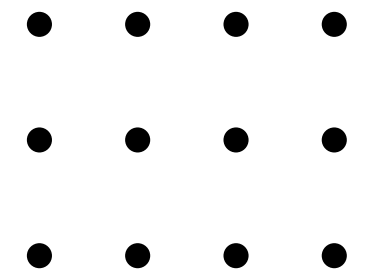
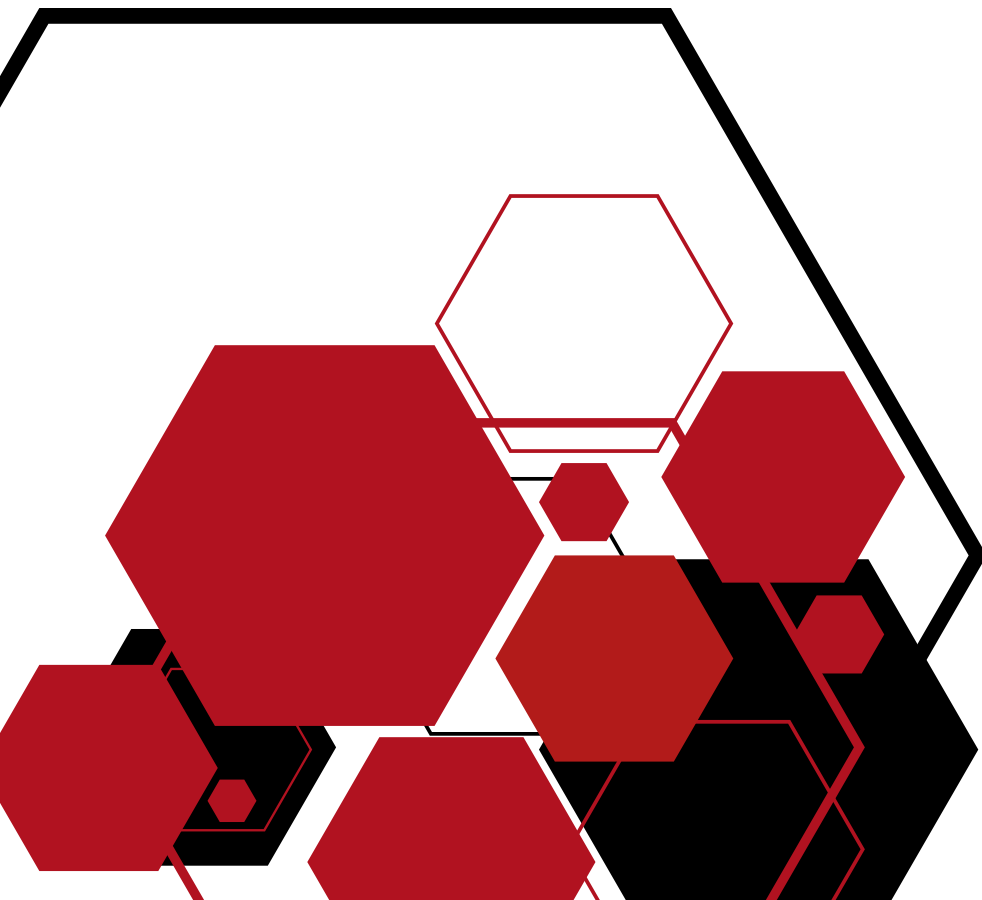


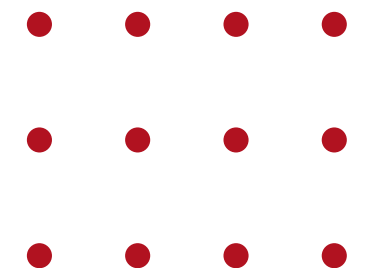
# OFFICE SUPPLY ANALYSIS

Group 2 Data Analysis Assignment



# Business Scenario

- ✓ The Company's leadership team is mulling different strategies which will boost its future sales and in turn profit.
- ✓ They need assistance in performing some quantitative analysis and use the generated insights as a guide to decide an appropriate strategy.
- ✓ Using the available information what analysis would you perform that can help the client ?



# OBJECTIVES, UNDERSTANDING & APPROACH



## OVERALL OBJECTIVE

Overall Business Objective: The goal of this analysis is to understand the sales trends of office supplies for a company in order to identify opportunities for increasing revenue and improving customer satisfaction.

## OUR UNDERSTANDING:

Our team understands that the client wants to use data analysis to gain insights into the sales trends of their office supplies products and identify areas for improvement.



## BUSINESS PROBLEM:

The company wants to optimize its sales and marketing strategies for its office supplies products to increase revenue and customer satisfaction.

## APPROACH:

Our approach will involve analyzing the historical sales data of the company to identify trends and patterns in customer behavior, product sales, and marketing strategies. This analysis will help us identify areas where the company can improve its sales and marketing strategies to increase revenue and customer satisfaction.

# Methodology

**01**

## Data Preparation & EDA

- Categorising data and dropping specific data based on data health review we drop postal code due to 80% missing data.
- EDA & extensive bi-variate analysis conducted on all meaningful variables.

**02**

## Variable Creation and Selection

- To make more meaningful insights we have created 4 new variables for the interest of better analysis.
- To have a cumulative analysis the variables were selected

**03**

## Interpretation and Reporting:

- Various types of graphs were used to analyse the relationship between each data.
- We used group by function to place the data under specific criteria.

## Numerical Dataset

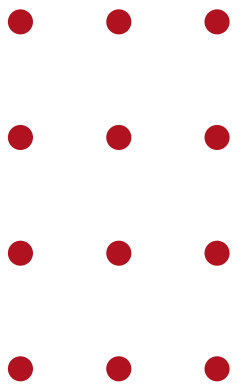
	Variable	Min	Pc 1%	Pc 5%	Pc 25%	Pc 50%	mean	Pc 75%	Pc 95%	Pc 99 %	max	% missing	% Unique Values
SALES	Float64	0.44	3.69	8.8	30.76	85.05	246.49	251.05	1015.96	2301.0	22638.48	0.0	Nan
QUANTITY	int64	1.0	1.0	1.0	2.0	3.0	3.48	5.0	8.0	11.0	14.0	0.0	Nan
DISCOUNT	float64	0.0	0.0	0.0	0.0	0.0	0.14	0.2	0.6	0.7	0.85	0.0	Nan
PROFIT	float64	-6599.98	-351.51	-83.904	0.0	9.24	28.61	36.81	211.5	587.36	8399.98	0.0	Nan
SHIPPING COST	float64	1.002	1.11	1.32	2.61	7.79	26.48	24.45	111.41	286.76	933.57	0.0	Nan

# Extended Data Dictionary

## Categorical Dataset

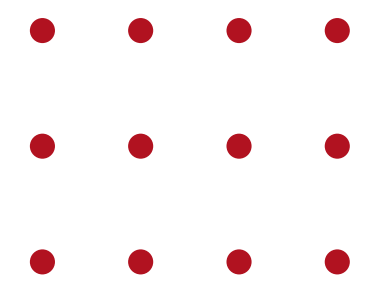
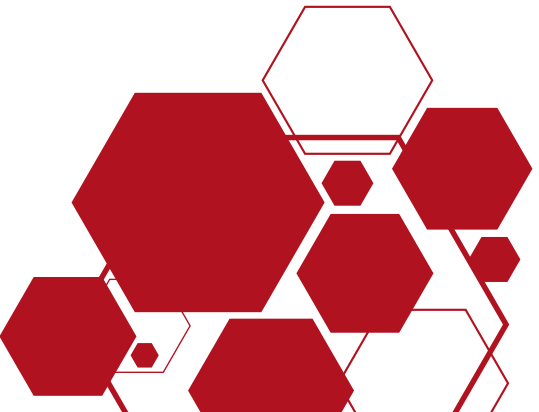
Variable Name	Description	count	unique	top	freq	Unique percentage(%)
Order ID	Unique ID pertaining to the order	51290	25728	CA-2015-SV20365140-42268	14	50.1618249171378
Ship Mode	Mode of shipping : First Class, Second Class,..	51290	4	Standard Class	30775	0.00779879118736596
Customer ID	Unique ID assigned to a Customer	51290	17415	SV-203651406	26	33.9539871319945
Customer Name	Customer Name	51290	796	Muhammed Yedwab	108	1.55195944628583
Segment	Business Segment of the Customer : Consumer, Corporate or Home Office	51290	3	Consumer	26518	0.00584909339052447
City	City of the Customer	51290	3650	New York City	915	7.11639695847144
State	State of the Customer	51290	1102	California	2001	2.14856697211932
Country	Country of the Customer	51290	165	United States	9994	0.321700136478846
Region	Region of the Customer	51290	23	Western Europe	5883	0.0448430493273543
Market	Market of the Customer	51290	5	Asia Pacific	14302	0.00974848898420745
Product ID	Unique ID assigned to a Product	51290	3788	OFF-FA-6129	227	7.38545525443556
Category	Category of the Product	51290	3	Office Supplies	31289	0.00584909339052447
Sub-Category	Sub-Category of the Product	51290	17	Binders	6146	0.0331448625463053
Product Name	Name of the product with description	51290	3788	Staples	227	7.38545525443556
Order Priority	Priority of the order : Critical, High, Medium and Low	51290	4	Medium	29433	0.00779879118736596





