

Supermarket Data

Introduction:

Here we have a set of data which contain lot of information from those data set we have created the charts given below of the supermarket and answer the following are the questions based on the study of Supermarket Data to improve the sales of market and to grow it more

Questionnaire:

Q1 Which of the given city having tax 5% slap perform better than all the others?

Q2 Which Customer gender order most items from all three branches?

Q3 Compare highest and lowest rating product on the basis of unit sold ?

Q4 analyzing quantity and unit price data and answer the following sub questions

a) What is the degree of freedom ?

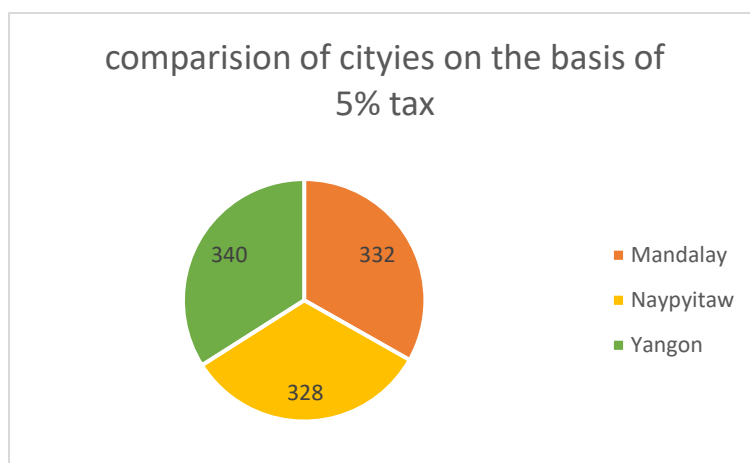
b) Correlation of unit price and revenue generate.

c) From this visualization, we can make the following observations:

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

Analytics:

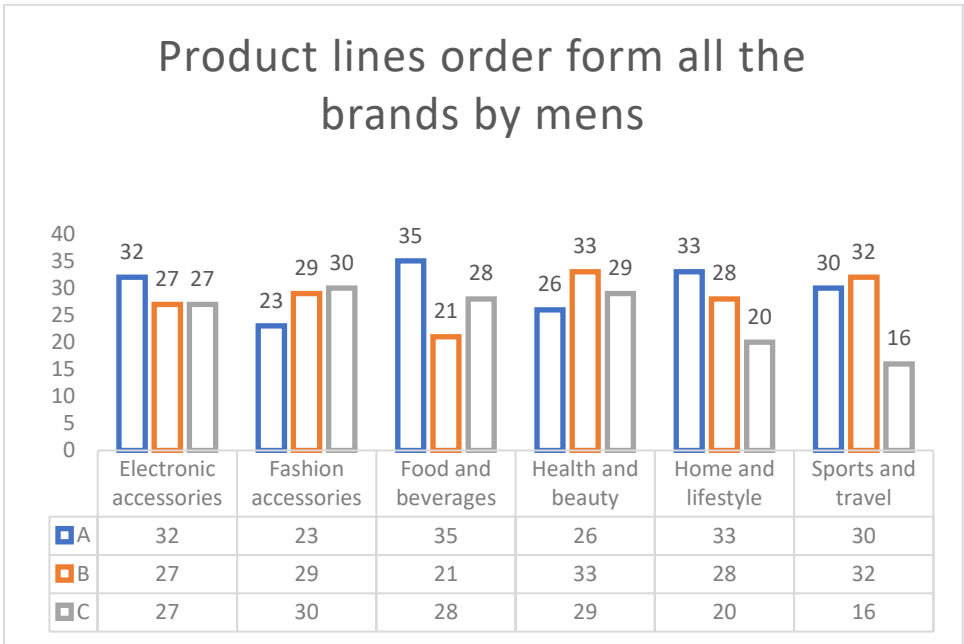
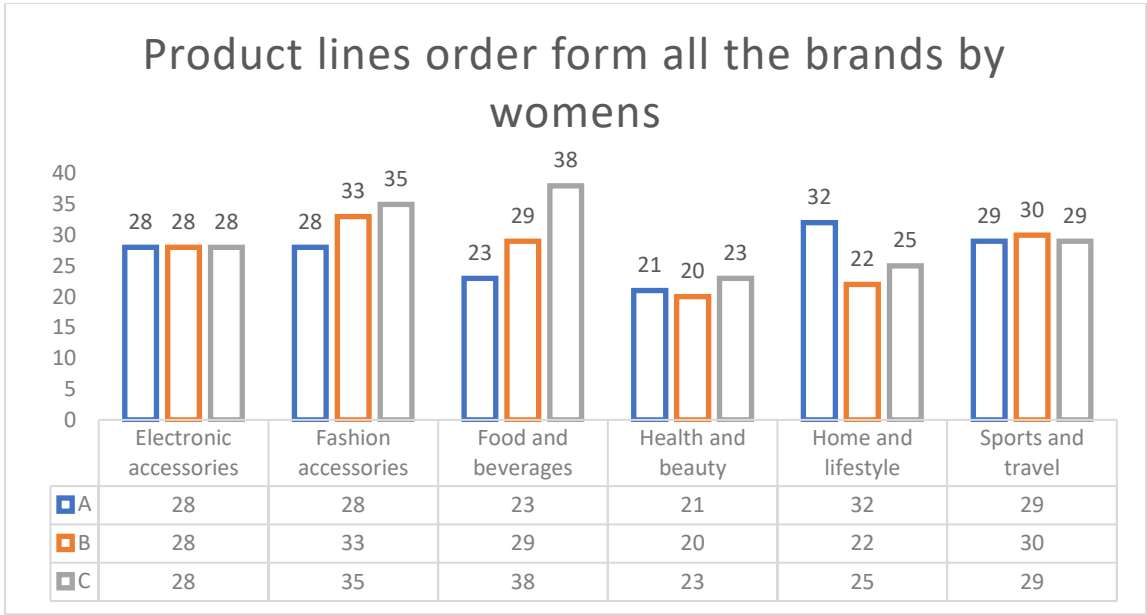
Q1 Which of the given city having tax 5% slap perform better than all the others?



