the study is to define, elaborate and predict the market segmentation for electric vehicles (EVs) in India. The study will provide an overview of market segmentation for EVs in India. In the end, the study concludes that the market segmentation will be helpful in several ways such as it helps to make your target market clear and also helps to enhance the chances of Electric Vehicles product acceptance in India. In order to increase market share, marketers must develop a strong strategy focusing on the target segment.*

**KEYWORDS:** Market segmentation, electric vehicles, automobile industry., india, renewable energy.

### **1. INTRODUCTION**

The Indian automobile industry is at a crossroads. This industry has been much more resilient to the impact of external economic factors compared to other industries, but the changing demographics in the country indicate that it will face headwinds over the next few years. The rise of new segments like compact SUVs and electric vehicles (EVs) have posed a challenge for automakers looking to compete in this market. The Indian automobile industry has been resilient to external economic factors over the last few years. While other industries have struggled with slow growth, rising input costs, and low consumer demand, the Indian automobile industry has continued to post growth. The reason for this is that India's

economic growth rate has been higher than most other countries in the world. The country's GDP grew at 7.6% in the first quarter of 2017, while China's GDP grew at 6.9%. This has helped India to remain one of the fastest-growing economies in the world India is expected to continue its high growth rate over the next few years, with an average annual growth rate of 7.5% expected between 2017 and 2022. The country is projected to be the fastest-growing major economy in the world over this period, as it benefits from strong private consumption and investment demand.

## 2. OBJECTIVES OF THE STUDY

- To define, elaborate and predict the market segmentation for electric vehicles (EVs) in India.
- To Study the automobile industry and its competitive structure and growth in India.
- To Study and understand an overview of market segmentation for EVs in India.

## 3. RESEARCH METHODOLOGY

The current study is based on a secondary source of information The sample data were collected from two secondary sources:

- Sources like industry journals, periodicals, newspapers, magazines and annual reports of companies have been identified for collecting the primary data.
- The secondary source has been identified through Google Scholar and another research database for collecting different relevant published articles, journals, reports and magazines on the subject mentioned in the research brief.

## 4. LITERATURE REVIEW

The segment of the study is an attempt to provide a comprehensive literature review on the effectiveness of market segmentation for electric vehicles in augmenting sales revenue in India. The core objective of this study is to understand the existing market segments and their potential for E-vehicle sales in India (Sandalow, 2009).

In order to achieve the objective, we have identified several aspects of market segmentation with respect to E-vehicles. In 2015, India was the second largest market for electric vehicles in the world. The country's shift towards electrification of its automobile sector is an attempt to reduce its dependence on fossil fuels. The country's goal is to have an all-electric fleet by 2030(de Rubens, 2019).

India is the fastest growing automotive market in the world. India is a nation with flourishing industries and commerce. The growth of Indian economy has been on the rise and has been more than 7% every year for the past decade. This has meant that automobile industry has also received an impetus to grow as people are buying more cars now-a-days (Shende, 2014).

Automobile Industry in India has witnessed an upsurge in the demand for electric vehicles. Many car manufacturers have come forward to launch these vehicles to make them more efficient and cost effective (Horsky, 1990).

India has also made significant investments in the renewable energy sector. In 2015, India's total installed power generation capacity from renewable sources was about 55 GW. However, there are several challenges that have been hampering the growth of E-vehicles in India. Some of these challenges include low voltage issues, high cost of batteries and lack of awareness among people regarding the concept of E-vehicles (Kapustin & Grushevenko, 2020). The current policy of the Government of India is to encourage people to shift from conventional vehicles to E-vehicles. The government has announced a FAME (Faster Adoption and Manufacturing of Hybrid & Electric Vehicles) scheme, which provides subsidies to people who buy E-vehicles. Under the scheme, a buyer of an E-vehicle is entitled to a subsidy of Rs 1.38 lakh for buying a two-wheeler and Rs 2.95 lakh for buying a four-wheeler. However, the scheme has been criticized for being too restrictive and not encouraging people to buy E-vehicles. The government should also incentivize people who are willing to install charging stations in their homes or offices. According to a report by the

Energy Efficiency Services Limited (EESL), the country has around 1,000 charging stations. However, there are only 50 public charging stations in India (Bohnsack et al., 2014).

Also, there is a lack of charging infrastructure in India. It is important to have an adequate number of charging stations for E-vehicles so that they can be used as a mainstream mode of transport. The Indian government has been working on the charging infrastructure. The Ministry of Power has set up a task force to work on this issue (Bohnsack et al., 2014). The other challenge is the price of E-vehicles. In India, the cost of batteries is very high and hence, E-vehicles are expensive. It is important to reduce the cost of batteries for E-vehicles so that they can be used as a mainstream mode of transport. Also, the government should come up with a proper policy for E-vehicles. This will help in the development of the market and bring down the cost of E-vehicles. The government should also come up with an effective subsidy policy (Vidhi & Shrivastava, 2018).

There are some other challenges too. There is a lack of charging infrastructure in India. We need to develop the charging infrastructure so that people can charge their vehicles at home, offices and public places. The government has set up a task force to look into develop the charging infrastructure. Another challenge is the lack of awareness about E-vehicles. government need to educate people about the benefits of E-vehicles and how they can be used as a mainstream mode of transport (Kisanga et al., 2018).

### **Overview of Electric Vehicles Growth in India**

India is the second largest market for vehicles in the world and is expected to be the third largest by 2020. According to a study, it was found that India has a huge potential as an electric vehicle market. Around eight million electric vehicles are expected to be sold in the global market by 2020. Market segmentation analysis helps in identification of most attractive segments in which a company can compete with others. By conducting this analysis, marketer reduces competition from other companies and finds his own strategy to penetrate deeper into the market. The higher the number of segments, more is the revenue for the company. So, it is important to identify the segments in which company can make more profit.