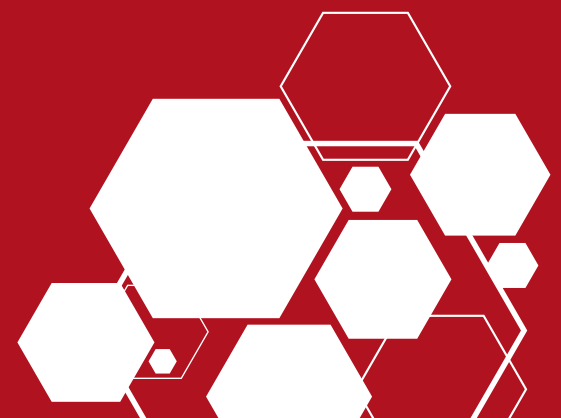
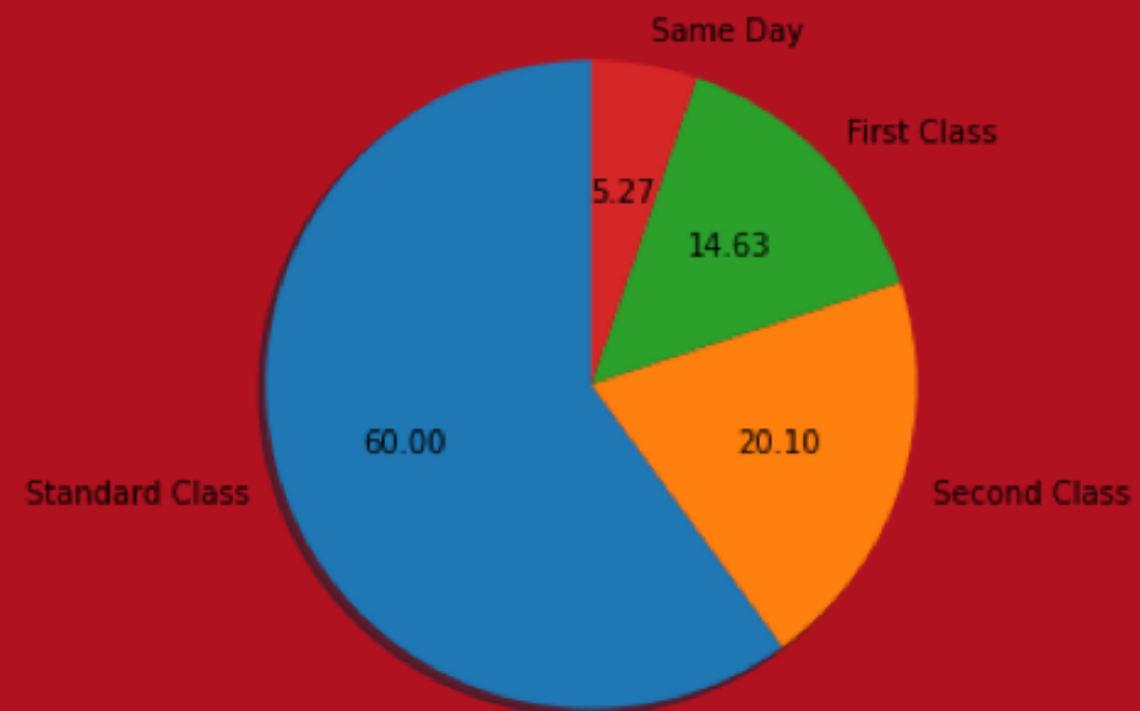
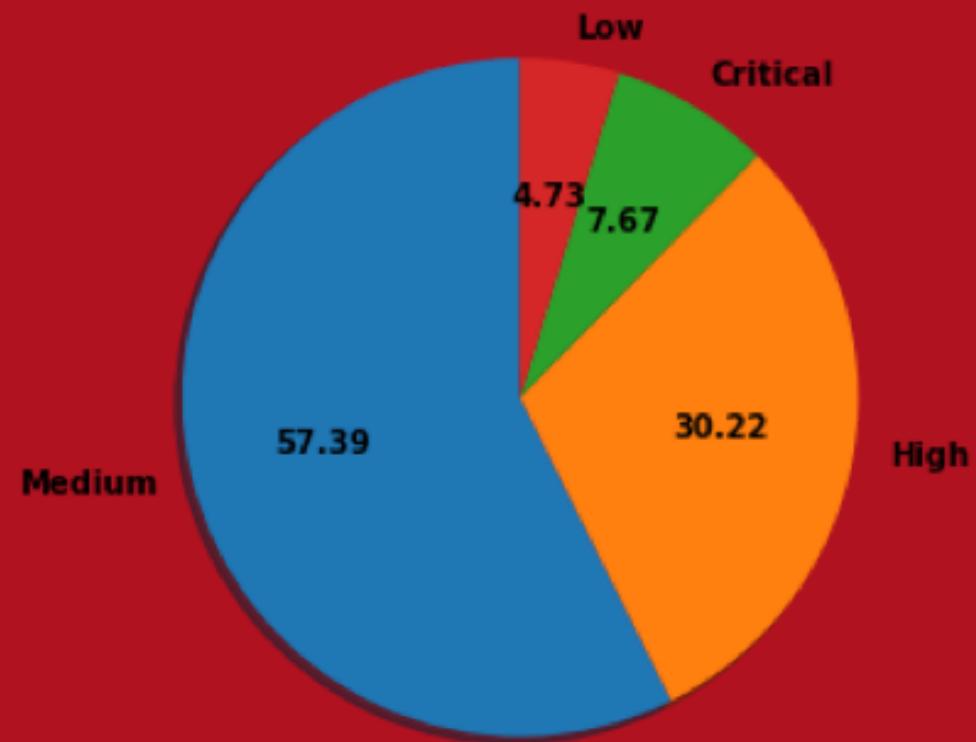
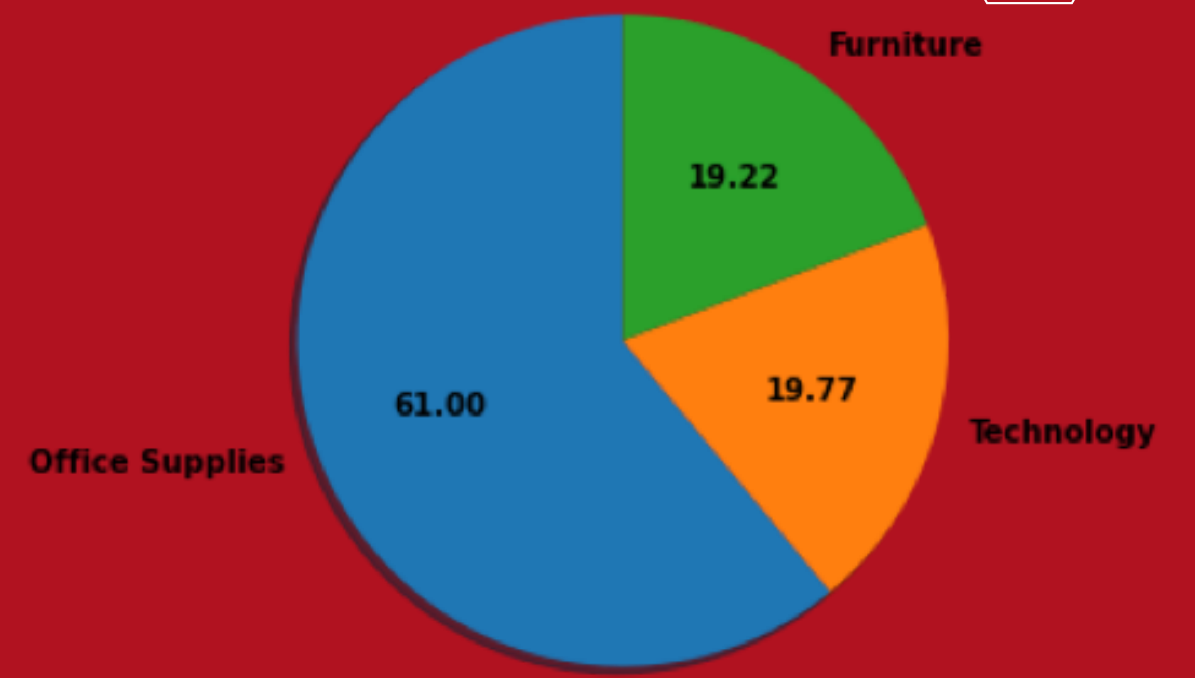
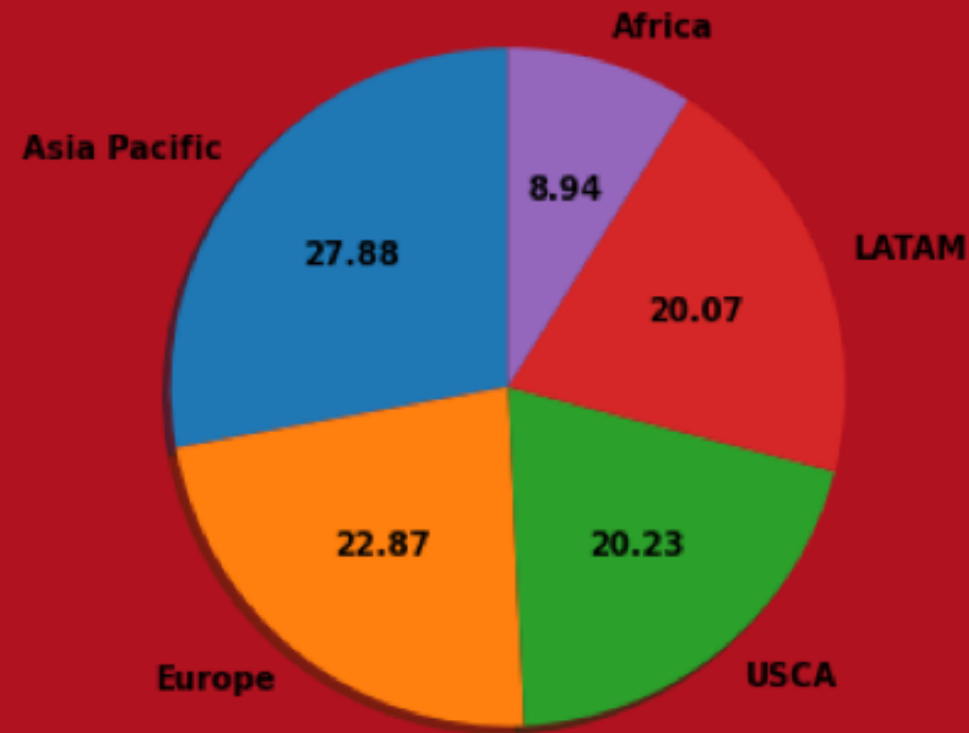
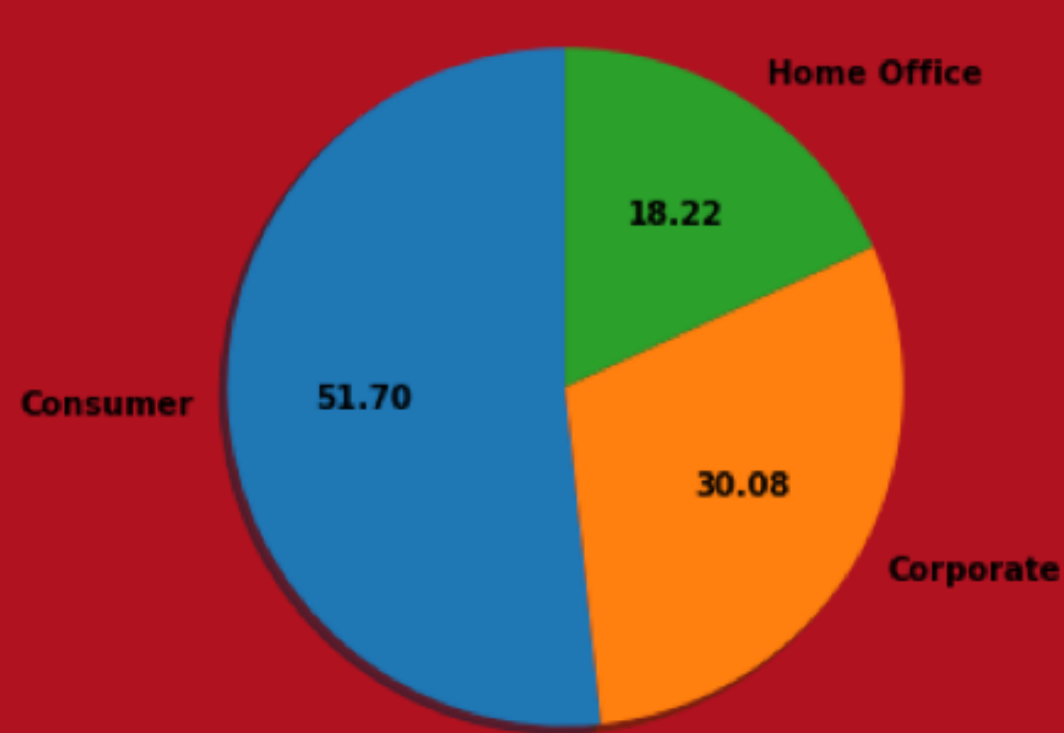
# Feature Engineering – New variables created

New variables created			
1	Month	Date-Numeric	Stores the specific month.
2	Year	Date-Numeric	Stores the specific year in dd-mm-yy format
3	Days_to_ship	Numeric	The difference between the Order Date and Shipping Date
4	Profit_per_sale	Numeric	To store the profit per sales.
5	Total Revenue	Numeric	Sales times the Profit

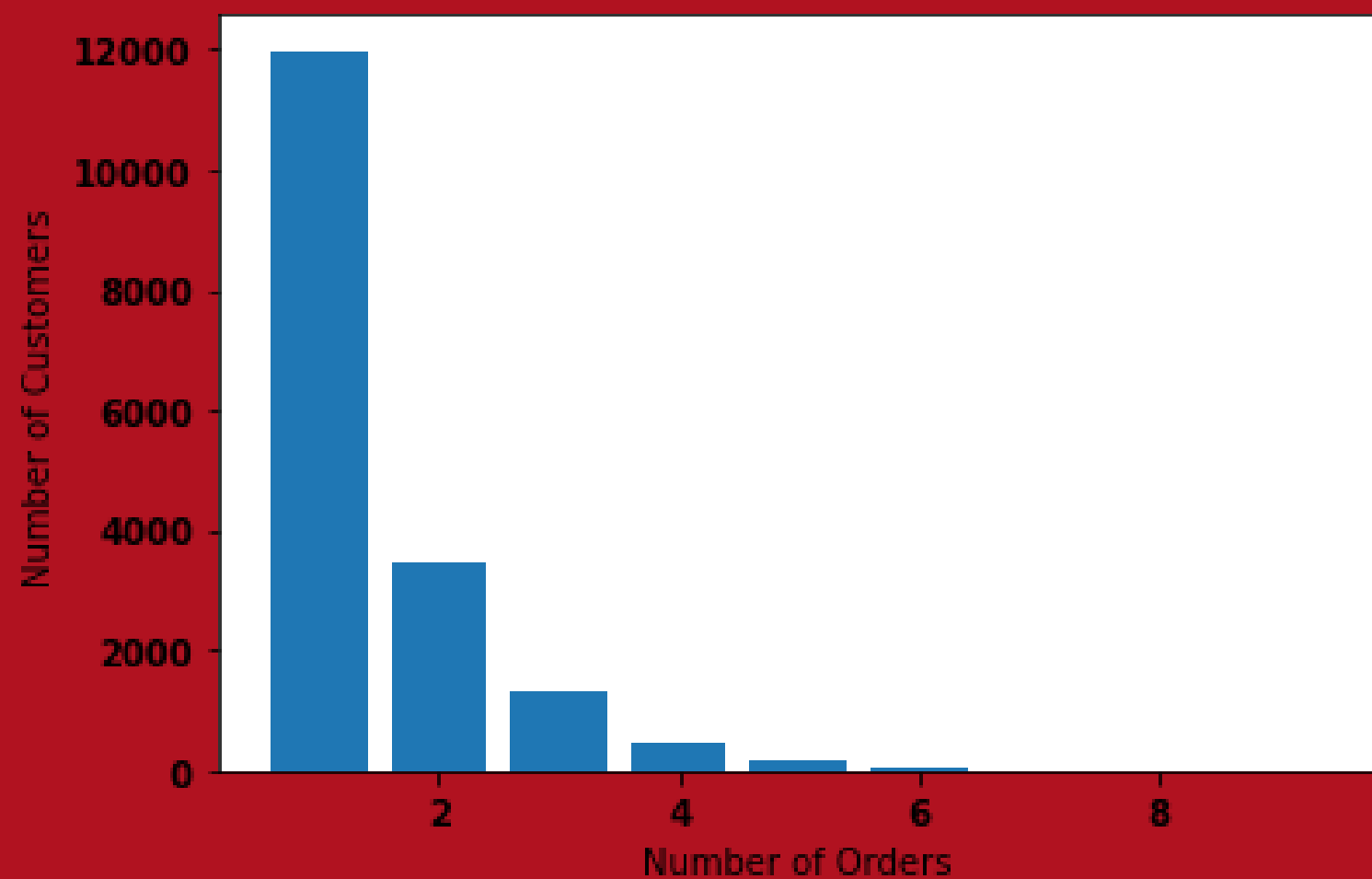




# Analysis Results on Order Count



# Customer Behaviour Analysis



Unique customers Catered 

**17415**

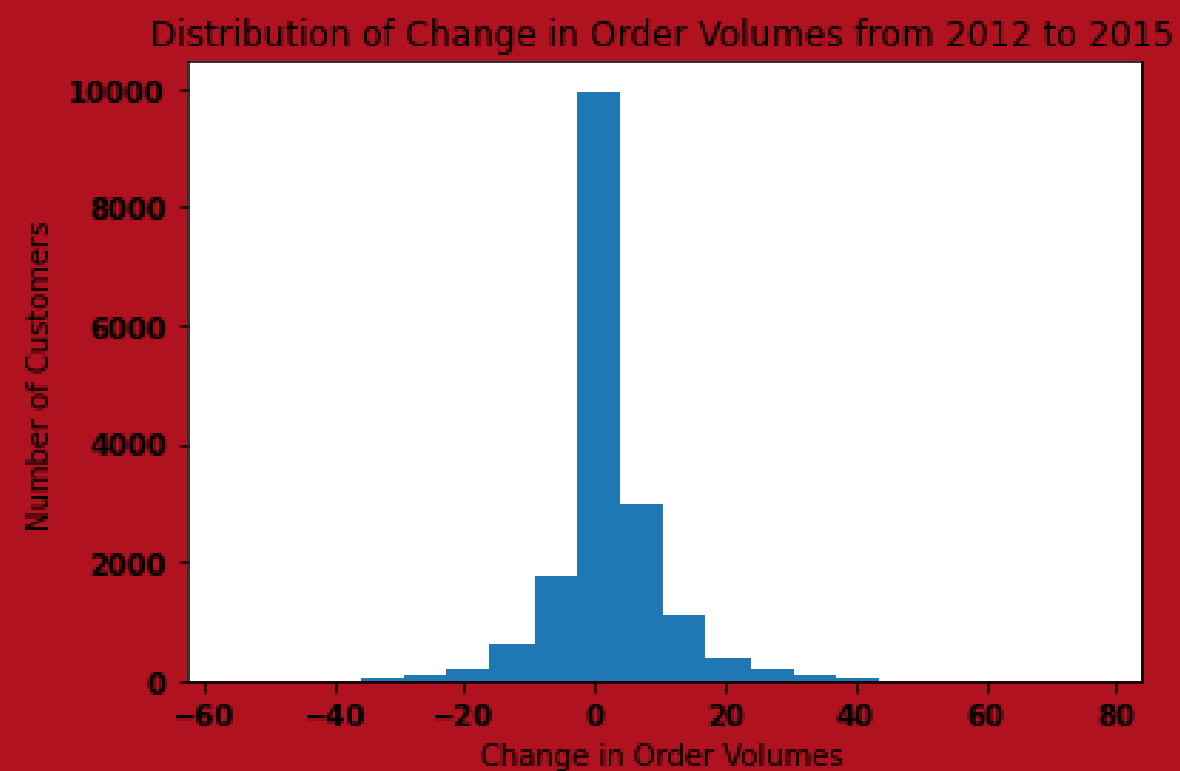
UNIQUE CUSTOMER  
CATERED IN THE LAST 4  
YEARS

