Marketing Insights for E-Commerce Company

Direction of Analysis

- Detailed exploratory data analysis (EDA) focusing on customer acquisition and retention on a monthly basis.

- Delved into the impact of discounts on revenues, analyze key performance indicators (KPIs) like revenue, number of orders, average order value, customer quantity, and more, across different dimensions such as category, month, week, and day.

- Identifying trends and seasonality in sales, understanding variations in order numbers and sales on different days, and calculating various metrics like revenue, marketing spend, and delivery charges by month are critical components of the analysis.

- Assessing the influence of marketing spend on revenue, identifying products in transactions, and determining which products are frequently purchased together through exploratory and market basket analysis are also key steps.

- Predicting customer lifetime value, exploring cross-selling opportunities add depth to the analysis.

- Performing cohort analysis by examining customer behaviour based on cohorts starting in each month and identifying the month cohort with maximum retention is integral to gaining comprehensive insights into the business dynamics

Business KPI's

Total Revenue	No of Customer	No of Orders	Average Order Value
4,541,725	1,486	25,061	181.2

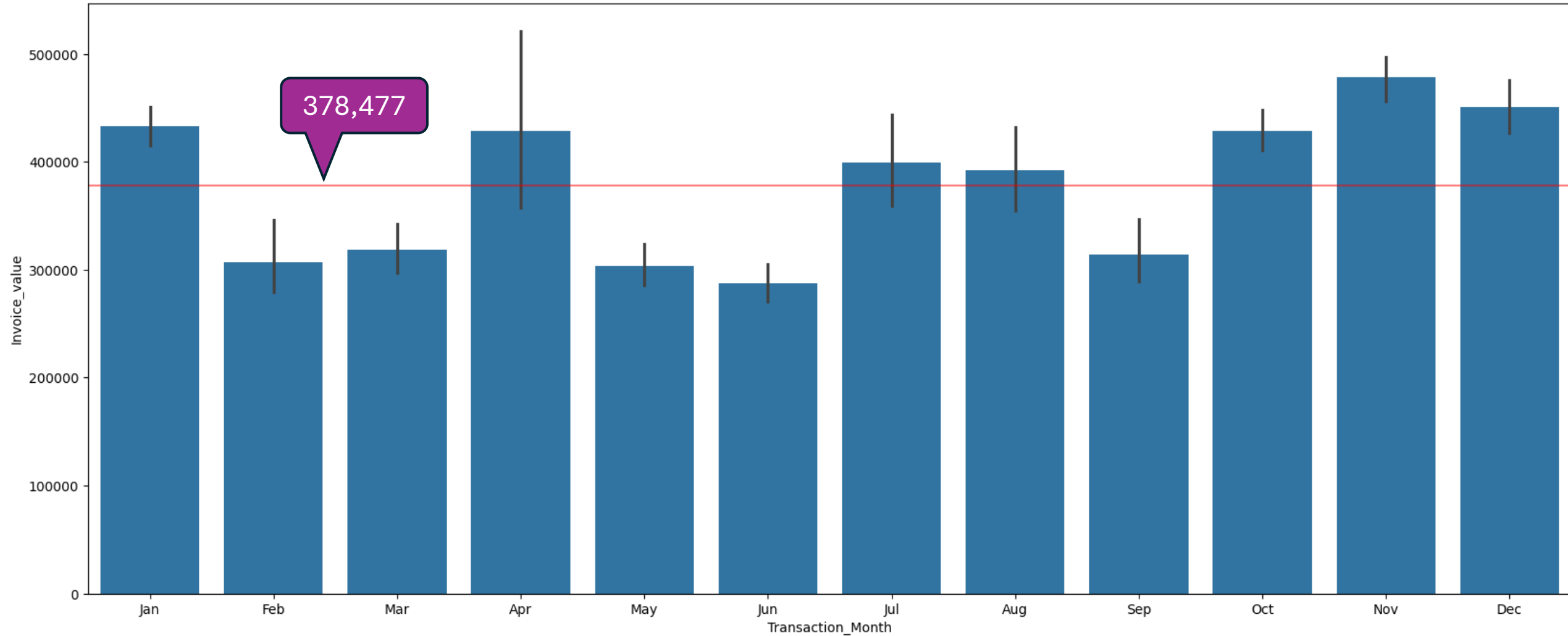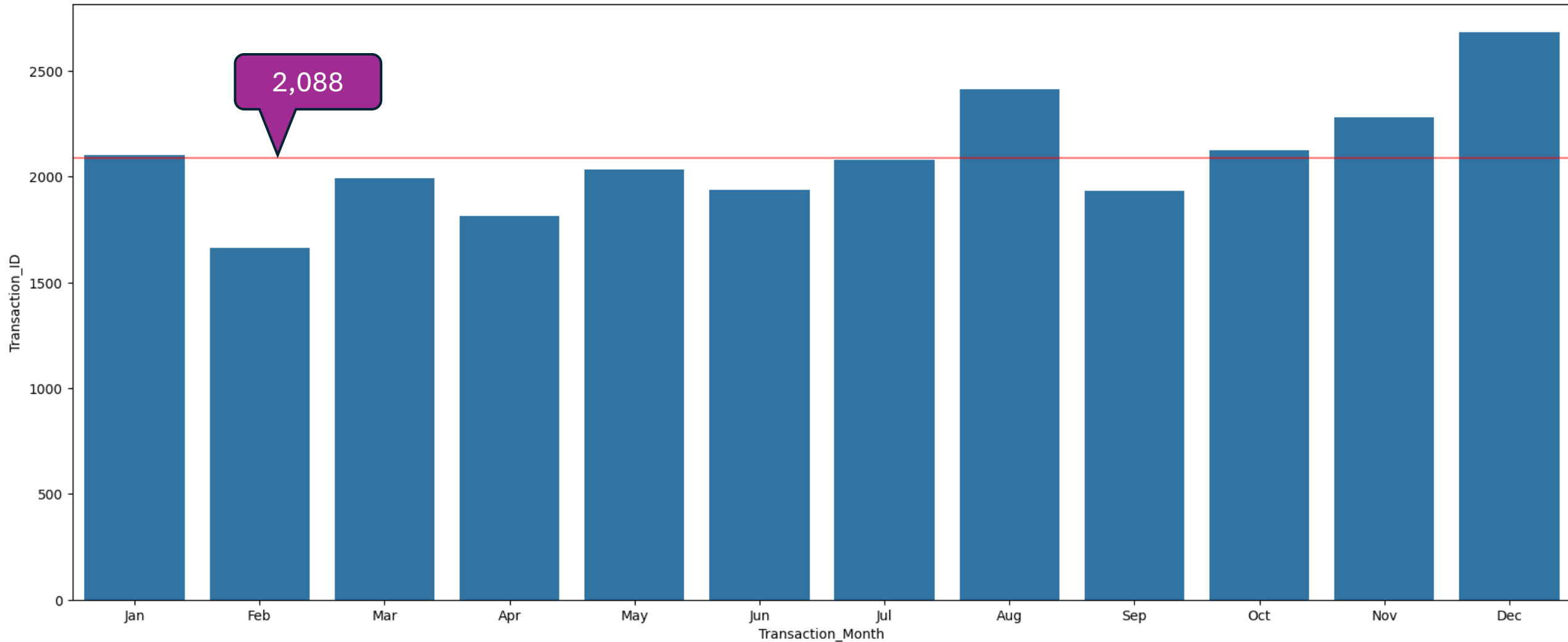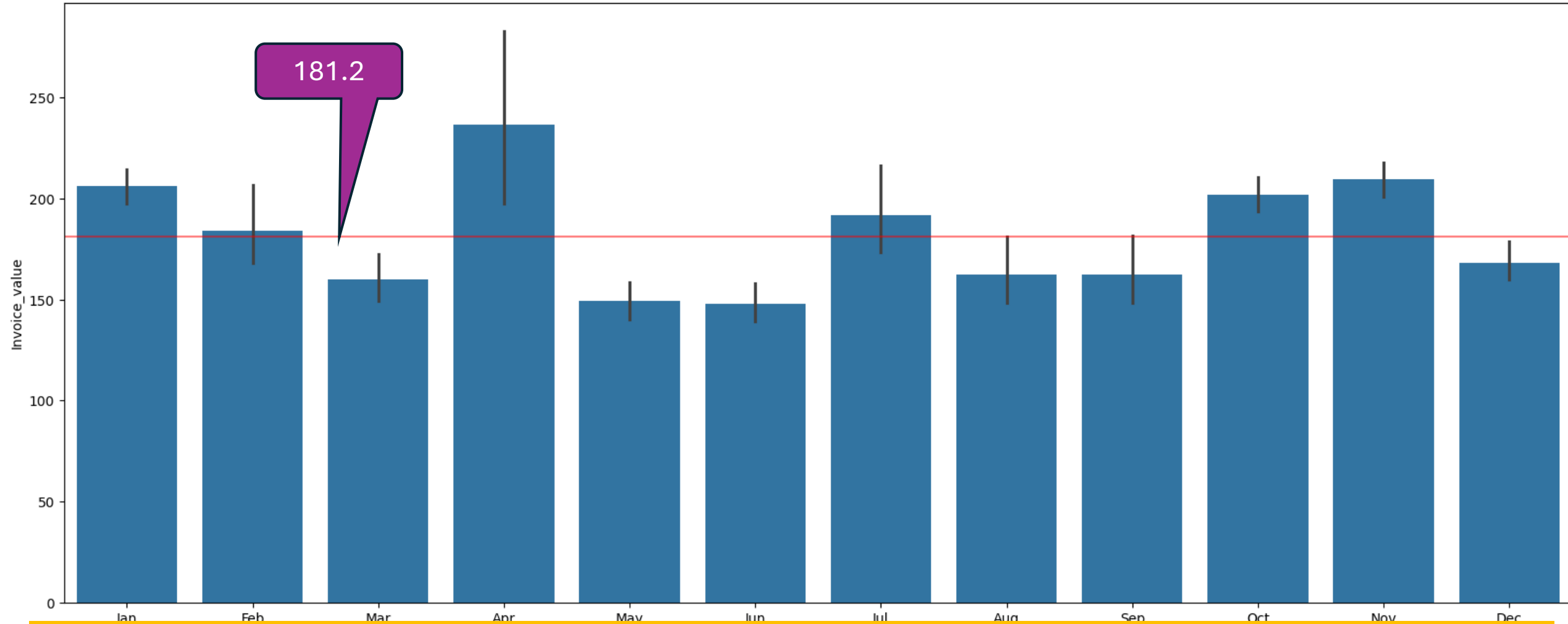| Total Marketing Spent	No of Products	No of Cities Served	Delivery Charges
1,733,546	1,145	5	220,522 [4.8% of Total Invoice]

