

PROJECT REPORT

VISUALIZATION TOOL FOR ELECTRIC VEHICLE CHARGE AND RANGE ANALYSIS

1 INTRODUCTION

1.1 Overview

An EV is a shortened acronym for an electric vehicle. EVs are vehicles that are either partially or fully powered on electric power.

Electric vehicles have low running costs as they have less moving parts for maintaining and also very environmentally friendly as they use little or no fossil fuels (petrol or diesel). While some EVs used lead acid or nickel metal hydride batteries, the standard for modern battery electric vehicles is now considered to be lithium ion batteries as they have a greater longevity and are excellent at retaining energy, with a self discharge rate of just 5% per month. Despite this improved efficiency, there are still challenges with these batteries as they can experience thermal runaway, which have, for example, caused fires or explosions in the Tesla model S, although efforts have been made to improve the safety of these batteries.

The top 5 largest EV Charging Station Companies In India are Tata Power, Charge Zone, Ather Energy

The Indian EV charging station market is highly fragmented as several private and public entities

are setting up charging infrastructure in various chargers are available in the Indian market comprising Type 1, Type 2, AC and DC, unidirectional and bidirectional charging catering to e4W (electric 4-wheeler), e3W (electric 3-wheeler), and e2W (electric 2-wheeler).

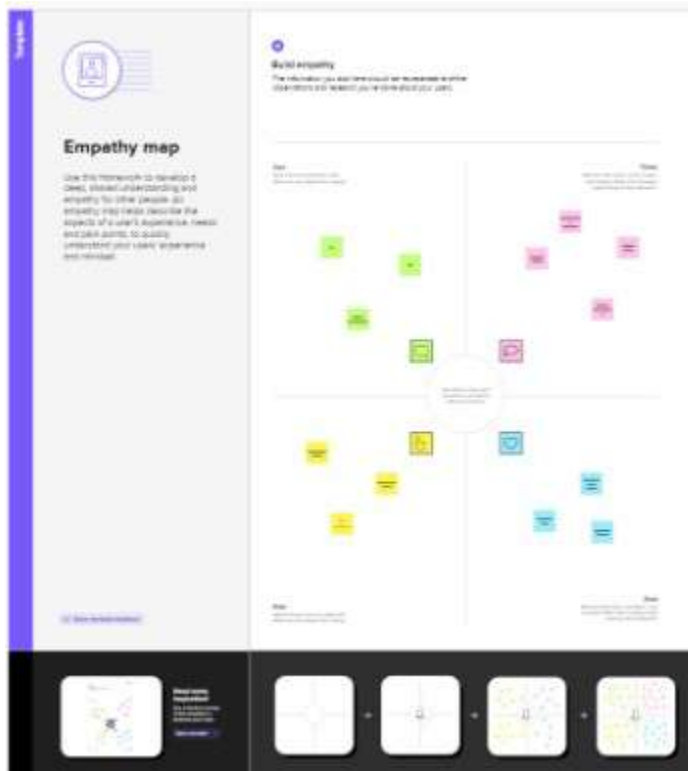
1.2 Purpose

The Vehicle Technologies Office (VTO) is supporting research and development (R&D) to lower the cost and improve the performance of power electronics in electric drive vehicles. 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. Finally, power electronics convert and distribute electrical power to other vehicle systems such as heating and ventilation, lighting, and infotainment. Power

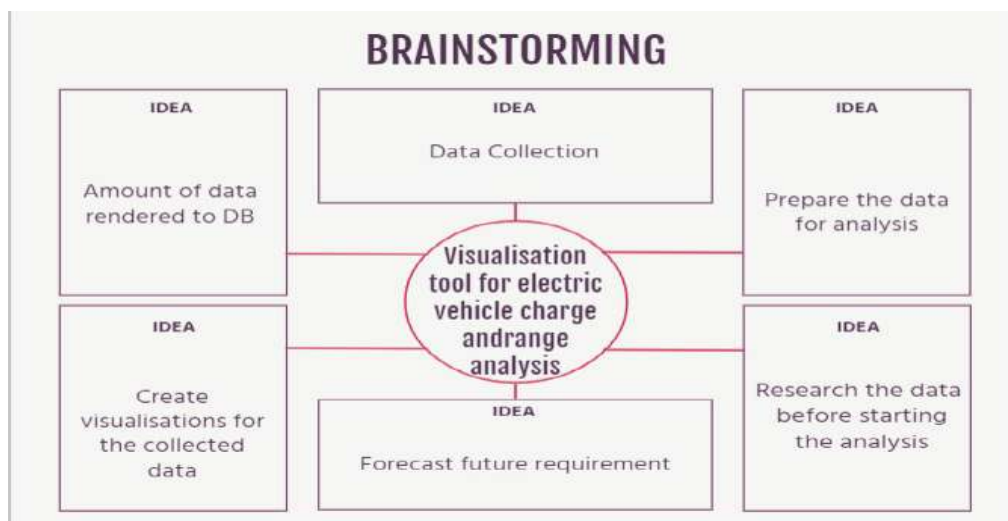
electronics components include inverters, DC/DC converters, and chargers (for plug-in electric vehicles).

