PROJECT REPORT TEMPLATE

1 INTRODUCTION

1.1 OVERVIEW

Conventional energy sources (fossil fuels) have been identified as polluting and degrading the atmosphere and causing global warming and the greenhouse effect. Conventional automobiles also contribute to environmental emission and greenhouse in the transportation sector. These vehicles produce Carbon dioxide (CO_2), Sulphur dioxide (SO_2) and nitrogen oxides as toxic combustion elements when we burn gasoline, coal or natural gas. The energy lost by ICE vehicles is represented as friction and heat loss on the moving segment. The displacement of ICE raises the significance of EVs as the best option of reducing emission.

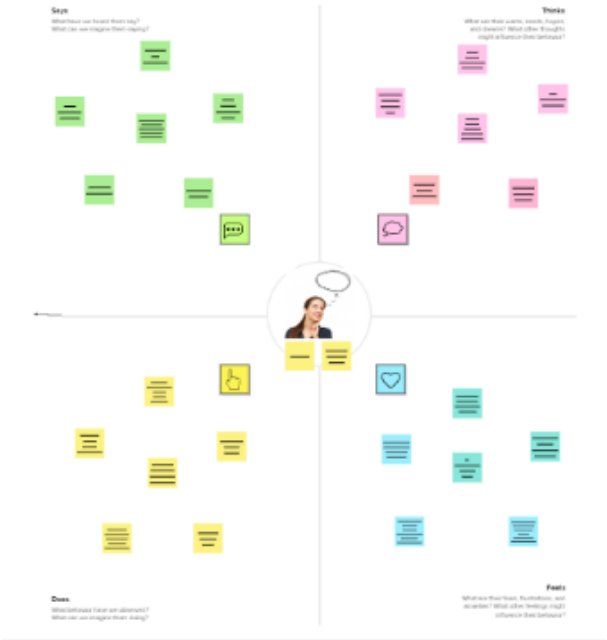
Electric vehicle (EV) is based on electric propulsion system. No internal combustion engine is used in EVs. All the power is based on electric power as energy source. Compared to conventional gasoline vehicle, Electric cars are better in light of energy efficiency, performance, convenience, maintenance and tax credits. In this paper we will discuss about the electric vehicles in India.

1.2 PURPOSE

In preset scenario, air pollution has become a serious concern for India. India was the world's eighth most polluted country in 2022. According to the recent global reports, many cities in India are the most polluted cities. Major sectors contributing to the air pollution are industrial sector and transport sector. Among this 51% of air pollution is caused by the industrial sector and 27% by the transport sector. Air pollution contributes to the premature deaths of 2 million Indians every year. In order to minimize the air pollution, Electric vehicle (EV) can act as blessing in lowering the GHG emissions. Electric vehicles offer numerous advantages such as decreasing the pollution level and reduction in oil import bills etc., The availability of fossil fuels is limited, and their use is destroying our planet. The emissions impact of electric vehicles is much lower than petrol or diesel vehicles. From an efficiency perspective, electric vehicles can covert around 60% of the electrical energy from the grid to power the wheels, but petrol or diesel cars can only convert 17%-21% of the energy stored in the fuel to the wheels. Therefore, electric vehicles are the way forward for Indian transport, and we must switch to them now.