Month wise Revenue

- Peak Revenue was Observed in the Month Oct ~ Jan
- Lowest revenue was Observed in the Months May~June & Feb~Mar
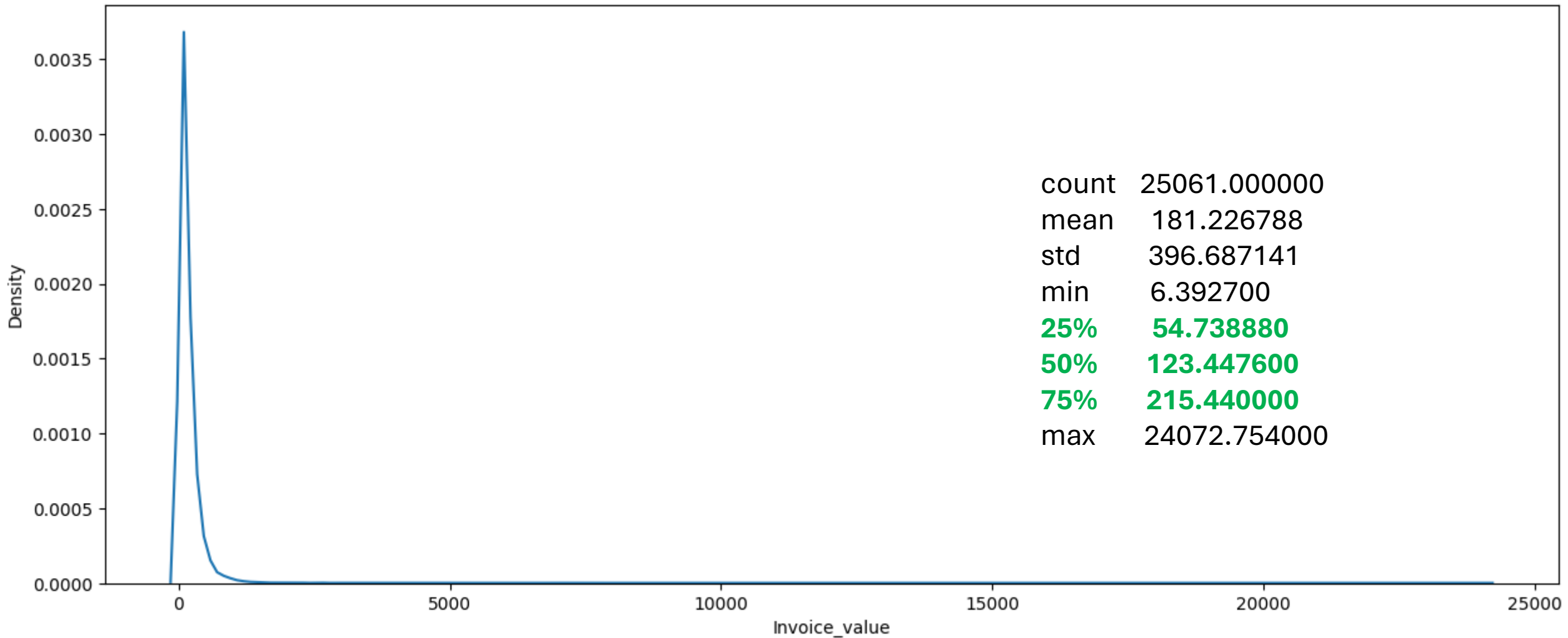
Month Wise Orders

