Automobile Part Manufacturer Company - MRA Project

BY
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Problem statement

Business Context:

An automobile parts manufacturing company has been actively selling products to a diverse range of customers for the past three years. Despite its growth, the company lacks the in-house expertise to derive actionable insights from its transaction data. As a result, they wish to uncover hidden patterns and trends in their customer transactions. By analyzing this data, the company aims to better understand customer behavior, improve customer segmentation, and implement targeted marketing strategies. These insights will help the company not only enhance customer satisfaction but also drive revenue growth by offering more personalized and efficient services.

Objective:

The primary objective of this analysis is to leverage data science techniques to:

1. Identify underlying patterns in customer purchasing behavior.
2. Segment customers based on their transactional data.
3. Provide actionable insights to optimize the company's marketing efforts.
4. Recommend personalized marketing strategies for each customer segment to maximize sales and customer retention.

Your role as a Business Analyst is to use the provided dataset to achieve these goals and present findings in a manner that can guide the company's decision-making.

Executive Summary & Data Dictionary

- **Data:** 2018 - 2021 year.

- **Objective:** Identify the underlying buying patterns of the customers and recommend customized marketing strategies for different segments of customers.

- **Dataset:** 2747 rows and 20 columns

- **Missing values and Duplicate values:** 0

- **Outliers:** Some columns have few outliers

- **Assumptions:**
  - Each row in the dataset corresponds to a unique transaction made by a customer. Customer segments can be defined using factors such as purchase frequency, spending amount, and recency of purchases (RFM Analysis).
  - Marketing strategies may differ for each customer segment, and the company might need to tailor its marketing efforts to suit these segments. The order date and days since the last order columns are accurately calculated, while the sales column is determined by multiplying the quantity ordered by the price per unit. The status column provides an accurate representation of the current order status.

Data Dictionary

ORDERNUMBER : Order Number

CUSTOMERNAME : customer

QUANTITYORDERED : Quantity ordered

PHONE : Phone of the customer

PRICEEACH : Price of Each item

ADDRESSLINE1 : Address of customer

ORDERLINENUMBER : order line

CITY : City of customer

SALES : Sales amount

POSTALCODE : Postal Code of customer

ORDERDATE : Order Date

COUNTRY : Country customer

DAYS_SINCE_LASTORDER : Days_ Since_Lastorder

CONTACTLASTNAME : Contact person customer

STATUS : Status of order like Shipped or not

CONTACTFIRSTNAME : Contact person customer

PRODUCTLINE : Product line – CATEGORY

DEALSIZE : Size of the deal based on Quantity and Item Price

MSRP : Manufacturer's Suggested Retail Price

PRODUCTCODE : Code of Product

Numeric columns:

ORDERNUMBER: Unique identifier for each order.

•QUANTITYORDERED: Number of items ordered in a specific transaction.

•PRICEEACH: Price per unit of the product in the order.

•ORDERLINENUMBER: Sequence number of the product in the order.

•SALES: Total sales value for the order.

•DAYS_SINCE_LASTORDER: Number of days since the customer's previous order.

Statistical Summary of Numerical Columns

- On average, 35 items are ordered per sales order, with a standard deviation of 9.76.

- The average price of each item is 101.09, with a standard deviation of 42.04.

- The average sales amount per order is 3553.05, with a standard deviation of 1838.95. The average time since the last order is 1757.09 days, with a standard deviation of 819.28.

- The summary statistics show no significant anomalies or issues that would raise concerns about the data quality.

	ORDERNUMBER	QUANTITYORDERED	PRICEEACH	ORDERLINENUMBER
count	2747.000000	2747.000000	2747.000000	2747.000000
mean	10259.761558	35.103021	101.098951	6.491081
std	91.877521	9.762135	42.042548	4.230544
min	10100.000000	6.000000	26.880000	1.000000
25%	10181.000000	27.000000	68.745000	3.000000
50%	10264.000000	35.000000	95.550000	6.000000
75%	10334.500000	43.000000	127.100000	9.000000
max	10425.000000	97.000000	252.870000	18.000000
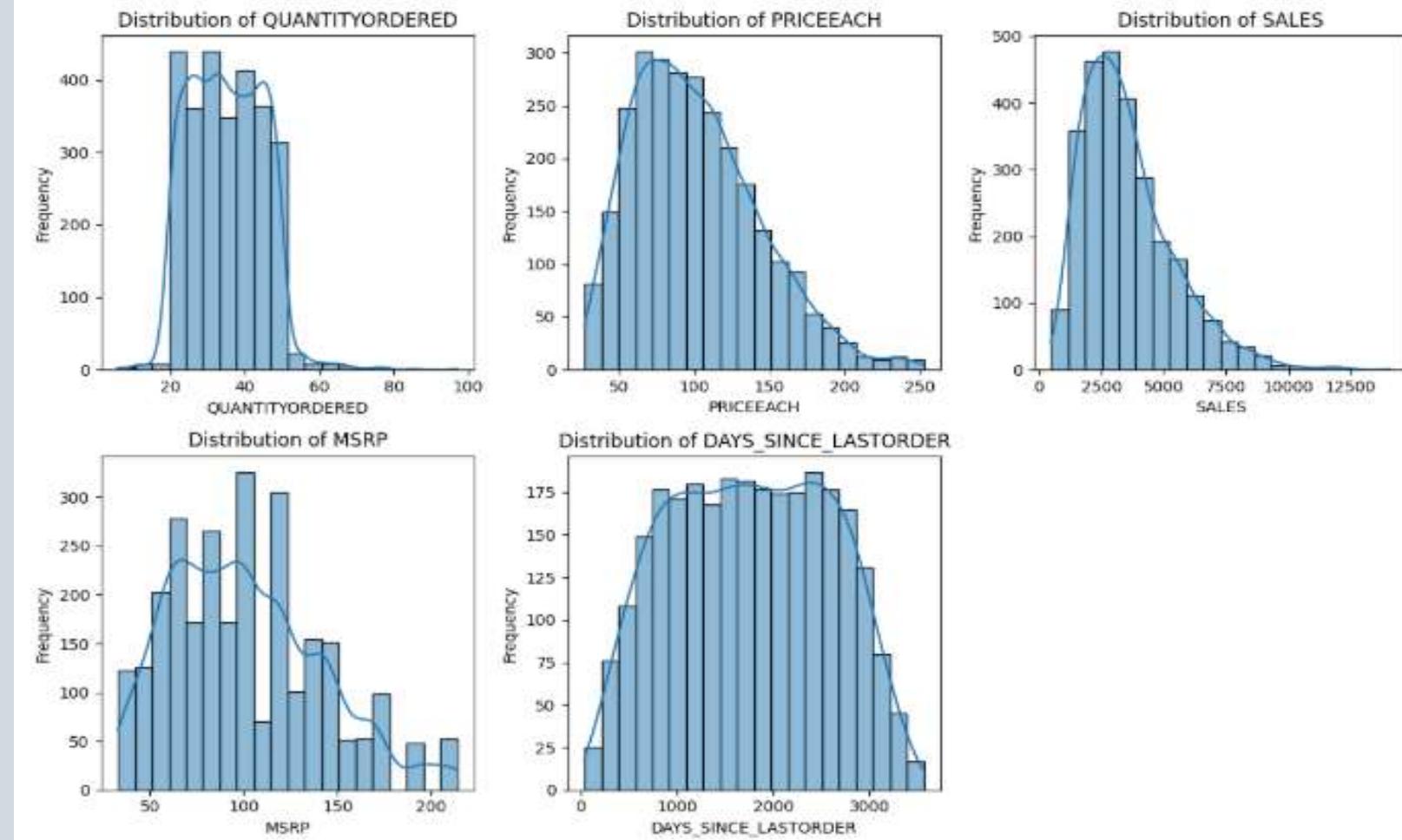
|	SALES	DAYS_SINCE_LASTORDER	MSRP
count	2747.000000	2747.000000	2747.000000
mean	3553.047583	1757.085912	100.691664
std	1838.953901	819.280576	40.114802
min	482.130000	42.000000	33.000000
25%	2204.350000	1077.000000	68.000000
50%	3184.800000	1761.000000	99.000000
75%	4503.095000	2436.500000	124.000000
max	14082.800000	3562.000000	214.000000

