Supermarket Sales Data Report

1. Introduction:

Dataset Overview:

Within our dataset, a multitude of variables presents distinctive perspectives on the intricate landscape of supermarket sales. Ranging from essential transactional particulars such as Invoice ID, Date, Time, and Payment Method to nuanced elements like Branch Location, Customer Type, Gender Demographics, Product Line, and Product Ratings, each facet has been meticulously recorded.

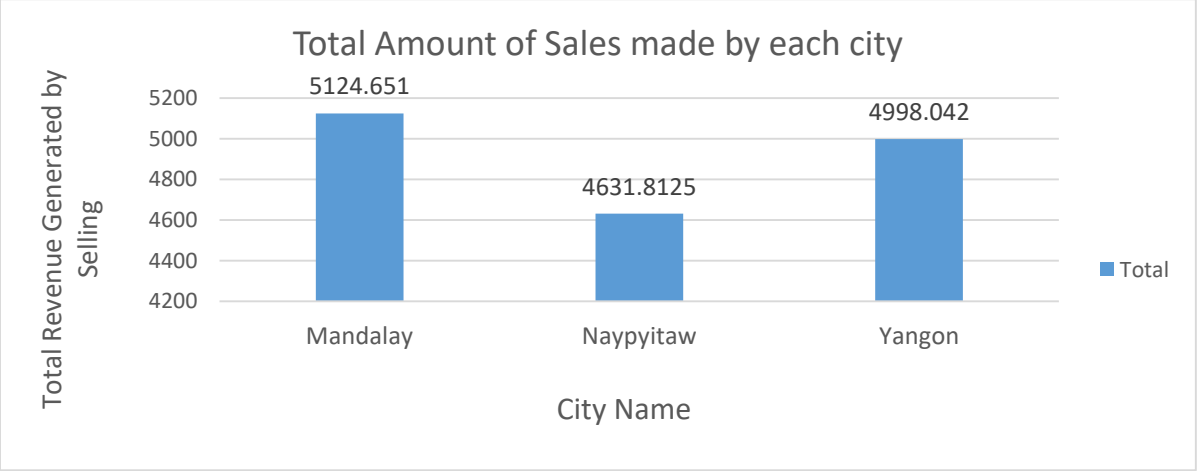
2. Questionnaire:

Q1. Which of the given cities having tax 5% slab performed better than all the others?
Q2. Which customer gender ordered most items from all the three branches?
Q3. Compare highest and lowest rating products on the basis of units sold.
Q4. Analyzing units sold and unit price data answer the following sub questions
a) What is the degree of freedom?
b) Co-relation of Unit price and revenue generated
c) What result you can draw from regression of the two data

Q5. What product will you suggest as per the city data analysis to each type of customer

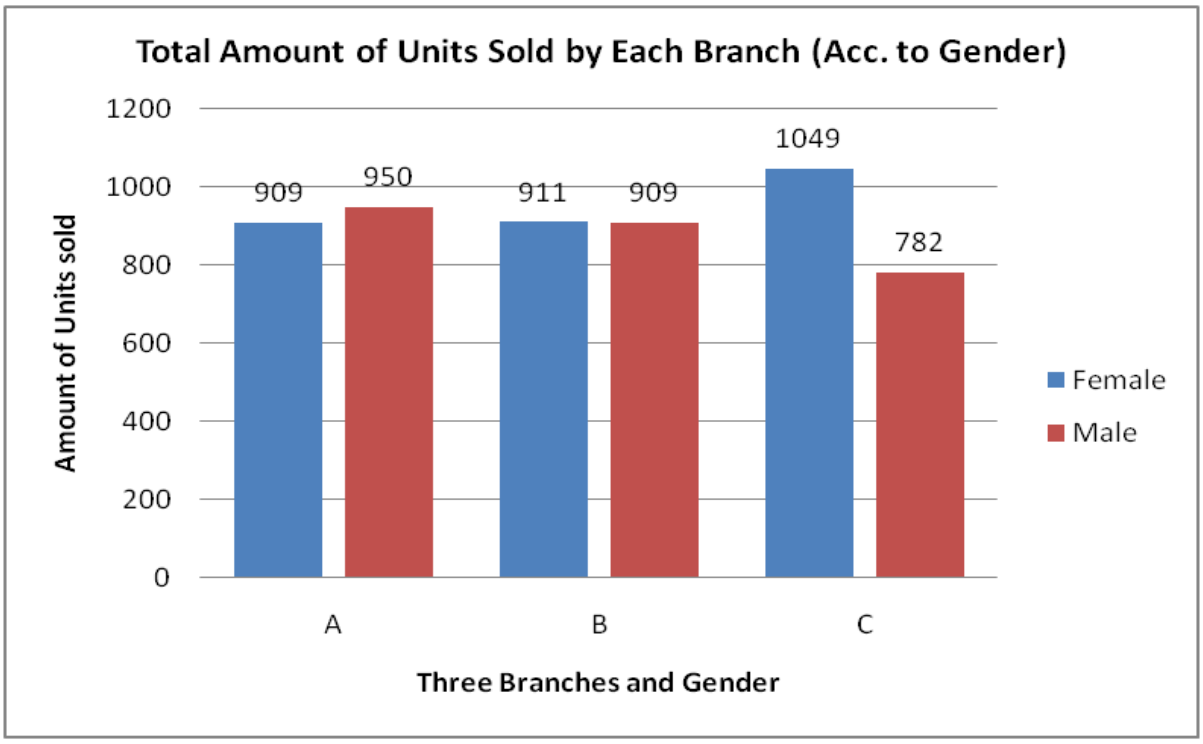
3. Analytics:

