Project Title: Electric Vehicle Market Segmentation Analysis

1. Introduction

The electric vehicle (EV) market is experiencing rapid growth driven by technological advancements, environmental concerns, and government incentives. To effectively target different customer segments, it is essential to understand their preferences and characteristics. This project aims to analyze an electric vehicle dataset and perform market segmentation to identify distinct customer segments and develop targeted marketing strategies for each segment.

2. Dataset Overview

Dataset Source: The dataset used in this analysis contains details of electric vehicles, including attributes such as brand, model, performance metrics, pricing, and segment classification.

Attributes:

Brand

Model

Acceleration (Accel)

Top Speed (TopSpeed)

Range

Efficiency

Fast Charge

Rapid Charge

Power Train

Plug Type

Body Style

Segment

Seats

Price (PriceEuro)

3. Data Preprocessing

Missing Values: Any missing values in the dataset were imputed using the mean of the respective columns.

Encoding: Categorical variables were encoded using label encoding to convert them into numerical format.

Normalization: Numerical variables were normalized using standard scaling to ensure uniformity in the range of values.

4. Exploratory Data Analysis (EDA)

Pairplot: Visualized relationships between key features such as acceleration, top speed, range, efficiency, and price.

Correlation Analysis: Examined the correlation between features to identify potential patterns and relationships.

5. Clustering Analysis

K-Means Clustering: Applied K-Means clustering algorithm to segment the electric vehicle market into distinct clusters based on features such as range, top speed, efficiency, price, and acceleration.

6. Marketing Strategy Development

Based on the clustering analysis, marketing strategies were developed for each segment:

Segment 0: Performance Enthusiasts

Target high-range and high-speed EVs.

Emphasize performance features and engage with automotive enthusiasts.

Segment 1: Budget-Conscious Consumers

Focus on efficient and affordable EV models.

Highlight cost savings and offer financing options.

Segment 2: Premium Customers

Showcase luxury features and high performance.

Create exclusive events and collaborations to target affluent customers.

7. Conclusion

The market segmentation revealed three distinct segments within the electric vehicle market. These insights can guide targeted marketing strategies and product development efforts to better meet the needs of each segment. Further research could explore additional features and refine the segmentation.

Conclusion

In conclusion, the electric vehicle market segmentation analysis provides valuable insights into customer preferences and behavior, enabling businesses to tailor their marketing strategies and product offerings to effectively target different segments within the EV market. By understanding the unique needs and preferences of each segment, companies can enhance customer satisfaction, drive brand loyalty, and capitalize on opportunities for growth in the dynamic and competitive electric vehicle industry.