- Likewise Peak orders were observed in same Oct ~ Jan with Peak in the December
- Manpower & Inventory Management can be planned as per the Peaks and maintenance/Restructuring can be Done is Least Order Month
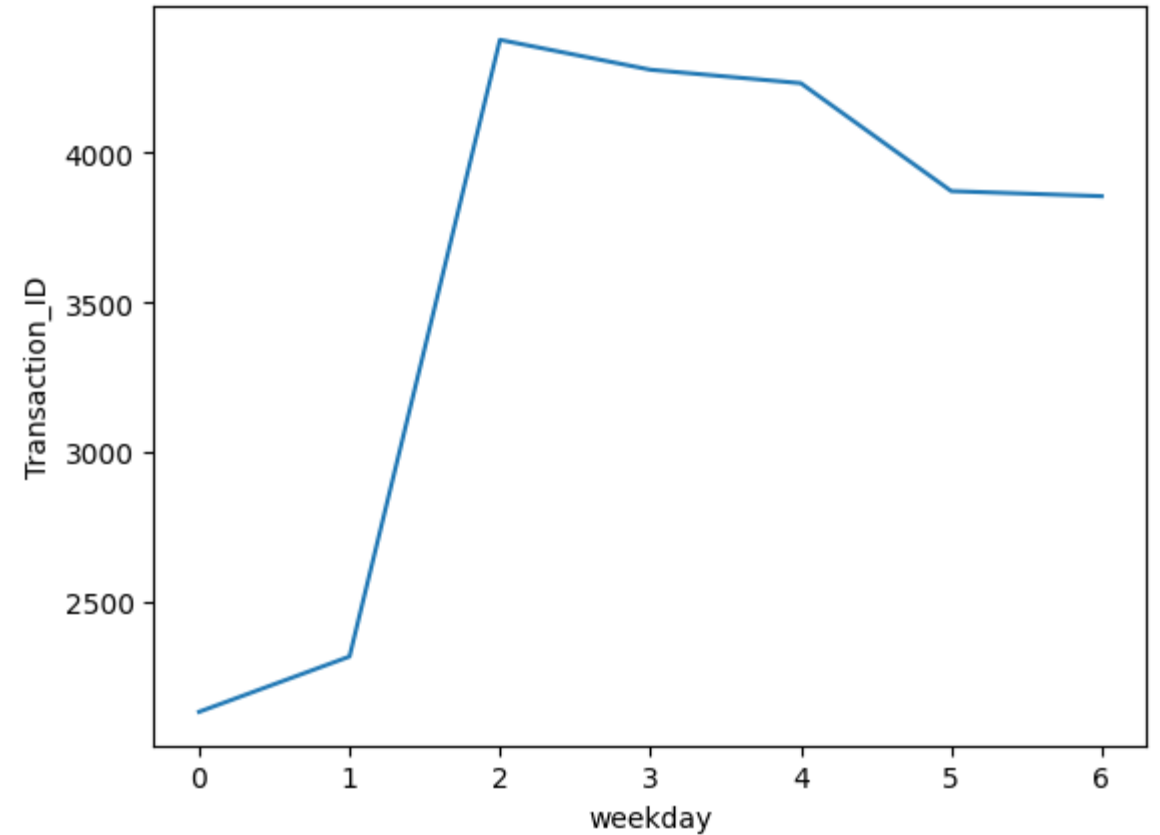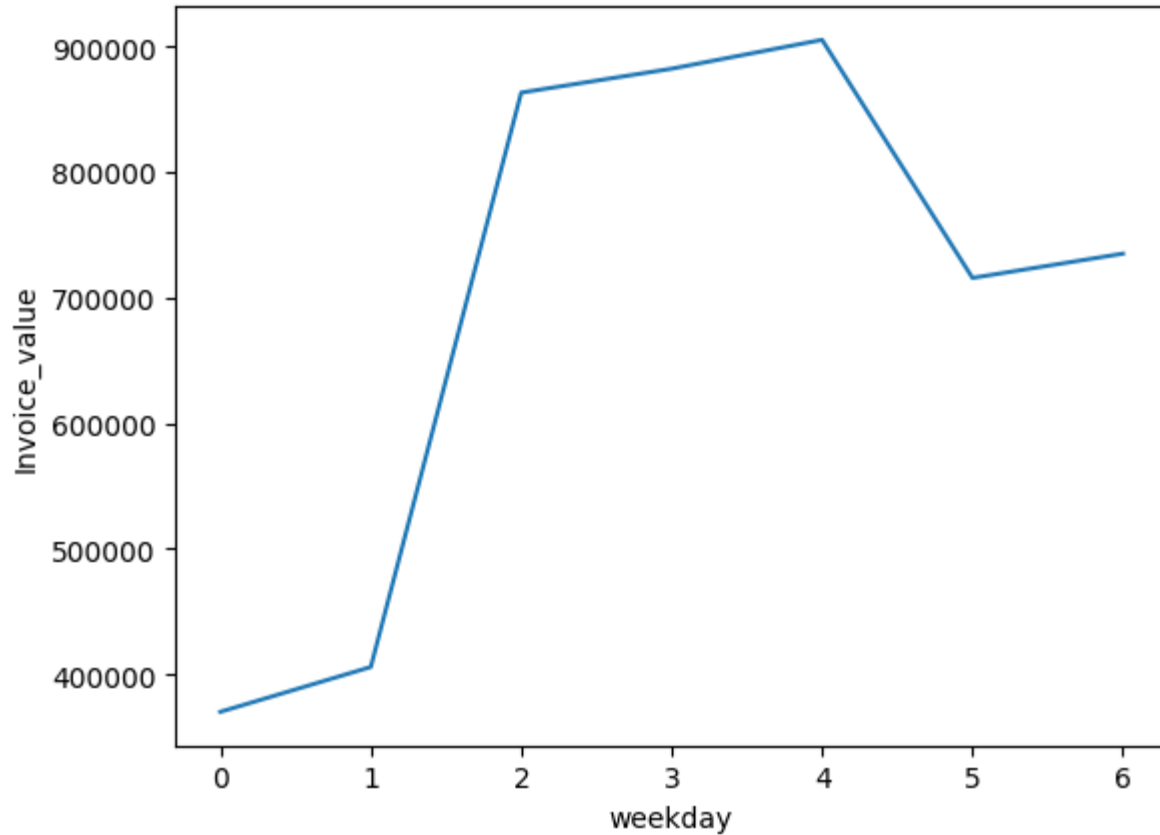
Average Order Value

count	25061.000000
mean	181.226788
std	396.687141
min	6.392700
25%	**54.738880**
50%	**123.447600**
75%	**215.440000**
max	24072.754000

- Average Order Value is Pretty good with mid 50 Percentile from 54~ 215
- But with More marketing and Discount Strategies ,we can increase overall Average Order Values
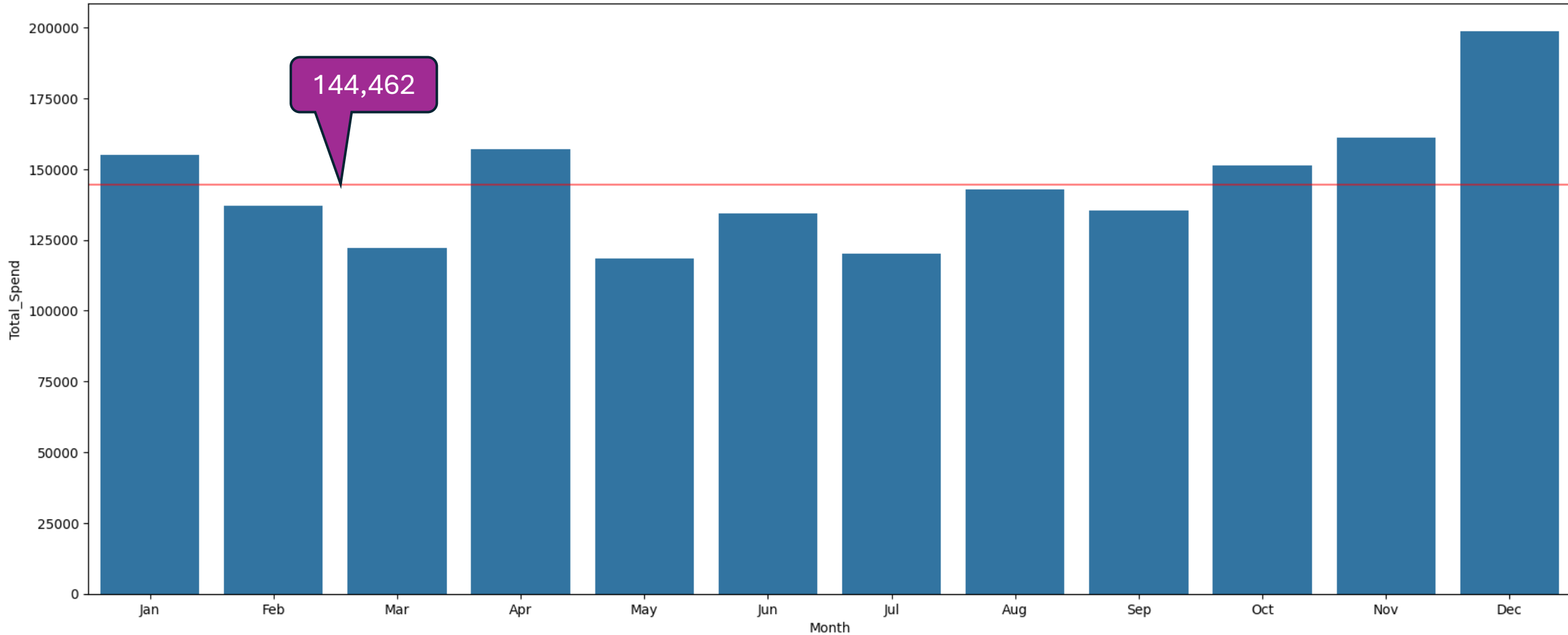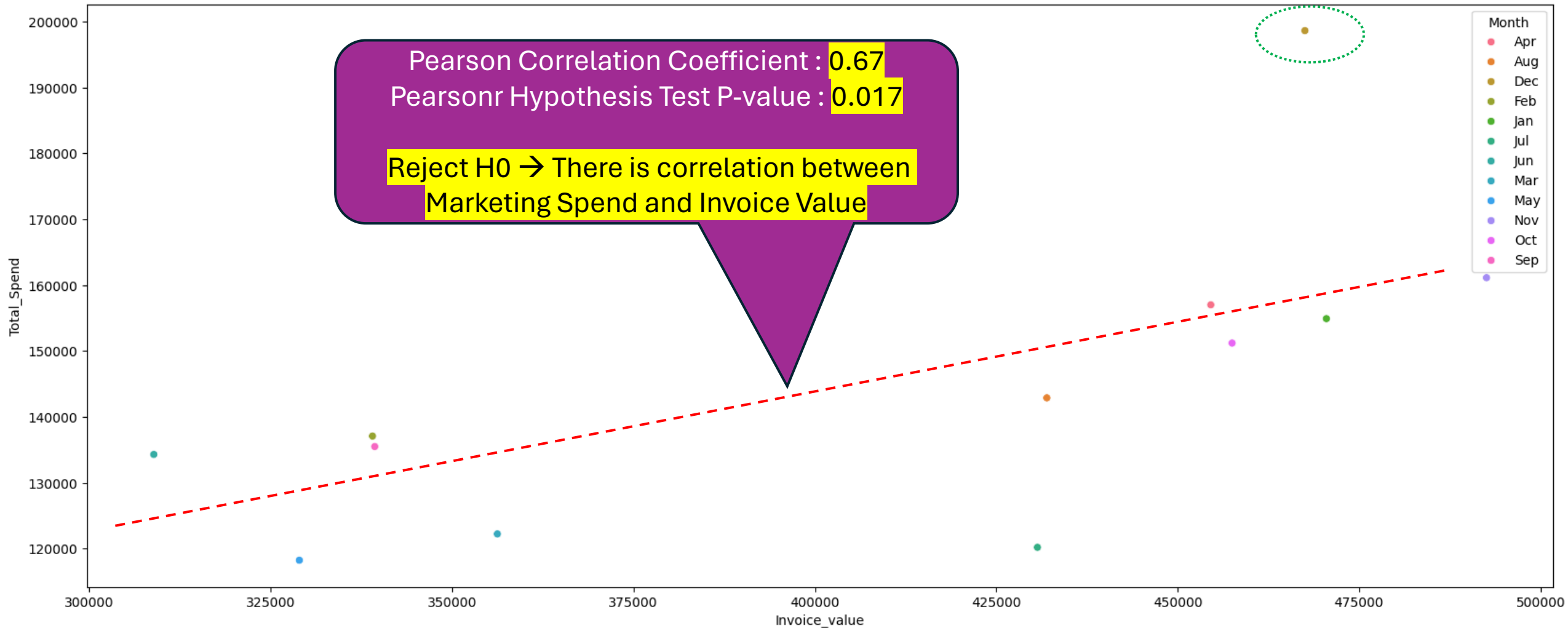
Weekday Impact on Sales

