J.B. INSTITUTE OF ENGINEERING AND TECHNOLOGY

Department of AI &DS, CSE (DS)

Value-Added Course on PowerBI
Report

Module Number: V

Title: Data Analysis on Electric Vehicle Dataset using Power BI

Date: 21-11-2025

Key Topics Covered:

- Understanding KPIs for EV Market Analysis
- Creating Measures using DAX
- Data Modeling for EV Analytics
- Visualizing EV Trends and Distribution
- Designing Top-N Charts and CAFV Eligibility Reports

Resource Person(s): Mrs.M.Neeharika

Duration: 2h

Mode of Delivery: Face to Face

Target Audience: III Year Students of AI &DS, CSE(DS)

Venue: Lab No: 101 in AI & DS Block

Objectives of the Course Module:

- To familiarize students with real-world EV datasets and teach them to derive meaningful KPIs using Power BI.
- To enable participants to apply DAX formulas for calculating total vehicles, average electric range, BEV/PHEV percentages, and other analytical measures.
- To help students design effective visualizations such as Top-N charts, distribution charts, and eligibility-based comparisons.
- To guide students in understanding EV market trends through model-year, state-wise, and manufacturer-wise analysis.

Expected Learning Outcomes of the Module:

By the end of the session, participants will be able to:

1. Calculate key performance indicators such as Total Vehicles, Average Electric Range, Total BEVs, and Total PHEVs.
2. Derive percentage-based KPIs to understand the market share of BEV and PHEV vehicles.

3. Develop visualizations showing Total Vehicles by Model Year (from 2010 onwards) and analyze adoption trends.
4. Create state-wise, model-wise, and make-wise distribution charts to identify geographical and brand-based adoption patterns.
5. Build Top 10 Make and Top 10 Model charts to understand dominant manufacturers and popular EV models.
6. Visualize CAFV Eligibility to assess the impact of clean-fuel incentives on EV adoption.

Summary: Session-5 focused on performing comprehensive data analysis on an Electric Vehicle dataset using Power BI. Participants began by calculating core KPIs, including the Total Number of Vehicles, Average Electric Range, Total BEVs and PHEVs, and their respective percentages. These metrics helped students understand the size, composition, and technological evolution of the EV market. The session then moved into visualization development. Students created a *Total Vehicles by Model Year* chart (from 2010 onwards), which revealed the yearly growth in EV adoption. They also built *State-wise Vehicle Distribution* charts to identify regions with higher EV penetration. Using DAX-based Top-N filtering, participants created **Top 10 Makes** and **Top 10 Models** charts, allowing for analysis of the most dominant manufacturers and popular EV models. Additionally, students analyzed **CAFV Eligibility**, exploring how incentive-eligible vehicles are distributed within the dataset and understanding the role of government policies in EV adoption. The session was highly practical, with hands-on dashboard building, formula writing, and visualization customization. Students gained a strong understanding of how Power BI can be used to interpret real-world EV market data. Feedback indicated that the session was informative, engaging, and valuable in developing both analytical and visualization skills essential for data-driven decision-making.

Signature of the HoD