2 PROBLEM DEFINITION & DESIGN THINKING

2.1 EMPATHY MAP



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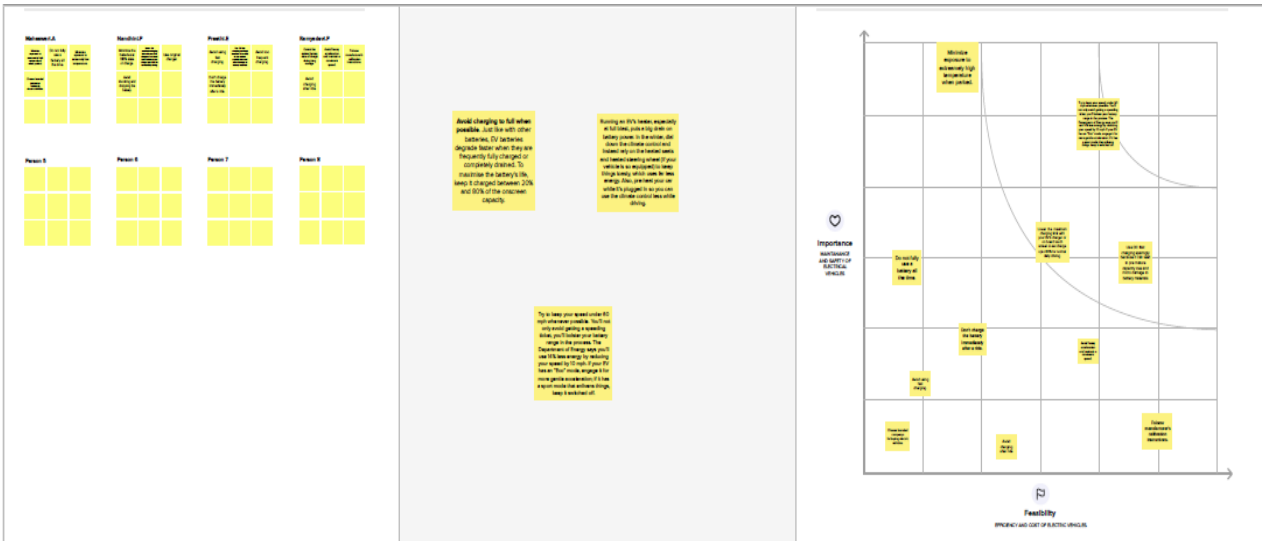
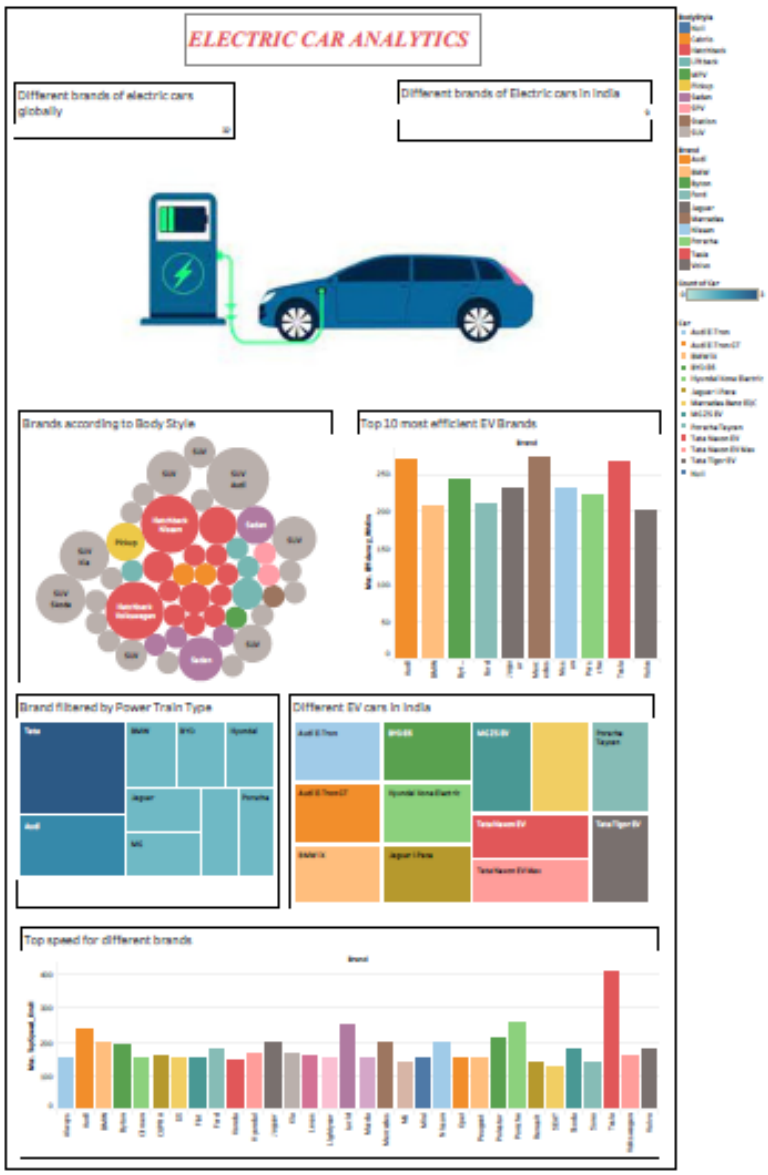


3 RESULT

From the analysis of Electric vehicles, TATA sells specific model cars at lower prices with better milage. Mercedes, Audi and Tesla brand cars provide best efficiency about 270 Wh/Km. Even though Audi and Benz brands are costliest than other brands, TATA Nexon or Tata Tigor EVs are cheaper and ranging from 15 to 20 lakhs. In India, there are few charging stations. New Delhi has many charging stations compared to other places in India. elsewhere some places there is no charging stations. Charging stations and cost of electric vehicles are the major draw backs to increase the number of electric vehicles in India.



4 ADVANTAGES & DISADVANTAGES

ADVANTAGES

By increasing the efficiency of electric vehicles, It may have low maintenance cost because they don't have many moving parts as an internal combustion vehicles. The service requirement of electric vehicles are lesser than the conventional petrol or diesel vehicles. Therefore the early cost of running an electric vehicle is significantly low. Driving an electric vehicle can help to reduce the carbon footprint because there will be zero tailpipe emissions. You can reduce environment impact of charging your electric vehicle further by choosing renewable energy options for home electricity. Electric vehicles don't have gears and are very convenient to drive. There are no complicated controls, brake and steers. When you want to charge your vehicle just plug it into home or public chargers. Electric vehicles are quit hence they reduce noise pollution than traditional vehicles contribute to it.

Electric vehicles can reduce fuel costs dramatically because of the high efficiency of electric-drive components. The fuel prices have increased significantly over the last two years, and show no signs of going down in our country. In addition to protecting the environment, switching to electric cars can also protect your wallet from the high rates for fuel, making it a cost-effective option.