2 PROBLEM DEFINITION & DESIGN THINKING

2.1 Empathy Map



2.2 Ideation and Brainstorming Map

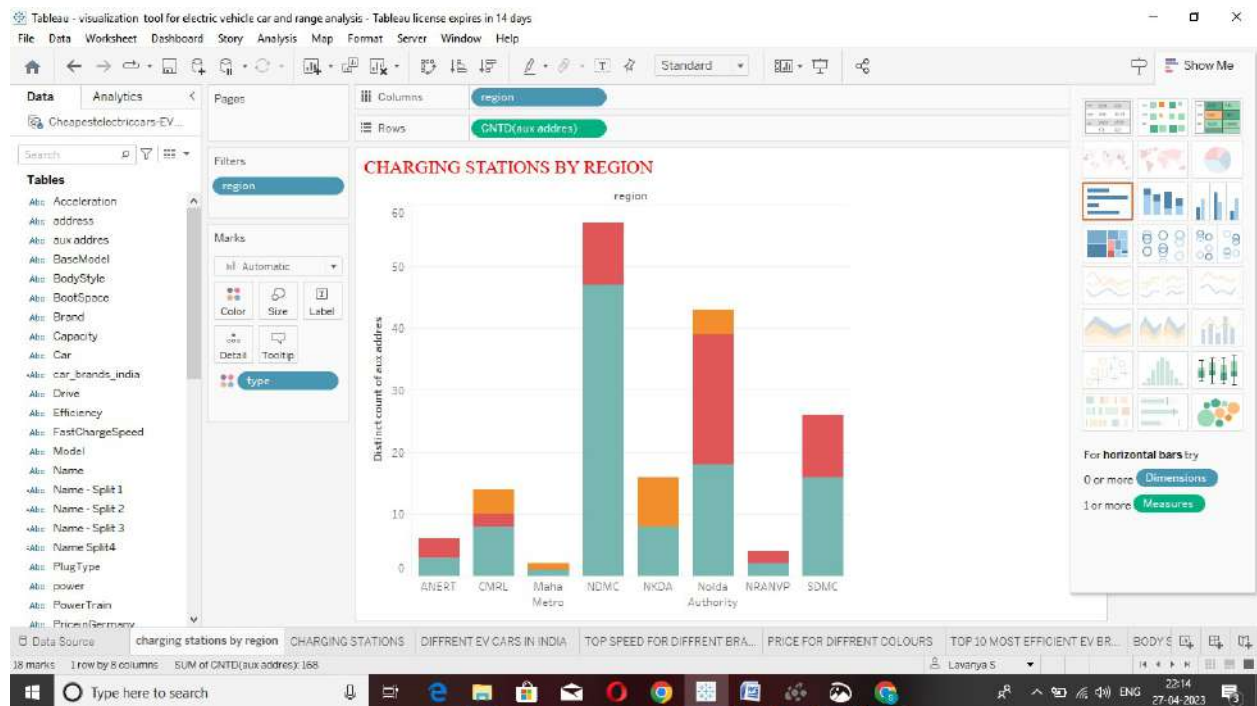


3.1 Social Impact: By solving or helping to solve the biggest issue in EV market. More people will understand and buy the EV instead of ICE's.