**68.78%**

PERCENT\_SINGLE\_ORDER\_CUSTO  
MERS

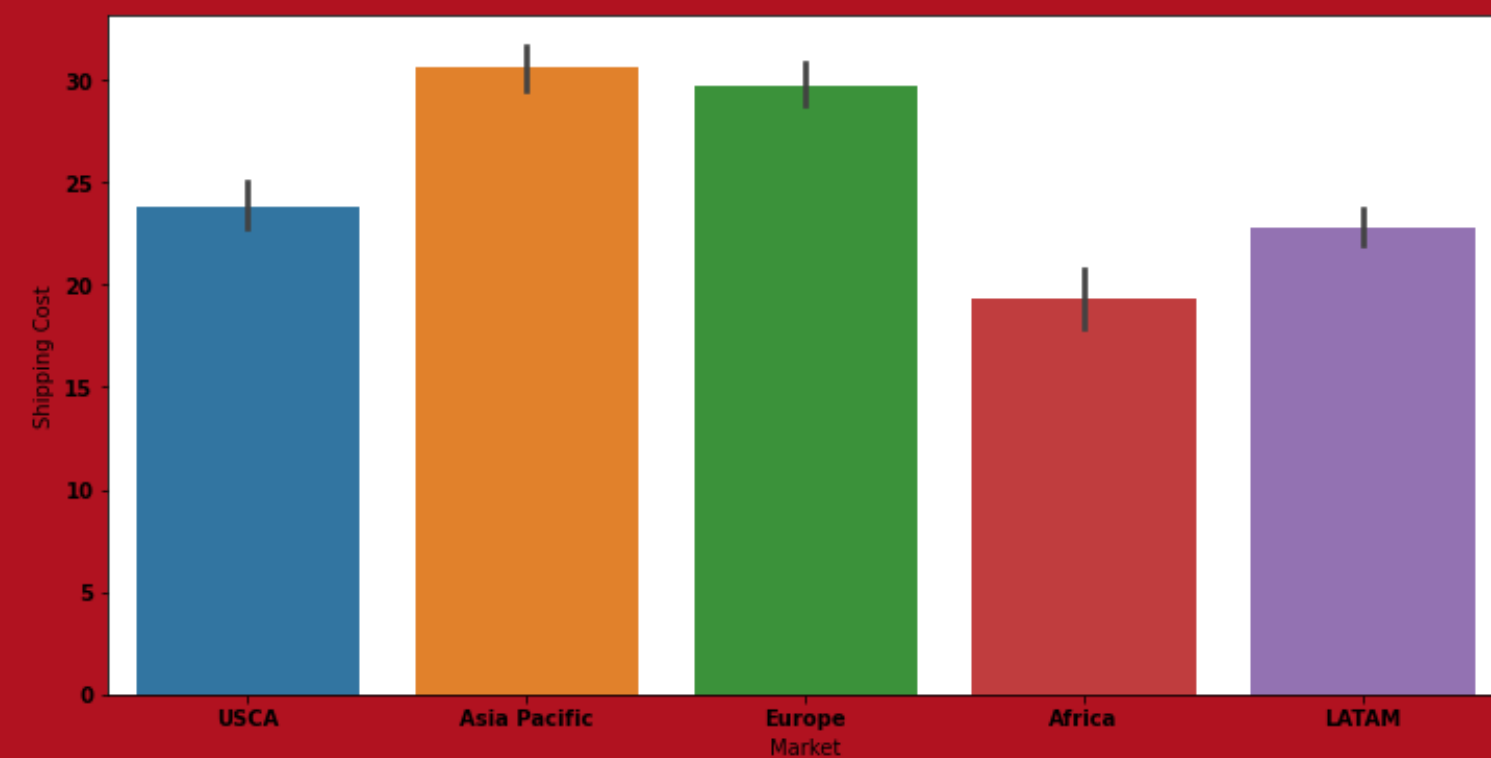
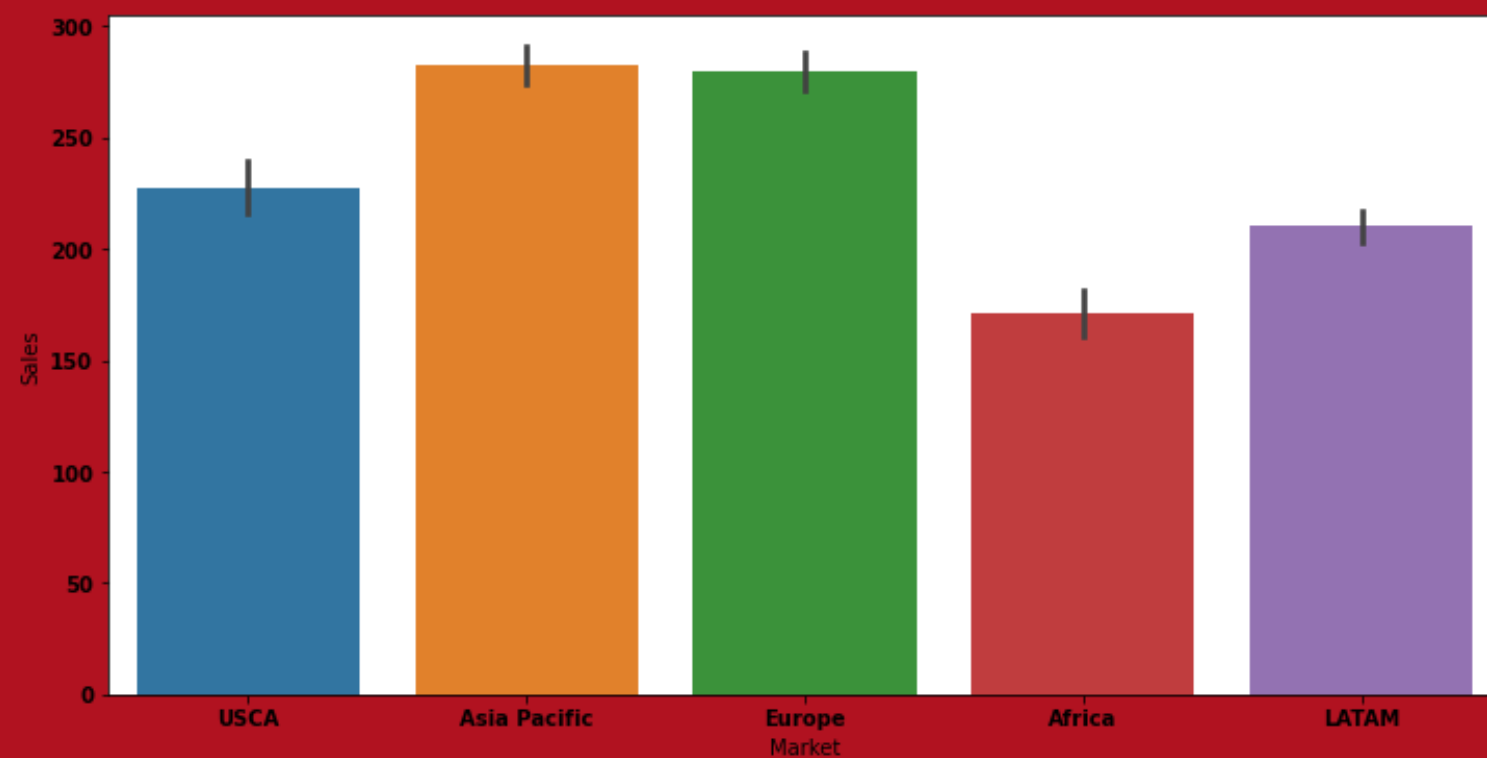
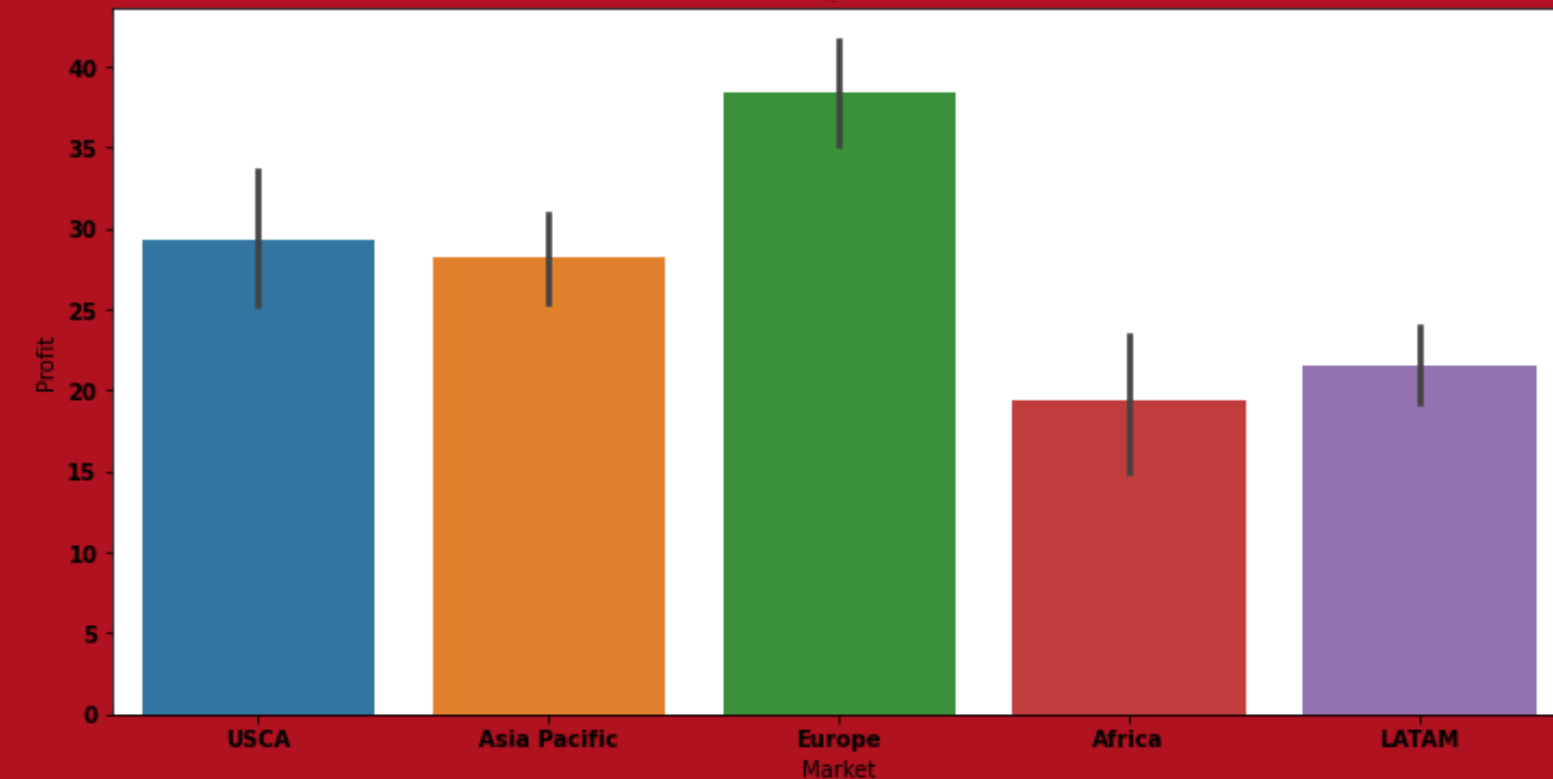
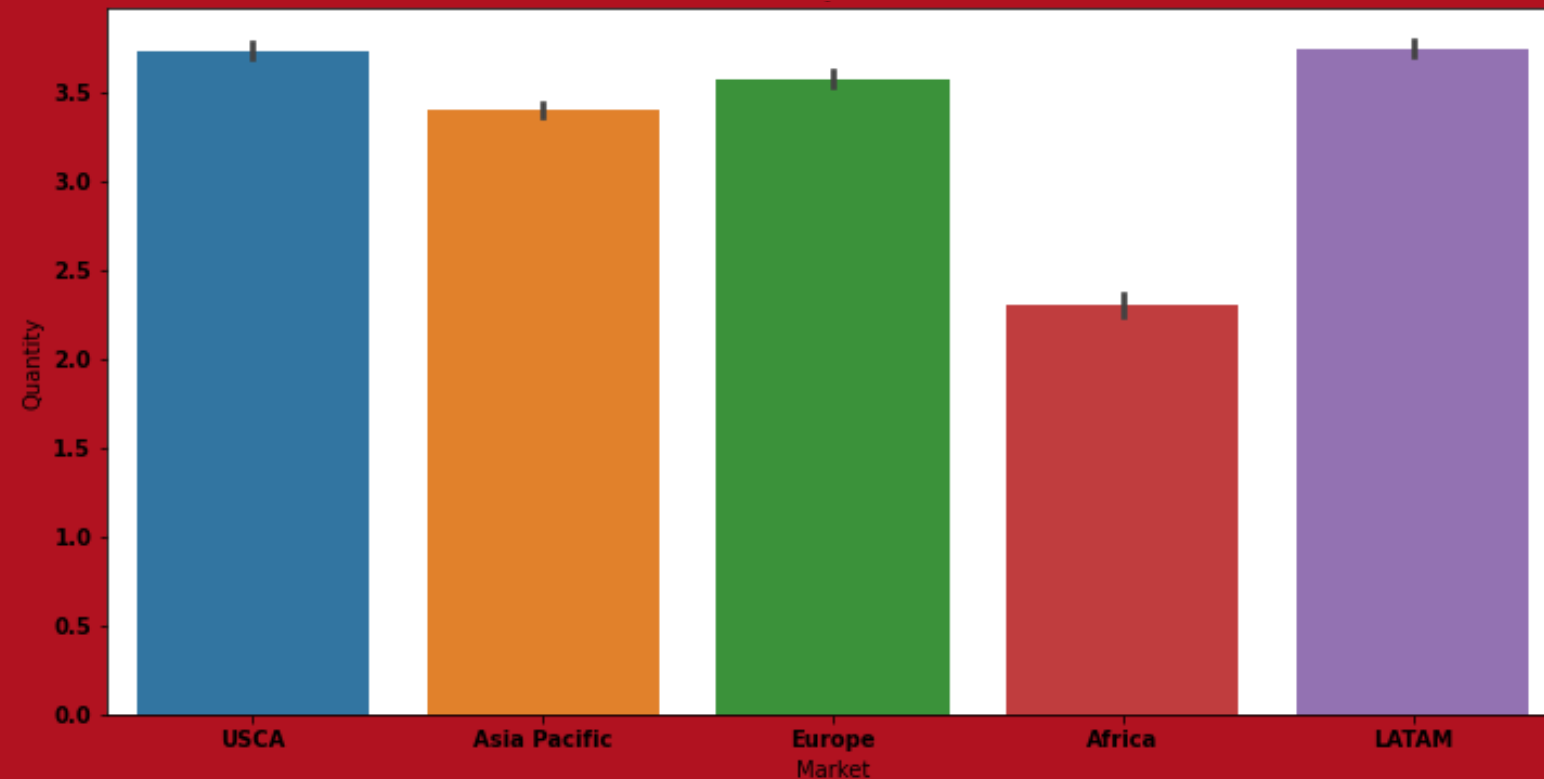
**31.21%**

