

INDIA'S SHIFT TOWARDS RENEWABLE ENERGY (ELECTRIC VEHICLES)

Rutwik Joshi, Shivam Labde, Pooja Darda

P.G Students, Faculty of Management,

MIT World Peace University.

Abstract

The future of Indian Automobile market is electric i.e. Electric Vehicles will ride the Indian roads. This means that the future of urban mobility is electric. The abundance of exploitable renewable energy in the country has given the EV industry most needed thrust. This study states the various policies undertaken by the government for the promotion of using Electric Vehicles. It offers various incentives for the customers of EV's. The government itself is introducing electric vehicles for public transport. With the help of emergent technology, the EV manufacturers are expected to increase many folds in the near future. Despite all the advantages of EV's, they can't settle all the current problems. They only constitute a part of the larger roadmap for renewable modes of transportation. Along with EV's, Hybrid Electric Vehicles and Plug-in Hybrid Electric Vehicles also contribute to the view of shifting to renewable sources of energy. The study states the evolution stages of the EV's and EV market in India. This study highlights the SWOT analysis and the Marketing Mix of EV's and the market in India. New standards are also being drafted for EV's.

Key Words: Electric Vehicles, Renewable Energy, Sustainability, PHEV.

1.1 Introduction

The government of India is promoting the introduction of electric cars. India imports oil from countries like Saudi Arabia and Iran and is largely depended on them. The cost for importing fuel is very high, so to get rid of this cost the government is promoting electric cars in India. The electric vehicles do not have internal combustion engine and have hydrocarbon fuel i.e. electricity. Another reason for the boon of electric vehicles in India is pollution as out of the top 20 most polluted cities in the world 15 are in India.

1.2 History

The first electric vehicle model was invented in 1828. The concept of electric vehicles has been around for a long time but in the last decade it has drawn the attention of many people. It was under Manmohan Singh that India took a concrete decision to bring electric cars India. This decision was motivated by the ministry of new and renewable energy as it approved the scheme of 95 crores scheme in 2010

In march 2012 the ministry of new and renewable energy discontinued the subsidy scheme of 95 crores which caused 70 per cent drop in electric vehicle sales. In 2013 a new scheme 'national electric mobility mission plan 2020' (NEMMP) was launched to create supporting infrastructure for electric vehicles and also to offer subsidies.

In 2015 the government funded 1000 crores to NEMMP for the next two financial years. In 2016 demonetization affected the automobile sector a lot. The transport minister Nitin Gadkari had stated that India is aiming to move to 100% electric vehicles in 2030, so the automobile industry had raised concerns over his ambitions and execution of his plans.

In 2018 the GST on electric vehicles was reduced from 18% to 5%.

1.3 Evolution

1828-1832

The idea of making a electric car came into existence.

1832

Robert Anderson developed the first crude electric vehicle.

1889-1891

William Morrison creates a first ever successful electric vehicle in US.

1899

The time when people realized that electric vehicles didn't emit smelly pollutants and are easy to drive than the gas and steam powered automobiles.

1901

As the electric vehicles were in demand Thomas Edison worked on making better batteries.
The first hybrid electric car was invented.

1920-1935

There was decline in electric vehicles due to better roads and discovery cheap Texas crude oil.

1968-1973

There was increase in demand for electric vehicles as there was increase in gas prices.

1971

NASA's Lunar rover the first manned electric vehicle was driven on moon, which helped to raise the profile of electric vehicles.

1979

Interest in electric car fades again as it had its own drawbacks like limited performance and range.

1997

Toyota introduced the first mass produce hybrid which became an instant success as it was used by various celebrities.

1999

Scientists and engineers working on making better electric cars and batteries

2006

Tesla motors announced that they will be working on a luxury electric sports car with a range of 350+ km. This accelerated the competitors to work on their own electric vehicles more efficiently.

2009-2013

To help the electric car users to charge their cars on the go, various charging stations were set up.