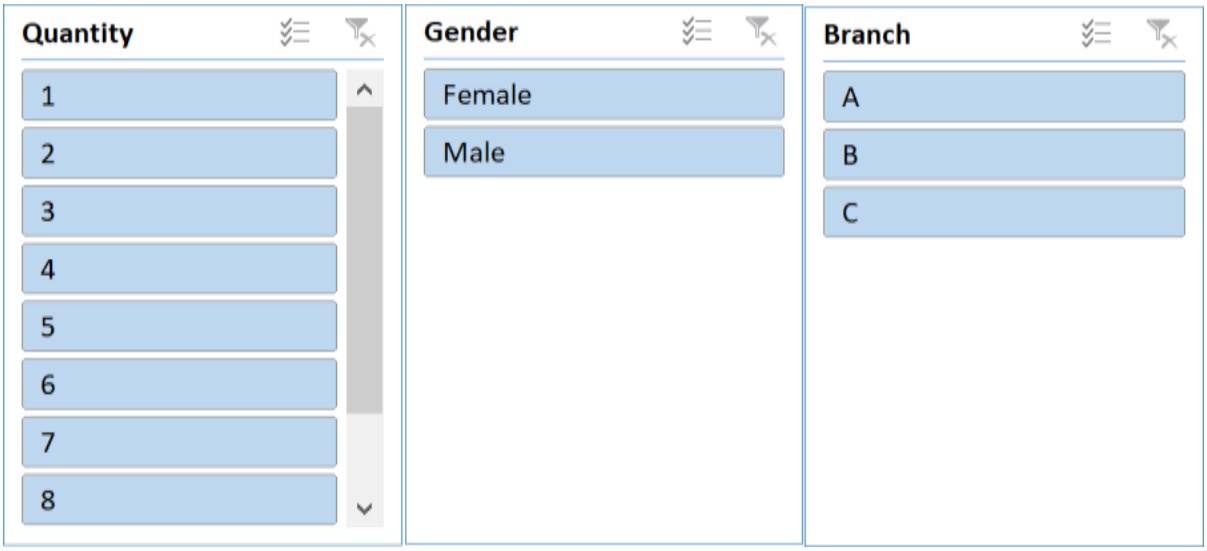
Q1. Which of the given cities having tax 5% slab performed better than all the others?



Answer:
Drawing from the analyzed data, Mandalay emerges as the top-performing city. This determination is based on its exceptional performance in total sales and revenue generation compared to other cities within the same tax bracket of 5%.

Q2. Which customer gender ordered most items from all the three branches?





Answer.