PERCENT\_REPEAT\_ORDER\_CUSTO  
MERS



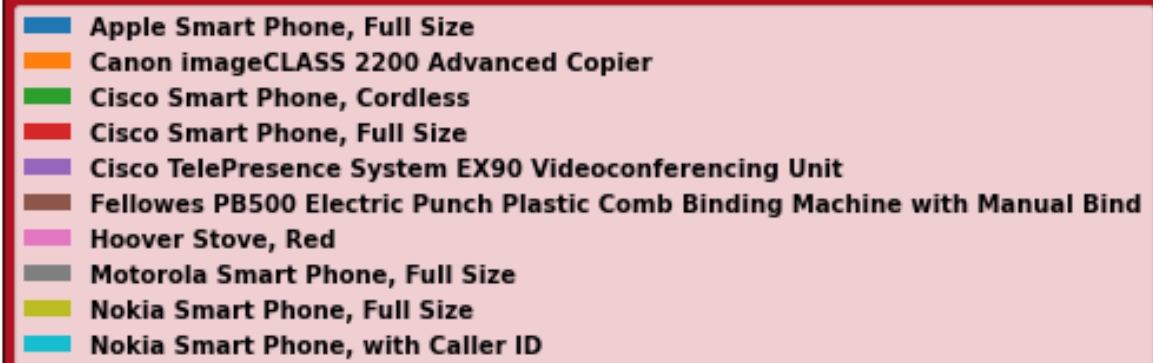
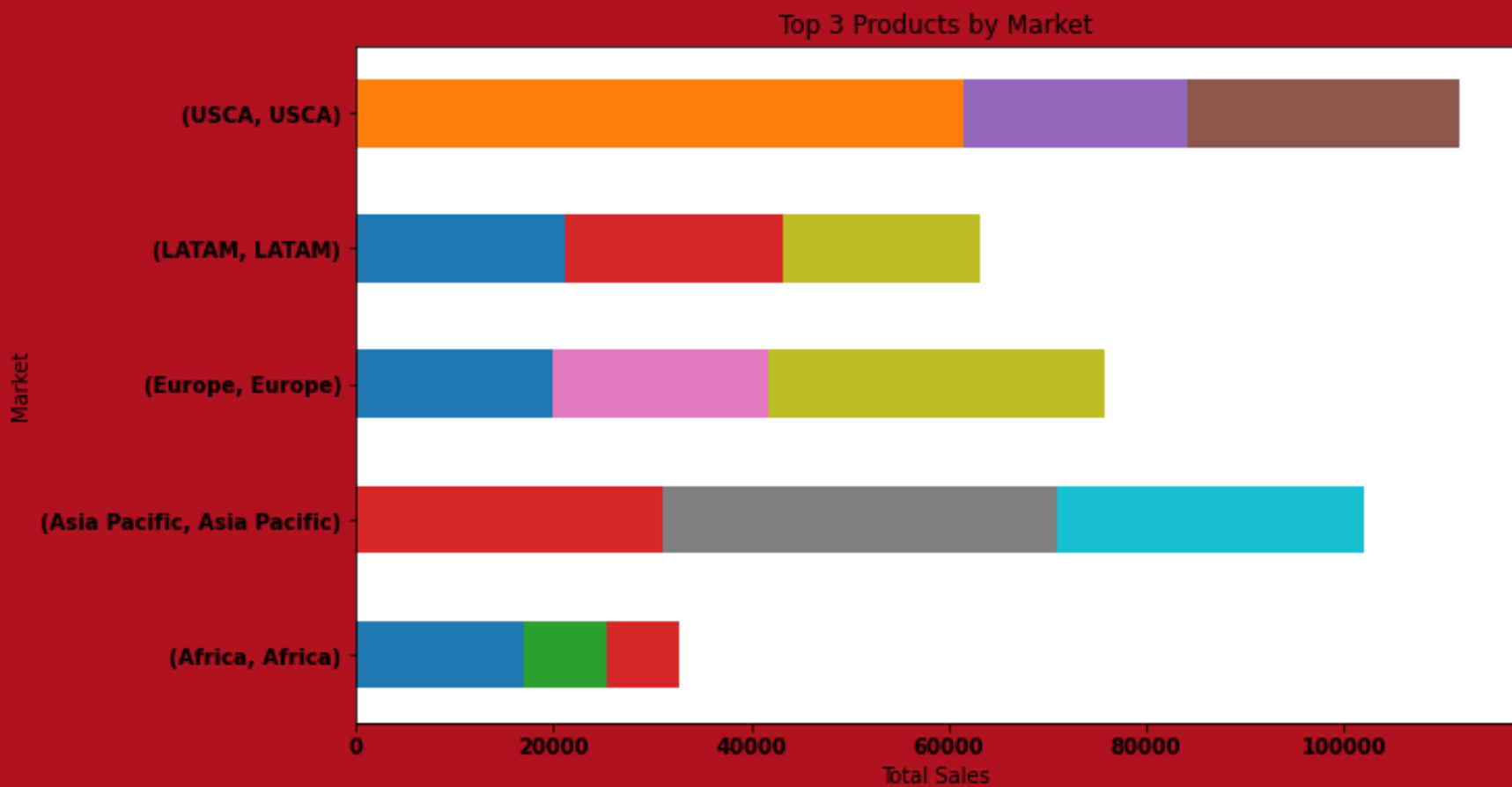
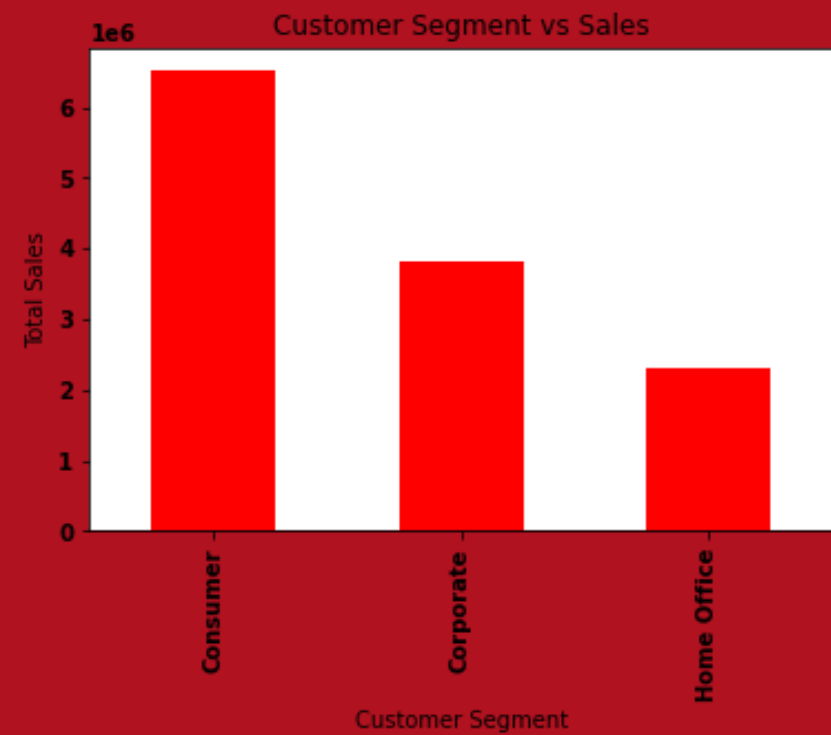
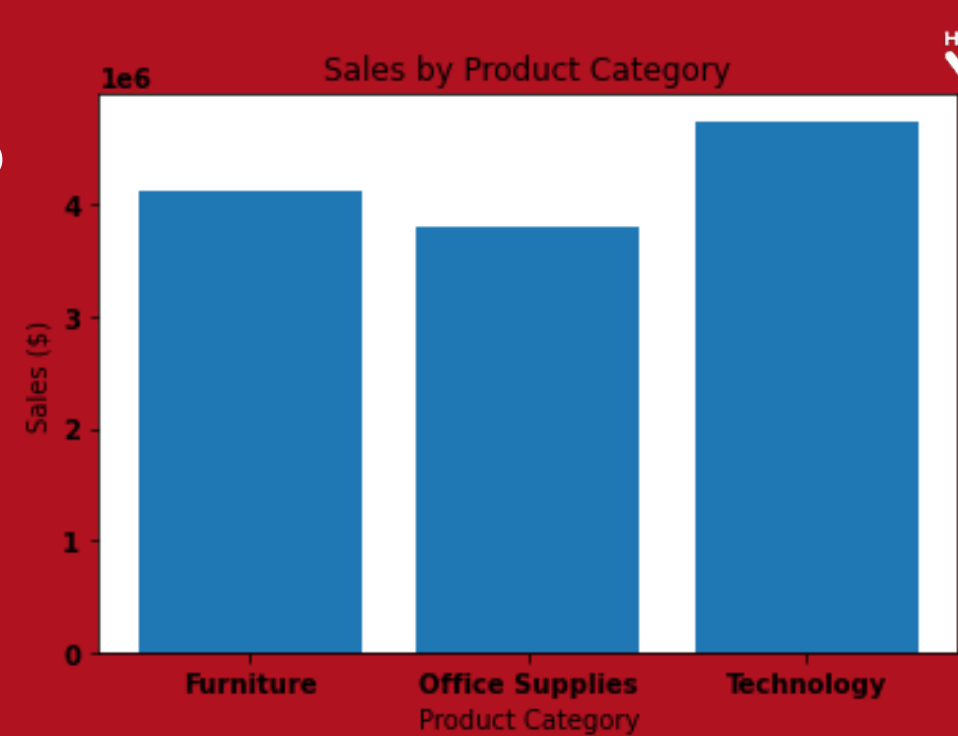
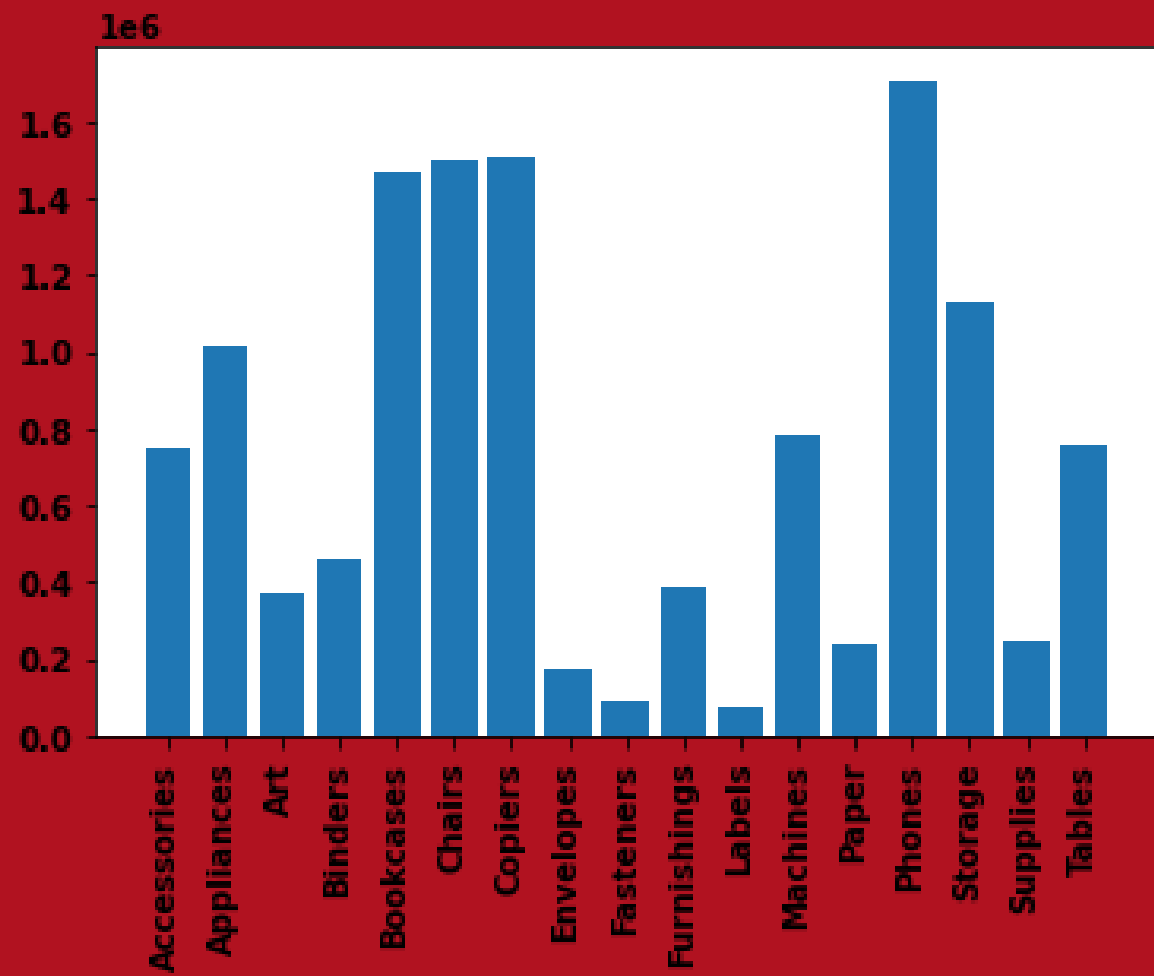
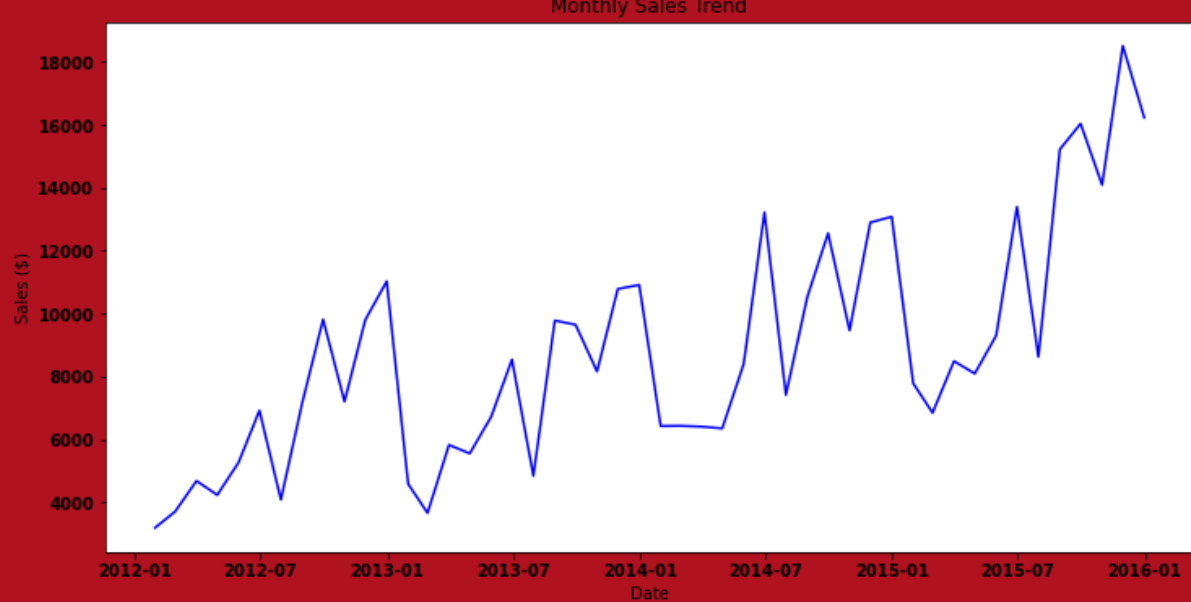
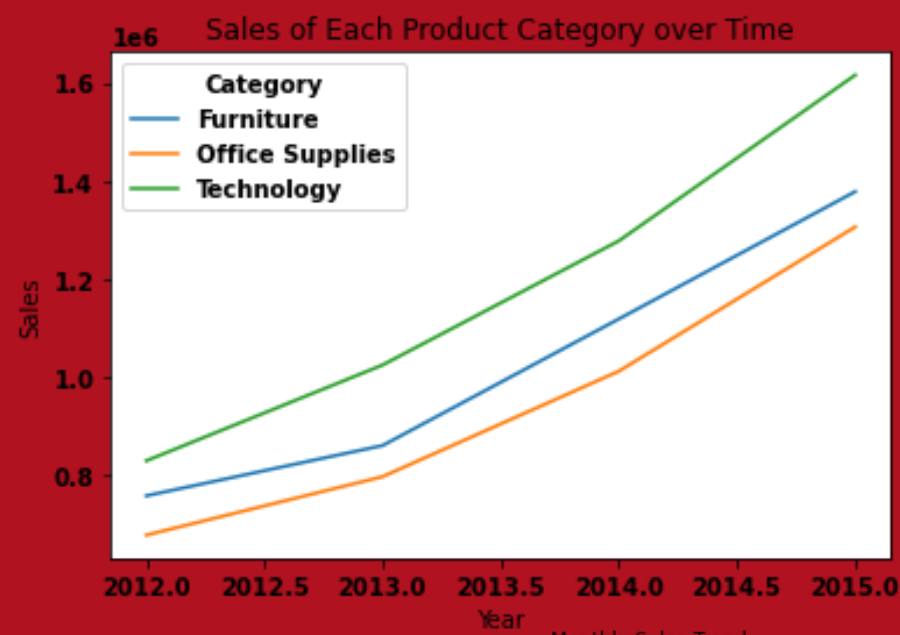