# 2. Exploratory Analysis & Insights
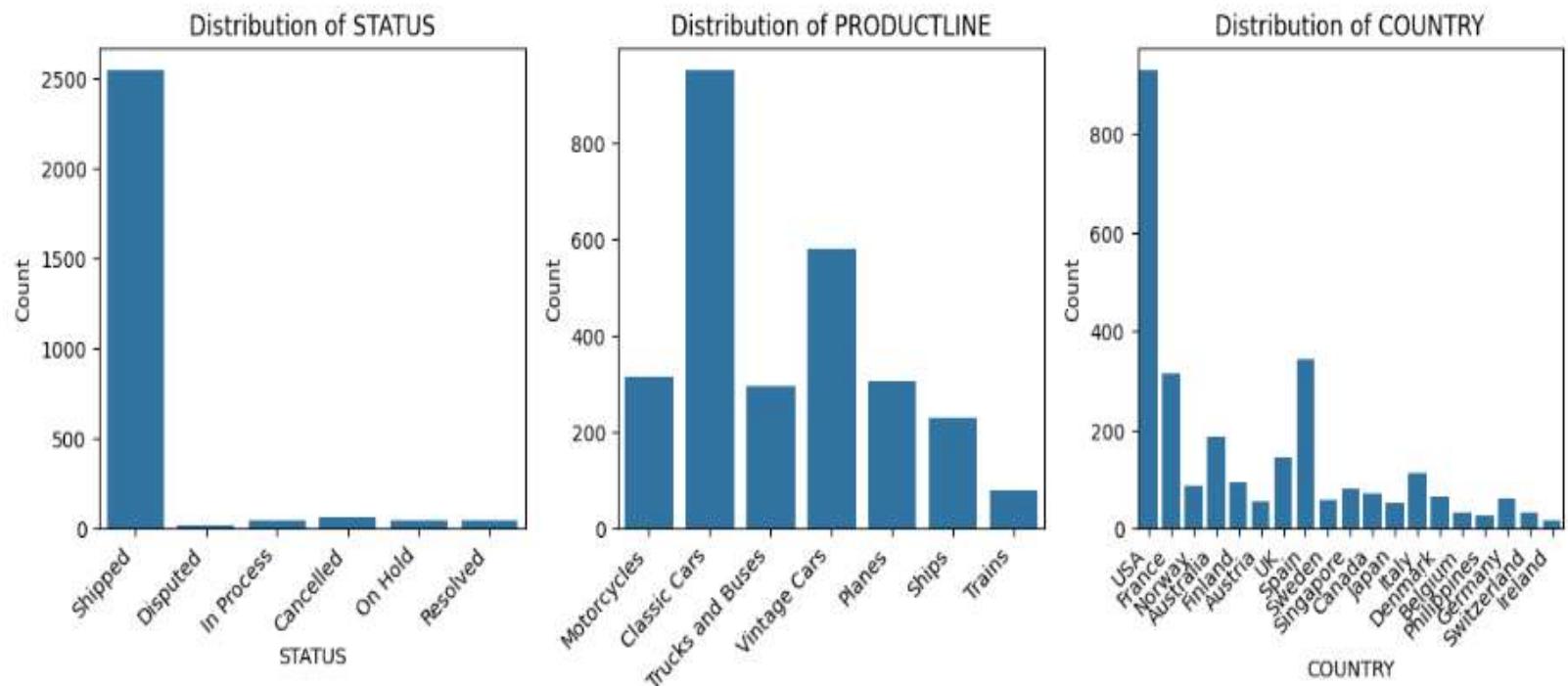
- Univariate, Bivariate, Multivariate & other analyses
- Weekly, Monthly, Quarterly, and Yearly Weekday Trends in Sales count
- Summary and Recommendations

Univariate Analysis

- **Sales & Pricing Trends**: Most sales come from low to mid-priced products (50-150 range), with few high-value transactions.

- **Order Quantity Patterns**: Two purchasing behaviors exist—one with smaller orders (10-50 units) and another with bulk orders.

- **Customer Purchase Frequency**: Some customers order frequently, while others have long gaps, indicating potential for targeted marketing.

- **Product Pricing Variability**: MSRP shows multiple peaks, suggesting different product categories with distinct pricing strategies.
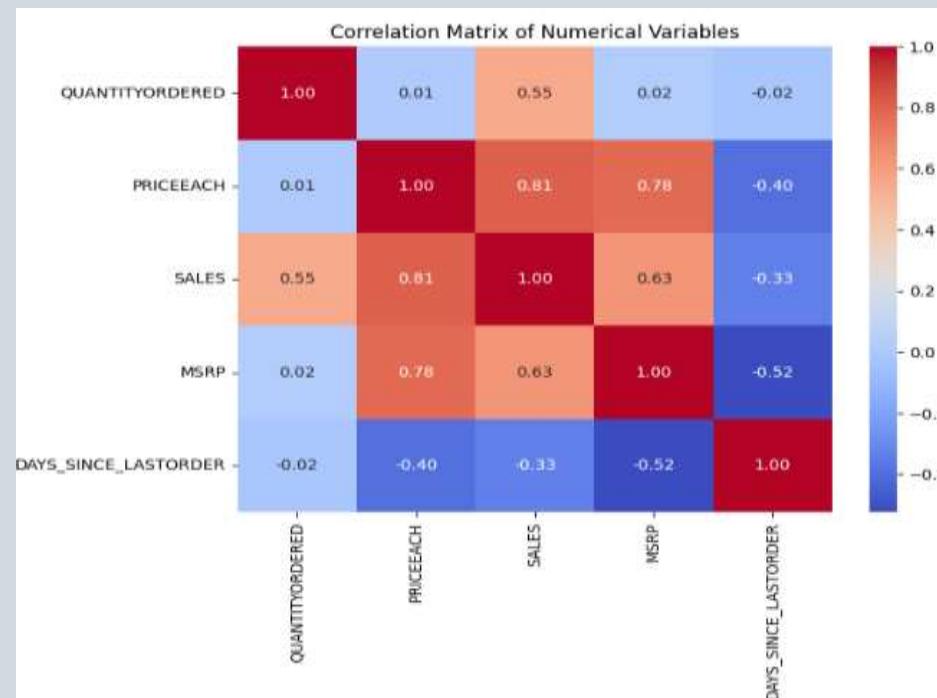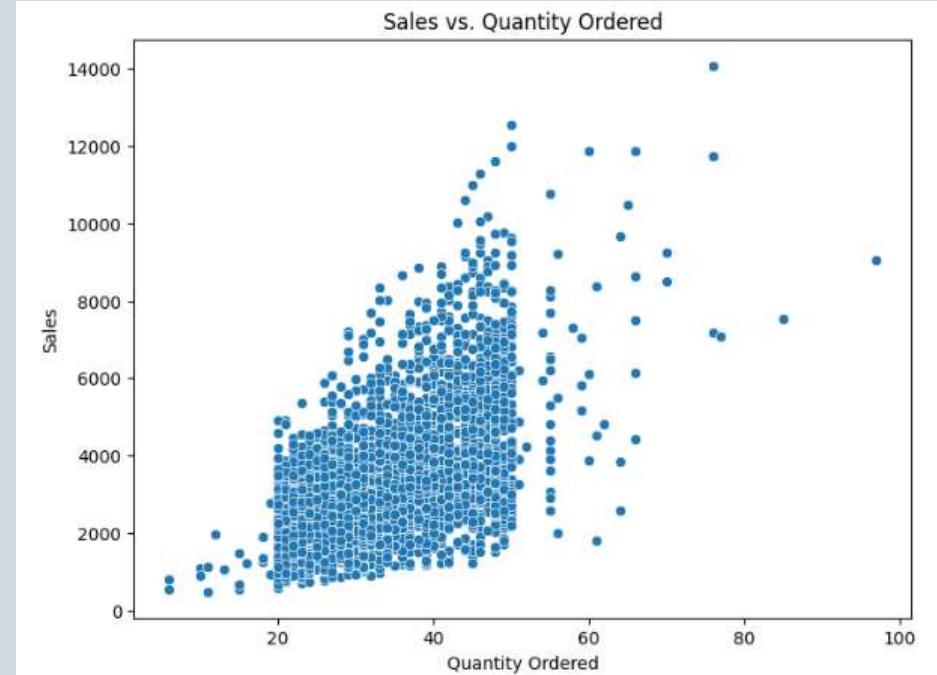
- **Order Status**: The majority of orders are **shipped**, while issues like **disputed or canceled orders** are minimal.

- **Popular Product Lines**: Classic Cars and Vintage Cars dominate sales, whereas **Trains and Phones** have the least demand.

- **Top Markets**: The **USA is the largest market**, followed by select European and Asian countries.

- **Global Reach**: Sales are spread across multiple countries, but a few contribute the majority of transactions.

- **Niche Product Demand**: Motorcycles and Trucks/Buses also have a notable customer base, indicating diversified interests.