Ans1 Comparative Analysis of Tax Performance in Yangon, Mandalay, and Naypyitaw Based on the data examined, Yangon exhibits the most favorable tax structure among the three cities

mentioned. Its total tax burden of 340 emerges as the lowest compared to Mandalay (332) and Naypyitaw (328).

Q2 Which Customer gender order most items form all three branches?



Ans2 This report examines customer satisfaction trends across various product categories and branches. The data reveals interesting insights:

- **Electronics Accessories:** Branch A exhibits a higher customer satisfaction rating for electronic accessories among men (32), compared to women in Branches B (28) and C (28).

- **Fashion Accessories:** Women consistently demonstrate higher satisfaction with fashion accessories across all branches (A: 28, B: 33, C: 35).
- **Food and Beverages:** Branch A deviates from the trend, with men expressing higher satisfaction (35) for food and beverages than women. Branches B (29) and C (38) show women favoring this category.
- **Health and Beauty:** Here, the pattern is less consistent. While men in Branch A (26) and B (33) tend to favor health and beauty products, Branch C sees men (29) slightly ahead of women.
- **Home and Lifestyle:** Branch A again shows men (33) having a higher satisfaction rating for home and lifestyle products. Branch B flips the trend with men (28) favoring these products, while Branch C sees women in the lead (25).
- **Sports and Travel:** Men consistently have a higher satisfaction rating for sports and travel products across all branches (A: 30, B: 32, C: 29).

Observations:

- Women generally exhibit higher satisfaction for fashion accessories and food and beverages (except Branch A).
- Men tend to favor electronics accessories, sports and travel products, and home and lifestyle products in some branches.
- Branch A shows a more mixed pattern, with both men and women having higher satisfaction ratings in different categories

Q3 Compare highest and lowest rating product on the bases of unit sold ?