# Analysis on Market



**Demography plays a major role in the sales & profit**

# Sales Trend Analysis

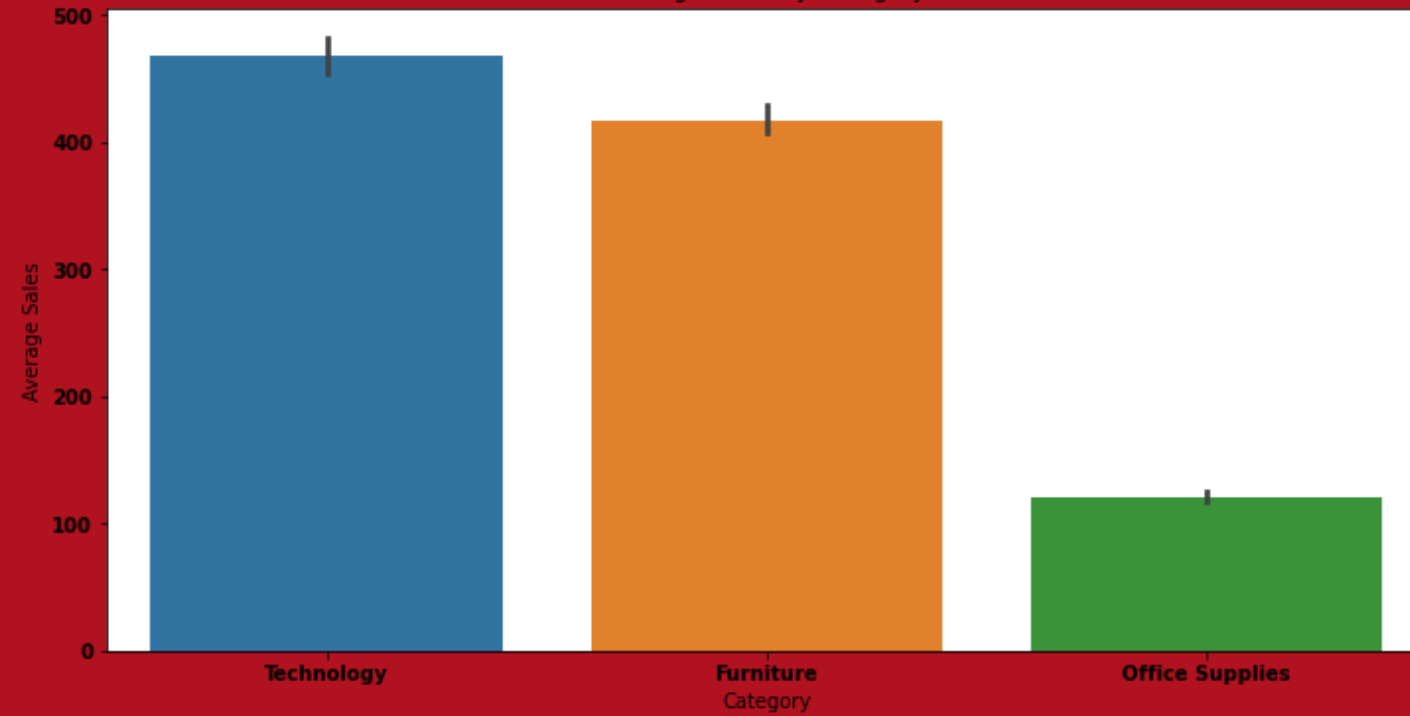


# Sales and Quantity Analysis

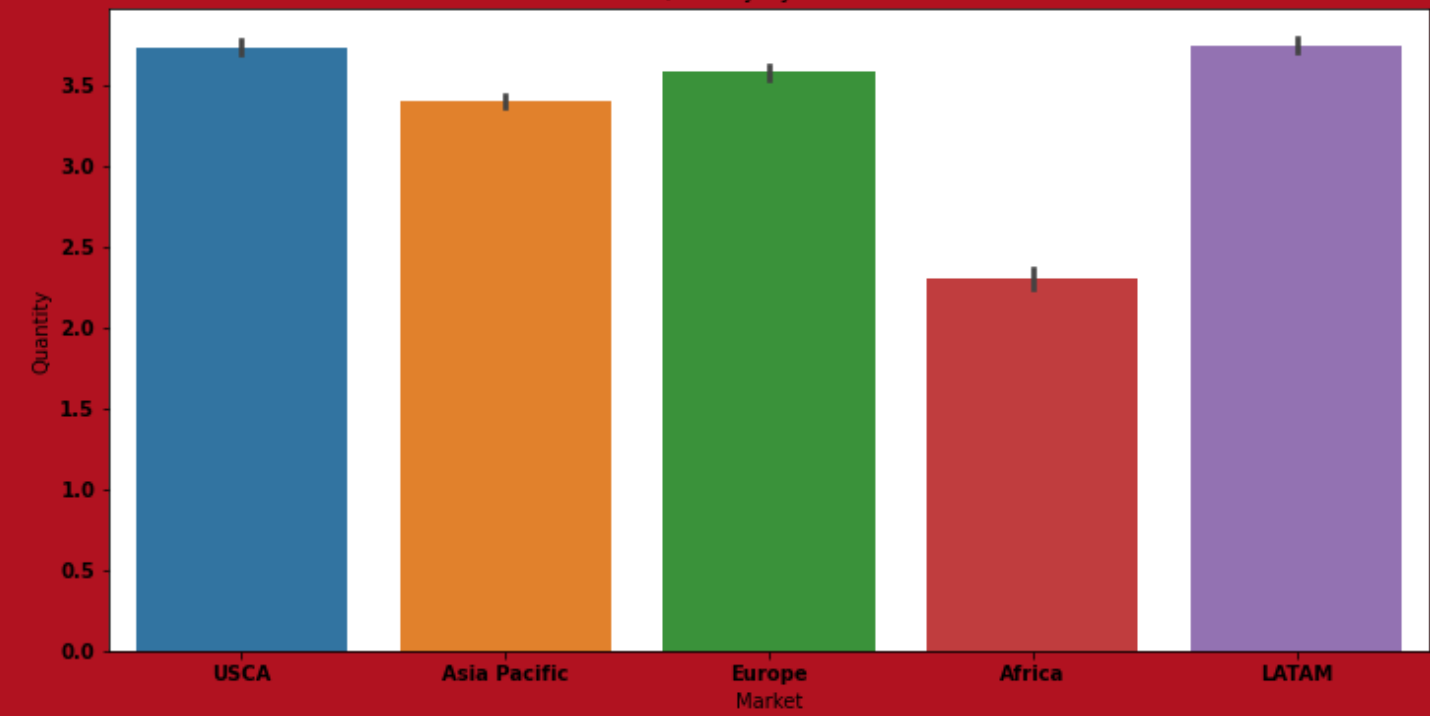
## Category

## Market

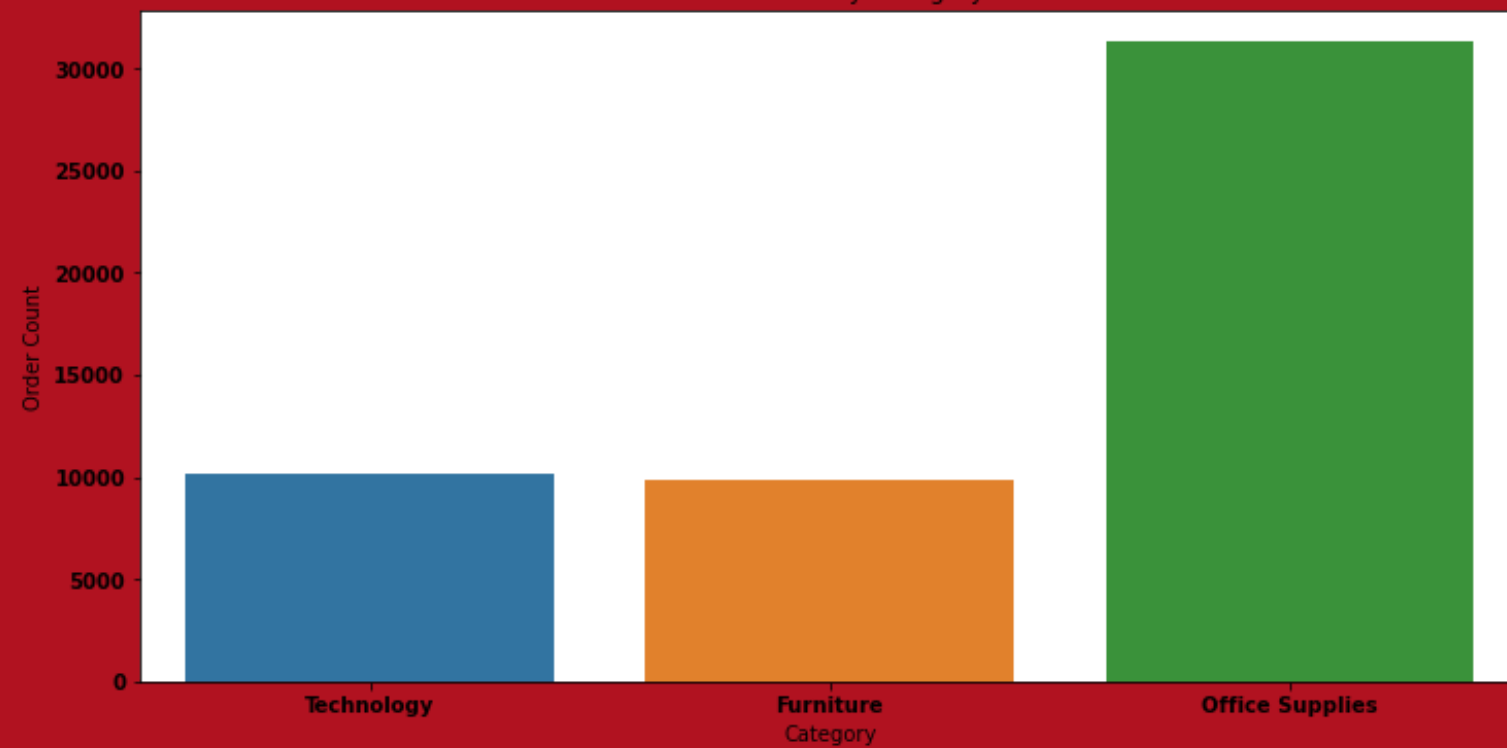
Average Sales by Category



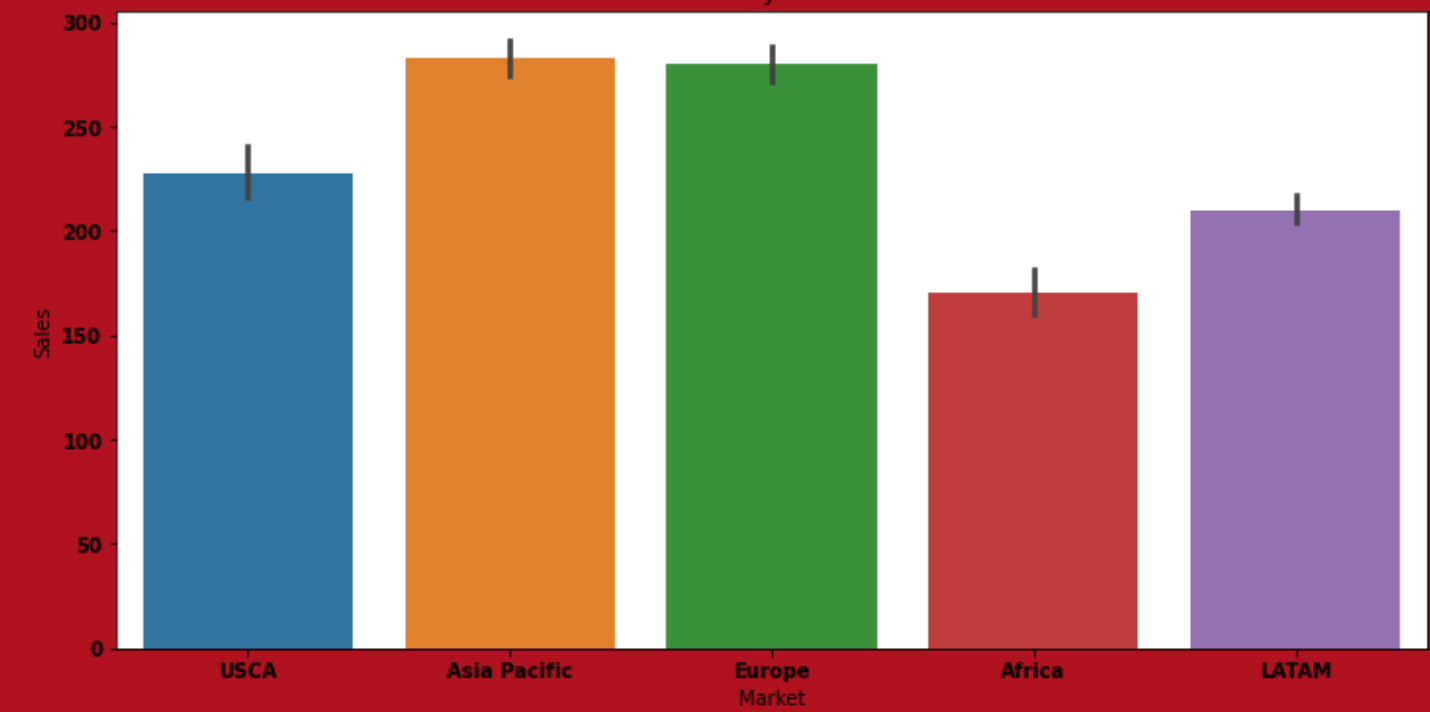
Quantity by Market



Order Count by Category