- **Potential Growth Areas**: Countries with lower sales volumes present opportunities for targeted marketing and expansion.
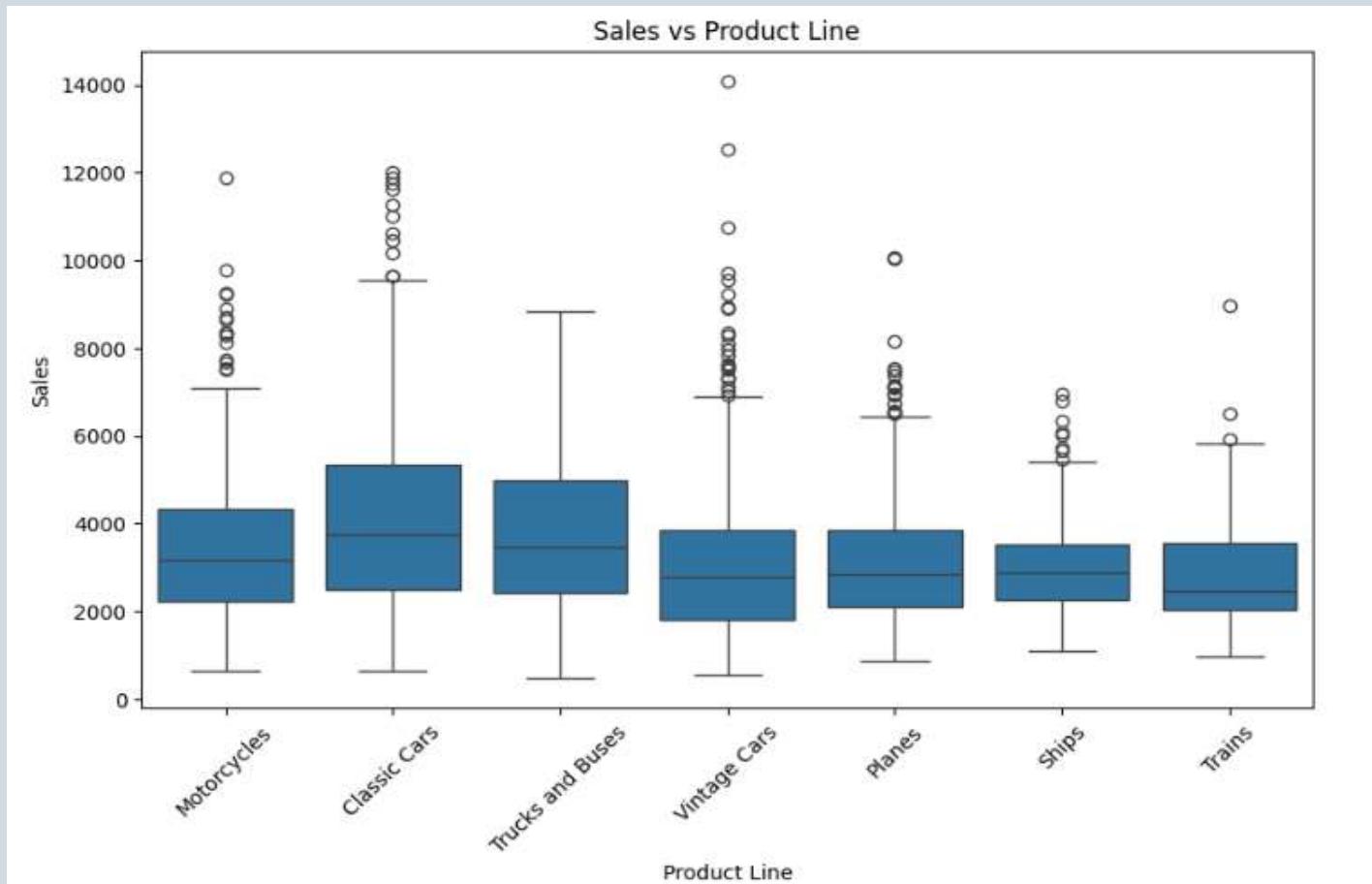
Bivariate Analysis

- **Positive Correlation between Sales & Quantity Ordered**: The scatter plot shows that as the quantity ordered increases, sales also tend to increase, indicating a strong relationship between these variables.

- **High Correlation between Price Each & Sales (0.81)**: The heatmap reveals that price per unit has a strong positive correlation with sales, meaning higher-priced items contribute significantly to total sales.

- **Moderate Correlation between MSRP & Sales (0.63)**: The Manufacturer's Suggested Retail Price (MSRP) has a noticeable impact on sales, suggesting premium products drive revenue.

- **Negative Correlation of DAYS_SINCE_LASTORDER with Sales & Price (-0.33, -0.40)**: The more days since the last order, the lower the sales, indicating that recent transactions drive higher sales performance.
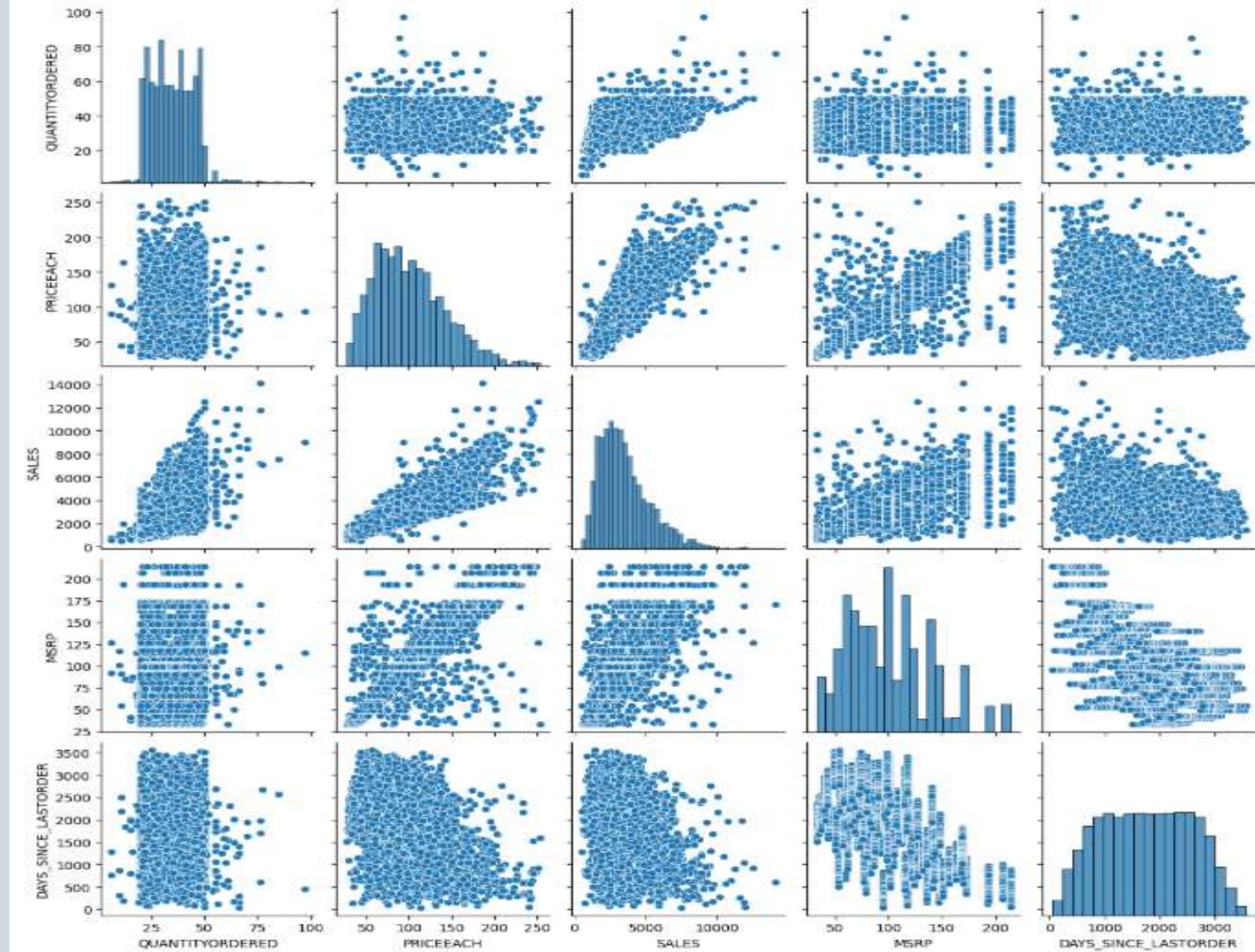
- **Classic Cars & Trucks and Buses** have the highest median sales, indicating strong performance.

- **Outliers** are present in all categories, especially in Classic Cars and Vintage Cars, showing occasional high-value sales.

- **Ships & Trains** have the lowest median sales with less variability, suggesting consistent but lower sales.

- **High variability** in Trucks and Buses, Classic Cars, and Vintage Cars indicates fluctuating sales trends.

- **Motorcycles and Planes** have moderate sales distributions, with several high-value outliers.

- **Sales distribution** across product lines shows significant variation, highlighting differences in demand and pricing strategies.