### **Market Segmentation Techniques:**

Segmentation techniques are used to divide the market into smaller groups. Market segmentation is done on the basis of various factors such as demographics, Psychographics, Geography, Behavioural factors etc.

### **Market segmentation is done on the basis of following:**

- **Demographic Segmentation:** Demographic segmentation is based on demographic characteristics such as age, gender, income, family size, occupation, education level etc.
- **Psychographic Segmentation:** Psychographic segmentation is based on consumer's personality and lifestyle characteristics such as lifestyle, personality, values, attitudes etc.
- **Geographic Segmentation:** Geographic segmentation is based on consumer's location such as city, state or country.
- **Behavioural Segmentation:** Behavioural segmentation is based on consumer's buying behavior such as consumer's buying habits, consumer's brand loyalty etc.

### **Segmentation Strategies:**

- **Market Segmentation Strategy:** Market segmentation strategy is based on consumer's geographic location, demographic, behavioural and psychographic factors. Market segmentation strategy is the most important strategy for the companies to develop their products and services.

- **Product Segmentation Strategy:** Product segmentation strategy is based on consumer's need, benefit, price sensitivity etc. Product segmentation strategy is used to develop the product or service which will satisfy the needs of consumers. Target Market: Target market is the group of consumers who are likely to buy a product or service. It is very important for the companies to identify their target market before developing their products and services.
- **Horizontal Segmentation:** Horizontal segmentation is the process of dividing a market indifferent segments based on the type of customer. Horizontal segmentation is done by using variables such as: Geographic location Demographic Factors Product Usage Psychographic factors.
- **Vertical Segmentation:** Vertical segmentation is the process of dividing a market into different segments based on the level of customer. Vertical segmentation is done by using variables such as: Level of demand or volume Level of service required Type of product required.

The market segmentation of e-vehicle sales is seen to be very distinct in each country and also differs from the conventional vehicle sales. The electric vehicle market will have to mature over a period of time and further gain traction before it can become a viable option for all the households across the world. This would mean that the price of the vehicles will fall and they would be able to match the conventional vehicles in terms of affordability.

Although electric vehicles run on lithium battery, the price of which is falling, they are still expensive as compared to the conventional internal combustion engine driven vehicles. It will take a few years for the price of lithium batteries to fall and for electric vehicles to become affordable.

A few years ago, Tesla CEO Elon Musk had said that he expected the price of lithium batteries to fall by 30% in 2018. But that did not happen still the price of lithium batteries is still high. In fact, the cost of electric vehicles has increased in 2018.

The electric vehicle market is growing all the time and will become mainstream with the improve of battery technology. The transition to E-vehicles relies on four pillars, which are:

- Public charging infrastructure
- Purchase incentives for private buyers
- Corporate procurement policies (tax breaks) to facilitate demand of E-vehicles
- Promotion of E-vehicles through communication channels, such as web and social media, etc. that influence public opinion in favour of E-vehicles

Electric vehicles (EVs) are a hot topic in the automotive world. As a result of this, it is important to consider market segmentation when marketing to EV consumers. Here are 3 considerations.

- **EV Adoption** – EV adoption is increasing, with early adopters having already bought EVs. Most of the growth still lies ahead of us. In order to market to this group, an emphasis on technology would work best as this group is most interested.
- **Demographics** – younger people are more likely to buy EVs. This is a great target market for any company, as younger people have the money and the desire to be environmentally conscious.
- **Competition** – There are many different types of EVs, and the competition is increasing. This shows that there is a market for these cars and that they are selling well.
- **Distribution** – EV sales occur in major cities in India, which is not surprising because India has been very supportive of EVs. The distribution is still concentrated in the major cities of India, but it is slowly spreading to other parts of the country.
- **Charging** – Charging occurs at home, which is also not surprising. However, the chart shows that workplace charging is becoming more popular and public charging facilities needed to be developed more in future.

## 5. CONCLUSION

India is on its way to becoming the third-largest automobile market in the world by 2020. The fastest-growing segment of this market in India is the electric vehicles category. In fact, if EV sales continue to grow at the current rate, they are projected to account for 2% of all new car sales by 2020. This rate of growth is faster than other developed markets and is being driven by government policy, consumer awareness and increased affordability. The Indian government has been driving policy changes that support the development of a sustainable and cost-effective EV charging infrastructure across the country. Electric Vehicle Charging Infrastructure (EVCI) is a technology that enables the charging of electric vehicles. The government has been actively promoting EVCI as a key component of its vision for a sustainable future.

In the end, we can say that the market segmentation will be helpful in several ways such as it helps to make your target market clear and also helps to enhance the chances of Electric Vehicles product acceptance. In order to increase market share, marketers must develop a strong strategy focusing on the target segment. This paper is a detailed analysis of the current conditions and trends in India's automobile industry, as well as its impact on the sales revenue of electric vehicles. The study also explores some of the most effective strategies for marketers and analyses how these strategies can be applied to increase sales revenue in India.

In the last decade, India's automobile industry has experienced rapid growth. In the year 2000, the total number of vehicles sold in India was only 1.5 million. This trend is expected to continue in the coming years. The Indian automobile industry is highly fragmented, with no single brand accounting for more than 10% of the market share. The Indian government has been actively promoting electric vehicles and hybrid vehicles, which is expected to increase the demand for electric vehicles in the coming years. The Indian government has also been working on promoting public transportation, which is expected to further boost the demand for electric vehicles.

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