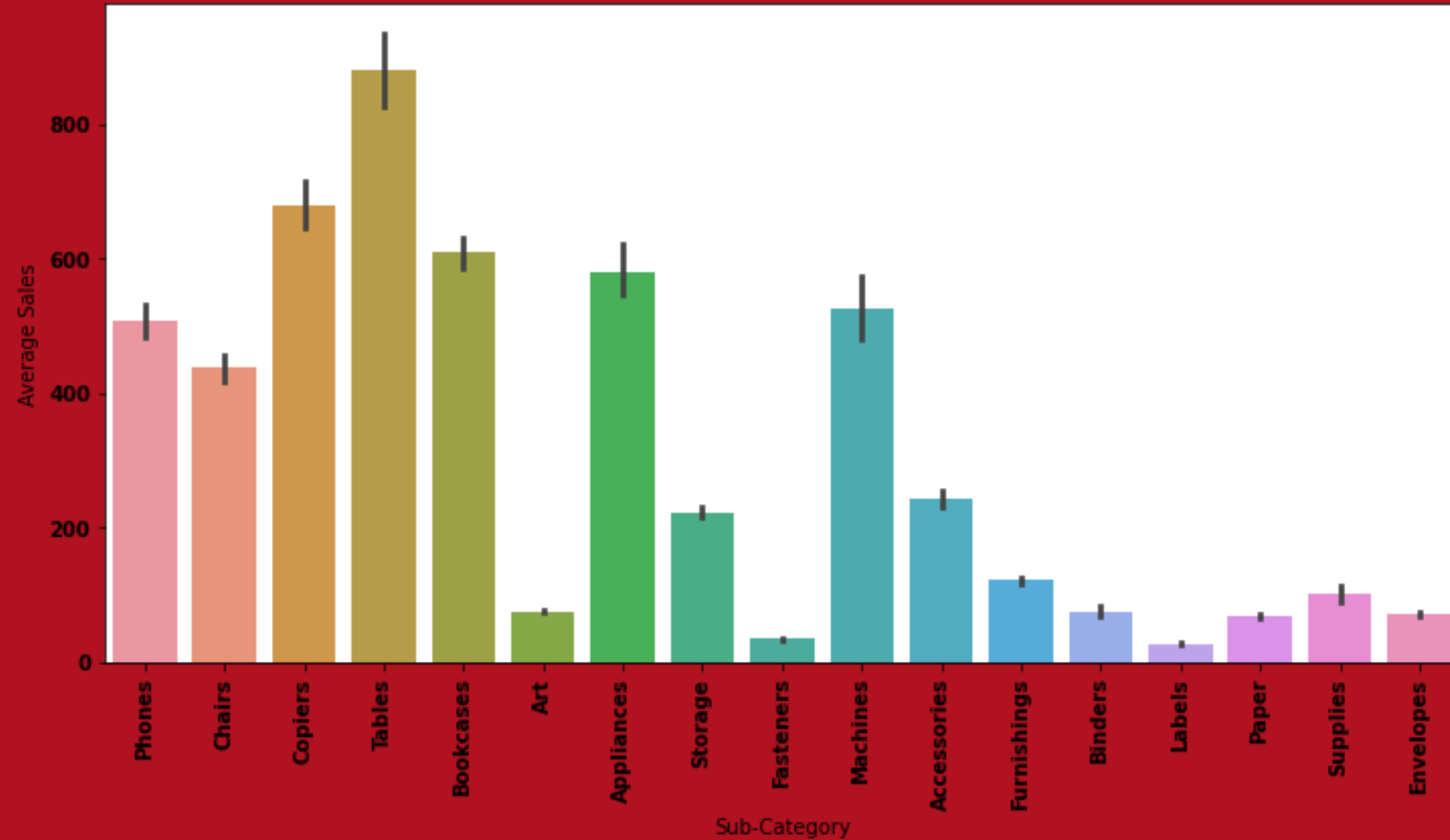


Sales by Market

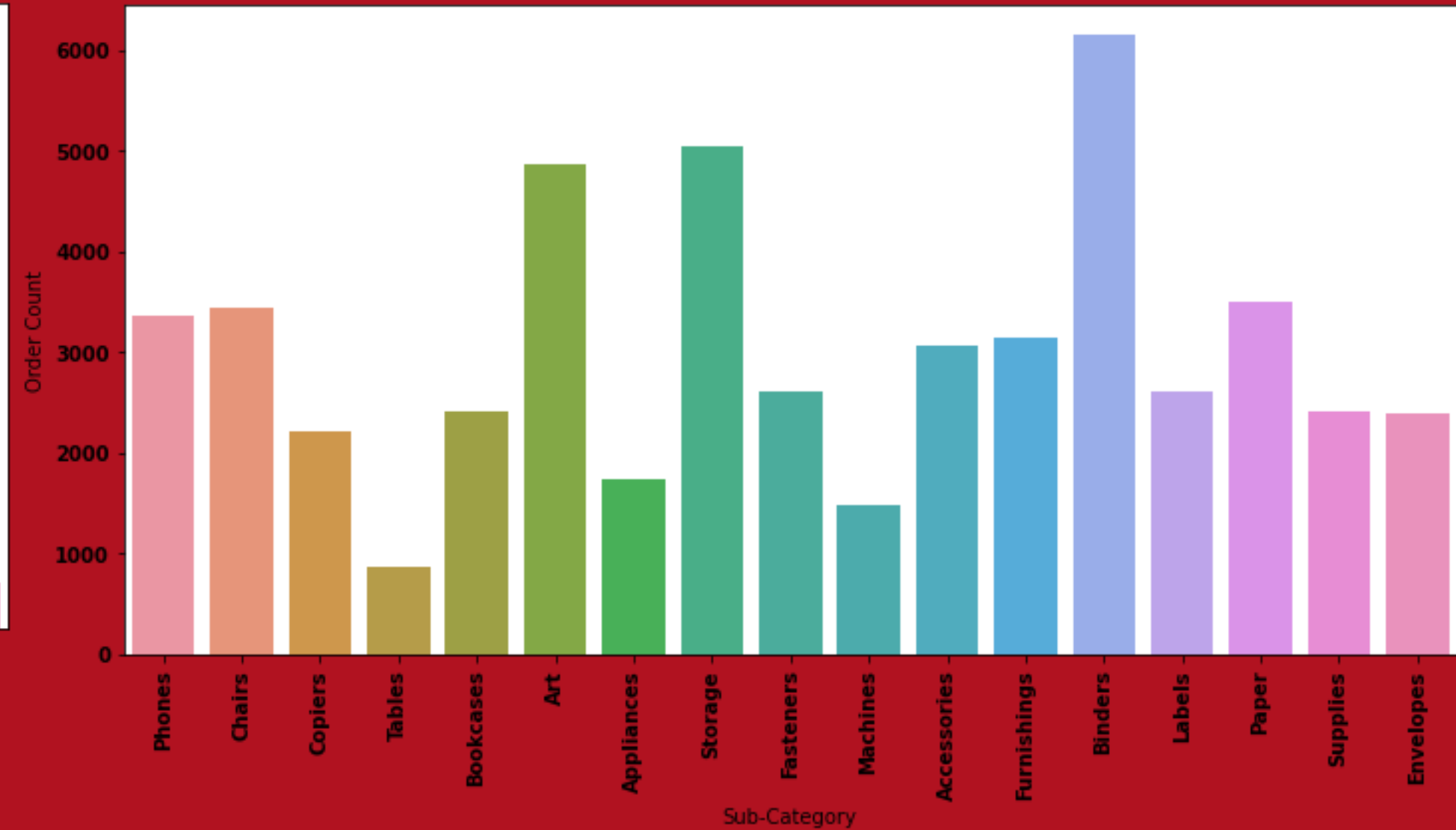


# Sales and Quantity Analysis

Average Sales by Sub-Category



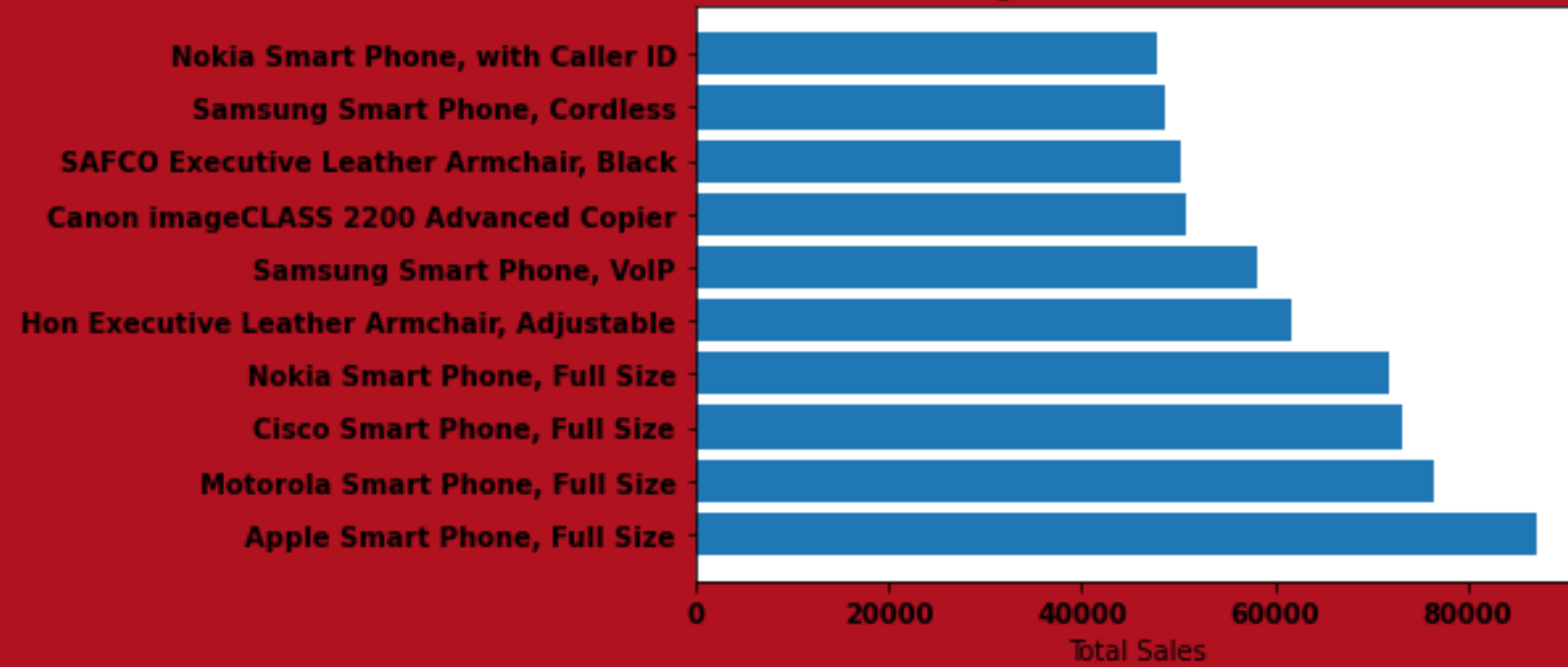
Order Count by Sub-Category



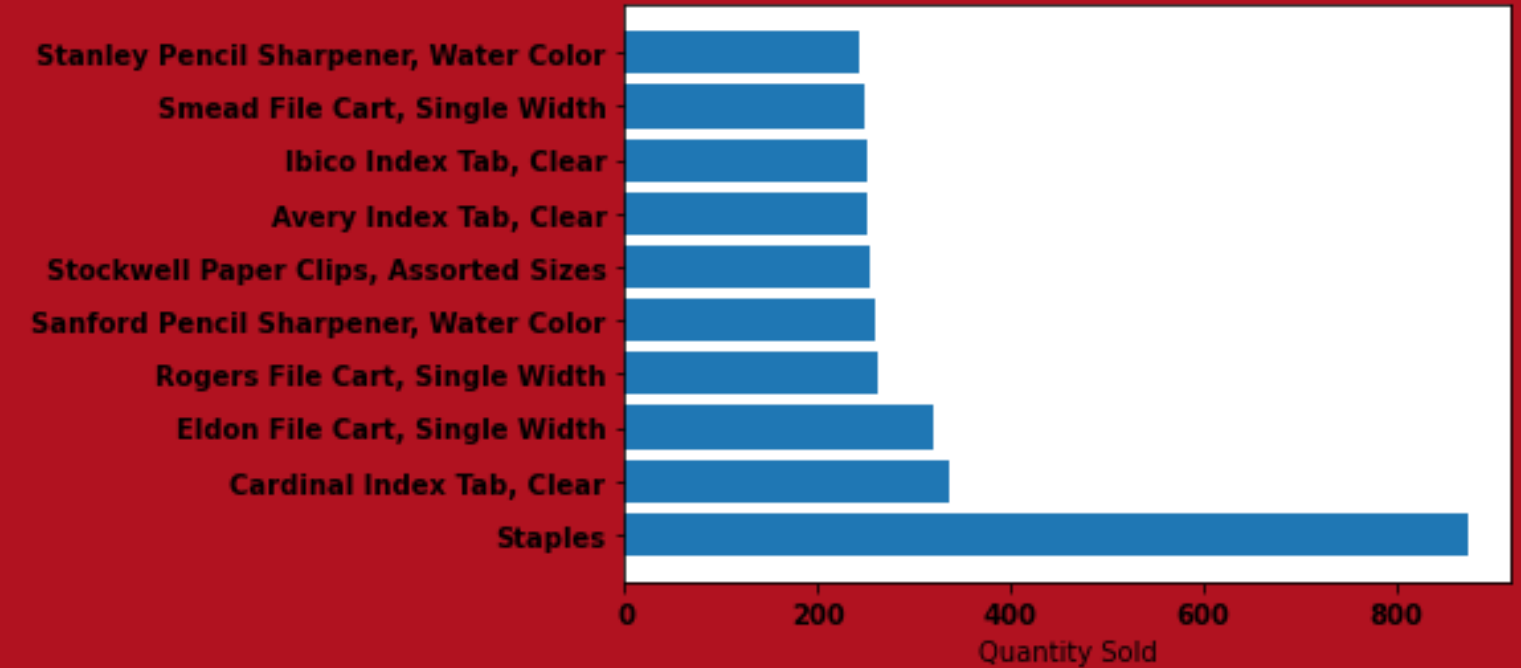
**Increasing the purchases of Tables, will heavily profit the company.**  
**Binders are the most popular and sold sub-Category**