Sales vs Product Line

Multivariate Analysis
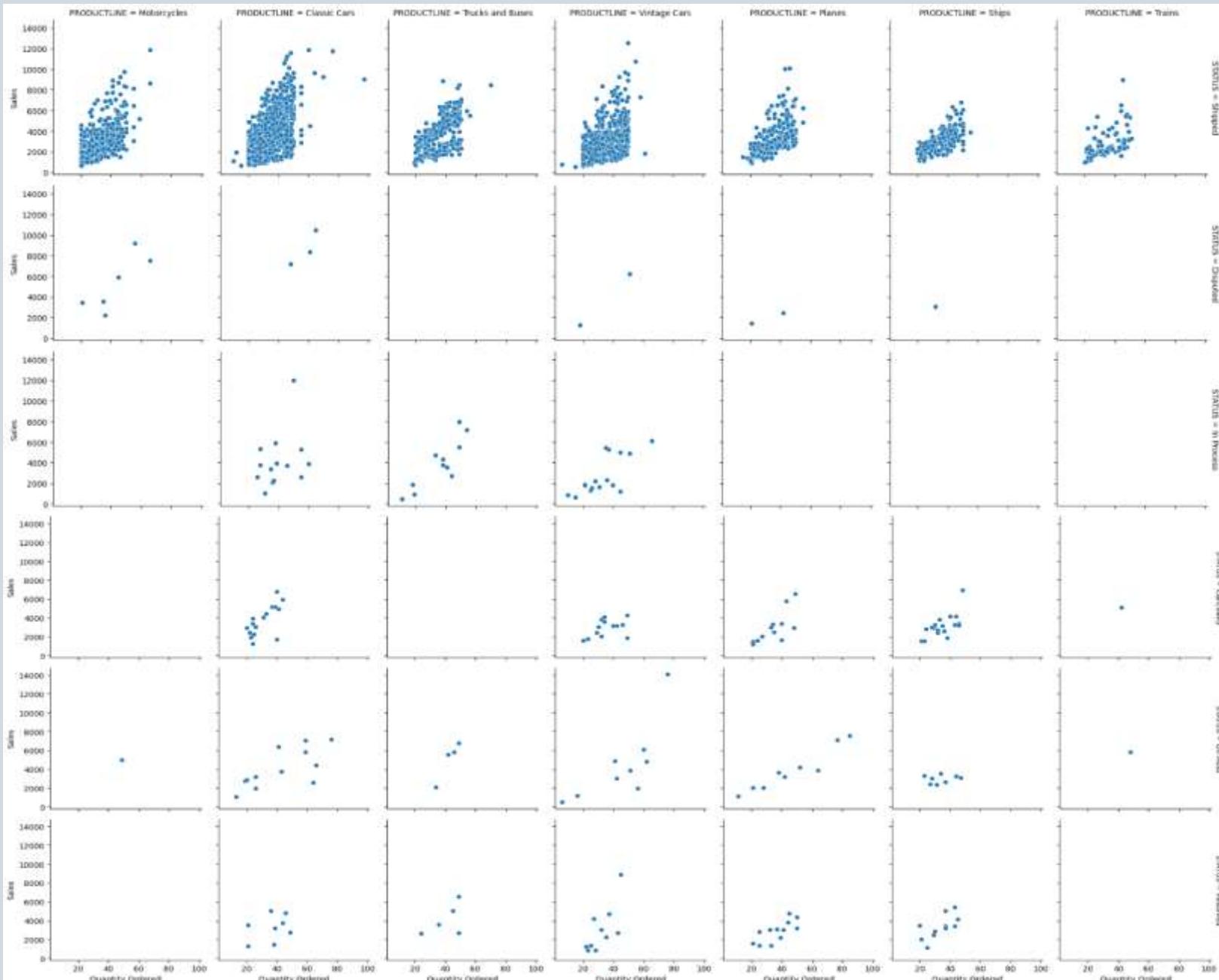
Insights from the Pairplot:

- **Sales vs. Quantity Ordered** – A strong positive correlation is visible, indicating higher sales when more quantity is ordered.

- **Sales vs. Price Each** – A moderate positive relationship suggests that expensive products contribute more to sales.

- **Days Since Last Order** – No clear trend with sales or other variables, implying sporadic ordering behavior.

- **MSRP (Manufacturer's Suggested Retail Price)** – Shows some variation with sales but no strong correlation.

- **Price Each vs. Quantity Ordered** – No clear trend, indicating pricing does not significantly impact the quantity ordered.

- **Distribution Patterns** – Several features, such as Price Each and Quantity Ordered, exhibit skewed distributions.
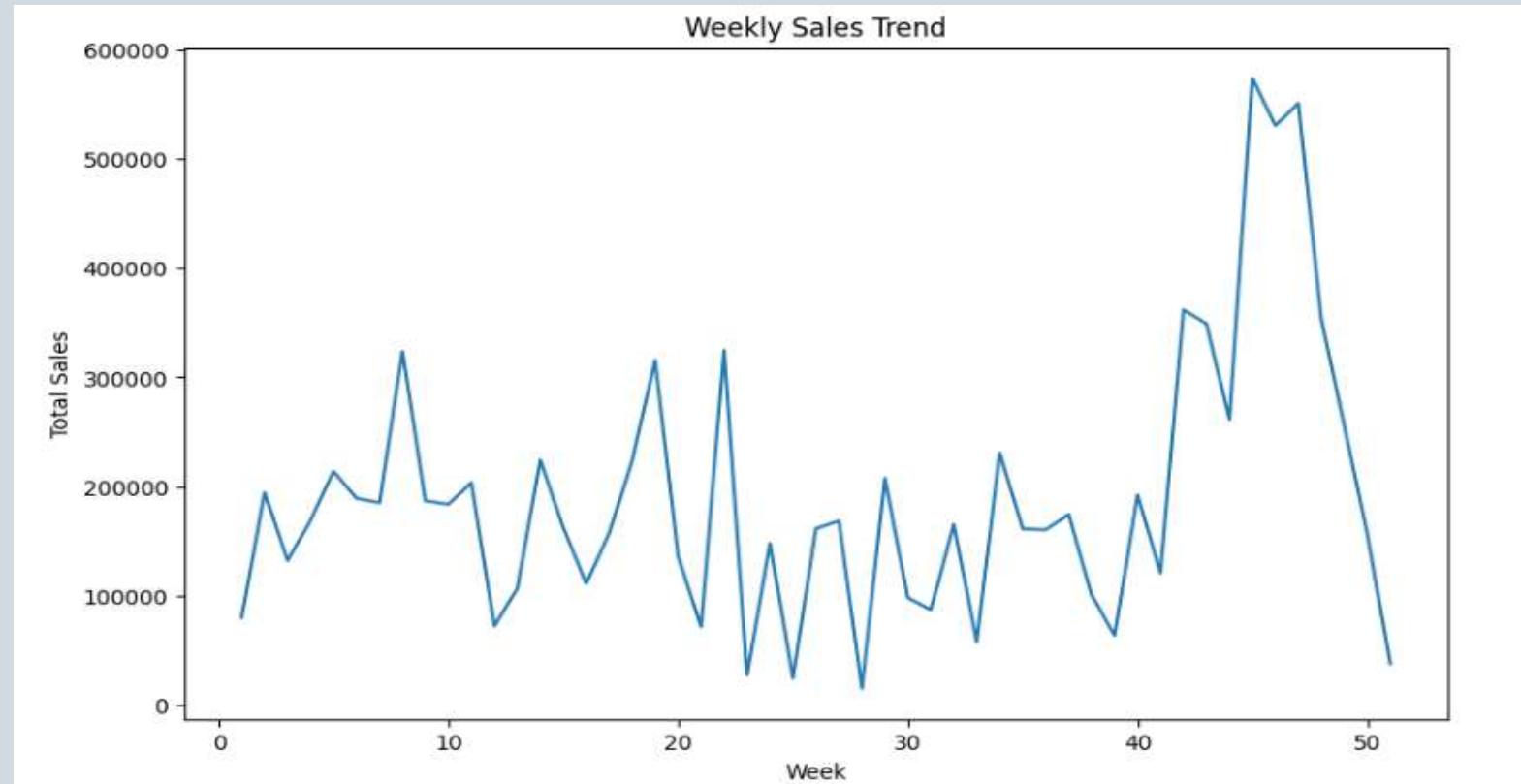
Insights from the FacetGrid Plot:

- **Sales vs. Quantity Ordered by Product Line** – A positive correlation exists across all product lines, with higher quantities leading to higher sales.

- **Classic Cars and Vintage Cars** – These categories show strong clustering, indicating they are frequently ordered in bulk.

- **Motorcycles and Trucks/Buses** – These product lines also follow a strong trend, but sales amounts vary more compared to other categories.

- **Ships and Trains** – These have fewer data points, suggesting they might be niche or less frequently purchased.

- **Status Impact** – Different order statuses (Shipped, Resolved, etc.) do not seem to significantly impact the sales distribution.