2010

The first commercially available plug-in hybrid named Chevy volt was released by GM

2019

In the union budget the GST on electric vehicles was reduced from 12% to 5% to promote electric vehicles in India.

2 Literature Review

In today's world of new technologies and innovations the whole world is trying to shift itself to new sources of energy. We are trying to reduce our dependence on non-renewable sources of energy. An important step in this direction is the shift towards Electric Vehicles. The availability of cheap electricity has made it possible to use electric vehicles in our day to day lives.

India having a large population, which is becoming aware of the environment, has opened a huge market for the electric car manufacturers. The Government of India is also encouraging the manufacturers as well as the people to shift to Electric Vehicles (EV). The cost of electric vehicles is also falling which is motivating the consumers to see EV's as an option over normal combustion engine cars.

2.1 Meaning

Electric Vehicles are those cars or vehicles which use electricity stored in its batteries. These batteries are rechargeable and can be charged with the electricity that is available in our houses. These cars have an electric motor that uses the electricity to power the vehicle and all its functions. These electric motors are used for propulsion. There can be more than one motor in an electric vehicle. Unlike hybrid cars, electric cars run on 100 per cent electricity.

2.2 Methodology

This research paper is based on secondary data collected by referring to a number of research papers and other articles. The paper has been drafted to understand the current situation of Electric Vehicles in the Indian market and to know its future. This study shows the evolution of the EV's in the world and in India. This research is an addition to the understanding of the EV sector in India. This research can be used by the young scholars for their study and future research.

2.3 SWOT Analysis

SWOT analysis is the detailed study of the strengths, weaknesses, opportunities and threats of any subject. SWOT analysis is generally undertaken to understand the viability of a particular product or service in the current market conditions. Therefore stated below is the SWOT analysis of Electric Vehicles in the Indian market:

Strengths

- Electric vehicles are eco-friendly as there are no emissions from the vehicle.
- The government has given various subsidies on the purchase of EV's (FAME).
- Low cost of maintenance is one of the major plus points of EV's.
- Cheaper cost of running as electricity is cheaper than fuel.
- Suitable for Indian market as they are easy to drive in traffic.

Weaknesses

- Takes time to recharge it's batteries.
- Lack of availability charging infrastructure.
- High price of electric vehicles is one of the reason for low sales in India.
- Consumers are still unaware about the advantages of owning an EV.
- Shorter range compared to combustion engine cars.

Opportunities

- Great scope for research and development.
- Shrinking the cost of production by producing in large quantities.
- Availability of skilled labour at low cost.
- As there are not more EV's in the market the companies can come up with more and more cars.
- Increasing cost of Fossil fuels.

Threats

- Competition from Hydrogen powered vehicles, alternative fuels, Ethanol cars.
- Rise in the cost of electricity.
- Availability of Hybrids and Plug-in Hybrids.
- Lack of charging infrastructure.
- Improvements in Public Infrastructure (as many of the Indian cities are improving their public transport system, it can affect the sales/demand of EV's).

2.4 Various Government Policies for Promoting EV's

The Government of India has tried to mend its policies related to Electric Vehicles by offering distinct subsidies. It has developed policies for the Indian needs. As the demand and awareness for EV's is on the rise there was a need to amend the policies and introduce new ones. The Indian government has developed different policies for different type of vehicles i.e. Cars, Buses, Bikes, etc.

1. Automotive Mission Plan (2026)

AMP is the scheme which states where the electric vehicles market in India should be till 2026. It states various policies to contribute to initiatives like "Make in India", "Skill India", etc. Its aim is to provide additional employment and increase the Automotive exports of India.

2. National Electric Mobility Mission Plan (NEMMP 2020)

The main aim of NEMMP is to achieve national fuel security by promoting Electric and Hybrid vehicles in the country. Also mitigating the impact of combustion vehicles on the environment is one of it's objective. This scheme focuses on expanding and improving the domestic manufacturing capabilities of the Indian Automobile Sector.

