Benefits and Challenges of Electric Vehicles in India

Dr. R. Dharmalingam  
Assistant Professor in Commerce, Rajah Serfoji Government College, Thanjavur  
(Deputed from Annamalai University)

Abstract—People use traffic to move from one place to another. Transport is essential of human life. Cycle rickshaw, pulled rickshaw, horse cart, and Bullock cart are used by people. Now most of the people are using diesel, petrol and gas vehicles for travelling. Conventional Vehicles is better than traditional Vehicles. Conventional vehicles are run on road because environment is affected by these types of vehicles. Electric vehicles have better spare parts low expense. India is planning to increase Electric Vehicles production at least 15% coming 5 year. This is main step reducing pollution and importing crude oil. Government are watched for environmental measures, technology improvements and cost reduction in energy storage. We discussed benefit and challenges of Electric Vehicles

Key words: Electric Vehicles, Conventional Vehicles, Internal Combustion Engine, Eco friendly, Battery

I. INTRODUCTION

Transport is essential of human life. Cycle rickshaw, pulled rickshaw, horse cart, and Bullock cart are used by people. Now most of the people are using diesel, petrol and gas vehicles for travelling. Conventional Vehicles is better than traditional Vehicles. Conventional vehicles are run on road because environment is affected by these types of vehicles. Conventional Vehicles is operating cost very high. Now days Fuel price have been rising that people faces financial difficulty.

Electric vehicles are operated by electric motors. Motor are operated by batteries. Batteries are charged by any electric plugging main supply. Electric vehicles have better spare parts low expense. There is no engine and oil changes in Electric vehicles. Electric vehicles have to extra energy efficient than gasoline engines. Electric have been using since the 1900s in different applications. Advances in battery technology, system analysis, Growth of vehicle producer gets led to the making of electric vehicles. Electric vehicles do not get internal Combustion engine. An Electric vehicle don’t make the pollution to public health that Internal Combustion engine make pollution. In 1910 gasoline-powered vehicles influenced large level in automobile market. Unfortunately, Electric vehicles did not move in market due to these vehicles were travelling to minimum 80 miles only. Coming year Electric vehicles is better condition, long distance travelling, eco friendly, and less operating cost including. Government of India is motivating produce Electric vehicles. Government provide various benefit to Electric vehicles manufacturer.

Objectives of the study

To study benefits of Electric vehicles
To study the challenges in Electric vehicles

Difference between Electric vehicles and conventional vehicles

<table>
<thead>
<tr>
<th>Basis of difference</th>
<th>Electric Vehicles</th>
<th>Conventional Vehicles</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maintenance</td>
<td>Electric Vehicles are less maintenance Expense</td>
<td>Conventional Vehicles are very high maintenance Expense</td>
</tr>
<tr>
<td>Environment</td>
<td>Electric Vehicles can also reduce the environmental that contribute to climate change and smog, improving public health and reducing ecological damage</td>
<td>Conventional vehicles are running on the road that affecting environmental pollution and ecological damage</td>
</tr>
<tr>
<td>Initial Investment</td>
<td>Initial Investment are very high then conventional Vehicles</td>
<td>Initial Investment are low compare then Electric Vehicles</td>
</tr>
<tr>
<td>Tax and incentive</td>
<td>Electric Vehicles are enjoying for tax and incentives</td>
<td>There are no benefit for tax and incentives.</td>
</tr>
<tr>
<td>Luxuries</td>
<td>There are missing of Luxuries items in Electric Vehicles</td>
<td>Lot of luxuries item are having in Conventional Vehicles</td>
</tr>
<tr>
<td>Charging infrastructure</td>
<td>Charging infrastructure not adequate</td>
<td>There is no Charging infrastructure</td>
</tr>
<tr>
<td>Operating cost</td>
<td>Operating cost are very low that using Eclectic Motors</td>
<td>Operating cost are very high that using Fuel engine</td>
</tr>
</tbody>
</table>

IJSRCSAMS

Volume 7, Issue 5 (September 2018)  www.ijsrcsams.com
II. ELECTRIC VEHICLES IN INDIA

India is planning to increase Electric Vehicles production at least 15% coming 5 year. This is main step reducing pollution and importing crude oil. Electric Vehicles usage is increasing worldwide. The Indian electric vehicles (EV) market is at a very developing stage consist of only 1% of the total automobile sales. The EV market in India was about 25,000 units at the end of 2016-17. A study conducted by the group showed that 4,330 EVs were sold in Gujarat, 2,846 in West Bengal, 2,467 in Uttar Pradesh and 2,388 in Rajasthan during the fiscal year. Government are watched for environmental measures, technology improvements and cost reduction in energy storage. In India last financial year sold 3 million cars, the car segment will expected to rise in future.

A new survey conducted in Bangalore, 87% of vehicle user was ready to buy electric vehicles if that will help to decrease pollution. However, key issue on going to be regarding the cost and maintenance of these vehicles. The battery cost including more than 50% of the value of the vehicle itself. India EV is a great opportunity for the industry entirely based on imports for nearly all of the critical minerals that go into production batteries. The EV market in India is set to see the way of a entry flurry of recent players of foreign and domestic origin in the 2 and 3-wheeler division. Mahindra get a first to the market benefit in 4 wheeler segment. Tata Motors has launched its electric vehicle Tata Tigor in 2018. Hyundai Motor Co. Ltd is hoped to launch its electric vehicle in 2019 the company proposal to make 60,000 electric vehicles annually from 2020. Marti Suzuki will enter the market by 2020.