- **Variation in Sales Patterns** – While the trend is consistent, the spread of sales varies across product lines, indicating differing demand levels.
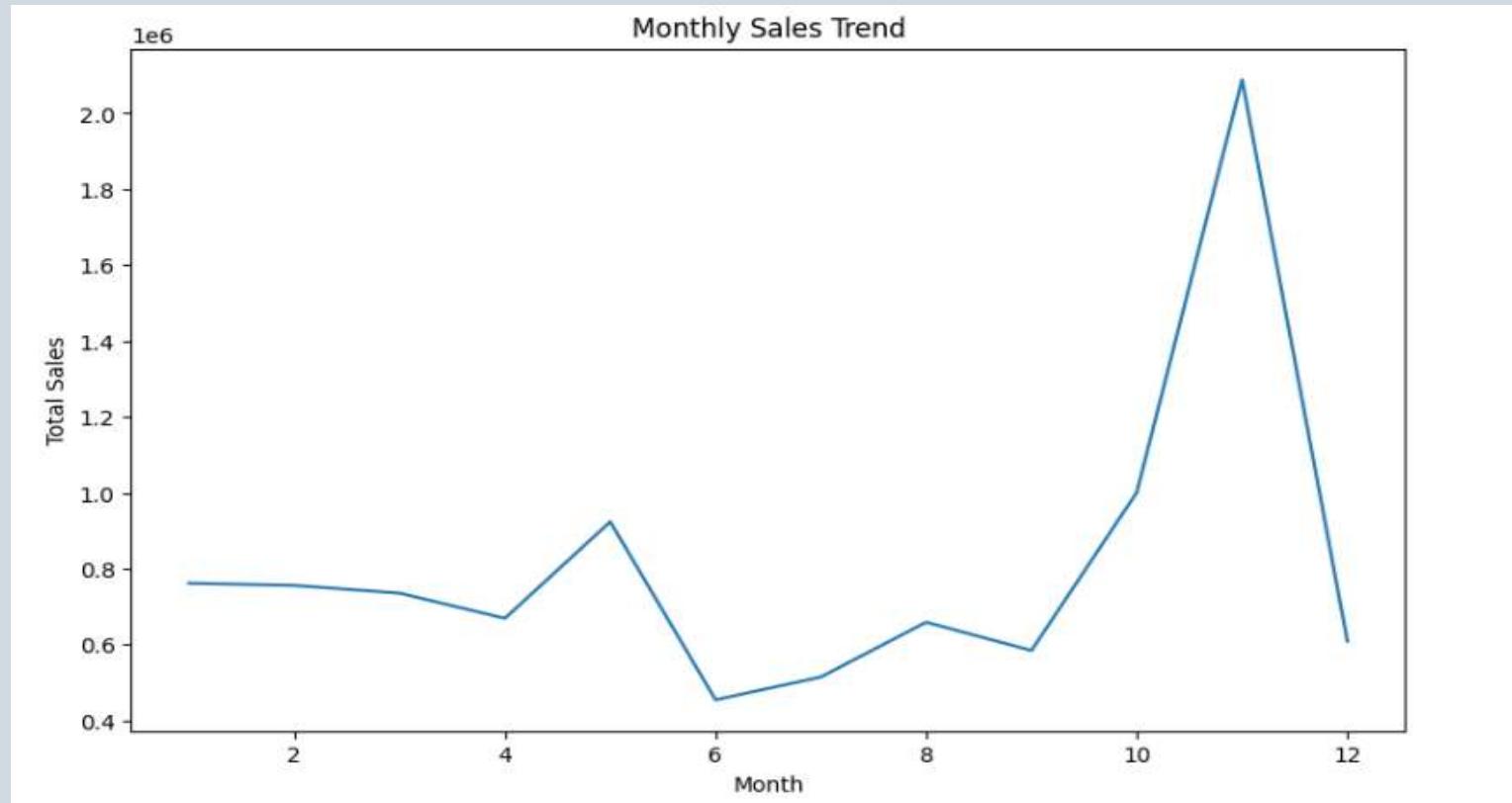
Weekly Trend

- **Fluctuating Sales** – The weekly sales trend shows significant fluctuations, with some weeks experiencing sharp increases and others seeing declines.

- **High Variability** – There are multiple peaks and troughs, indicating periodic surges in sales, possibly due to seasonal demand, promotions, or bulk orders.

- **Strong Sales in Later Weeks** – Sales show a steep rise around weeks 40–45, reaching a peak of nearly 600,000. This could be due to a holiday season, end-of-year sales, or strategic business promotions.

- **Sudden Drop in Sales at the End** – After the peak, sales drop sharply in the last few weeks, possibly due to seasonality or the completion of major bulk orders.

- **Potential for Further Analysis** – Examining monthly or quarterly trends and identifying external factors (such as promotions or economic conditions) could provide deeper insights into the reasons behind the fluctuations.
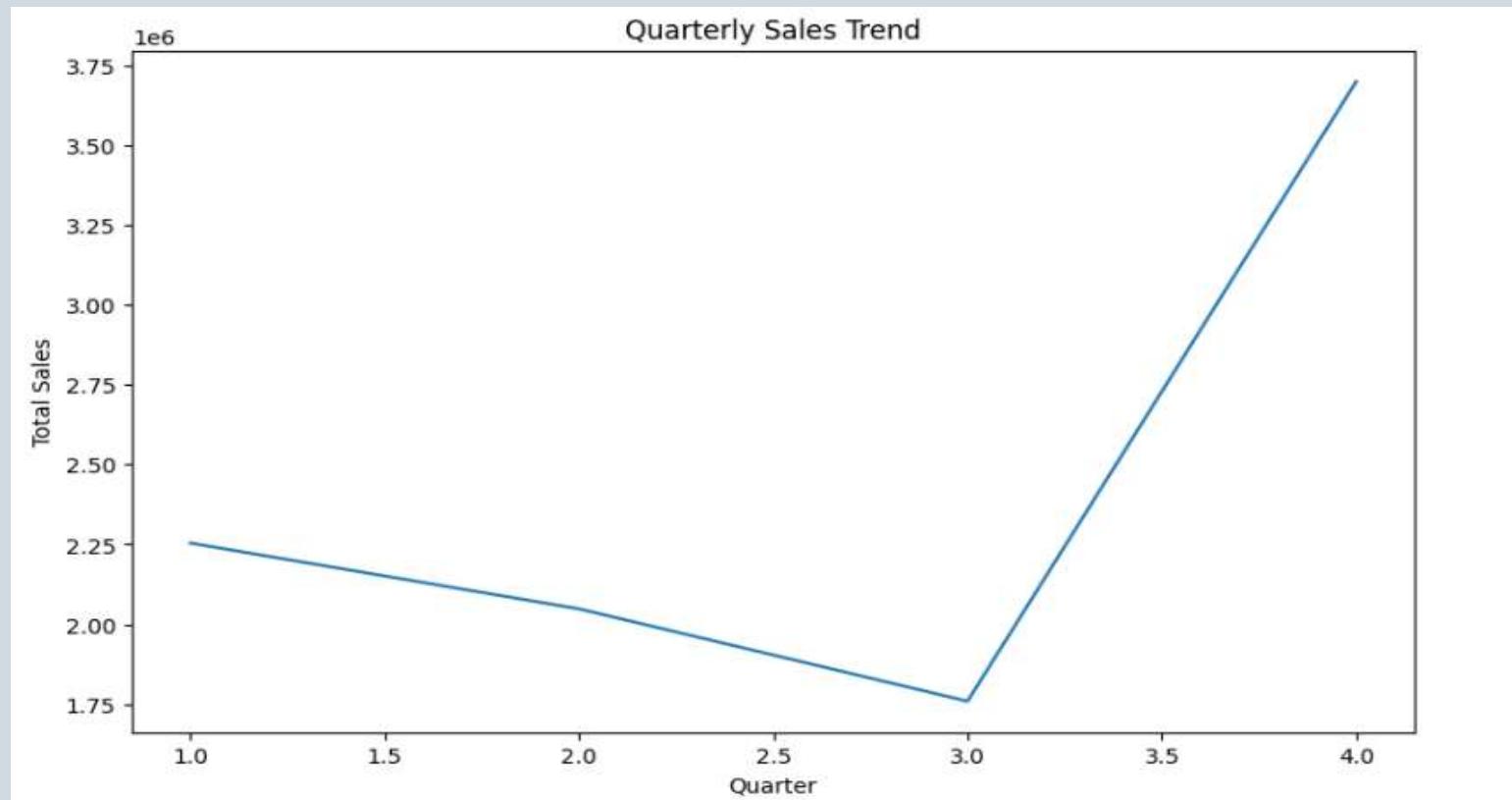
Monthly Trend

- **Peak in November** – Sales experience a significant spike in November, reaching over 2 million. This could indicate a major shopping event, such as holiday sales, end-of-year purchases, or seasonal demand.

- **Gradual Increase Before the Peak** – Sales start increasing from around August, suggesting a buildup to the peak, possibly due to festive or year-end sales strategies.

- **Low Sales Mid-Year (May–July)** – Sales dip around May–July, indicating a potential off-season period where demand is lower.

- **Post-Peak Drop in December** – After the peak in November, sales decline sharply in December, which may be due to customers making bulk purchases before the holiday season.