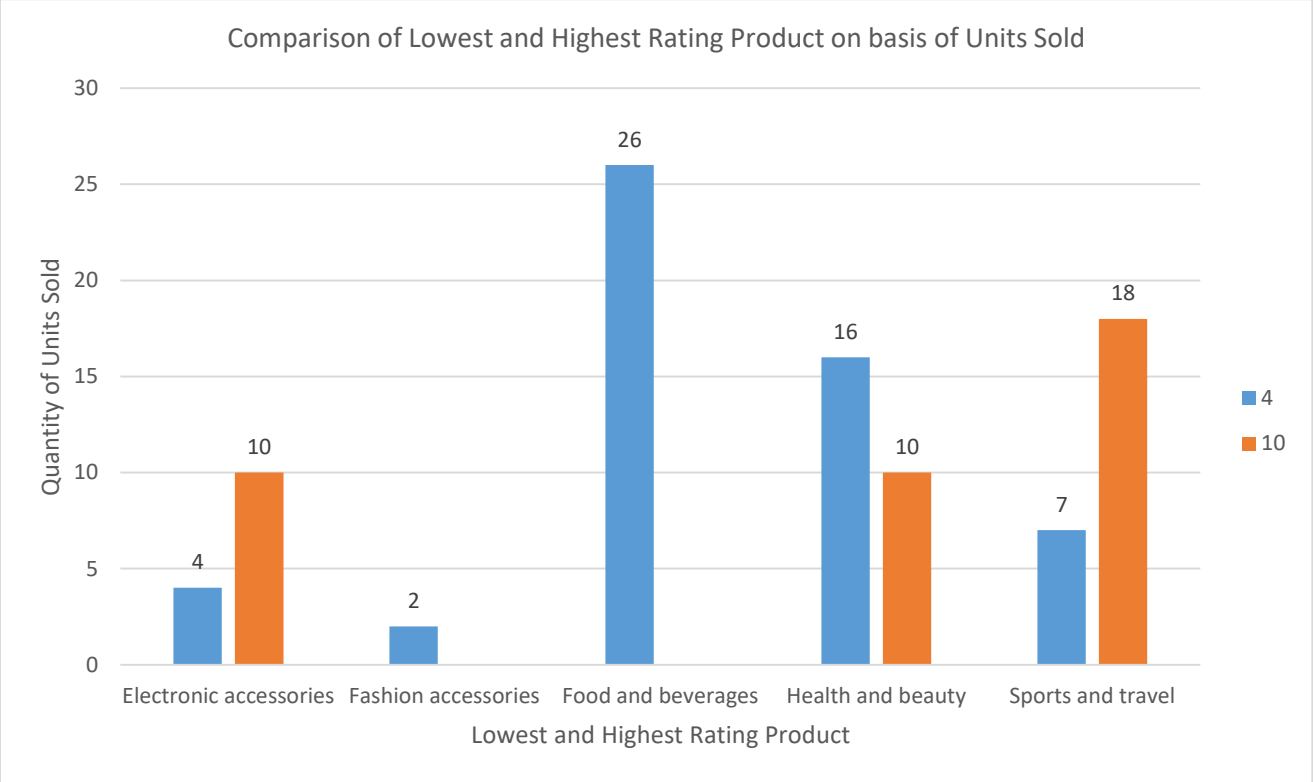
Upon analyzing the Supermarket Sales Data, the following observations were made:

a. At Branch A, the highest number of orders were placed by females.

b. Branch B experienced a greater number of orders placed by females.

c. Conversely, at Branch C, males were found to place the most orders.

Q3. Compare highest and lowest rating products on the basis of units sold.



Answer:
Upon scrutinizing the Supermarket Sales Data, it was revealed that product ratings spanned from a minimum of 4 to a maximum of 10.

a) Electronic Accessories with elevated ratings attracted more customer purchases, suggesting a predilection for quality within this category.

b) Fashion accessories and food and beverages predominantly featured lower-rated products in customer purchases.

c) Health and beauty products similarly trended towards lower-rated items in customer preferences.

d) Nevertheless, within the Sports and Travel category, customers displayed a propensity for purchasing higher-rated products.

