INTRODUCTION:

OVERVIEW

A vehicle that can be powered by an electric motor that draws electricity from a battery and is capable of being charged from an external source and have an electric motor instead of an internal combustion engine.

The Electric Vehicle (EV) is not new, but it has been receiving significantly more attention in recent years. Advances in both EV analytics and battery technologies have led to increased automotive market share. However, this growth is not attributed to hardware alone. The modern mechatronic vehicle marries electrical storage and propulsion systems with electronic sensors, controls, and actuators, integrated closely with software, secure data transfer, and data analysis, to form a comprehensive transportation solution. Advances in all these areas …

PURPOSE

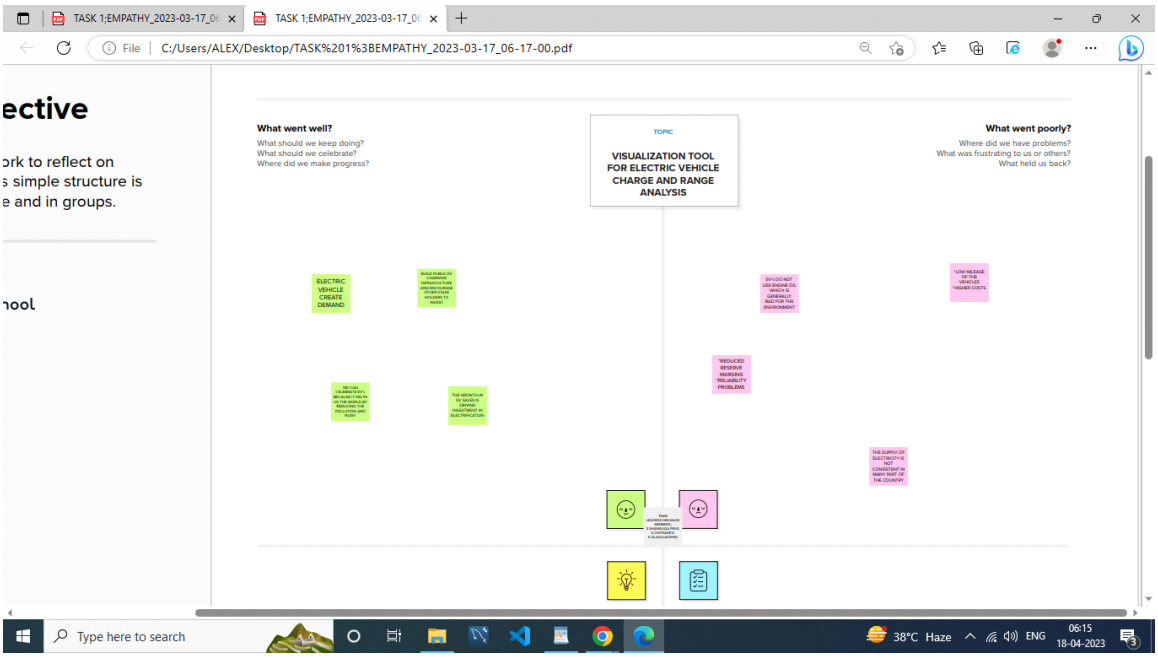
In full electric mode, an electric car produces zero tailpipe emissions, dramatically lowering smog and greenhouse gas emissions even when considering electricity generation.

Vehicle power electronics primarily process and control the flow of electrical energy in hybrid and plug-in electric vehicles, including plug-in electric vehicles. They also control the speed of the motor, and the torque it produces.