- **Potential Business Strategy Adjustments** – Understanding why sales peak in November and drop afterward can help in planning marketing campaigns, inventory stocking, and promotional activities. Analyzing sales by product category or region could provide further clarity.
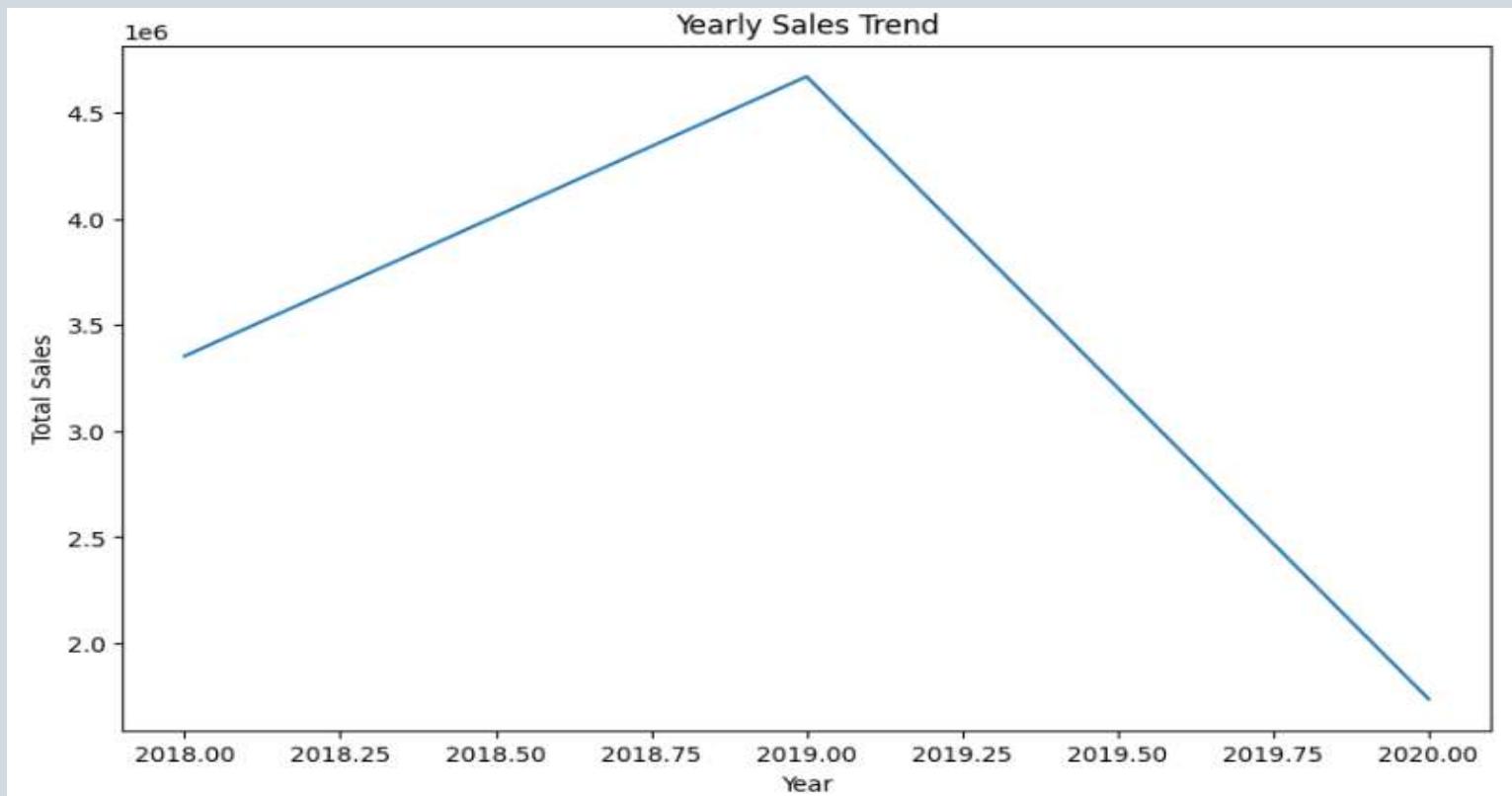
Quarterly Trend

- **Q4 Spike in Sales** – Sales significantly increase in the fourth quarter, reaching the highest value. This aligns with the monthly trend, where November had the highest sales. It suggests seasonal trends, possibly due to holiday shopping, year-end sales, or festival-related purchases.

- **Gradual Decline from Q1 to Q3** – Sales consistently decrease from Q1 to Q3, indicating a lower demand period. This might be due to seasonal variations, fewer promotions, or consumer spending patterns.

- **Sharp Growth in Q4** – The sharp increase in Q4 sales suggests a well-defined peak season. Businesses might be leveraging major sales events, discounts, or year-end budget spending.

- **Business Strategy Recommendations** – Companies could optimize inventory, marketing, and promotions by preparing for high demand in Q4 while exploring strategies to boost sales in the earlier quarters.

Yearly Trend

- **Strong Growth from 2018 to 2019** – Sales increased significantly in 2019, indicating a period of business expansion, possibly due to increased customer demand, successful marketing strategies, or the introduction of new products/services.

- **Sharp Decline in 2020** – The total sales dropped drastically in 2020, suggesting a major disruption. This could be due to external factors such as economic downturns, supply chain issues, or a decline in customer spending.

- **Potential Impact of Global or Market Changes** – Given the timeline, external events like the COVID-19 pandemic may have affected sales in 2020. It's crucial to analyze if lockdowns, changes in consumer behavior, or operational constraints contributed to this drop.

- **Need for Further Investigation** – A deeper analysis is required to identify key reasons for both the peak in 2019 and the decline in 2020. Factors such as changes in pricing, market competition, or seasonality should be examined to understand the trends and plan future strategies.

Summary

- The yearly sales have declined, which is a concerning trend.

- Quarter 4 records the highest sales compared to the other quarters.

- Sales remain steady during the first four months of the year.

- Among all days, Thursday has the lowest sales, while Sunday sees the highest.

- Sales rise from Friday to Sunday and decline from Monday to Thursday.

- Sales are higher at the beginning of the month than in later days.

- The majority of on-hold orders are from the USA, with a few from Sweden.

- Spain, the USA, the UK, and Sweden have a similar number of canceled orders.

- Spain has the highest number of disputes, most of which have been resolved.

- Classic car parts account for the largest share of sales.

Recommendation

- Further analysis is needed to understand the decline in annual sales.

- To capitalize on strong Q4 sales, businesses should boost inventory during this period.

- The reasons for lower sales in the sixth month should be identified and addressed.

- Marketing efforts should focus on Thursdays to boost sales, and weekend promotions can increase Friday-to-Sunday sales.

- Offering discounts early in the month could drive sales. Orders on hold should be resolved quickly to prevent revenue loss.

- Canceled orders should be monitored for trends, and disputes should be resolved promptly to maintain customer satisfaction.

- Given the strong sales of classic car parts, businesses should consider expanding their inventory of these items.

3. Customer Segmentation using RFM analysis
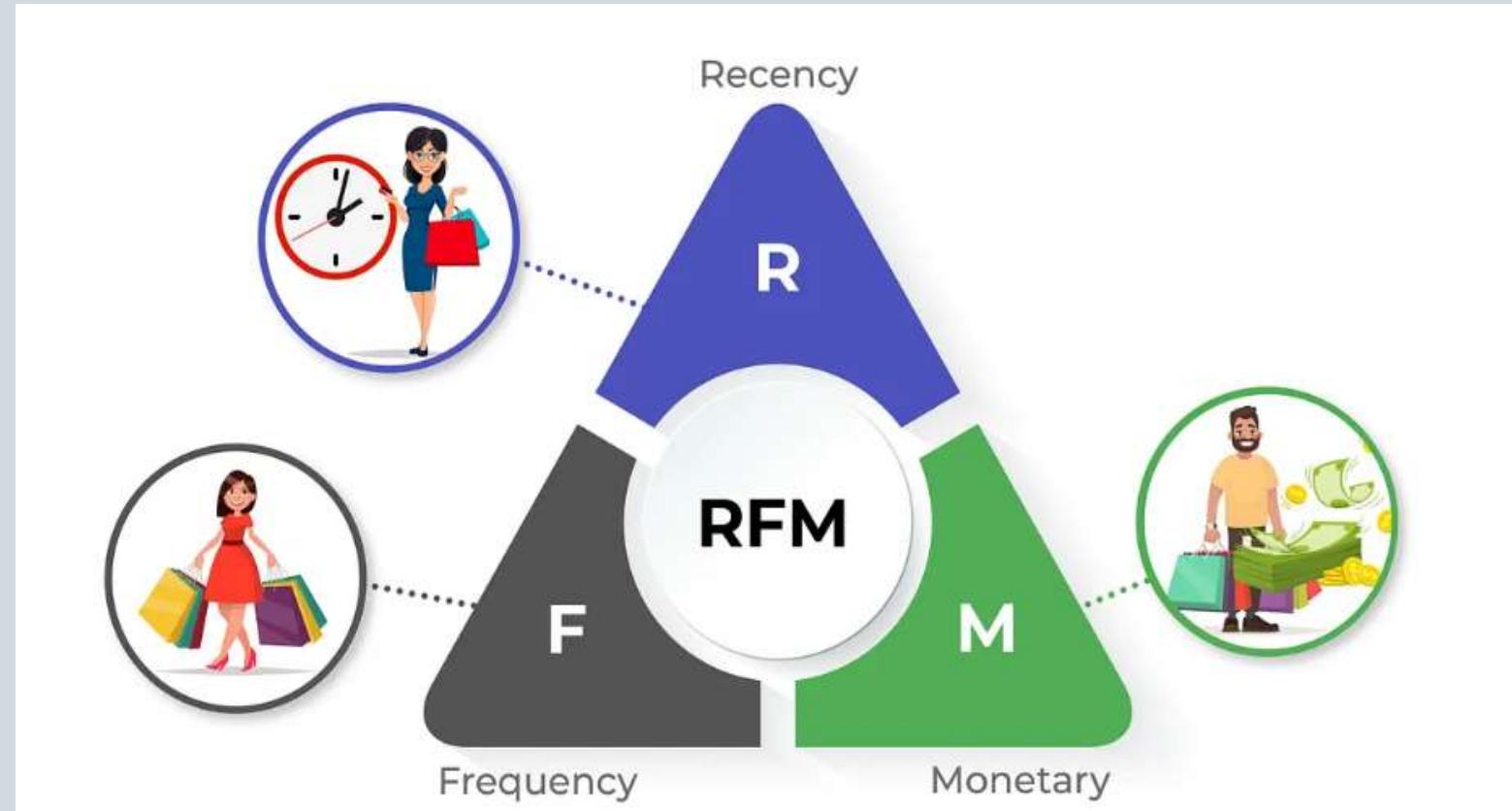
- What is RFM and which tool used
- What all parameters used and assumptions made
- KNIME workflow
- Output Table

What is RFM ?