3. Smart City Initiatives

The smart city initiative is a programme undertaken by the Indian government to develop 100 cities in India. This scheme includes developing various infrastructural facilities in these cities. The programme also focuses on developing policies and regulations pertaining to the use of EV's. Under this scheme the government has introduced electric buses and offers other benefits to the people.

4. Faster Adoption and Manufacturing of (Hybrid &) Electric Vehicles (FAME)

FAME is an incentive scheme for the promotion of Hybrid and Electric vehicles in India. FAME gives financial incentives for EV production and electric transport infrastructure. FAME was launched in 2015 and has two phases:

1st Phase - 2015 to 31st March 2019

2nd Phase – 1st April 2019 to 31st March 2022

The second phase covers the deployment of electric buses, electric and plug-in & hybrid cars, electric two and three wheelers.

2.5 Marketing Mix (4 P's)

PRODUCT

The significance of product in marketing is of utmost importance. The companies that are interested in entering the Indian EV market should try to launch different models with different capacities that deliver high performance and with other functionalities that differentiate them from the others. Also, the people now know the effects of combustion engine cars on the environment and so are moving to EV's. Therefore, the marketing departments of the companies should try and focus on products to control the pollution with the desired performance.

PRICE

Price the next determining factor for the consumers to buy any product. Hence, the companies should have the prices of their products at par with the prices of other vehicles. The message of sustainability should be conveyed to the customers about the EV's. The companies can invest in Research and development to produce more price-centric products. As the customers can afford these vehicles the company can have hold on a large segment and have a large market share. The Pricing strategies should be monitored on a frequent basis.

PROMOTION

Promotion is the activity that facilitates the companies to increase their sales and gain popularity in the market. The companies need to focus on their promotional strategies while preparing Marketing Plans. Advertisements aid the companies to increase awareness about their products and the brand. It also helps in the Positioning of the brand in the people. Choosing the appropriate marketing channels for that particular company is also an important task in promotion. It is important to communicate the desired message of the company to the people to convert them into customers.

PLACE

Place is the location where the products of the companies will be available for the customers. The companies should identify the place where they can offer their products. It is important for the companies to determine such places. Different marketing strategies can be prepared for different places for the companies. The place should be chosen where a company believes that it can reach its target customers and increase its sales.

2.6 Future Scope

Electric vehicles are gaining popularity in India. The government is also promoting the introduction of electric vehicles in India. Indians are value conscious and hence they prefer buying diesel cars over petrol cars despite the MRP of diesel car being more than that of petrol car. The primary reason of electric vehicle being costly is its battery. However after all the research and development the cost of the battery is reduced by almost 50%.

Now the next question arises is' when and where will people charge their electric vehicles? India's target is to go full electric by 2030. Even if India achieves this target India will have to install loads of charging stations where people will charge their EV's. To charge the vehicles India will need loads of electricity. How will India generate this huge amount of electricity? The generation of this electricity should be from a clean sources that is from renewable sources like wind energy, solar energy, tidal energy etc.

If the generation of electricity is not from a clean source that is from burning coal, there is no use of electric cars in India as the coal will pollute the air as the normal petrol or a diesel car does.

2.7 Segmentation, Targeting, Positioning (STP)

- **Segmentation**

Segmentation refers to the process of dividing the market into small groups or sub-groups to cater the need of these groups / sub-groups individually and effectively. In this process the whole market is divided on the basis of some common characteristic. These so divided groups or sub-groups are called as segments.

