

# PROJECT REPORT OBJECTIVES AND INSIGHTS

## Objectives

1. Data Collection and Preparation
2. Exploratory Data Analysis (EDA)
3. Sales Segmentation
4. Forecast Analysis
5. Interactive Dashboard Creation

## QUESTIONS

### Data Collection and Normalization (SQL)

1. Data Collection and Importation

Ans: The sales data was imported into the workbench to perform analysis.

2. Identify and handle missing values in critical columns.

Ans: No null values in the data.

3. Data Standardization

Ans: Data renaming was done on the data and also a few column was removed to ensure data integrity.

4. Normalizing crucial columns.

Ans: The Orderdate column was normalize by changing from d/m/y to sql standard date format y/m/d. The column was backed up to avoid data loss, the old column was deleted and the new standardized date have the same name as the old name.

### Exploratory Data Analysis (EDA) (SQL)

1. What are the top-selling product lines, and how much revenue do they generate?

Ans: Top 5 selling products are (Classic cars, Vintage cars, Bus and trucks, Motorcycles, Planes) with values of ('3248229.139', '1510284.260', '955157.540', '952185.410', '788540.92') respectively.

2. Which countries or cities contribute the most to total sales?

Ans: Among 54 present cities, MADRID contributed the most to the total sales while Munich had lowest sales.

3. What are the monthly or yearly sales trends?

Ans: Monthly sales trend (November 2018 had the highest sales followed by November 2019).

4. Who are the top customers contributing the most to revenue?

Ans: The top 5 contributing the most to total revenue are ('Euro Shopping Channel', 'Mini Gifts Distributors Ltd.', 'Australian Collectors, Co.', 'Muscle Machine Inc', 'La Rochelle Gifts').

5. How does deal size (DEALSIZE) impact product line sales?

Ans: From the report (DEALSIZE) with medium size contributed the most to the total revenue compared to the two other sizes (large and small). Also Classic cars that are medium had the highest sales contribution.

### **Sales Segmentation (using Python)**

1. Can sales trends be grouped by product categories for better inventory management?
2. How do segments differ in terms of quantity ordered and price sensitivity?
3. What is the relationship between deal sizes, product categories, and revenue?
4. Are there specific regions (countries or cities) driving higher sales performance?

### **Summary of the Outputs:**

1. **Sales Trends by Product Categories:** A bar chart to show the distribution of sales by product lines.
2. **Segment Analysis:** A scatter plot showing how quantity ordered relates to price sensitivity for product lines.
3. **Deal Sizes and Revenue:** A dual-axis chart showing total revenue and average deal sizes by product line.
4. **Regional Performance:** A treemap to visualize which regions (countries) are driving higher sales performance.

### **Forecast Analysis (using Python)**

**What will be the total sales for the next 1 year?**

Ans: 1. **Historical Sales (Blue Line):**

- The blue line represents the monthly sales trend over the past periods.
  - You can observe fluctuations in sales, with noticeable peaks and troughs, indicating some seasonality or periodic trends.
2. **Forecasted Sales (Orange Line):**
- The orange line shows the predicted sales for the next 12 months based on the SARIMA model.
  - The forecast continues the trend observed in the historical data, factoring in seasonality, trends, and patterns.
3. **Confidence Interval (Shaded Region):**

- The shaded area around the orange line represents the confidence interval (e.g., 95%).
- It provides a range within which the actual sales values are likely to fall.
- A wider confidence interval indicates greater uncertainty in the forecast.

### Interpretation:

- **Overall Trend:** The forecast suggests a continuation of the historical trend. If sales were increasing over time, the forecast reflects this growth, and if they were fluctuating seasonally, it accounts for those patterns.
- **Seasonality:** If your historical sales show recurring ups and downs (e.g., higher sales during specific months), the forecast incorporates this and adjusts for future cycles.
- **Uncertainty:** The further into the future the forecast, the wider the confidence intervals. This is expected as predictions become less certain over time.

## Power Bi Dashboard

This Auto Sales Dashboard provides a comprehensive overview of global auto product performance, order fulfillment status, revenue contribution, and geographic demand.

Key KPIs:

Total Quantity Ordered: 96K units

Total Revenue: 9.76M

- Sales are heavily driven by Classic and Vintage Cars
- The order pipeline is healthy, with the majority of orders successfully shipped
- Demand is globally distributed, with strong activity in Europe and North America

### 2. Detailed Insights

#### A. Total Sales by Product

Classic Cars are the top revenue driver, generating 3.84M, accounting for the largest share of total sales.

- Vintage Cars follow with 1.81M, showing strong niche demand.
- Trucks & Buses (1.11M) and Motorcycles (1.1M) contribute moderately.
- Planes (0.97M) and Ships (0.7M) generate lower but stable revenue.
- Trains (0.23M) are the weakest-performing category.

#### Insight:

Revenue is highly concentrated in Classic and Vintage Cars, which together contribute a significant portion of total sales. This indicates strong brand or collector demand but also signals dependency risk.

## **B. Quantity Ordered by Product**

- Classic Cars dominate unit sales, aligning with their revenue leadership.
- Vintage Cars also record high order volume, confirming consistent demand.
- Motorcycles and Trucks & Buses show balanced mid-level demand.
- Ships and Trains have the lowest quantities ordered.

### **Insight:**

High revenue products also sell in high volumes, suggesting pricing is well-aligned with customer demand, especially for Classic Cars.

## **C. Auto Sales Status (Order Fulfillment Health)**

- Shipped: 2,541 orders (overwhelming majority)
- Cancelled: 60 orders
- Resolved: 47 orders
- On Hold: 44 orders
- In Process: 41 orders
- Disputed: 14 orders

### **Insight:**

Order fulfillment performance is very strong, with minimal cancellations and disputes. Operational efficiency and customer satisfaction appear high.

## **D. Geographic Sales Distribution (Sales by City)**

- Europe and North America show the highest concentration of sales activity.
- Asia and Australia also demonstrate notable demand, though at lower density.
- Sales presence across multiple continents indicates a well-diversified global customer base.

### **Insight:**

The business is not overly reliant on a single region, which reduces exposure to regional economic or regulatory risks.

## **CONCLUSION**

- ✓ The company operates with strong operational efficiency and low friction in order processing.
- ✓ Classic Cars are the backbone of revenue and volume.
- ✓ Product diversification exists but could be optimized for better balance.
- ✓ Global reach provides scalability opportunities, especially in underpenetrated regions.
- ✓ This dashboard successfully translates operational and sales data into clear performance signals for decision-making.

## **RECOMMENDATIONS**

- ✓ Invest further in Classic Cars through premium pricing, exclusive editions, and targeted marketing.
- ✓ Use Vintage Cars as a secondary growth engine through collector partnerships and limited releases.
- ✓ strengthen distribution and marketing in Asia and Australia, where demand exists but is less saturated.
- ✓ Leverage European success as a blueprint for scaling in similar markets.
- ✓ Continue monitoring order status KPIs to keep cancellations and disputes low.
- ✓ Introduce early-warning indicators for orders “On Hold” or “In Process” to reduce delays.