Recency, Frequency, Monetary Value (RFM) is a marketing analysis tool used to identify a firm's most valuable customers based on their purchasing behavior.
An RFM analysis evaluates customers by scoring them in three categories:

- **Recency**: How recently a customer made a purchase.

- **Frequency**: How often a customer makes a purchase.

- **Monetary**: How much a customer spends.

This analysis helps businesses understand customer loyalty and target their marketing efforts more effectively.

Tool used : KNIME

KNIME, short for Konstanz Information Miner, is an open-source, free platform for data analytics, reporting, and integration.

Segmentation
Segmentation refers to the process of dividing customers into distinct groups based on shared characteristics, behaviors, or needs. This enables businesses to tailor marketing strategies, products, and services to meet the specific demands of each segment more effectively.

In the context of RFM, segmentation helps categorize customers based on their **Recency**, **Frequency**, and **Monetary** scores. By grouping customers into segments such as "high-value," "at-risk," or "new customers," businesses can prioritize efforts and design personalized campaigns that maximize engagement and profitability.

With tools like **KNIME**, segmentation becomes even more powerful. KNIME allows businesses to apply RFM analysis and other data mining techniques to create meaningful customer segments, visualize patterns, and enhance decision-making.

R	F	M	
1	1	1	= Low profit = NO
2	2	2	= At risk = YES
2	2	3	= High end = NO
0	0	1	= Lost = NO
3	3	3	= Loyal = YES

What all parameters used and assumptions made

Assuming **01-06-2020 (June 1, 2020)** as the reference date for recency calculation is a valid approach.

Justification:

- The **maximum order date in the dataset is May 31, 2020**. Setting **June 1, 2020**, as the reference ensures that recency is calculated consistently for all customers.

- **Formula for Recency:** Recency=Reference Date−Last Order Date\text{Recency} = \text{Reference Date} - \text{Last Order Date} Recency=Reference Date−Last Order Date
  - If a customer last ordered on **May 31, 2020**, their recency = **1 day**.
  - If a customer last ordered on **May 15, 2020**, their recency = **17 days**.
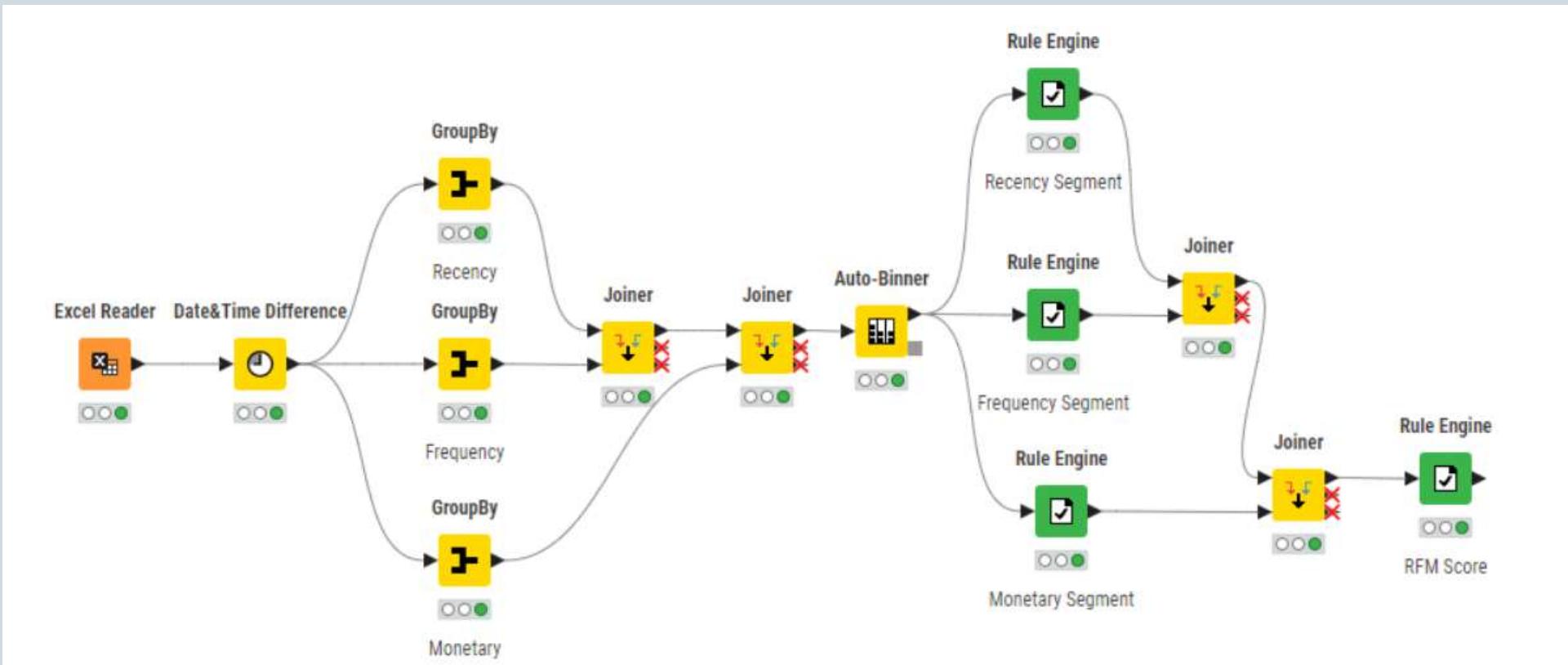
Ignoring the "Days Since Last Order" column and recalculating recency ensures data integrity and avoids errors from precomputed values.

The formulas are defined as follows:

- **Recency:** The minimum recency value for each customer.

- **Frequency:** The total count of unique customer names per customer. Alternatively, order quantity can be used.

   Monetary: The total sum of (unit price × quantity ordered) per customer. Alternatively, sales can be considered.

Based on these calculations, customers are categorized into three groups: **High, Medium, and Low**.

KNIME workflow

Output Table

#	RowID	CUSTOMERN... String	Min*(Recency) Number (long)	Count*(ORDE... Number (integer)	Sum(SALES) Number (double)	Min*(Recenc... String	Count*(ORDE... String	Sum(SALES) ... String	Recency Seg... String	Frequency Se... String	Monetary Se... String	RFM score String
1	Row0_	AV Stores, Co.	197	51	157,807.81	Bin 2	Bin 3	Bin 3	Medium	High	High	Loyal Customer
2	Row1_	Alpha Cognac	65	20	70,488.44	Bin 1	Bin 1	Bin 1	High	Low	Low	Other
3	Row2_	Amica Models & Cc	266	26	94,117.26	Bin 3	Bin 2	Bin 2	Low	Medium	Medium	At Risk
4	Row3_	Anna's Decorations	84	46	153,996.13	Bin 1	Bin 3	Bin 3	High	High	High	Best Customer
5	Row4_	Atelier graphique	189	7	24,179.96	Bin 2	Bin 1	Bin 1	Medium	Low	Low	Other
6	Row5_	Australian Collectal	23	23	64,591.46	Bin 1	Bin 2	Bin 1	High	Medium	Low	Other
7	Row6_	Australian Collecto	185	55	200,995.41	Bin 2	Bin 3	Bin 3	Medium	High	High	Loyal Customer
8	Row7_	Australian Gift Netv	120	15	59,469.12	Bin 2	Bin 1	Bin 1	Medium	Low	Low	Other
9	Row8_	Auto Assoc. & Cie.	234	18	64,834.32	Bin 3	Bin 1	Bin 1	Low	Low	Low	Lost Customer
10	Row9_	Auto Canal Petit	55	27	93,170.66	Bin 1	Bin 2	Bin 2	High	Medium	Medium	Other
11	Row10	Auto-Moto Classics	181	8	26,479.26	Bin 2	Bin 1	Bin 1	Medium	Low	Low	Other
12	Row11	Baane Mini Imports	209	32	116,599.19	Bin 2	Bin 3	Bin 3	Medium	High	High	Loyal Customer
13	Row12	Bavarian Collectabl	260	14	34,993.92	Bin 3	Bin 1	Bin 1	Low	Low	Low	Lost Customer
14	Row13	Blauer See Auto, Cc	209	22	85,171.59	Bin 2	Bin 1	Bin 2	Medium	Low	Medium	Other
15	Row14	Boards & Toys Co.	114	3	9,129.35	Bin 1	Bin 1	Bin 1	High	Low	Low	Other
16	Row15	CAF Imports	440	13	49,642.05	Bin 3	Bin 1	Bin 1	Low	Low	Low	Lost Customer
17	Row16	Cambridge Collects	390	11	36,163.62	Bin 3	Bin 1	Bin 1	Low	Low	Low	Lost Customer
18	Row17	Canadian Gift Exch	223	22	75,238.92	Bin 3	Bin 1	Bin 1	Low	Low	Low	Lost Customer
19	Row18	Classic Gift Ideas, I	231	21	67,506.97	Bin 3	Bin 1	Bin 1	Low	Low	Low	Lost Customer
20	Row19	Classic Legends In	193	20	77,795.2	Bin 2	Bin 1	Bin 2	Medium	Low	Medium	Other
21	Row20	Clover Collections,	259	16	57,756.43	Bin 3	Bin 1	Bin 1	Low	Low	Low	Lost Customer

