EV Market Segmentation Analysis Report

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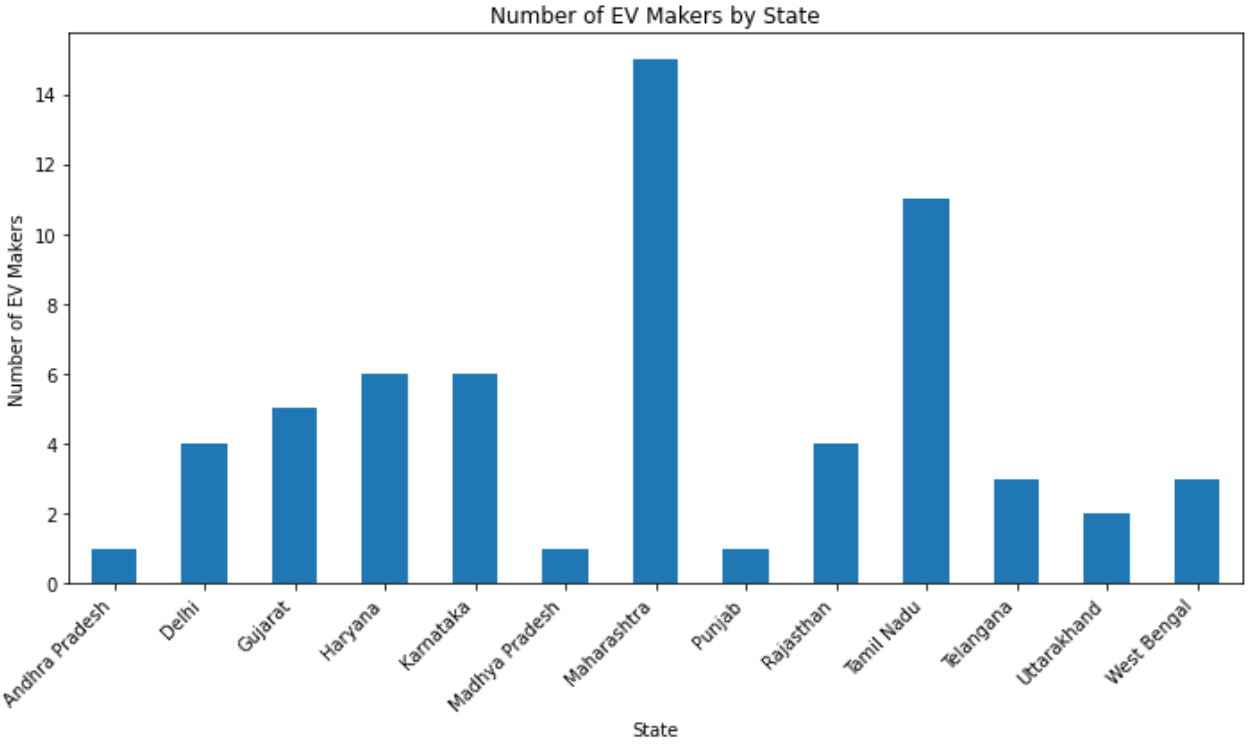
Github Link: https://github.com/tanuj-cmd-15/EV-Market-Segmentation

1) Introduction:

The Indian automotive market has historically been dominated by non-electric vehicles (NEVs). The popularity of NEVs stems from their affordability, low maintenance costs, and readily available fuel infrastructure. However, the Electric Vehicle (EV) market in India is experiencing a rapid surge in popularity, attracting major automotive brands such as TATA, Mahindra, and international companies.