# Analysis by Products - The Top 10s

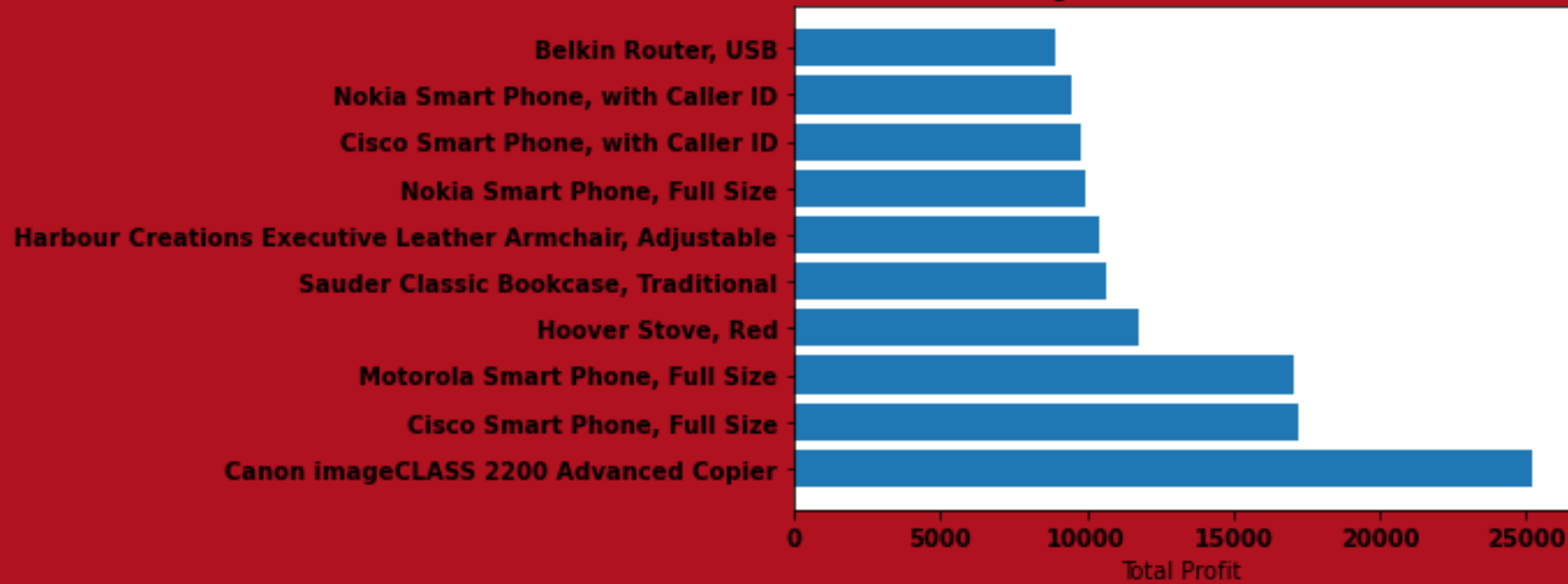
Highest Sold Products



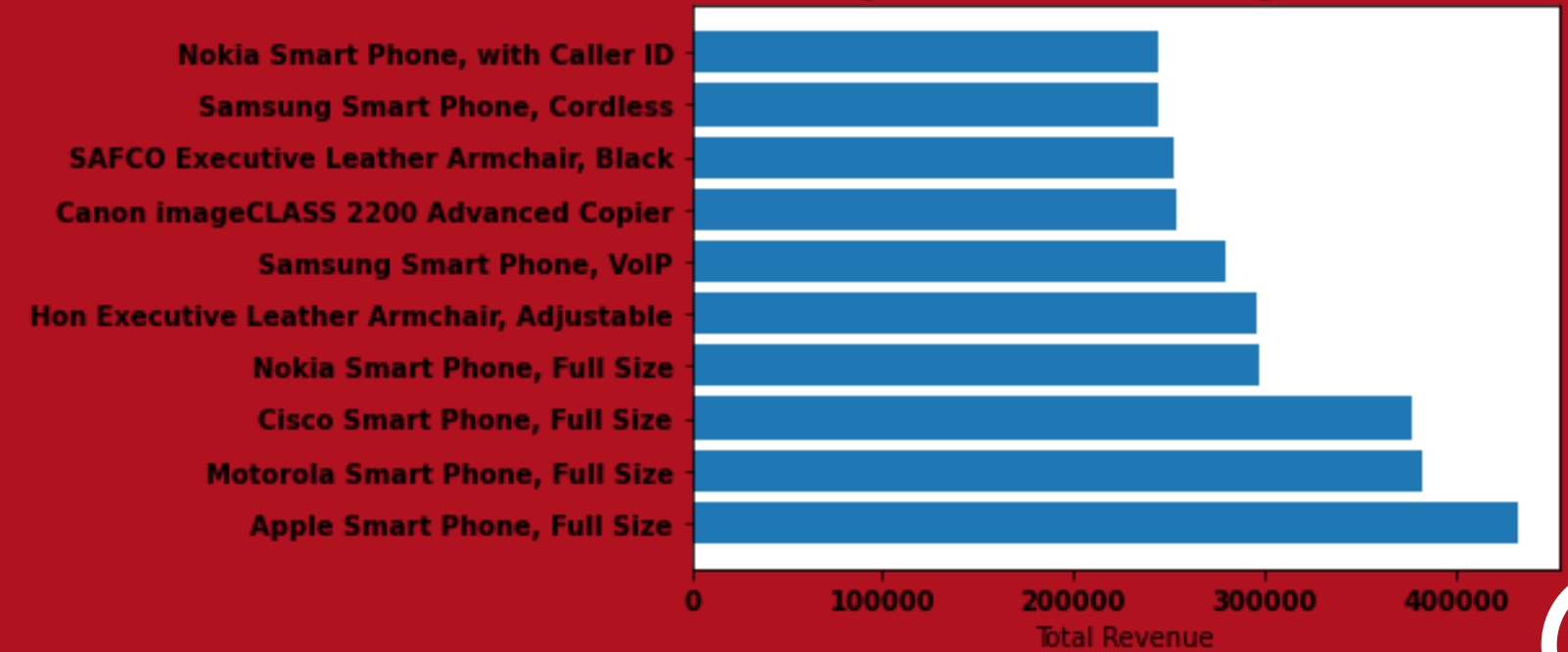
Most Popular Products



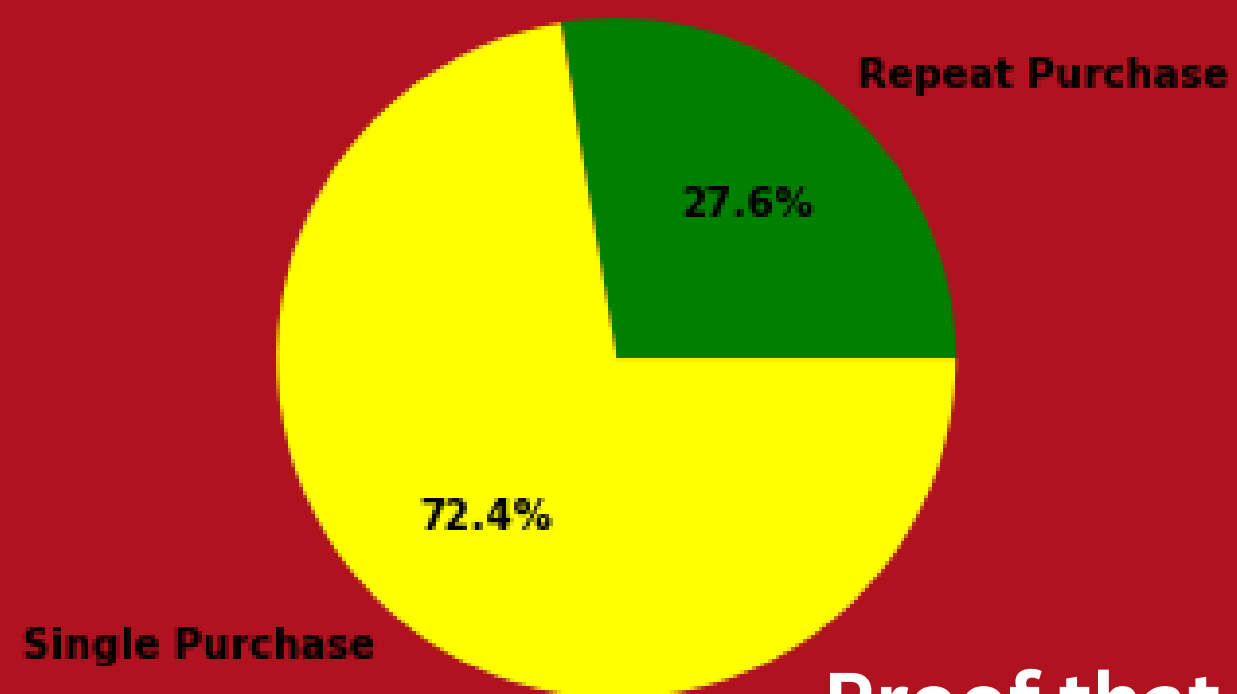
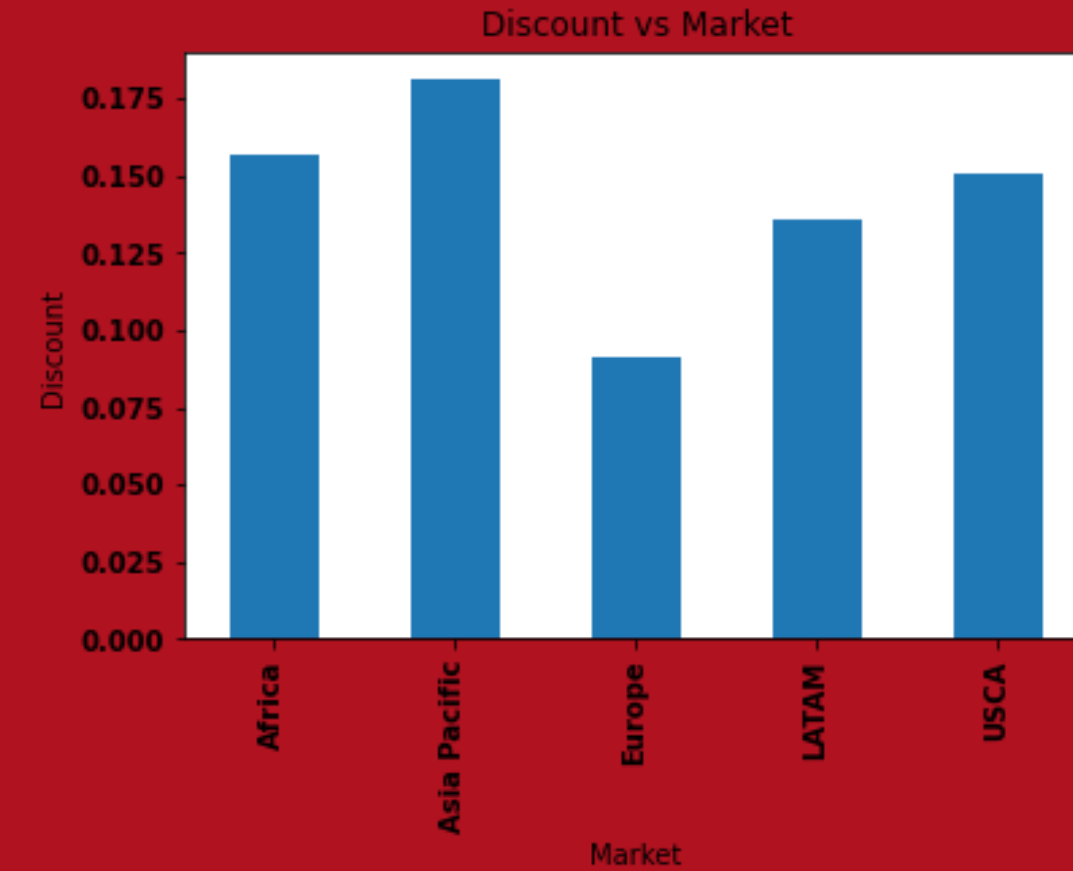
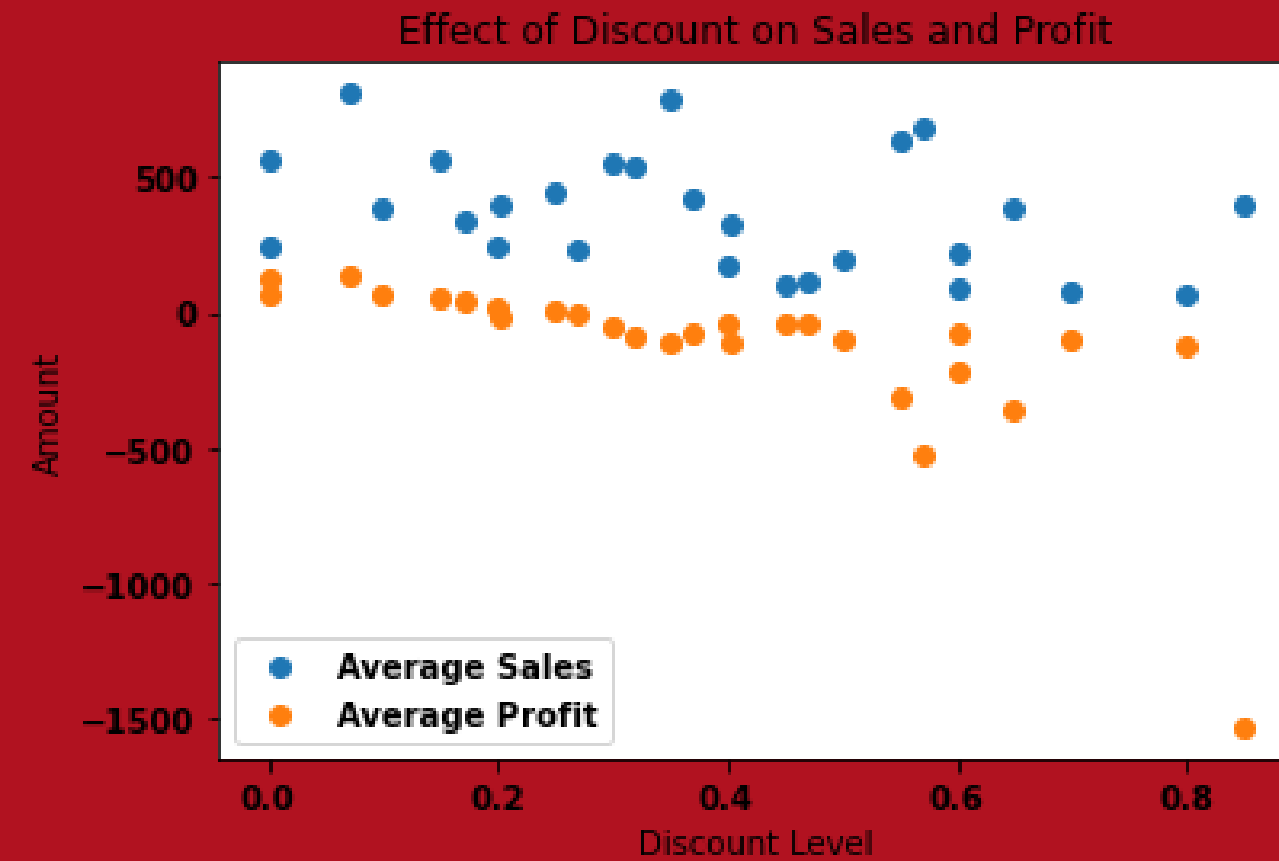
Highest Profit Products