4. Inferences from RFM Analysis and identified segments

- Top 5 customers(Best customers)
- Customers are on the verge of churning
- Loyal customers
- Lost customers

Top 5 customers(Best customers)

#	RowID	CUSTOMERN... String	Min*(Rec... ↑ Number (long)	Count*(ORDE... Number (integer)	Sum(SALES) Number (double)	Min*(Recenc... String	Count*(ORDE... String	Sum(SALES) ... String	Recency Seg... String	Frequency Se... String	Monetary Se... String	RFM score String
	Ro	CUSTOMERNAI	Min*(Recency)	Count*(ORDERI	Sum(SALES)	Min*(Rece... ⌄	Count*(OR... ⌄	Sum(SALE... ⌄	1 selected ⌄	Frequency ⌄	Monetary S... ⌄	1 selected ⌄
33	Row32	Euro Shopping Chai	1	259	912,294.11	Bin 1	Bin 3	Bin 3	High	High	High	Best Customer
44	Row43	La Rochelle Gifts	1	53	180,124.9	Bin 1	Bin 3	Bin 3	High	High	High	Best Customer
28	Row27	Diecast Classics Ini	2	31	122,138.14	Bin 1	Bin 3	Bin 3	High	High	High	Best Customer
54	Row53	Mini Gifts Distributc	3	180	654,858.06	Bin 1	Bin 3	Bin 3	High	High	High	Best Customer
73	Row72	Souveniers And Thi	3	46	151,570.98	Bin 1	Bin 3	Bin 3	High	High	High	Best Customer
68	Row67	Salzburg Collectabl	15	40	149,798.63	Bin 1	Bin 3	Bin 3	High	High	High	Best Customer
42	Row41	L'ordine Souveniers	22	39	142,601.33	Bin 1	Bin 3	Bin 3	High	High	High	Best Customer

- High Sales: These are the top 5 customers based on high sales amounts ($142,601 to $912,294).
- High Engagement: All customers have recent activity (Recency Bin 1) and frequent orders.
- "Best Customer": Identified through high recency, frequency, and monetary values in the RFM score.

Customers are on the verge of churning

#	RowID	CUSTOMERN... String	Min*(Rec... ↓ Number (long)	Count*(ORDE... Number (integer)	Sum(SALES) Number (double)	Min*(Recenc... String	Count*(ORDE... String	Sum(SALES) ... String	Recency Seg... String	Frequency Se... String	Monetary Se... String	RFM score String
	Ro:	CUSTOMERNAM	Min*(Recency)	Count*(ORDERM	Sum(SALES)	2 selected ⌄	Count*(OR... ⌄	2 selected ⌄	2 selected ⌄	2 selected ⌄	2 selected ⌄	1 selected ⌄
22	Row21	Collectable Mini De	461	25	87,489.23	Bin 3	Bin 2	Bin 2	Low	Medium	Medium	At Risk
57	Row56	Norway Gifts By Ma	285	24	79,224.23	Bin 3	Bin 2	Bin 2	Low	Medium	Medium	At Risk
3	Row2_	Amica Models & Co	266	26	94,117.26	Bin 3	Bin 2	Bin 2	Low	Medium	Medium	At Risk
48	Row47	Marta's Replicas Cc	232	27	103,080.38	Bin 3	Bin 2	Bin 2	Low	Medium	Medium	At Risk
52	Row51	Mini Classics	230	26	85,555.99	Bin 3	Bin 2	Bin 2	Low	Medium	Medium	At Risk
81	Row80	Toms Spezialitten, I	229	26	100,306.58	Bin 3	Bin 2	Bin 2	Low	Medium	Medium	At Risk
39	Row38	Heintze Collectable	223	27	100,595.55	Bin 3	Bin 2	Bin 2	Low	Medium	Medium	At Risk

- Low Engagement: These customers show low recency (Recency Segment: Low and Bin 2/Bin 3), indicating they haven't made recent purchases.
- Medium Frequency & Spending: Their purchase frequency and monetary value are generally medium, suggesting they still engage occasionally but are at risk.
- At Risk: All customers are labeled "At Risk" in the RFM score.

Lost customers

#	RowID	CUSTOMERN... String	Min*(Rec... Number (long)	Count*(ORDE... Number (integer)	Sum(SALES) Number (double)	Min*(Recenc... String	Count*(ORDE... String	Sum(SALES) ... String	Recency Seg... String	Frequency Se... String	Monetary Se... String	RFM score String
		Ro	CUSTOMERNAM	Min*(Recency)	Count*(ORDERN	Sum(SALES)	Min*(Rece...	Count*(OR...	Sum(SALE...	1 selected	1 selected	1 selected	1 selected
30	Row29	Double Decker Gift	496	12	36,019.04	Bin 3	Bin 1	Bin 1	Low	Low	Low	Lost Customer
88	Row87	West Coast Collect:	489	13	46,084.64	Bin 3	Bin 1	Bin 1	Low	Low	Low	Lost Customer
71	Row70	Signal Collectibles I	477	15	50,218.51	Bin 3	Bin 1	Bin 1	Low	Low	Low	Lost Customer
26	Row25	Daedalus Designs I	466	20	69,052.41	Bin 3	Bin 1	Bin 1	Low	Low	Low	Lost Customer
16	Row15	CAF Imports	440	13	49,642.05	Bin 3	Bin 1	Bin 1	Low	Low	Low	Lost Customer
60	Row59	Osaka Souveniers C	415	20	67,605.07	Bin 3	Bin 1	Bin 1	Low	Low	Low	Lost Customer

- Low Engagement: These customers have very low recency (Recency Segment: Low), indicating they haven't purchased in a long time.
- Low Frequency & Spending: All customers have low purchase frequency and low spending, as shown in the Frequency Segment and Monetary Segment.
- "Lost Customer": All are classified as "Lost Customer" in the RFM score, signaling complete disengagement.

Loyal customers

	#	RowID	CUSTOMERN... String	Min*(Recency) Number (long)	Count*(ORDE... Number (integer)	Sum(SAL... ↓ Number (double)	Min*(Recenc... String	Count*(ORDE... String	Sum(SALES) ... String	Recency Seg... String	Frequency Se... String	Monetary Se... String	RFM score String
		Ro	CUSTOMERNAM	Min*(Recency)	Count*(ORDERN	Sum(SALES)	Min*(Rece... ∨	Count*(OR... ∨	Sum(SALE... ∨	Recency Se... ∨	Frequency ... ∨	Monetary S... ∨	1 selected ∨
☐	7	Row6_	Australian Collector	185	55	200,995.41	Bin 2	Bin 3	Bin 3	Medium	High	High	Loyal Customer
☐	56	Row55	Muscle Machine In	183	48	197,736.94	Bin 2	Bin 3	Bin 3	Medium	High	High	Loyal Customer
☐	45	Row44	Land of Toys Inc.	199	49	164,069.44	Bin 2	Bin 3	Bin 3	Medium	High	High	Loyal Customer
☐	1	Row0_	AV Stores, Co.	197	51	157,807.81	Bin 2	Bin 3	Bin 3	Medium	High	High	Loyal Customer
☐	65	Row64	Rovelli Gifts	202	48	137,955.72	Bin 2	Bin 3	Bin 3	Medium	High	High	Loyal Customer
☐	58	Row57	Online Diecast Crea	210	34	131,685.3	Bin 2	Bin 3	Bin 3	Medium	High	High	Loyal Customer

- High Frequency: These customers place frequent orders (Frequency Segment: High) with consistent engagement.
- Medium Recency: Most of these customers have a medium level of recent interaction (Recency Segment: Medium).
- Loyal Status: All customers are categorized as "Loyal Customer" in the RFM score.

5. Recommendation

Based on RFM analysis, customers can be classified into four groups: best customers, loyal customers, customers on the verge of churning, and lost customers. Implementing a tailored approach for each group is crucial to improving customer retention and enhancing their overall experience.

- Best Customers: To maintain their loyalty, it's essential to offer personalized recognition, exclusive deals, and special incentives. Strengthening their connection with our brand will encourage long-term commitment.

- Customers on the Verge of Churning: A proactive strategy is needed to retain these customers. Conducting surveys, offering targeted incentives, and personalizing communication can help address their concerns and rebuild their trust in our brand.

- Lost Customers: Analyzing their behavior and preferences can reveal the reasons behind their departure. Understanding these factors allows us to implement targeted strategies to prevent future churn and enhance our overall retention efforts.

- Loyal Customers: Providing periodic discounts and special offers can keep them engaged and deepen their relationship with our brand. By nurturing their loyalty, we can convert them into our most valuable customers.

THANK YOU