The Electric Vehicle market is segmented on the basis of vehicle type and the geography where it is going to be used. Under vehicle type the market is classified into commercial vehicles, passenger cars, two wheelers, three wheelers, etc. The major segments in the electric vehicle industry are as follows:

- a) Fully Electric Vehicles
- b) Hybrid Electric Vehicles
- c) Plug-in Hybrid Electric Vehicles

- **Targeting (Target Audience)**

Targeting is the next step that is undertaken by the companies after segmentation. After segmentation the company realizes which segment they can cater the best and chooses that segment. This process of choosing the segment that segment is known as Targeting. These segments are chosen by evaluating the needs of the segment and which segment closely resembles with the company's product.

The current scenario in India related to the target audience of electric vehicles is still in question. The people that are interested in owning an EV are hesitant or reluctant to invest large amount, as the on-road prices of the EV's is high. On the contrary, those people who are capable of owning an EV are focussing on buying other luxury vehicles that suit their status. All this is affecting the efforts to popularize Electric Vehicles in the Indian Market. The EV manufacturing companies are now promoting their vehicles by offering cab services in them. For example: Mahindra Verito operates with cab services such as Ola and Uber. Therefore, these companies try to target those customers who use cab services or who show interest in EV's. These customers are selected on the basis of online or offline surveys, collecting browsing data, etc.

EV manufacturers mainly target the urban population as they can better understand the benefits of owning an EV. They also target by advertising the advantages of EV in the city and its practicality in their day to day lives.

- **Positioning**

Positioning means the perception of consumers about a brand or a product with relation to its competitors. Positioning Strategy refers to the process that establishes an image of a particular brand or product / service in the minds of the people.

The EV manufacturers are using the positioning strategy to position themselves as the ones who have great regard for environment. By selling EV's they display that they are committed in reducing the carbon emissions from conventional vehicles. For Example: Tesla has positioned itself as the company that offers cars of best quality that are equipped with best in class features and technology.

3.1 Conclusion

This research study gives input about the Electric Vehicles industry in India. This study gives an idea about how the Government of India is trying to promote the usage of Electric Vehicles on the Indian roads. The study also states how the Indian consumers are transitioning to EV's and how they have understood the effect of traditional vehicles on the environment.

The current Indian EV market seems attractive as there are less options and competitors in the market. Despite this numerous challenges stand in the way of 'full electrification' of the Indian car market. To overcome these challenges the companies present and those willing to enter India should have their Marketing Mix in place.

The expansion of the EV market in India as well as the world is a welcome move, especially in the light of increasing greenhouse gases and Global Warming. This gives the EV's a winning edge over the traditional combustion engine vehicles. Also we know that the future is electric, so that has worked well for promoting Electric Vehicles and expanding its reach to the people.

With all the major manufacturers now realizing the need of shifting to producing electric vehicles, the automobile market has changed and is now moving towards renewable energy sources. This move has inspired other start-ups to inhabit producing electric vehicles. Hence, the whole EV industry is evolving as a result of strong and definite steps in the Research and Development of Electric Vehicles.

3.2 References

- Dr. Rajesh N. Pahurkar, Parag Metha (November 2017), Developing Sustainable Marketing Strategy for Electric Vehicle (EV), Automotif
- Anders Fjendbo Jensen, Stefan Lindhard Mabit (December 2017), The use of electric vehicles: a case study on adding an electric car to a household
- Lingzhi Jin, Peter Slowik (march 2017), Literature review of electric vehicle
- Ankit Kumar, S K Choudhary, Chethan K N (June 2018), COMMERCIAL VIABILITY OF ELECTRIC VEHICLES IN INDIA, International Journal of Mechanical Engineering and Technology (IJMET)
- Subash Dhar, Minal Pathak, Priyadarshi R. Shukla (March 2017), Electric vehicles and India's low carbon passenger transport: a long-term co-benefits assessment, Journal of Cleaner Production
- <https://www.slideshare.net/SushovanBej/feasibility-analysis-of-electric-vehicles-in-india>
- <https://www.slideshare.net/SushovanBej/feasibility-analysis-of-electric-vehicles-in-india>
- https://niti.gov.in/writereaddata/files/document_publication/EV_report.pdf