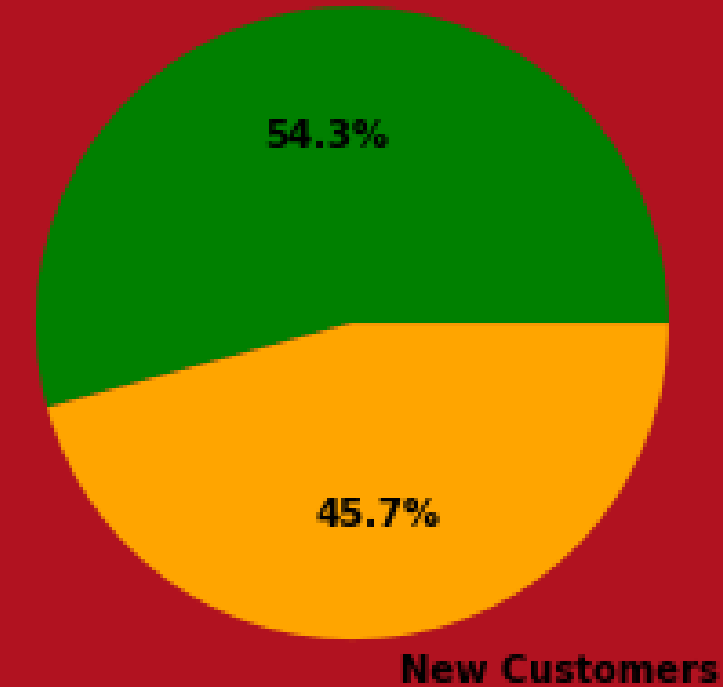
Highest Revenue Generating Products



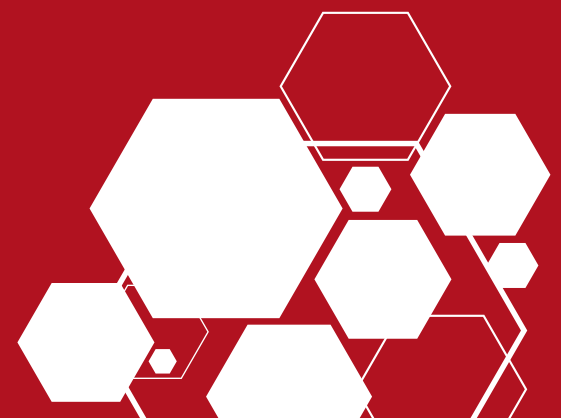
# Analysis on Discount



Returning Customers

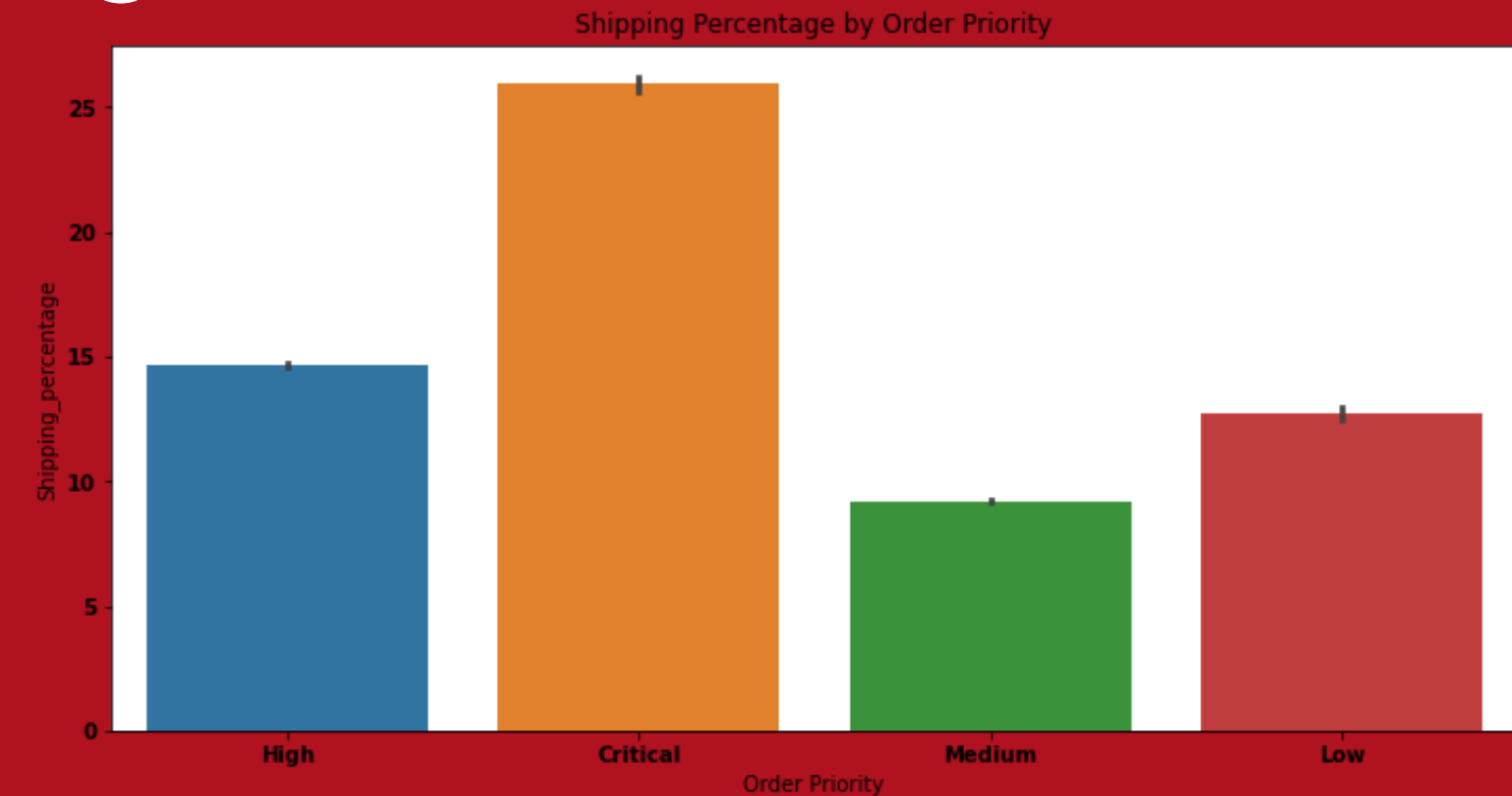
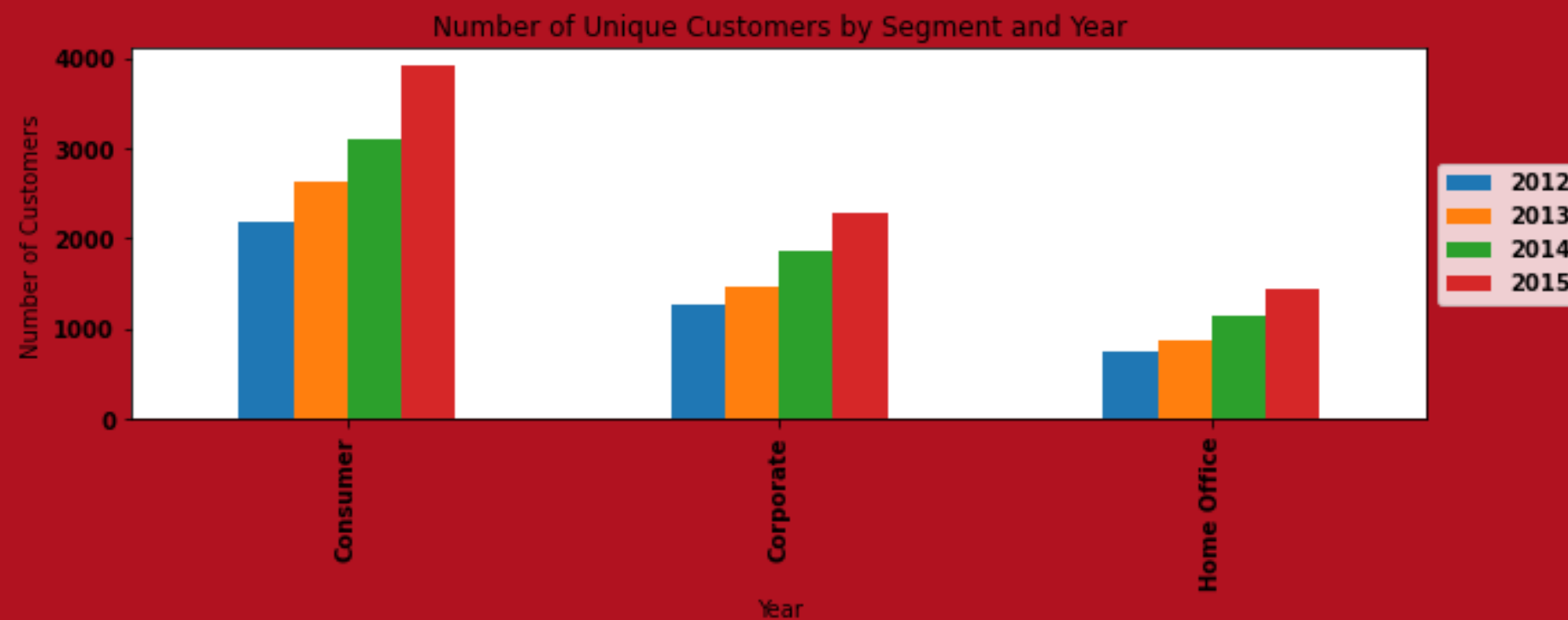


Proof that Discount works





# Other Analyses

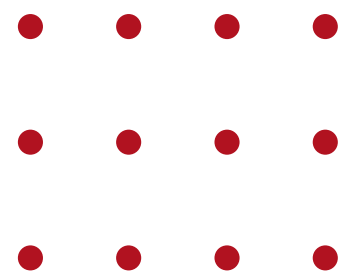


## Exponential Growth

# SUMMARY

## Key Considerations

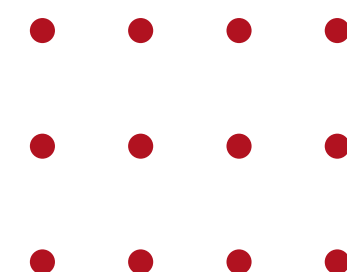
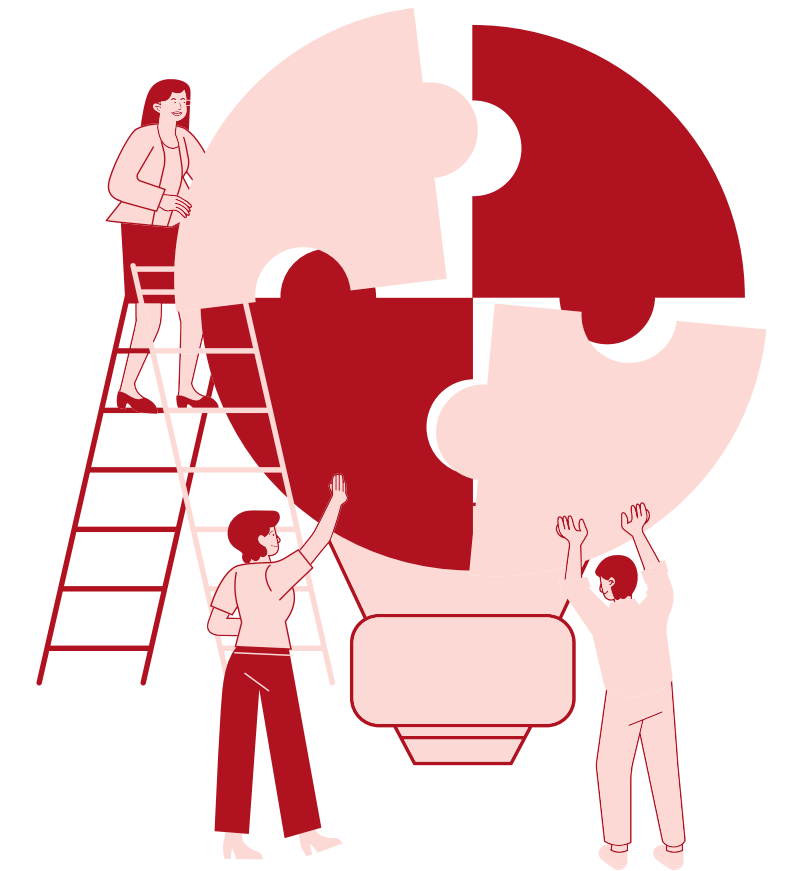
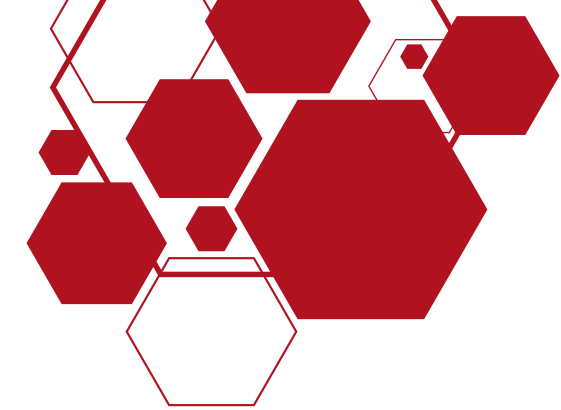
1. **Discounts** have a significant impact on sales and profit. It is important to analyze the optimal discount levels that will increase sales and profit without negatively impacting the bottom line.
2. **Shipping cost** can also have an impact on sales and profit. Businesses should consider offering free shipping at a certain order value or finding ways to reduce shipping costs.
3. The **customer segment** has a significant impact on the number of customers and purchases each year. Understanding the needs and preferences of each segment can help businesses tailor their marketing and sales strategies accordingly.
4. There are certain products and categories that are more popular among customers. Analysing the **sales and profitability of different products and categories** can help businesses optimize their inventory management and marketing efforts.
5. It is important to track **customer behavior** such as **purchase frequency, retention rate, and new customer acquisition**. This can help businesses identify opportunities to increase customer loyalty and improve overall customer satisfaction.
6. Finally, analyzing the **sales data over time** can help businesses identify trends and seasonality patterns. This can help with forecasting and planning for future sales and inventory management.



# SUMMARY

## Approach & Solution

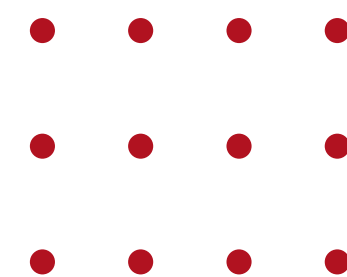
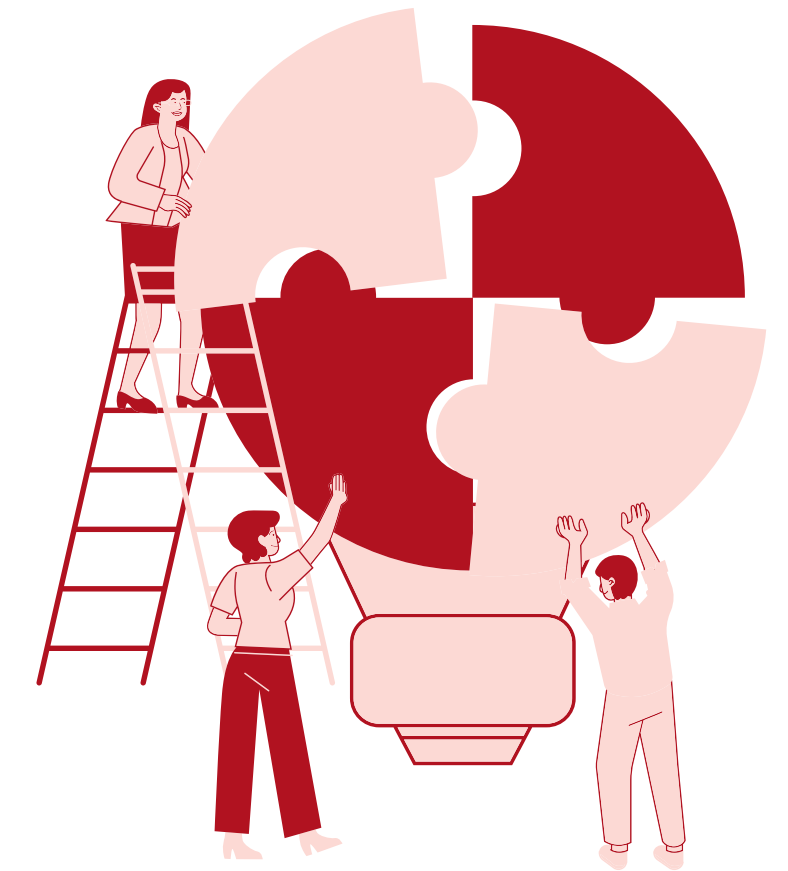
- 1. Offer targeted discounts:** From the analysis on the effects of discounts on sales and profits, the business can consider offering targeted discounts on specific products or sub-categories that have shown to be more responsive to discounts. This can help increase sales and profits without resorting to blanket discounts that may not be as effective.
- 2. Optimize shipping costs:** The analysis on the effects of shipping costs on sales and profits can help the business optimize its shipping strategies. For example, the business can consider offering free shipping for orders above a certain threshold or for specific products/categories that have higher profit margins.
- 3. Improve customer retention:** The analysis on the effects of discounts on customer retention can help the business identify ways to retain existing customers. For example, the business can offer loyalty programs or targeted promotions to customers who have made repeat purchases.
- 4. Target high-potential segments:** The analysis on segment vs. number of customers and purchases can help the business identify segments that have high growth potential. The business can then tailor its marketing strategies to target these segments and capture a larger share of their spending.
- 5. Identify slow periods:** The analysis on months with the longest number of days with least sales can help the business identify slow periods and plan accordingly. For example, the business can focus on inventory management during these periods to avoid overstocking and reduce storage costs.



# SUMMARY

## Approach & Solution

- 1. Offer targeted discounts:** From the analysis on the effects of discounts on sales and profits, the business can consider offering targeted discounts on specific products or sub-categories that have shown to be more responsive to discounts. This can help increase sales and profits without resorting to blanket discounts that may not be as effective.
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# THANK YOU

Open to Questions