Electric Vehicles includes
- Fully Electric Cars
- Hybrid Cars
- Scooters
- Motorcycles
- Bicycles
- Buses
- Mini Pickup Trucks
- Heavy duty Trucks, semi-trailer and tracker trucks
- Rickshaws
- Railways
- Solar Electric boat

III. BENEFITS OF ELECTRIC VEHICLES

1. No Fuel Required

Electric vehicles are fully operating by batteries. Batteries are powered by the electricity. There is no requiring fuel to operate vehicles.

2. Maintenance

Electric Vehicles are less maintenance Expense. Oil and other maintenance Expense are not required for run the vehicles

3. No Emissions

Electric Vehicles are 100 percent eco-friendly as they run on electrically powered engines. They are even better than conven as hybrids running on gas produce emissions. Electric Vehicles can also reduce the environmental that contribute to climate change and smog, improving public health and reducing ecological damage.

4. Cost Effective

Electric vehicles are better because government provide various incentives and loan facility. Price is less, benefit high and low operating cost:

5. Low Maintenance

Electric Vehicles run on electrically powered engines and hence there is no need to lubricate the engines. Therefore, the maintenance cost of these Vehicles has come down.

6. Popularity

EV’s are growing in popularity. With popularity comes all new types of Vehicles being put on the market that are each unique, providing you with a wealth of choices moving forward.

7. Safe to Drive

Electric Vehicles undergo same fitness and testing procedures test as other fuel powered cars.. This can prevent you and other passengers in the Vehicles from serious injuries

8. Reduced Noise Pollution

Electric Vehicles put curb on noise pollution. That is main benefit of these vehicles.

9. Savings

These Vehicles can be fuelled for very cheap prices, and many new Vehicles will offer great incentives for you to get money back from the government for going green. Electric Vehicles can also be a great way to save money in your own life.

IV. CHALLENGING OF ELECTRIC VEHICLES

1. Charging infrastructure

Electric Vehicles are operated by Batteries but there is adequate Charging Station in India. These is major problems no growth of Electric Vehicles in India. Most of the people are travelling for long distance but batteries charging time taken minimum 3 hours because there is major setback for no charging station.
2. **Travelling distance**

Electric Vehicles are run average 80 kilo meters only single charging batteries. Large number of people wants to travel long distance because these form of vehicles no possible travelling for long distance. These types of Vehicles are run less distance.

3. **Expensive**

Batteries cost is expensive and its life are 4 years. Lithium-ion batteries are operated by Electric Vehicles. These batteries have more maintenance and charging time are 8 hours. Sometimes battery is no fully charged. Lithium Ion batteries do not easy to reprocess and it take a ton of resources to produce. That is a more difficult problem.

4. **People mindset**

Most of the people are not interest to purchase Electric Vehicles. People are thinking that there is no resale value. It price is very high Comparison of the conventional vehicle.

5. **Performance**

Electric Vehicles are less performance than Conventional Vehicle. These forms of vehicles are low speed and less performance. People want to move from one place other place but journey time increased.

6. **Large initial investment**

Purchase prices are very high then conventional Vehicles. Battery and Spare parts price is very high. There is no availability of spare parts. People are expecting low investment cost.

7. **Luxuries**

There are missing of Luxuries items in Electric Vehicle. These form of vehicles less possible of install air condition facility. Any sophisticated provisions are not fit in Electric Vehicles.

8. **Safety Measures**

There is no safety Measures in Electric Vehicles. Lithium ion battery are blaze more dangerous than gas fires because explosive nature of lithium ion batteries.

9. **Increase the electricity demand**

Productions of Electric Vehicles are only making to Increase the overall electricity demand. Battery are charged by electricity. Production electricity are generated by coal because already facing coal demand. In India obtained coal from other country.

10. **Reducing Import crude oil**

Most of the people are using Electric vehicles. India is buying crude oil from other country.

V. **CONCLUSIONS**

Most of the people are not interest to purchase Electric Vehicles. People are thinking that there is no resale value. People are thinking that Initial cost is very high. Electric Vehicles are run average 80 kilo meters only single charging batteries. Batteries cost is expensive. Electric Vehicles are operated by Batteries but there is adequate Charging Station in India. These forms of vehicles are low speed and less performance. There are missing of Luxuries items in Electric Vehicle. There is no safety Measures in Electric. Electric Vehicles are less maintenance Expense. Vehicles can also reduce the environmental that contribute to climate change and smog, improving public health and reducing ecological damage. Electric Vehicles put curb on noise pollution. Government should provide for Tax free, incentives, loan, free electricity tariffs other benefit to car manufacture and buyer. EV is a great opportunity for the industry. Electric Vehicles manufacture should expect to have bright future in India.

REFERENCES

[1]. RameshBasalDepartment of Electrical and Electronic and Computer
[2]. https://www.researchgate.net/publication
[3]. www.grantthornton.in/globalassets
[4]. https://auto.howstuffwork.com/challenges.facing-electric-carindustry
[5]. https://autowise.com/top-7disadvanges of electric-cars
[6]. https://en.wikipedia.org/wiki/Electric_Vehicles in industry
[7]. Car wale https://www.carwale.com/news/Indian-electric-vehicles industry-witness-124.per-growth this fiscal year