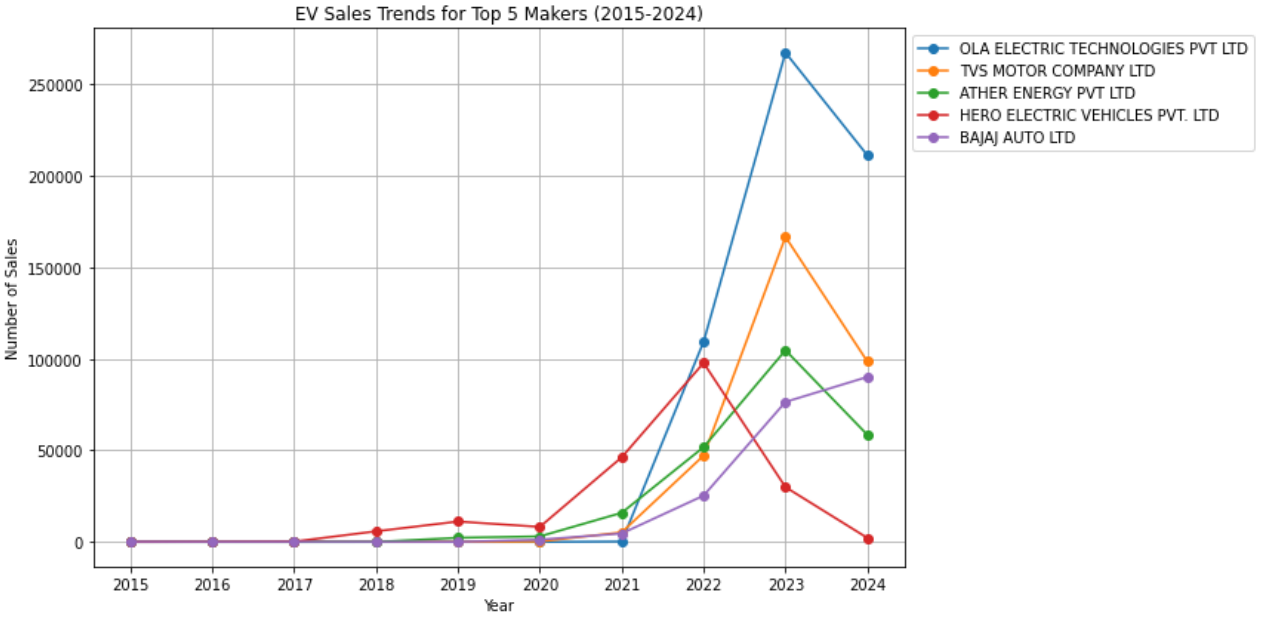
This report analyzes the Indian EV market to identify potential opportunities for a new EV startup. The goal is to develop a unique EV product that can compete with established brands while appealing to price-conscious Indian consumers.

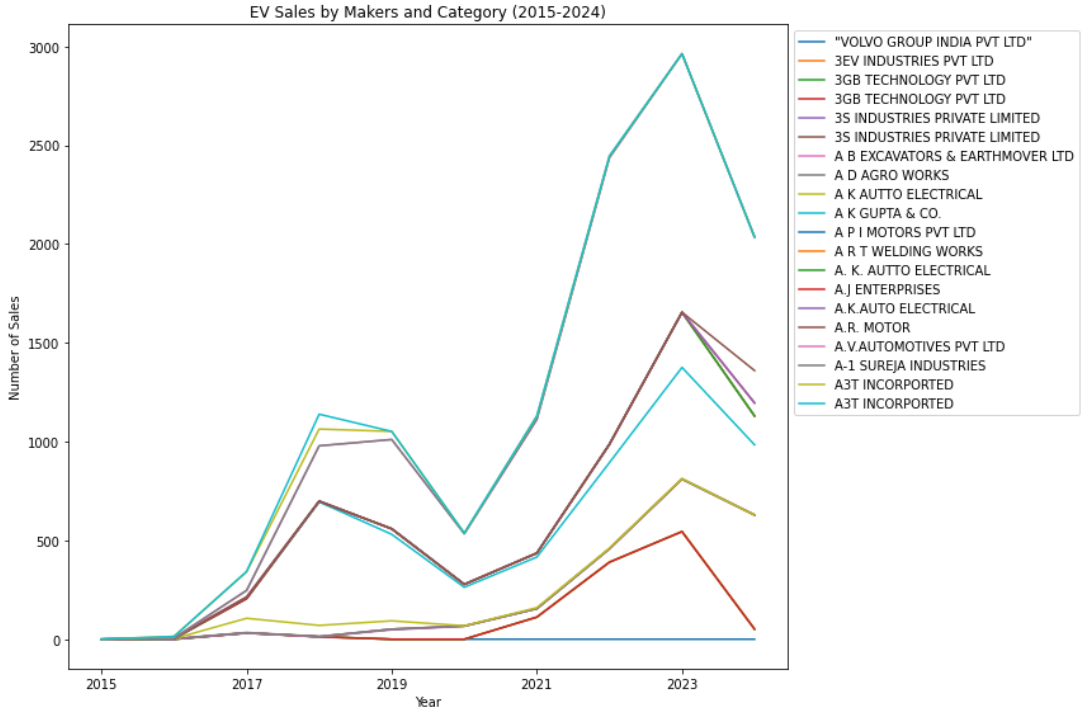


2) Market Information:

a) General Usage Info:

- EVs currently represent less than 1% of total vehicle sales in India.
- The EV market is projected to reach INR 475 billion by 2025.
- Two-wheelers dominate the market (62%), followed by three-wheelers (37%).
- The four-wheeler segment has the lowest EV penetration (0.12%), but is expected to grow to 5% by 2025.
- Market penetration varies significantly by state, influenced by factors such as demographics, income levels, regulations, and urbanization.