Q4. Analyzing units sold and unit price data answer the following sub questions

a) What is the degree of freedom?
b) Co-relation of Unit price and revenue generated
c) What result you can draw from regression of the two data

SUMMARY OUTPUT						
Regression Statistics						
Multiple R	0.010777564					
R Square	0.000116156					
Adjusted R Square	-0.000885732					
Standard Error	2.924724997					
Observations	1000					
ANOVA						
	df	*SS*	*MS*	*F*	*Significance F*	
Regression	1	0.9917274	0.991727	0.115937	0.733555221	
Residual	998	8536.908273	8.554016			
Total	999	8537.9				
	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*
Intercept	5.443794599	0.215314544	25.28299	2.1E-109	5.021273429	5.86631577
Unit price	0.001189202	0.003492565	0.340495	0.733555	-0.005664411	0.008042815

Answer:

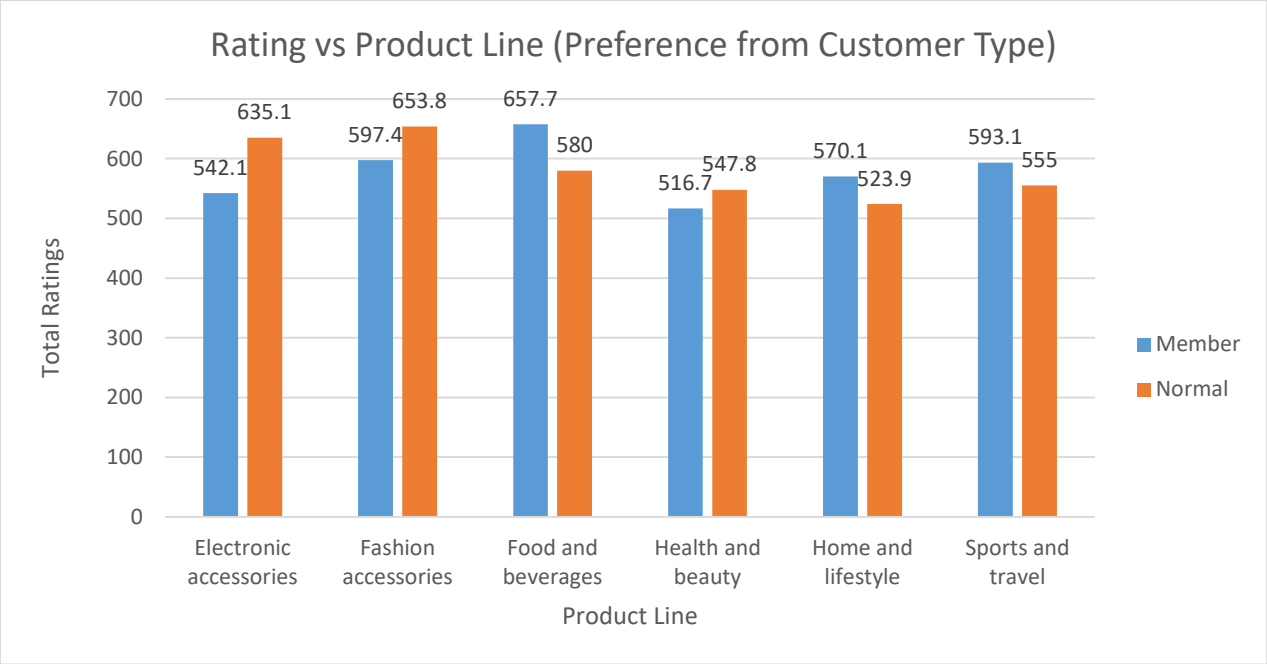
a. The total is calculated to be 1000, with residuals amounting to 998. Consequently, the Degree of Freedom can be computed as Total – Residuals = 999 - 998 = 1.