0--> Monday , 6--> Sunday
- Customer are More Engaged with Business between Wednesday ~ Friday
- Efforts to be directed to increase engagement on Weekends

Relation Between Marketing and Revenue

Pearson Correlation Coefficient : 0.67
Pearsonr Hypothesis Test P-value : 0.017

Reject H0 → There is correlation between Marketing Spend and Invoice Value
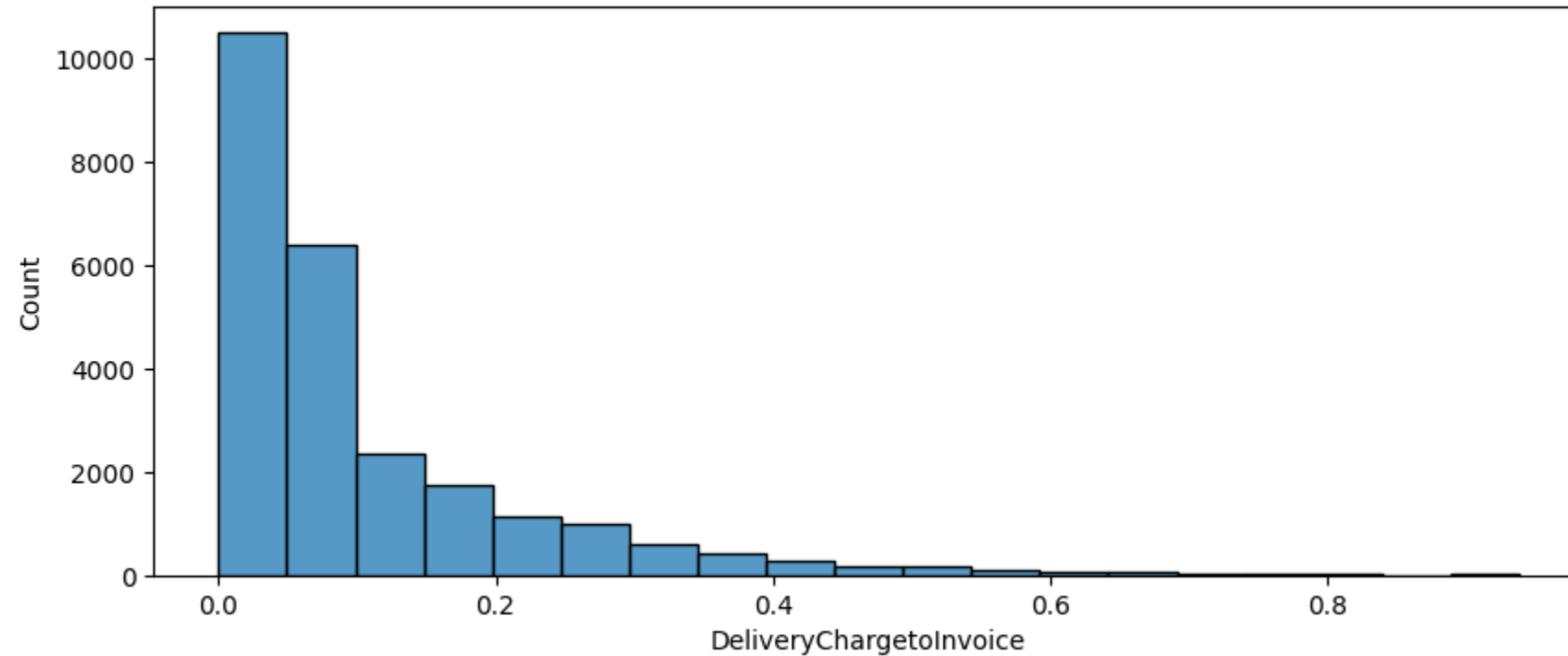
- Therse is Positive Correlation Between Marketing spend and Revenue Generated [Hypothesis Testing Proves that]
- How Improvement can be done for marketing Spend in Month of December as Marketing Spend is Very High Compared to Revenue Generated
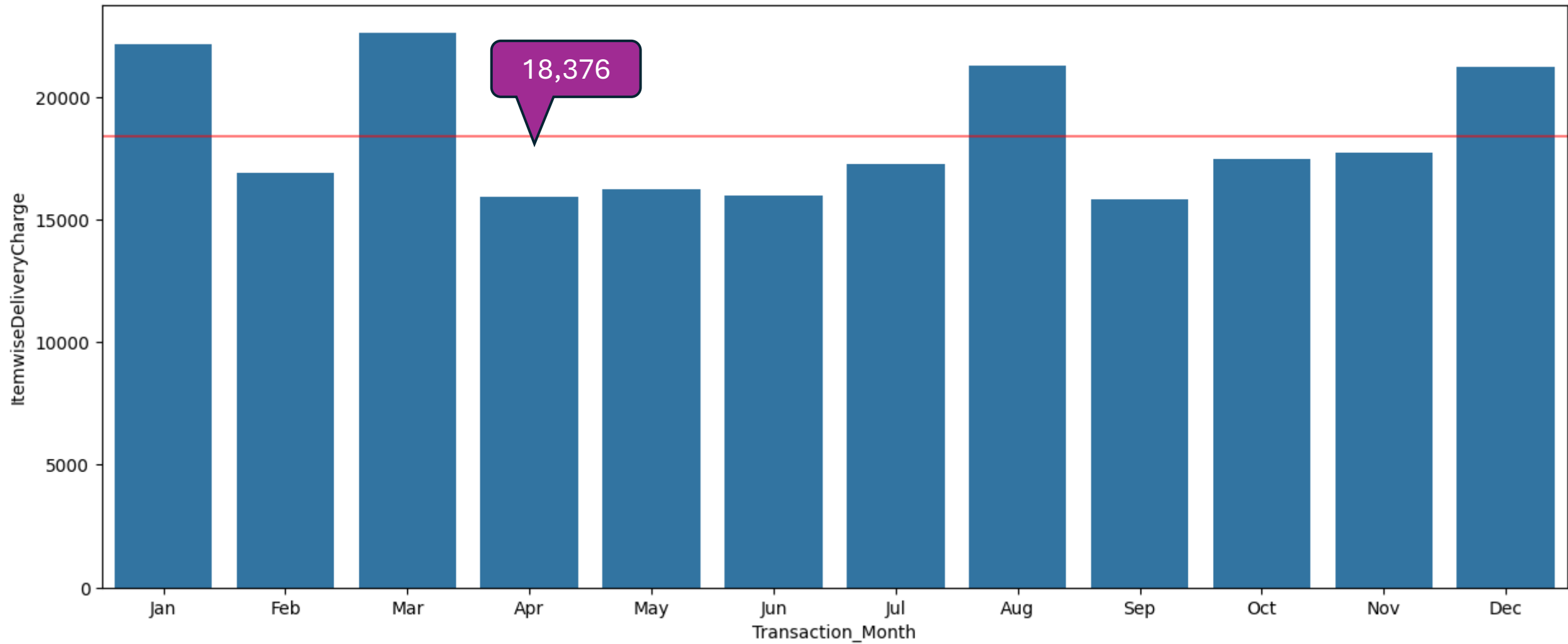
Delivery Charges