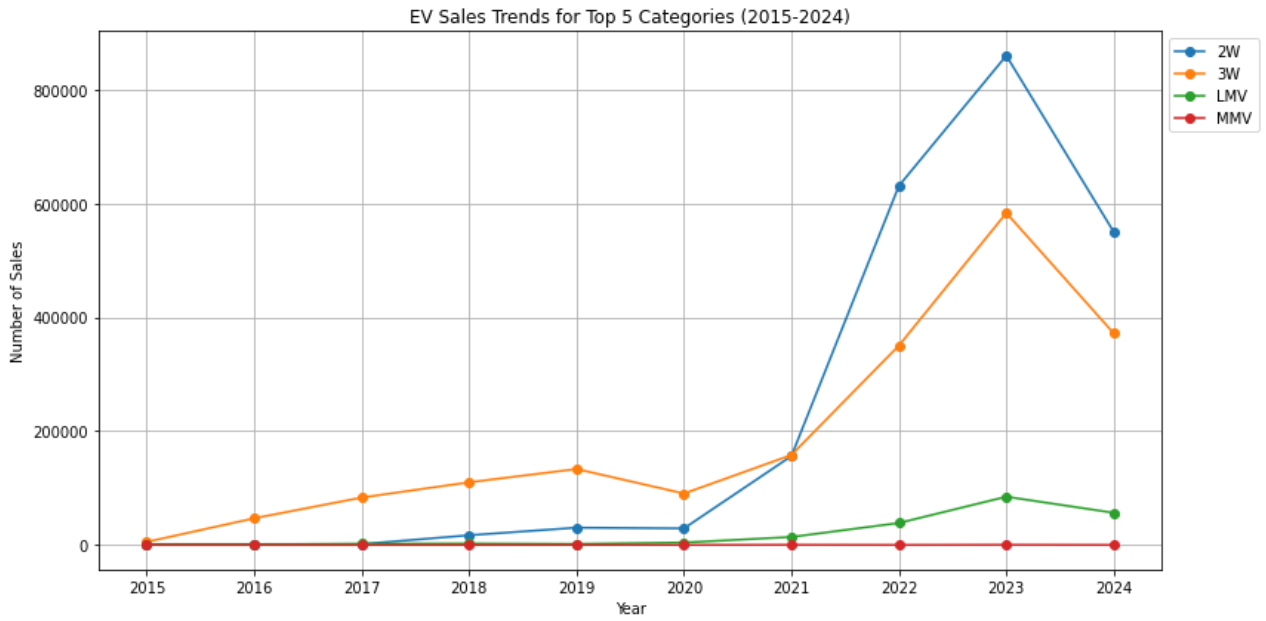


b) Battery Info:

- Lead-acid batteries currently dominate the market, but lithium-ion batteries are gaining traction due to government incentives and demand from two-wheelers.
- The government has set target driving ranges for different EV categories, which influences battery capacity and energy consumption.
- EV battery lifespans are influenced by factors such as charging cycles, speed, and temperature.
- Retired EV batteries can be repurposed for second-life applications like grid-scale energy storage, maximizing their economic value.
- Second-life applications align with India's renewable energy goals and can extend battery life by another 10 years.

3) Market Segmentation Analysis:

This analysis utilizes data from various sources, including government websites, car research platforms, and market research.



