Power BI Project: Automobile Market Research Analysis

1. Project Objective

The main goal of this project was to explore and analyze automobile data using Power BI. The idea was to get a clearer picture of various car features like fuel type, torque, seating capacity, safety options, and overall performance. I wanted to turn raw data into something visual and insightful that helps understand trends and make decisions quickly.

2. Scope of Work

This project involved:

- Importing and cleaning the dataset.
- Building a dashboard that highlights key metrics and comparisons.
- Creating visualizations to explore how different car models perform.
- Making it interactive so users can filter data by make, model, or fuel type.

3. Expected Outcome

By the end of the project, I wanted to have:

- A clean and well-structured Power BI dashboard.
- Clear, visual answers to important questions about car performance.
- Interactive charts and graphs that make exploring the data easy and insightful.
- A tool that could help someone in the automotive industry or a customer understand the market better.

4. Tools & Technologies Used

- Power BI Desktop for data visualization and dashboard creation.
- Excel/CSV as the primary data source.
- DAX to create custom metrics and calculated fields.

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5. Dataset Overview

The dataset includes details of various car models and their specifications, such as:

- Fuel type (Petrol, Diesel, Electric, etc.)
- Torque, Power, and Kerb Weight
- Number of cylinders and valves
- Fuel tank capacity
- Safety features like airbags and child locks
- Dimensions like height, width, and seating capacity

6. Key Questions Explored (KPIs)

- 1. How many total vehicle entries are in the dataset?
- 2. What are the total height, mileage, and number of doors recorded across all models?
- 3. Which fuel type has the highest average fuel tank capacity?
- 4. How do power, torque, and width vary by car variant?
- 5. Which models and fuel types have the most cylinders?
- 6. Is there a relationship between fuel tank capacity and vehicle length?
- 7. How common are airbags and child safety locks across models?
- 8. What's the average seating capacity and kerb weight by manufacturer?
- 9. Which car models deliver the highest torque values?
- 10. What is the highest number of valves per cylinder, and how is it distributed?

7. Process Followed

Step 1: Data Preparation

Imported the data into Power BI, cleaned up the formatting, corrected data types, and removed blanks.

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Step 2: Data Modeling

Organized the data, created calculated fields (like averages and totals), and structured the model.

Step 3: Building Visuals

Used bar charts, donut charts, line graphs, tables, and gauges to present the data.

Step 4: Making It Interactive

Added slicers and filters by Make, Model, and Fuel Type. Applied a consistent theme for readability.

8. Dashboard Summary

The dashboard highlights key metrics using:

- KPI Cards (Total records, mileage, doors)
- Charts (Fuel capacity, cylinders, safety features, performance)
- A gauge for valve count
- Scatter plot comparing fuel tank capacity with vehicle length
- Tables summarizing torque, weight, and features

Everything is interactive for detailed exploration.

9. Final Thoughts & Conclusion

This project was a great learning experience. I turned raw automobile data into an interactive dashboard using Power BI. It helped me practice data visualization, DAX, and storytelling with data. The final result makes it easy to understand car performance trends and make data-driven decisions.