count	25061.000000
mean	0.107730
std	0.121575
min	0.000000
25%	**0.034254**
50%	**0.055961**
75%	**0.139550**
max	**0.938571**

- Only 50 Percentile of Order have Delivery to Invoice Ratio < 6%
- It might be causing Some Friction for order Conversion
- Business can work on Reducing Overall Delivery Charges which can drive the Revenue

Discounts Impact on Revenue
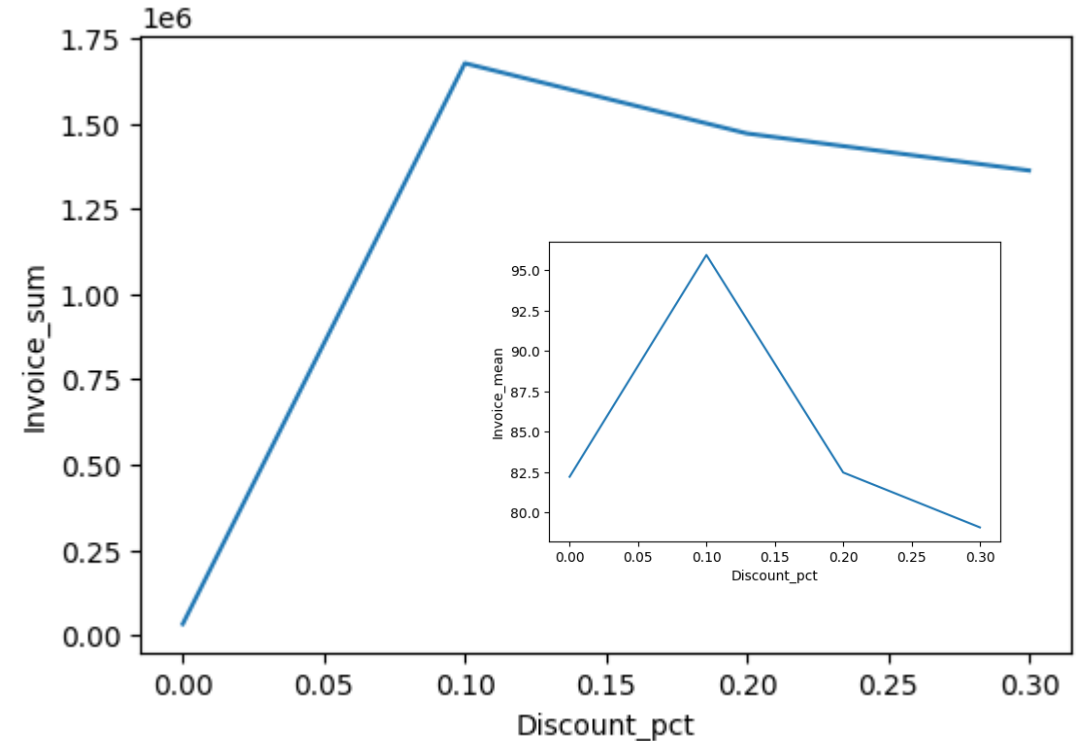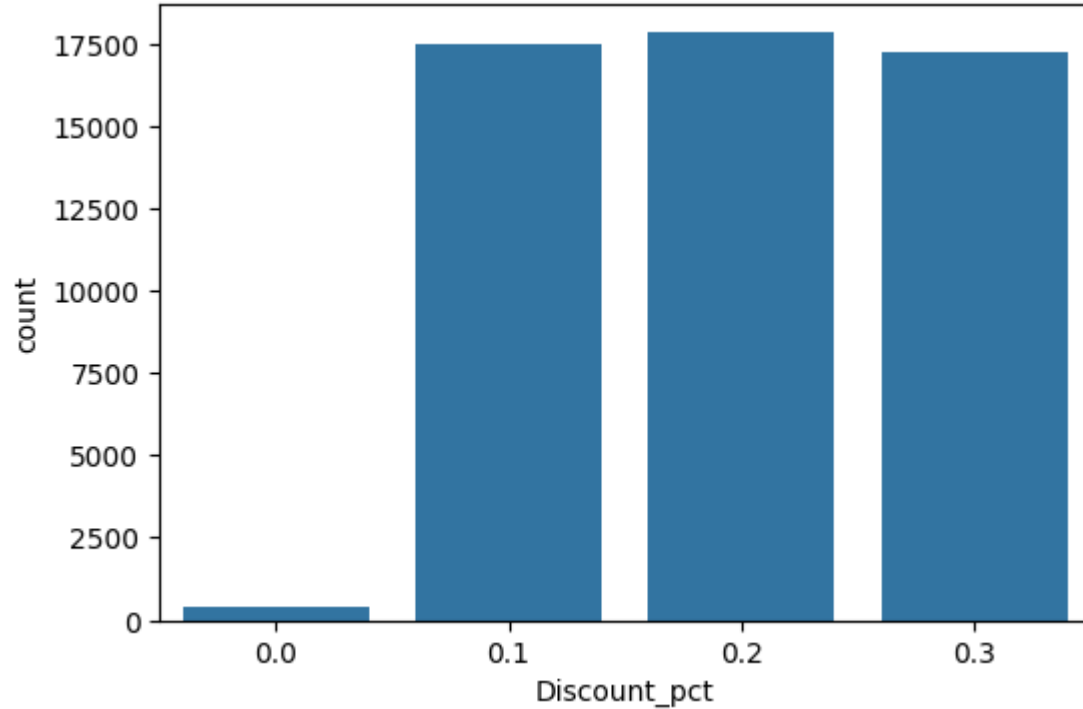
- Discount has less impact on Order placement
- Invoice Value is lowering due to the Discount
- So E-Commerce can reduce the discount percentage to increase Profits as Customer Equally buy given a Discount irrespective of its value

Customer Insights

- Overall Revenue Generated & No of order by Male are Higher than females
- However, female Buy more Frequent than males
- So marketing Strategies can be Tailored according to the Customer behaviour