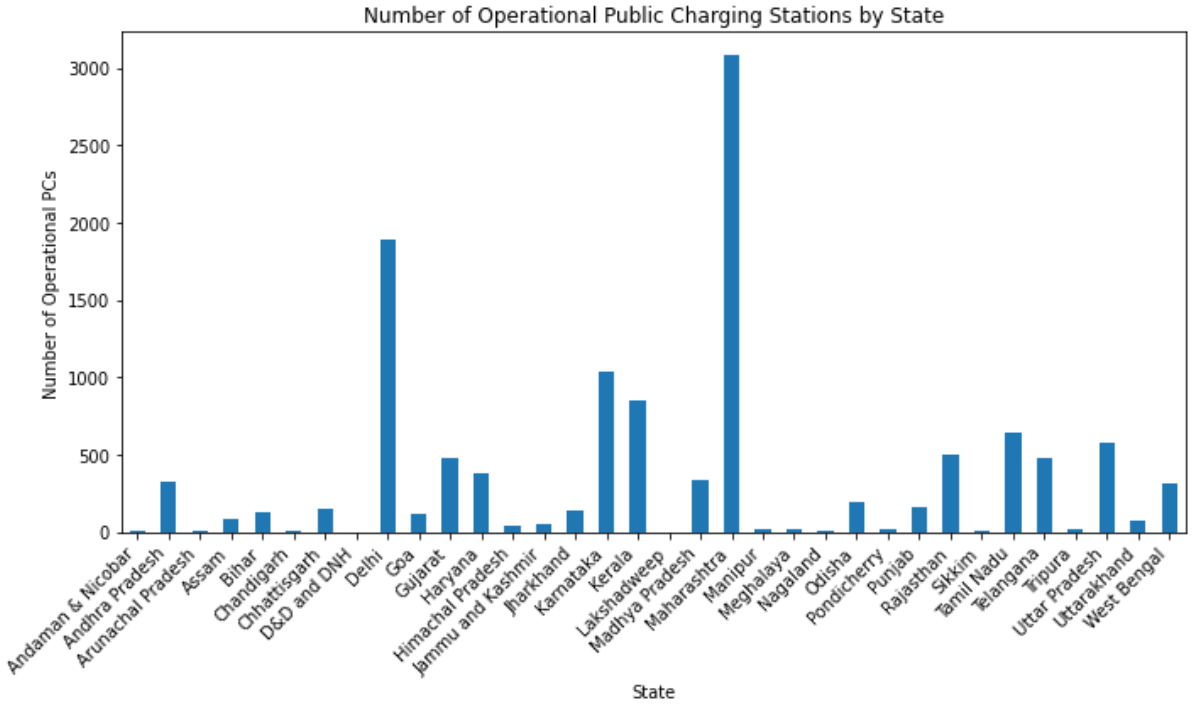
a) Visualization Analysis:

(a) Geographic and Demographic Research:

- **South India:**
  - Tech hub with strong EV demand.
  - Significant charging infrastructure.
  - Major manufacturing plants of popular EV brands.
- **Delhi:**
  - Highest number of charging stations.
  - Relatively low EV popularity.
- **North-East India:**
  - Growing EV popularity.
- **Other States/Regions:**
  - Balanced numbers and competitive demand.
- **Daman and Diu and Lakshadweep:**
  - Insufficient data for analysis.
- **Charging Station Availability:**
  - Maharashtra has the highest number of EV makers with 15.
  - The states of Tamil Nadu, Haryana, and Karnataka have a significant number of EV makers, with over 6.
  - Delhi, Gujarat, and Telangana have a moderate number of EV makers.

- The states of Andhra Pradesh, Madhya Pradesh, Punjab, Rajasthan, Uttarakhand, and West Bengal have a lower number of EV makers.
- The data suggests that Maharashtra is a leading state in India for EV manufacturing.
- The states with a higher number of EV makers are likely to have a more developed EV ecosystem.
- The presence of EV makers in a state indicates the availability of resources, infrastructure, and skilled labor.
- The state governments may be playing a role in encouraging EV manufacturing by providing incentives or subsidies.
- The growth of the EV industry in India is evident from the increasing number of EV makers in different states.

- The data can be useful for policymakers and investors who are looking to invest in the EV industry in India.



(b) Psychographic and Behavioral Research:

- **Petrol Cars:**
  - Most popular (79% market share).
  - Cheaper than diesel and CNG cars.
- **Diesel Cars:**
  - 20% market share.
  - More expensive, but offer high performance and durability.
- **CNG Cars:**
  - Lowest popularity.

    - Limited performance and durability, but offer fuel economy.
- **EV Price:**
    - A major concern for most consumers.
    - Consumers prioritize low-priced and low-maintenance vehicles.

b) Segmentation Analysis:

- **Principal Component Analysis:**
    - Identifies key variables contributing to consumer preferences for EVs.
    - Value for money, performance, and fuel economy are key features influencing EV purchase decisions.
- **Segment Extraction:**
    - Four distinct segments were identified based on consumer responses to EVs.
    - Segments 1 and 4 exhibit strong positive sentiments towards EVs, making them attractive target markets.
    - Segment 3 displays balanced sentiments, suggesting potential with targeted marketing.
    - Segment 2 holds negative sentiments toward EVs, rendering them unattractive for EV targeting.