DISADVANTAGES

People who need to travel long distance are concerned about finding adequate charging stations in the middle of the journey, which are not always accessible To recharge these vehicles, a high-voltage electric current is required. The most significant disadvantage of electric vehicles is that they must be charged regularly. Aside from that, increasing the weight of these vehicles reduces their capacity. Unlike conventional automobiles, which requires only a few minutes to replenish their gas tanks, Electric vehicles require many hours to charge. The charging of these automobiles is quite sluggish. When compared to conventional automobiles, electric vehicles have a short driving range. Electric vehicles cannot travel farther at a faster rate of speed than those powered by engines if speed is the issue. The driving range is also very limited in addition to this.

It's no more hidden from anyone that the Li-ion battery in electric vehicles is built to last till 6-7 years or hardly 8 years and after the battery decay period of an electric vehicle battery its user remains with no other choice than to buy a newer battery which costs nearly 3/4th of the whole vehicle cost. Battery cost is going to be a pressing issue for the EV buyers because electric vehicles are new to both market and customers the battery issue requires at least 5 years to surface this will going to be impacted in a long run. The majority of electric vehicles on the market today are small and only seat two people. They are not intended for the whole family, and adding a third person can make the little uncomfortable for the other two travellers.

5 APPLICATIONS

EVs emit zero tailpipe emissions, helping reduce the carbon footprint. You can further reduce your carbon footprint by utilising renewable energy to charge your EV. In the past, EVs were seen as impractical. However, that has changed over the years, with manufacturers offering well-designed and good-looking EVs. Even the performance of EVs has changed for the better. Electric Vehicles are lighter in weight, and their acceleration is impeccable compared to fuel-powered vehicles. With India embracing the inclusion of EVs, the government offers several policies and incentives to encourage the usage of such vehicles. For instance, the registration fees and road tax on purchasing EVs are lesser than ICE vehicles. Petrol or diesel-powered vehicles require regular maintenance since they have multiple moving parts. That's not the case with electric vehicles since they have comparatively lesser moving parts. This means that your electric car is likely to have lower maintenance costs in the long run.

Since you are not paying for petrol or diesel to keep your EV running, you save a lot of money on fuel. The cost to charge an electric vehicle compared to the price of petrol or diesel is substantially low. You can reduce the electricity cost further by utilising renewable energy sources such as solar. The cost to charge an electric vehicle compared to the price of petrol or diesel is substantially low. Pure EVs have zero tailpipe emissions, which reduces air pollution. Since the electric motor of the EV operates on a closed circuit, it does not emit any harmful gases. Pure electric cars do not require petrol or diesel, which is excellent for the environment.

With less moving parts, electric vehicles offer the opportunity to convert these since spaces into storage and offer larger cabin room. You can also find storage spaces under the hood the conventional ICE is no more there. EV motors and batteries do not take a lot of space compared to fuel-powered vehicles. Electric vehicles are used for variety of transportation purpose including, personal and public transportation as well as commercial and industrial purpose.

6 CONCLUSION

Electrical vehicles are the wave of future! Manufacturing business are putting more effort into transitioning from a traditional automobiles to electric vehicles. Electric vehicles are definitely more environmentally friendly than internal combustion vehicles. Batteries are being engineered to have long life. When the electric vehicle become more widespread, Battery recycling will become more economically possible.

The implementation of electric vehicles in India aims primarily to reduce the greenhouse gas emissions and cut oil expenses. The vision 2030 put forth by Indian government an ambitious and difficult task. The government should make implementation of charging stations to tackle the challenges. India’s obligations towards many environment friendly agreements has given it as situation where it is prompted to implement vision 2030.The era of electric vehicles has arrived! The manufacturing businesses are working harder to switch form conventional to electric vehicles. Owning an electric car with the proper infrastructure and functionality has a lot of advantages. With so many benefits,this year might be the time to buy a battery -powered car .Consider going electric!

7 FUTURE SCOPE

Electric vehicles (EVs) have gained significant traction in recent years as a cleaner and more efficient alternative to traditional gasoline-powered cars. India is the third largest automobile market globally in terms of sales, ahead of Germany and Japan. The Economic Survey 2023 predicts that India's domestic electric vehicle market will see a 49 percent compound annual growth rate (CAGR) between 2022 and 2030, with 10 million annual sales by 2030. Additionally, the electric vehicle industry is projected to create around 50 million direct and indirect jobs by 2030. A European survey based on climate found that as of 2022, 39% of European citizens tend to prefer hybrid vehicles, while 33% prefer petrol or diesel vehicles.

The least preferred type of vehicles are electric cars, preferred by 28% of Europeans. 44% Chinese car buyers are the most likely to buy an electric car, while 38% of Americans would opt for a hybrid car, 33% would prefer petrol or diesel, while only 29% would go for an electric car. Aside from the fact that more cities are implementing LEZs, these zones are also growing in size and strictness with time. With an electric car, you have limitless access to low-emission zones, now and in the future, wherever and whenever you want. Electric vehicles offer a strong potential to reduce emissions and aid in the fight against climate change. In many cases, they will most likely replace combustion engines. Hence it may play a vital role in airways transportation .

8 APPENDIX:

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