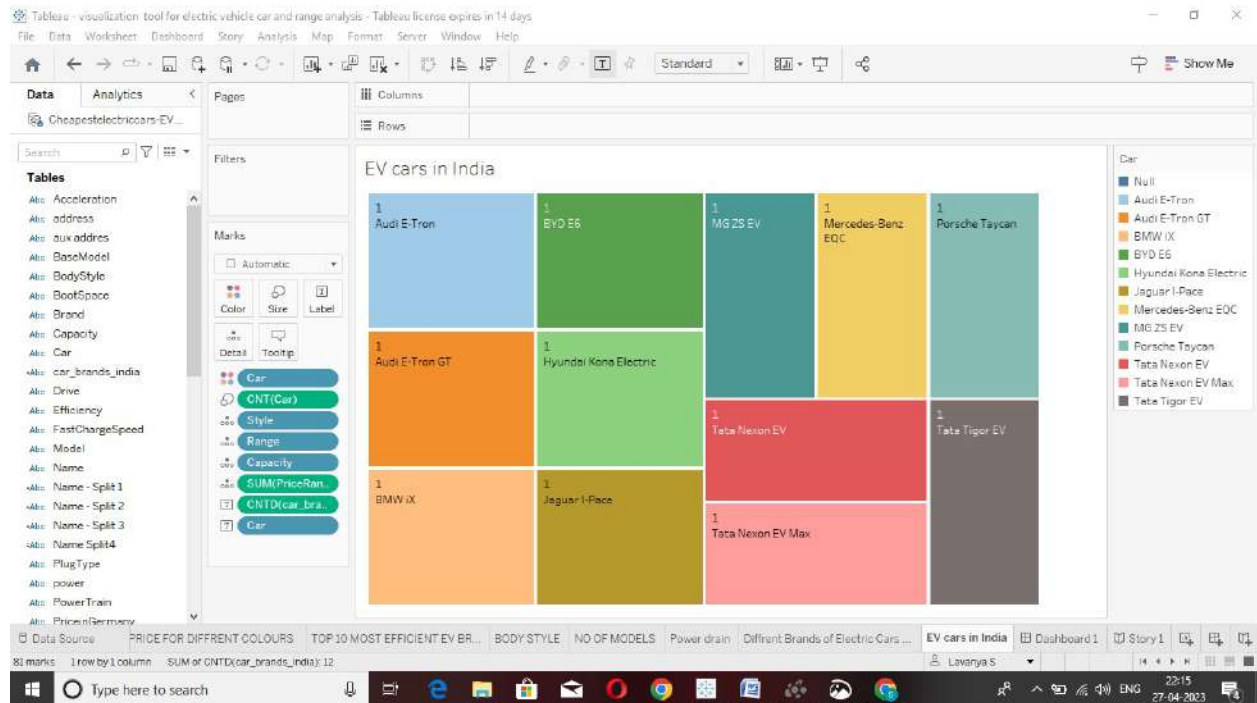
Business Model/Impact: This project can provide the insights for the Car/Battery Manufacturers and it can also provide the insights for the people who are using the EV or Thinking to enter in EV Market.

