Car Sales Model Profit Analysis

1. Introduction

The purpose of this project was to analyze car sales data to gain insights into sales performance, pricing trends, and model retention rates. The dataset used for this analysis was sourced from Kaggle and created specifically for this analysis, simulating a real-world scenario in the automotive sector.

2. Dataset Source

The dataset was sourced from Kaggle and consists of various attributes related to car sales, including model names, unit sales, prices, retention percentages, and resale values. This temporary dataset was created to mimic real-world data and facilitate comprehensive analysis.

3. Data Cleaning

The initial dataset required several cleaning steps to ensure accuracy and usability:

- **Removal of duplicates**: Identified and removed duplicate records to ensure data integrity.
- **Handling missing values**: Addressed missing values by either imputing with mean/mode or removing incomplete records, ensuring the dataset was complete and reliable.
- **Standardizing formats**: Ensured consistency in data formats, such as dates and currency values, to facilitate seamless analysis.

4. Data Analysis

The cleaned dataset was analyzed to extract key metrics:

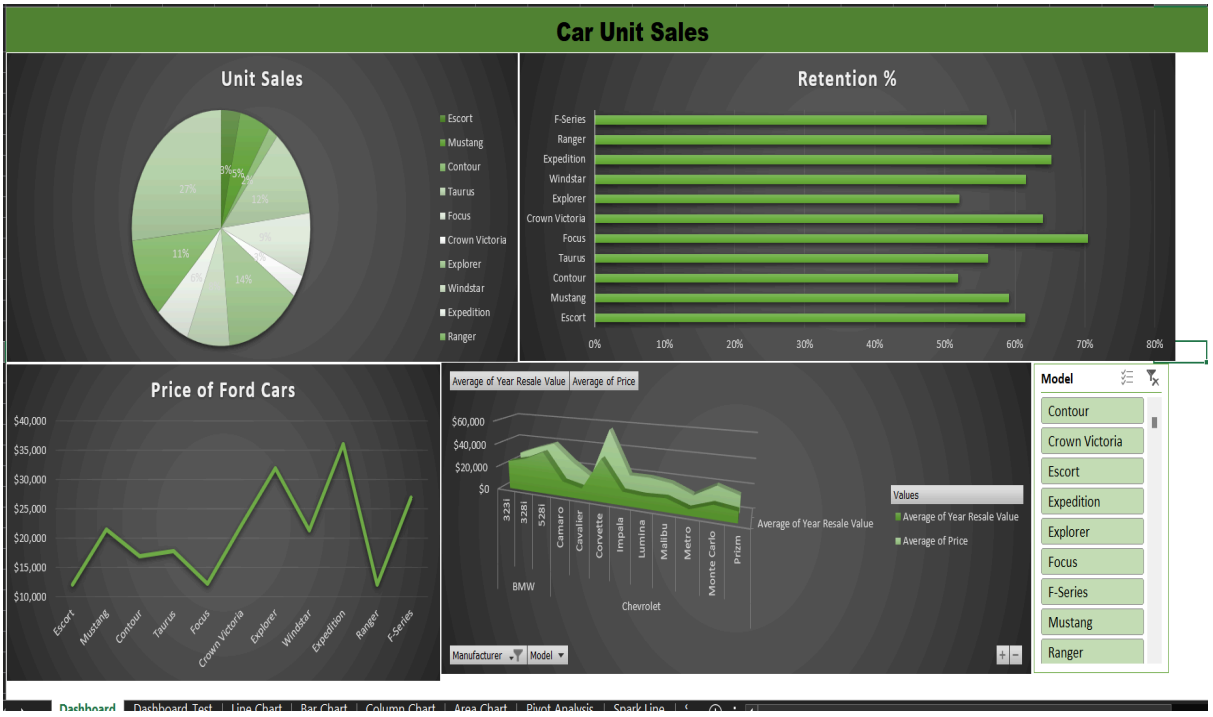
- **Unit Sales**: Analysis of the number of units sold per car model revealed the popularity and market demand for each model.
- **Price Trends**: Evaluation of pricing trends across different car models provided insights into market positioning and pricing strategy.
- **Retention Rates**: Calculation of retention percentages helped understand customer loyalty and model performance over time.

5. Data Visualization

Data visualization was performed using Excel, leveraging various charts and graphs to represent the data:

- **Pie Chart**: Used to depict the distribution of unit sales among different car models, offering a clear visual comparison of market share.
- **Bar Chart**: Showed retention percentages for each car model, highlighting customer loyalty and satisfaction.
- **Line Chart**: Illustrated price trends of Ford cars over time, revealing pricing strategies and market reactions.

6. Interactive Dashboard



An interactive dashboard was created in Excel to allow users to explore the data dynamically. The dashboard includes:

- **Filter options**: Users can filter data by car model and manufacturer, enabling focused analysis and customized views.
- **Dynamic charts**: Charts update automatically based on user selections, providing a flexible and user-friendly analysis tool.

7. Insights and Recommendations

Key insights from the analysis include:

- **Top-performing models**: The Ford F-Series and Ranger have the highest unit sales and retention rates, indicating strong market demand and customer satisfaction.
- **Price trends**: The Mustang shows significant price fluctuations, suggesting potential market volatility and the need for a more stable pricing strategy.
- **Retention analysis**: Models like the Explorer and Expedition have high retention rates, suggesting strong customer loyalty and satisfaction.

Recommendations based on these insights:

- **Focus on top models**: Increase marketing efforts for high-performing models like the F-Series and Ranger to maximize sales and market share.
- **Price stability**: Investigate the causes of price volatility for the Mustang and develop strategies to achieve more stable pricing.
- **Customer loyalty programs**: Enhance loyalty programs for models with high retention rates, such as the Explorer and Expedition, to maintain and grow customer satisfaction.

8. Conclusion

The project successfully analyzed car sales data, providing valuable insights into sales performance, pricing trends, and customer retention. The interactive dashboard created in Excel serves as a powerful tool for ongoing analysis and decision-making, allowing users to explore the data dynamically and derive meaningful insights. This analysis demonstrates the importance of data-driven decision-making in the automotive sector and provides a foundation for further studies and strategic planning.