Customer Insights
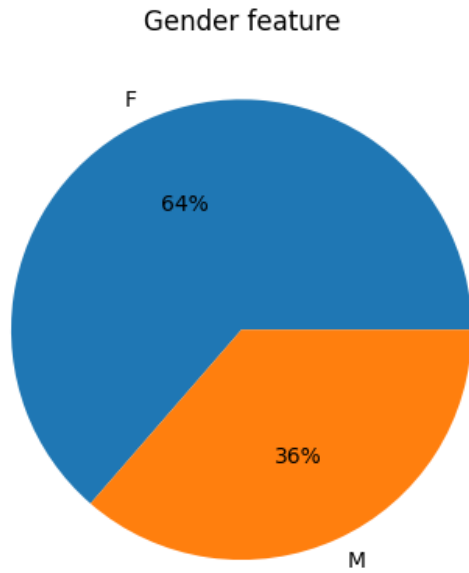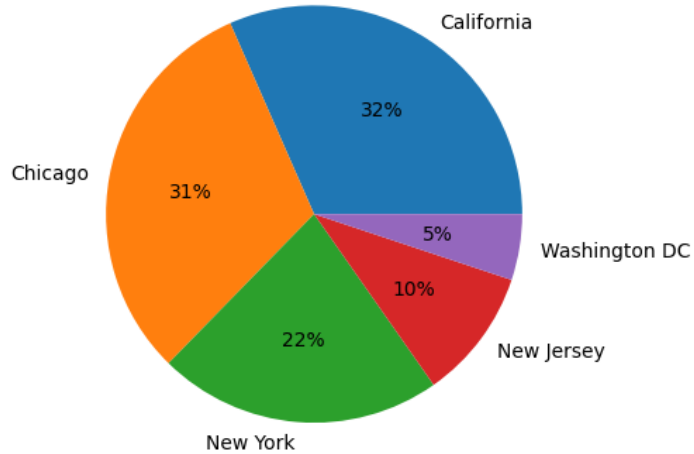
Average Order Value

Interval between order
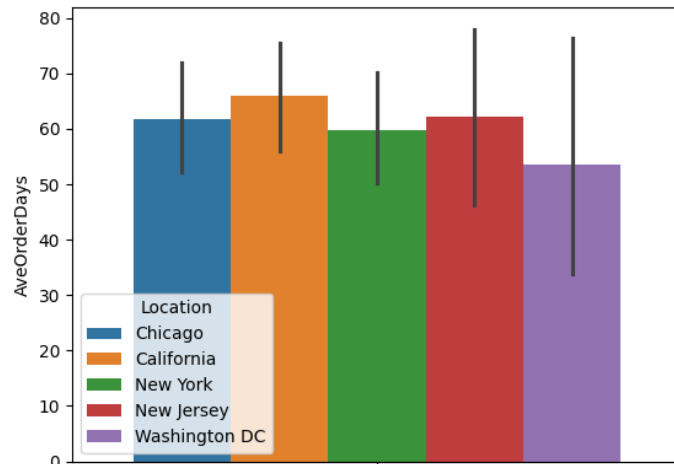
Average No of Orders
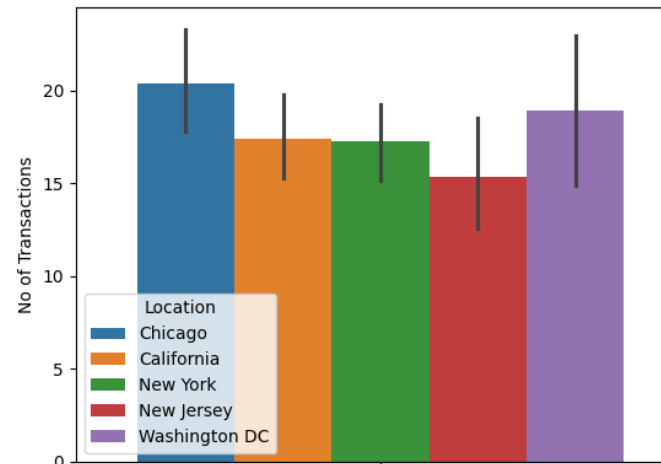
- Overall Revenue Generated & No of order are comparatively Higher for Chicago and Washington DC

- However Frequent Purchases made by California

- So marketing Strategies can be Tailored according to the Customer behavior

Customerwise - Average Order Value

count	1468.000000
mean	160.480226
std	110.510733
min	1.986667
25%	**108.585007**
50%	**149.929344**
75%	**188.179001**
max	1716.436147
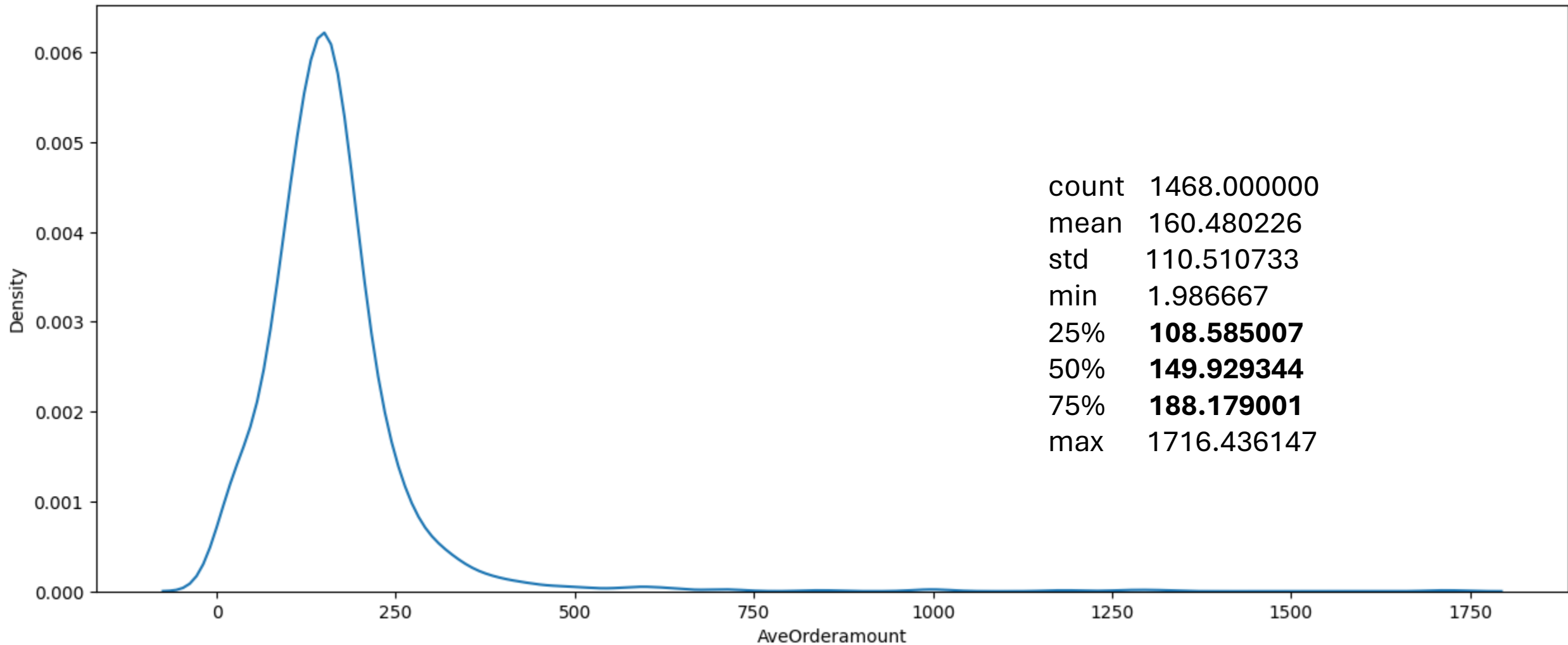
- Although Average Order Value is 181$, but Only 25 percentile of Customer have order Value Greater the 188$
- But with More marketing ,Discount Strategies & Upselling ,we can increase overall Average Order Values