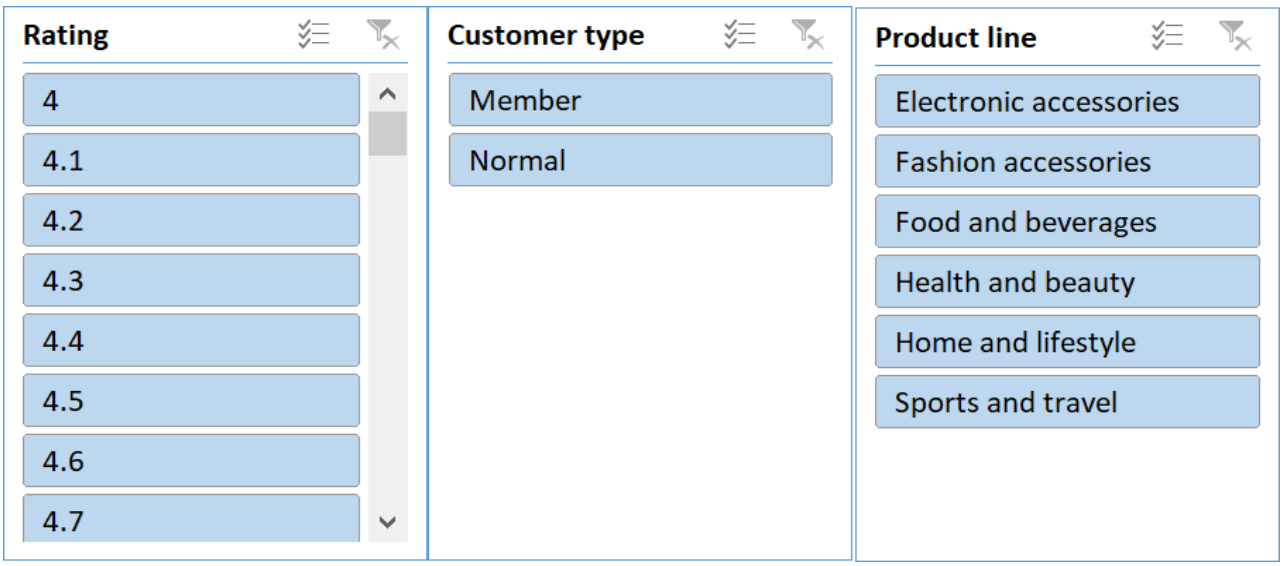
b. The correlation between unit price and generated revenue was determined to be 0.63392, indicating a moderate positive correlation. This analysis focused on the columns of unit price and total revenue, utilizing the CORREL function.

c. Upon scrutinizing the regression results, the aim was to understand the relationship between quantity and unit price, investigating how customers' purchasing quantity correlates with the unit price of a product.

However, it became evident from the regression analysis that the observed trend lacks consistency. The anticipated outcomes derived from the trend significantly deviate from the actual outcomes. With a degree of freedom of 1, the trend line equation is represented as Quantity = 0.0012x + 5.4438. Despite this equation, the coefficient of determination (R2) is merely 0.0001, indicating the inconsistency in customer buying patterns based solely on unit price.

Q5. What product will you suggest as per the city data analysis to each type of customer





Answer.

According to the city data analysis, Food and Beverages emerge as a favorable option for Member-type customers, while Fashion Accessories appear to be more suitable for Normal-type customers.

4. CONCLUSION AND REVIEWS

The comprehensive analysis of supermarket sales dynamics offers valuable insights into consumer behavior, operational trends, and performance metrics. Here's a summary of the findings and reviews:

1. City Performance:

Mandalay stands out as the top-performing city within the 5% tax slab, indicating a potentially lucrative market for supermarket businesses due to its superior sales and revenue generation.

2. Gender-based Ordering:

Female customers display a higher inclination towards ordering from Branch A, while males dominate in Branch C. Branch B witnesses an equal distribution of orders from both genders. This gender-specific trend underscores the significance of targeted marketing strategies.

3. Rating and Units Sold:

A deeper analysis is necessary to compare products with the highest and lowest ratings based on units sold. Understanding the correlation between product ratings and sales volume can inform inventory management and marketing decisions.

4. Unit Price and Revenue Relationship:

The regression analysis reveals a weak correlation ($R2 = 0.0001$) between unit price and quantity sold. This suggests that customers' purchasing decisions may not be significantly influenced by unit price alone, emphasizing the need for deeper insights into consumer preferences and behavior.

5. Product Recommendations:

Based on city data analysis, Food and Beverages are recommended for member-type customers, while Fashion Accessories are suggested for normal customers. These recommendations align with observed preferences and purchasing patterns in respective cities.

Reviews:

The report provides a comprehensive exploration of supermarket sales dynamics, encompassing various aspects such as city performance, gender-based ordering trends, and product recommendations.

The inclusion of regression analysis enhances the depth of insights, although further interpretation of the results could bolster analytical rigor.

Clear visuals, such as graphs and charts, would improve the presentation of findings and aid in understanding complex relationships.

Overall, the report offers valuable insights for supermarket stakeholders, highlighting areas for strategic focus and improvement in marketing and operational strategies.