(c) Economical Research:

- Analyzes technical specifications and ideal price points for EVs.
- Recommends a price range of INR 9.46 Lakhs to INR 39.5 Lakhs.
- Identifies a battery capacity range of 26.0 kWh to 107.8 kWh.
- Sets driving range targets between 315 km and 857 km.
- Defines a power range of 73.75 BHP to 516.29 BHP.
- Recommends charging times between 1.5 hours and 9.0 hours.

4) Conclusion:

a) Geographic and Demographic Analysis:

- South India: Competitive market with established brands, presenting challenges for a new EV startup.
- North-East India: Growing popularity of EVs, offering a promising entry point for a new brand.
- East India and Central India: Potential target markets after establishing a presence in North-East India.

b) Psychographic and Behavioral Analysis:

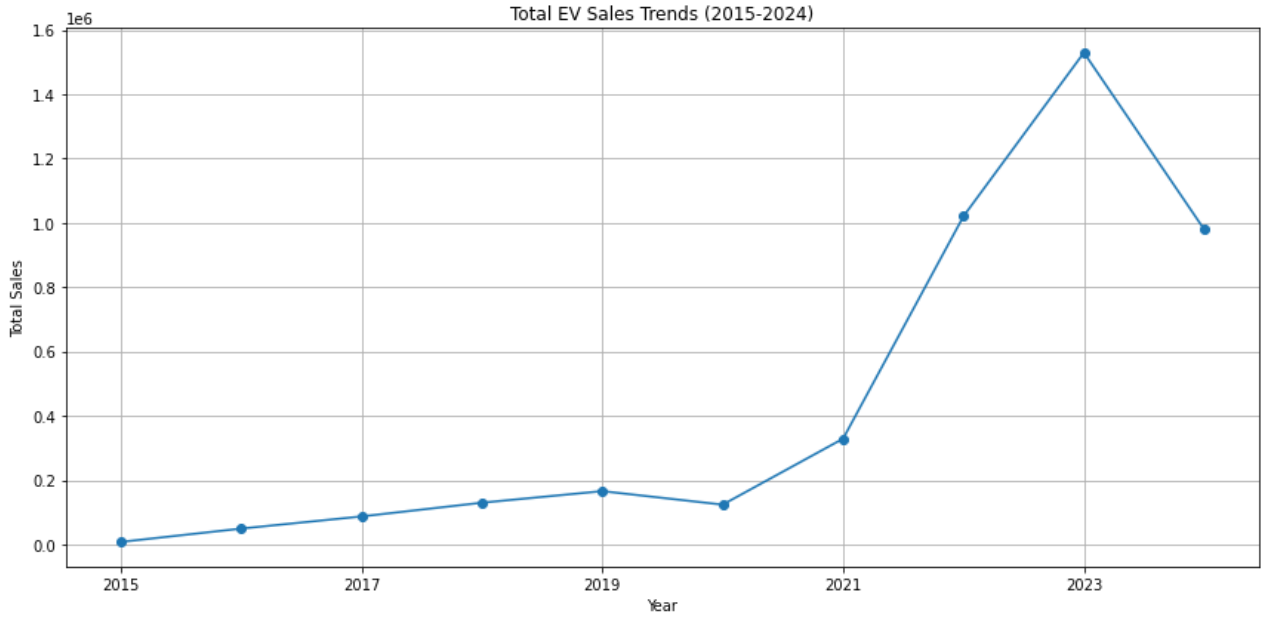
- Consumers prioritize price and maintenance costs, favoring low-priced and durable EVs.
- Positive sentiments towards EVs among consumers who have tested or owned them.
- Effective marketing highlighting features and performance can attract potential customers.

c) Economical Analysis:

- The recommended price and technical specifications create a competitive advantage in the market.
- Optimization of battery capacity, power, and driving range can maximize cost-effectiveness.
- Fast charging capabilities are essential to enhance user experience and minimize charging time.

Final Thoughts on Startup Strategy:

- **E-Bikes:** Target East Indian states like Uttar Pradesh, Bihar, and West Bengal, as well as Central Indian states like Madhya Pradesh, due to their affordability and growing popularity of e-bikes.
- **E-Cars:** Focus on North-East India and Central India as initial target markets, followed by East India.
- **South India:** A challenging market due to strong competition from established brands; consider targeting this market after establishing a strong presence in other regions.
- **North India:** Not recommended as a target market due to low EV adoption despite the availability of charging infrastructure.



Overall, this report provides a comprehensive analysis of the Indian EV market and offers insights for developing a successful EV startup strategy. By understanding the market segments, consumer preferences, and regional differences, a new EV brand can position itself effectively and achieve sustainable growth.