Customer On Boarding , Attrition & Cohort Analysis

Customer On Boarding

Average Active Days of each Cohort

Customer Attrition
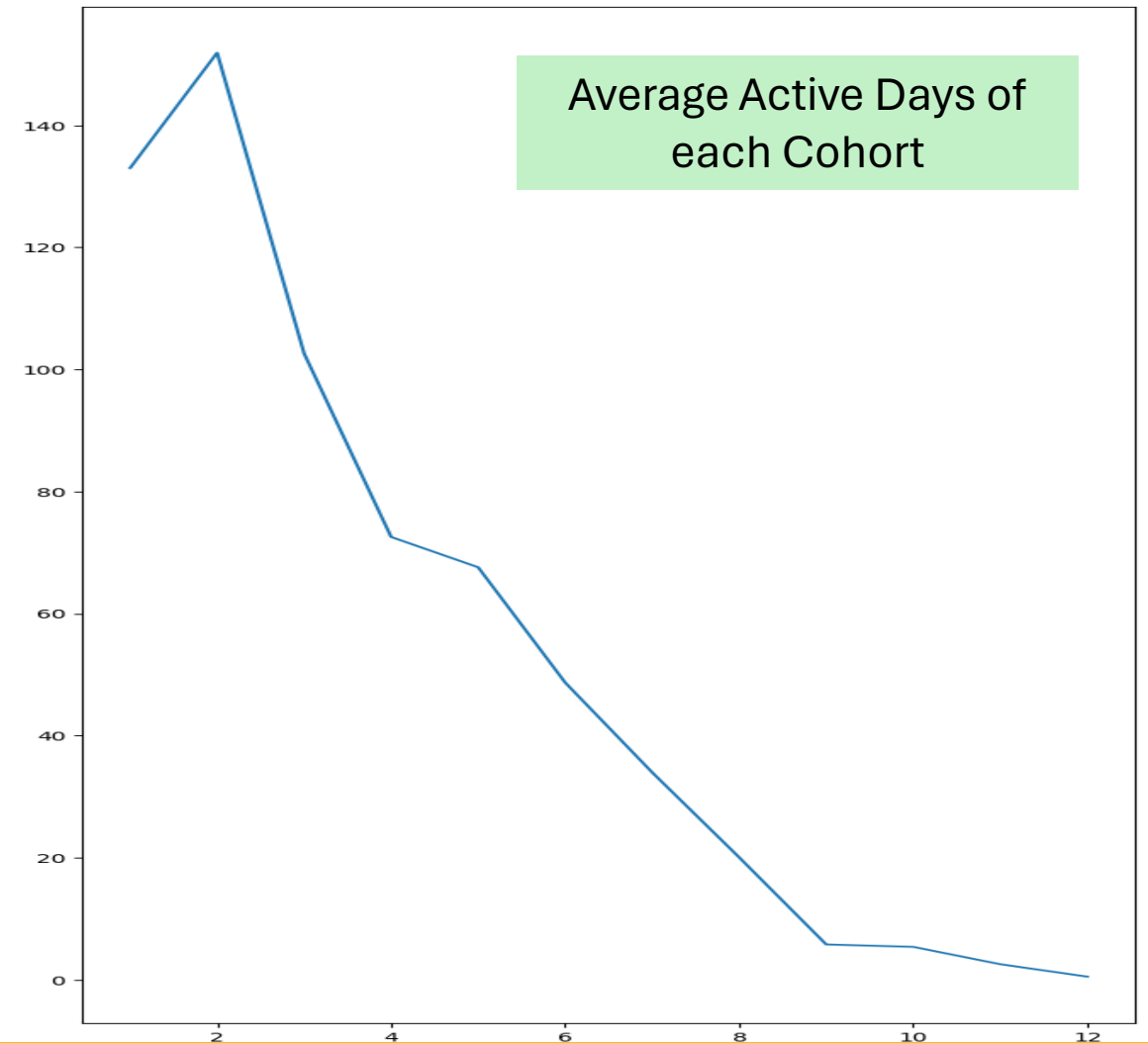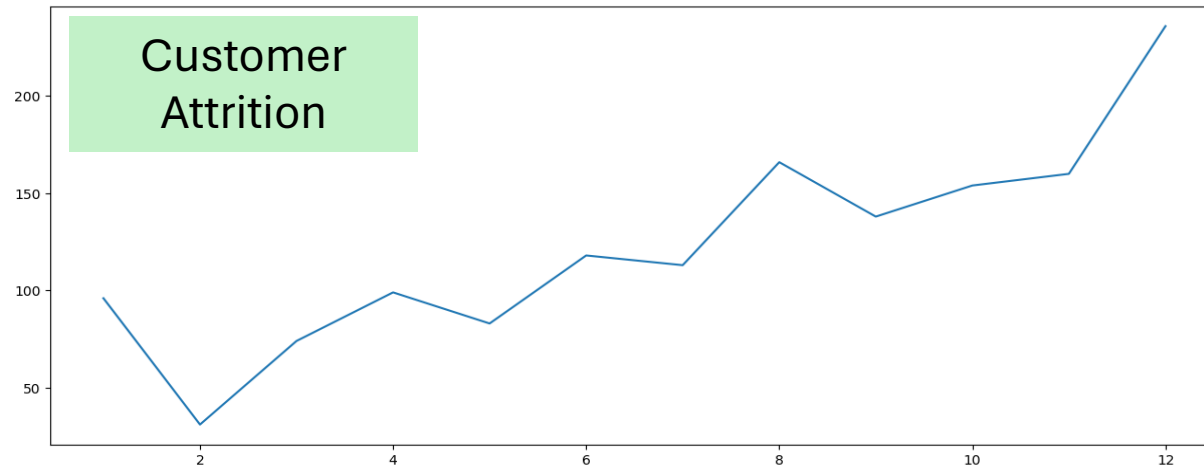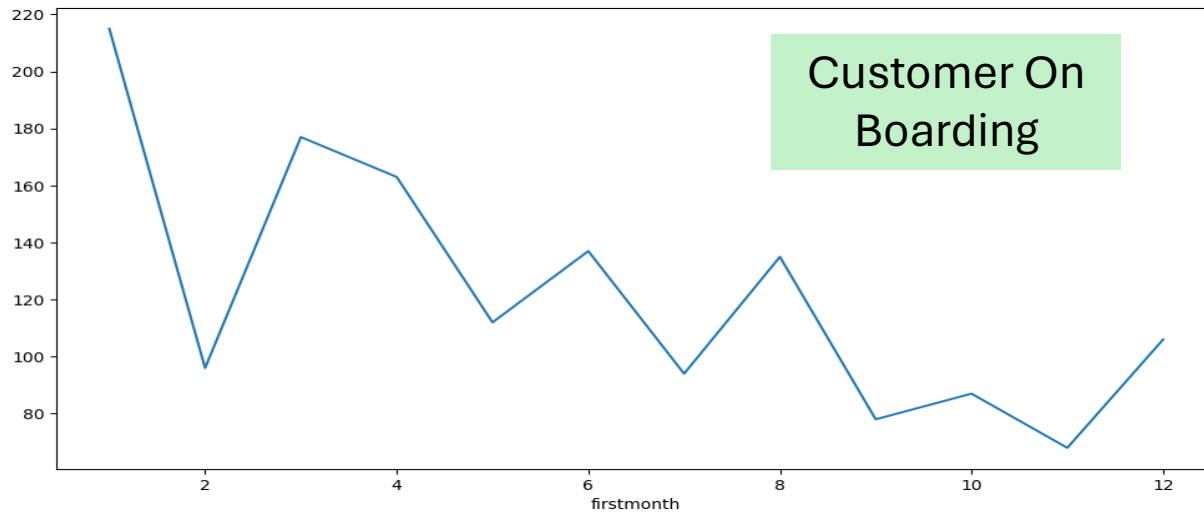
- As we are analyzing the Purchase data of One Year → Conclusive Judgment cannot be made of Attrition and Onboarding
- However it is observed that Customer Boarded in month of Feb has Stayed longer time