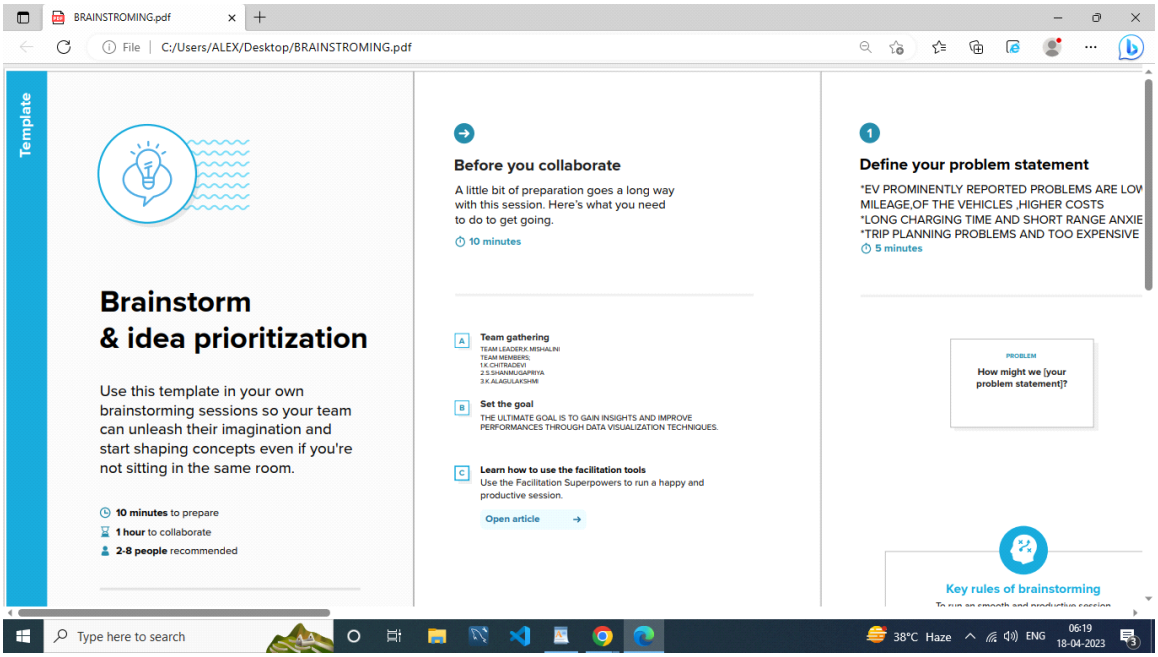
Electric vehicles consists of an electric motor that is powered by a battery pack. The main advantage of electric vehicles is that they emit zero emissions and are eco-friendly. They also do not consume any fossil fuels, hence use a sustainable form of energy for powering the car.The EV charging station market is expected to grow 5 to 7 times in the next 5 years. It was valued at 5 billion dollars in 2020 and optimistic predictions see it reach around 35 billion by 2026, which would make EVs represent 15% of all car sales worldwide within 5 years

PROBLEM DEFINITION AND DESIGN THINKING:

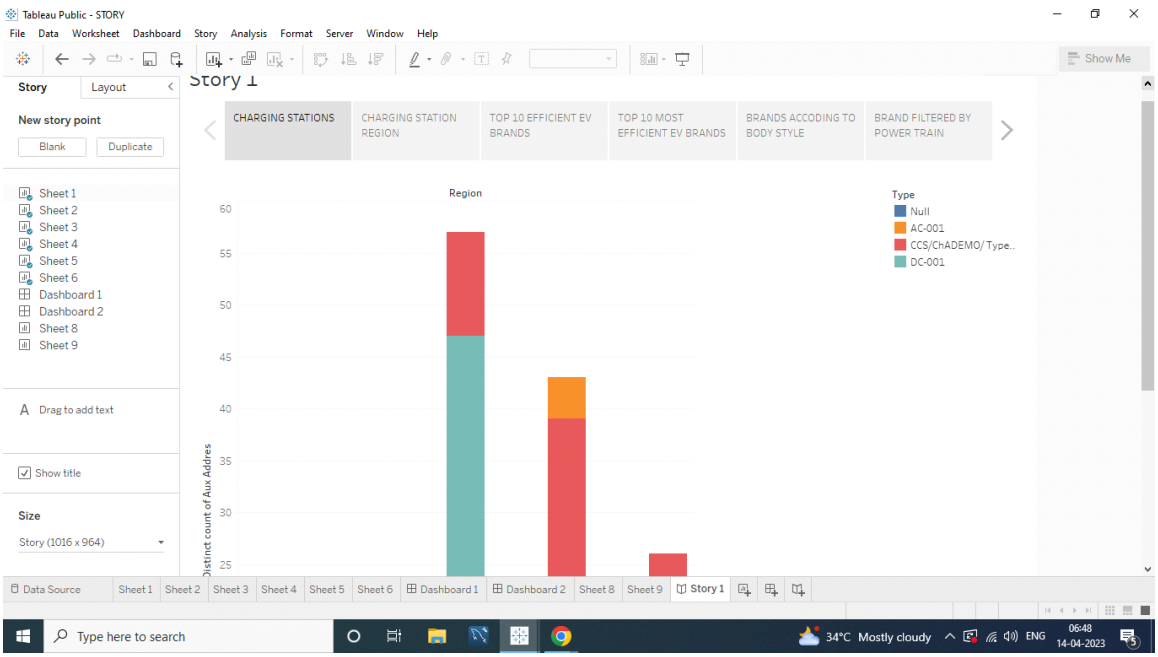
EMPATHY MAP



IDEATION AND BRAINSTORMING MAP



RESULT



ADVANTAGES AND DISADVANTAGES

ADVANTAGES:

Electric vehicles use electricity to charge their batteries instead of using fossil fuels like petrol or diesel. Electric vehicles are more efficient, and that combined with the electricity cost means that charging an electric vehicle is cheaper than filling petrol or diesel for your travel requirements.