3.2 ACTIVITY & SCREENSHOT

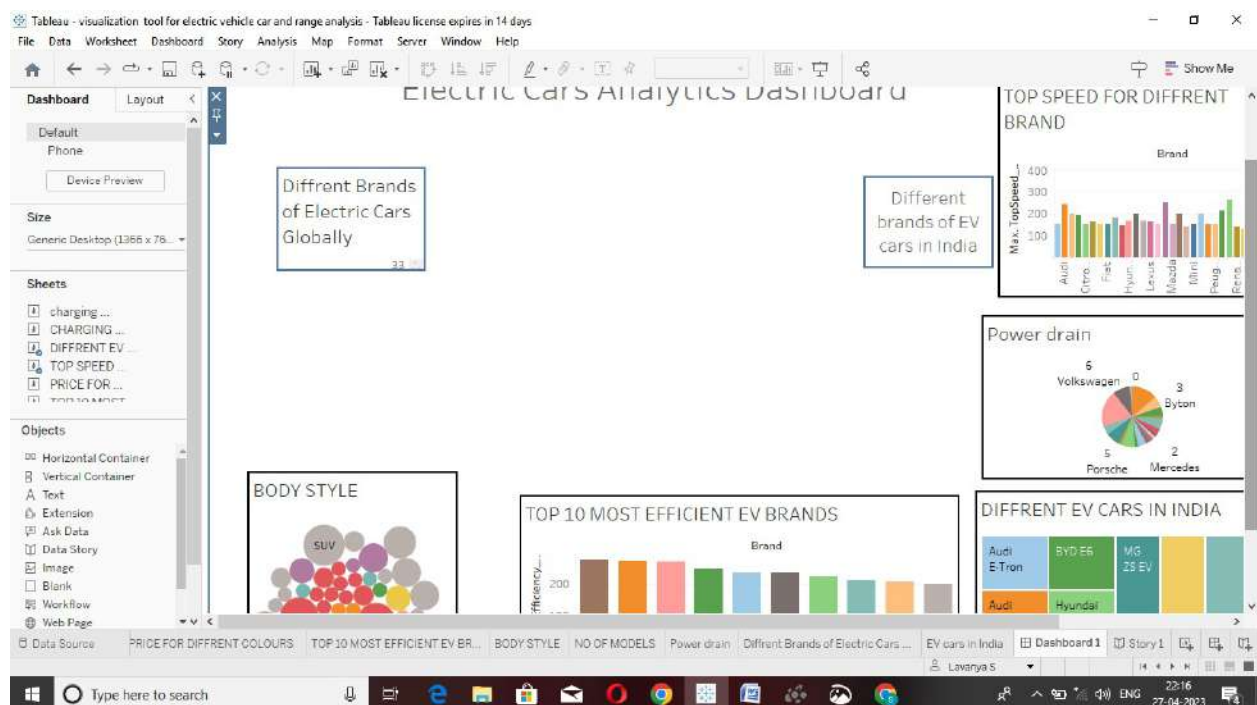
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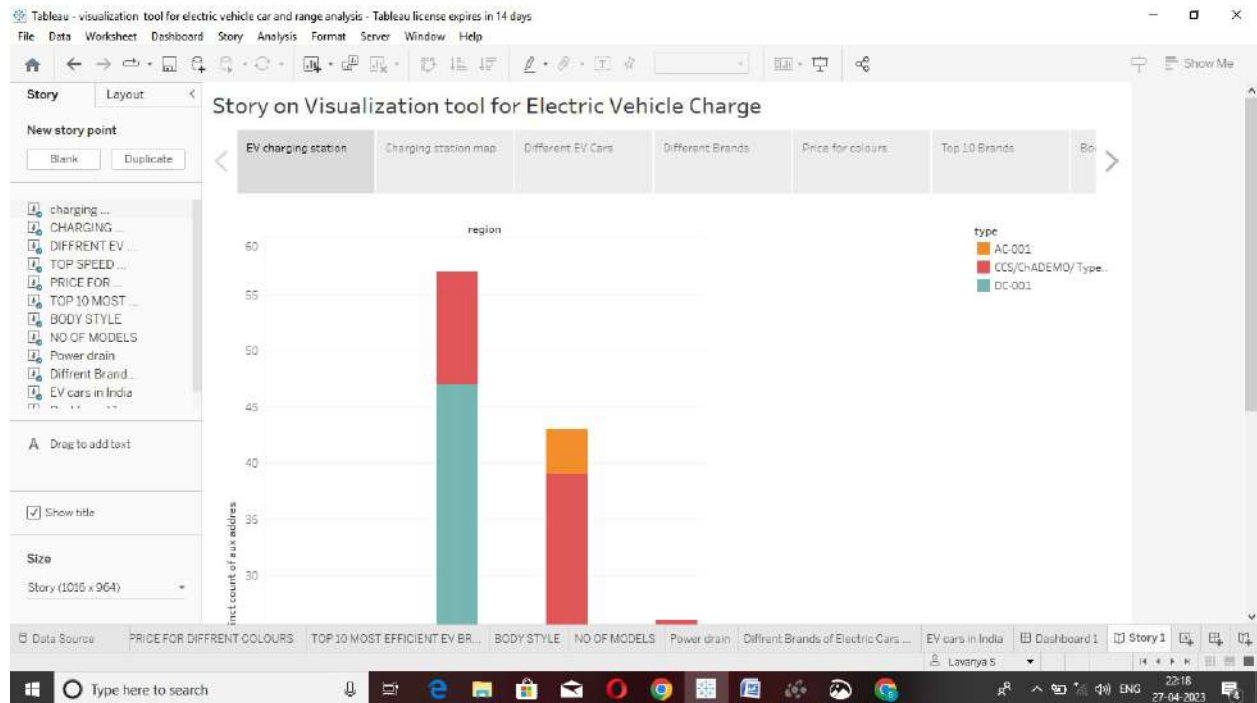
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DASHBOARD



STORY



4 TEAM DETAILS

Team Leader-S.Lavanya

Team Member1-M.Rihana Barvin

Team Member2-E.Priya

Team Member3-S.Keerthana Devi

5 ADVANTAGES & DISADVANTAGES

ADVANTAGES

Electric vehicles have other advantages over those powered by combustion engines:

- No fuel required so you save money on gas
- Environmental friendly as they do not emit pollutants
- Lower maintenance due to an efficient electric motor
- Better Performance
- Electric cars are not only lighter but have faster acceleration

DISADVANTAGES

- Limited Battery Range. The average petrol car can easily do four or five hundred miles on a tank of petrol.
- Battery Lifespan Concerns.
- Charging Infrastructure Worries.
- Long Charging Times.
- Low Top Speeds.
- More Expensive to Buy.
- Environmental Impact.

6 APPLICATIONS

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.

7 CONCLUSION

The basic conclusion is that when it comes to climate change and air quality, electric cars are clearly preferable to petrol or diesel cars. Contrary to some public doubts and uncertainties about the environmental benefits of electric cars, the science is increasingly clear.

8 FUTURE SCOPE

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.

APPENDIX

Source code- Dashboard

https://public.tableau.com/views/visualizationtoolforelectricvehiclecarandrangeanalysis/Dashboard1?:language=en-US&:display_count=n&:origin=viz_share_link

Source code- Story

https://public.tableau.com/views/story_16826545324520/Story1?:language=en-US&:display_count=n&:origin=viz_share_link