RFM Segmentation
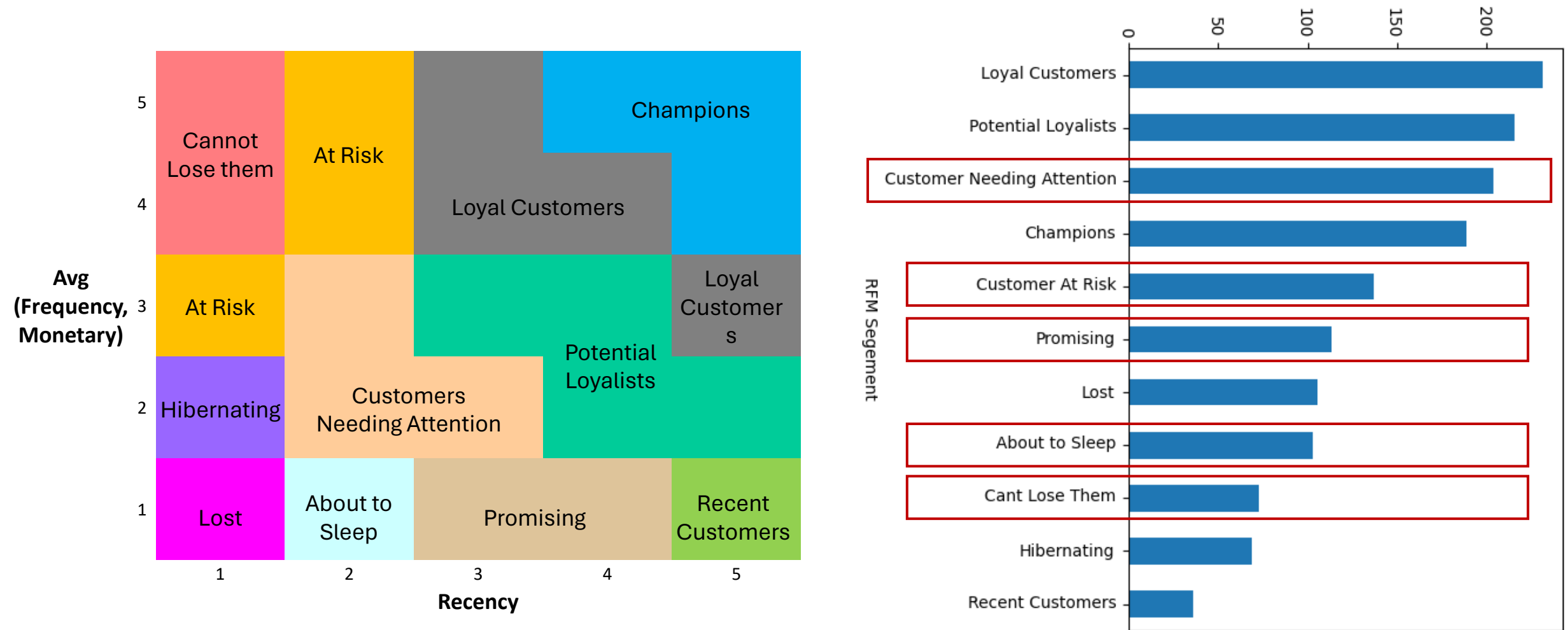
- Tailor Fit Strategies to be made to convert all Customers to Champions
- Customer Acquisition is Costlier that Retention → So need to work Proactively to not lose existing Customers

Product Insights

- Office Category Items are most Sold
- Next Comes Apparel & Drinkware
- Category based Strategy to be implemented to Increase sales across all categories
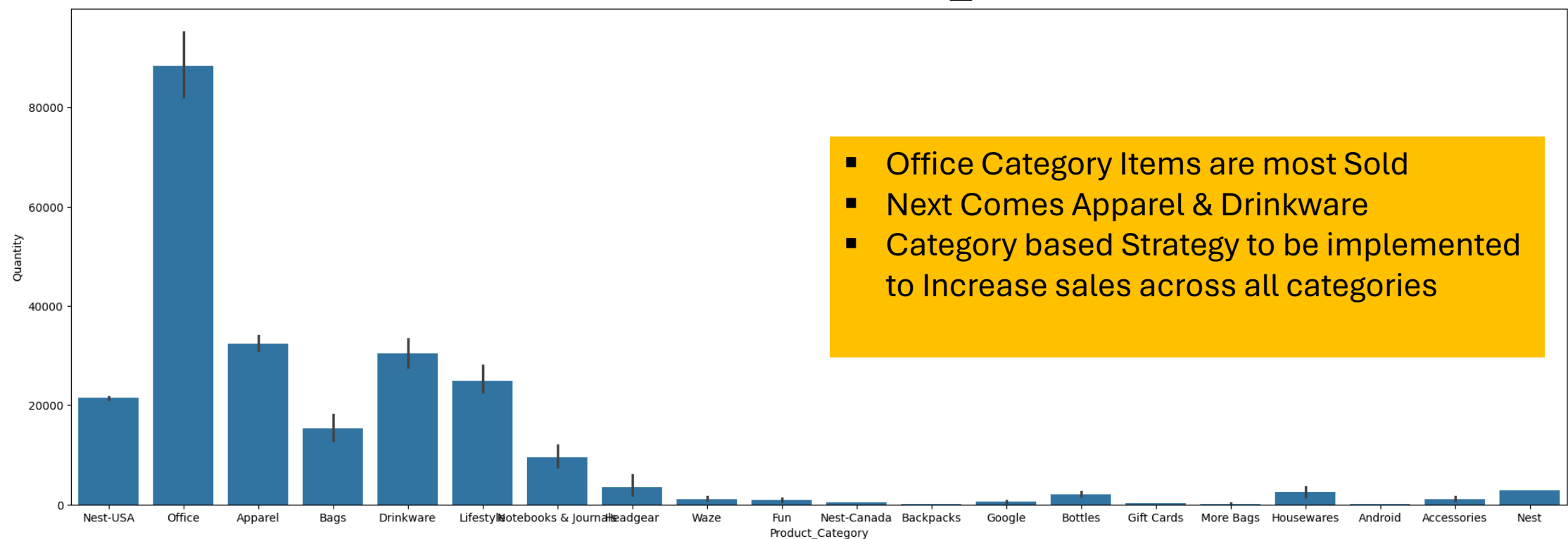
Most Sold Products

Product_Description	Quantity
Maze Pen	16234
Google 22 oz Water Bottle	14282
Google Sunglasses	11452
Sport Bag	7321
Google Metallic Notebook Set	6496

Least Sold Products

Product_Description	Quantity
Google Tee Red	3
Android 5-Panel Low Cap	3
Compact Journal with Recycled Pages	1
Android Women's Short Sleeve Tri-blend Badge T...	1
Google Women's Colorblock Tee White	1

Market Basket Analysis – Frequently Bought Items

	Product1	Product 2	No of Occurrences
1	Nest Cam Outdoor Security Camera - USA	Nest Cam Indoor Security Camera - USA	693
2	Google Sunglasses	Google 22 oz Water Bottle	391
3	Nest Learning Thermostat 3rd Gen-USA - Stainle...	Nest Cam Outdoor Security Camera - USA	301
4	Nest Learning Thermostat 3rd Gen-USA - Stainle...	Nest Cam Indoor Security Camera - USA	228
5	Nest Protect Smoke + CO White Battery Alarm-USA	Nest Learning Thermostat 3rd Gen-USA - Stainle...	226
6	Nest Protect Smoke + CO White Battery Alarm-USA	Nest Cam Outdoor Security Camera - USA	192
7	Windup Android	Google Sunglasses	190
8	Google Sunglasses	Google Laptop and Cell Phone Stickers	183
9	Nest Protect Smoke + CO White Wired Alarm-USA	Nest Learning Thermostat 3rd Gen-USA - Stainle...	181
10	Google Sunglasses	Google Kick Ball	157
11	Nest Protect Smoke + CO White Battery Alarm-USA	Nest Cam Indoor Security Camera - USA	150
12	Sport Bag	Google 22 oz Water Bottle	135
13	Google Laptop and Cell Phone Stickers	Google 22 oz Water Bottle	134
14	Sport Bag	Google Sunglasses	134
15	YouTube Custom Decals	Google Laptop and Cell Phone Stickers	134
16	Google Sunglasses	Foam Can and Bottle Cooler	132
17	Nest Protect Smoke + CO White Wired Alarm-USA	Nest Cam Outdoor Security Camera - USA	125
18	Google Laptop and Cell Phone Stickers	Google Doodle Decal	123
19	Google Men's 100% Cotton Short Sleeve Hero Tee...	Google Men's 100% Cotton Short Sleeve Hero Tee...	120
20	Recycled Paper Journal Set	Google Sunglasses	118

- Above are the Top Frequently Bought Items → Reminder and Upselling Can be Done with reference to the above list

Recommendations

- Lean Revenue Generation Months like May~June & Feb~Mar can used to Restructure the Business Model and Develop Logistics & Resources

- High Average Order Value months to be targeted for More marketing to Capitalize the Customer Spending nature

- Conversely More discounts can be provided in the lower Average order value months to Further accelerate Revenue

- Marketing Efforts to be directed to increase engagement on Weekends

- Optimization can be done for marketing Spend in Month of December as Marketing Spend is Very High Compared to Revenue Generated & it can be redirected to increase Revenue in Other Low Revenue months

- Logistics must be Optimized to Reduce Overall Delivery Charges which can drive the Revenue

- Discount percentage can be reduced to increase Profits as Customer Equally buy given a Discount irrespective of its value

- Tailor Fit Strategies to be made for each RFM Segment to convert all Customers towards Champions Category

- Category based Strategy to be implemented to Increase sales across all categories

- Cross Selling/Upselling can be used to Increase based on Frequent Bought Items