It provides the possibility for charging stations to tailor services to EV drivers and respond in real-time to unexpected events. Through continuous data collection from these devices, CPOs can optimize performance going forward and improve the charging experience.

By charging frequently, you may never need to go to a service station again! EVs can also reduce the emissions that add to environmental change and smog, improving public health, and reducing ecological damage. Charging your EV on sustainable power, for example, solar or wind minimizes these emissions even more.

Electric motors lose very little energy as they are extremely low friction and heat up less than combustion engines. Electric vehicle motors are extremely efficient – with calculated values ranging from around 80 to over 90 percent efficiency.

DISADVANTAGES

Fast charging for electric vehicles is known to cause lithium plating which happens in cold temperatures

when lithium deposits form around the anode of the battery during charging; it deteriorates battery life and safety.

Higher Purchase Cost. Compared to regular automobiles, electric vehicles are highly pricey. ...

- Low Speed and Range. ...
- Low Price on Selling. ...
- The Inconvenience of Service Station. ...
- Low Energy. ...
- Battery Expenses. ...
- Slow Charging. ...
- Expensive Recharging Options.

The supply of electricity isn't consistent in many parts of the country, and charging larger batteries requires higher capacity and voltage. The existential EV problems of range and the anxiety around running out of charge persist, especially given the distances across India and its notoriously bad traffic.

APPLICATIONS

- The following guidelines have been issued by the Central Government of India regarding the setting up of EV charging stations in India: The Government of India has made it compulsory to set up an EV charging station every 3 km in the cities, 25 km on the highway, and 100 km on roads for heavy-duty vehicles.
- The electric vehicle charger should preferably be installed on the same side of the vehicle's charge port and as close as possible. Place the EV charger within 15 to 20 feet of the vehicle's charge port. EV cords can be as long as 25 feet, with 18 to 20 feet being the norm
- Pune, India., Jan. 30, 2023 (GLOBE NEWSWIRE) -- The electric vehicle charging station market size to hit USD 111.90 billion by 2028. The global market size was valued USD 24.16 billion in 2020 and USD 17.59 billion in 2021.
- The fact is that at the end of 2022, India had 2,700 public charging stations and 5,500 charging connectors. The country is likely to have 10,000 public charging stations by the end of 2025, according to Counterpoint Research.
- Assuming there are 100 electric vehicle owners who charge their vehicles daily, and they all use your charging station, you could potentially earn revenue of around Rs. 4-5 lakhs per month. With a gross margin of around 30%, the profit would be around Rs. 1.2-1.5 lakhs per month, and the net margin would be around Rs.

CONCLUSION

The progress that the electric vehicle industry has seen in recent years is not only extremely welcomed, but highly necessary in light of the increasing global greenhouse gas levels. As demonstrated within the economic, social, and environmental analysis sections of this webpage, the benefits of electric vehicles far surpass the costs. The biggest obstacle to the widespread adoption of electric-powered transportation is cost related, as gasoline and the vehicles that run on it are readily available, convenient, and less costly. As is demonstrated in our timeline, we hope that over the course of the next decade technological advancements and policy changes will help ease the transition from traditional fuel-powered vehicles. Additionally, the realization and success of this industry relies heavily on the global population, and it is our hope that through mass marketing and environmental education programs people will feel incentivized and empowered to drive an electric-powered vehicle. Each person can make a difference, so go electric and help make a difference!

FUTURE SCOPE

- 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.

There are no emissions:

- Electric automobiles are being developed primarily because they do not emit any pollution when driving. An electric vehicle is propelled by a battery-powered electric motor. There is no burning of fuel. An electric vehicle does not have an exhaust system. It's the best road transportation solution at a time when global CO2 emissions and air pollution must be drastically cut.

Access to city centres is unrestricted:

- 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.

Comfortable and quiet:

- Unlike a combustion engine, an electric motor produces very little noise. As a result, the silence inside an electric vehicle is unmistakable. Additionally, unlike a combustion engine, an electric motor does not produce any vibrations or resonance. The vibration-free and silent drivetrain adds to the relaxation.