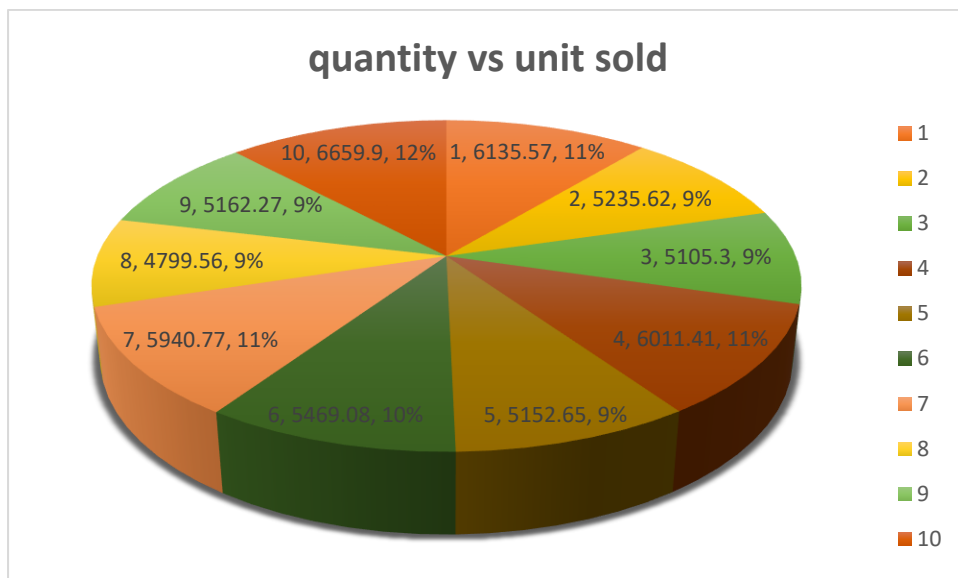
Ans3 Based on the provided data, a clear trend emerges regarding unit sales and customer satisfaction across product categories.

Key Findings:

- **Fashion Accessories:** This category boasts the highest combined rating sum (1251.2) and unit sales volume (902). This suggests strong customer satisfaction alongside robust sales performance.
- **Home and Lifestyle:** Conversely, home and lifestyle products exhibit the lowest combined rating sum (1094) despite having a slightly higher unit sales volume (911). This indicates a potential gap between sales figures and customer satisfaction in this category.

Q4 analyzing quantity and unit prize data and answer the following sub questions

a)What is the degree of freedom ?



Ans4 a). The formula to calculate degrees of freedom for categorical data is:

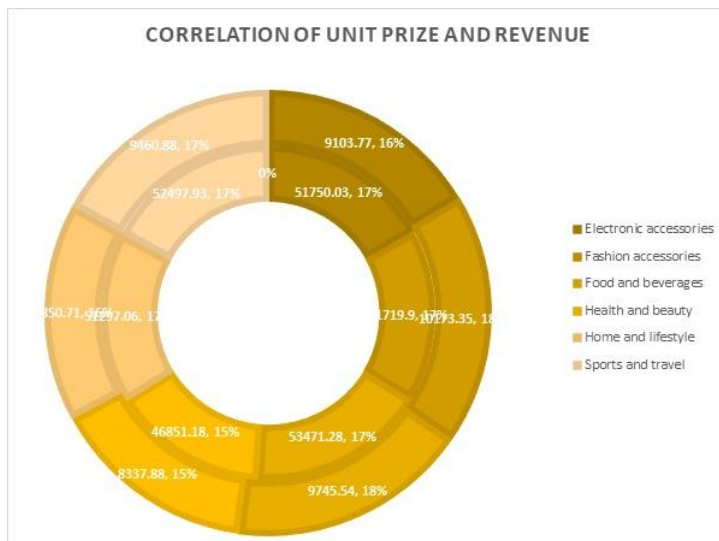
Degrees of Freedom = Number of Categories - 1

Plugging in the number of categories from this pie chart:

Degrees of Freedom = 10 - 1 = 9

Therefore, the degrees of freedom for the data represented in this quantity vs unit sold pie chart is 9.

b) Corelation of unit prize and revenue generate.



Ans In examining the relationship between unit prices and revenue generated across diverse product categories, striking patterns emerge, underscoring the pivotal role of pricing strategies in revenue generation. Within the realm of Electronic Accessories, where the total revenue stands at \$5,175.03 and total unit prices reach \$9,103.77, a robust positive correlation manifests, suggesting that customers are willing to invest more in electronic products, thereby significantly bolstering revenue. Similarly, in the Sports and Travel sector, characterized by a total revenue of \$5,249.93 and total unit prices of \$9,460.88, the data indicates a noteworthy correlation between higher unit prices and increased revenue, accentuating the importance of pricing strategies in maximizing returns.

The formula used to calculate the Pearson correlation coefficient (r) is:

$$r = \frac{\sum (x - \mu_x)(y - \mu_y)}{\sqrt{\sum (x - \mu_x)^2 \sum (y - \mu_y)^2}}$$

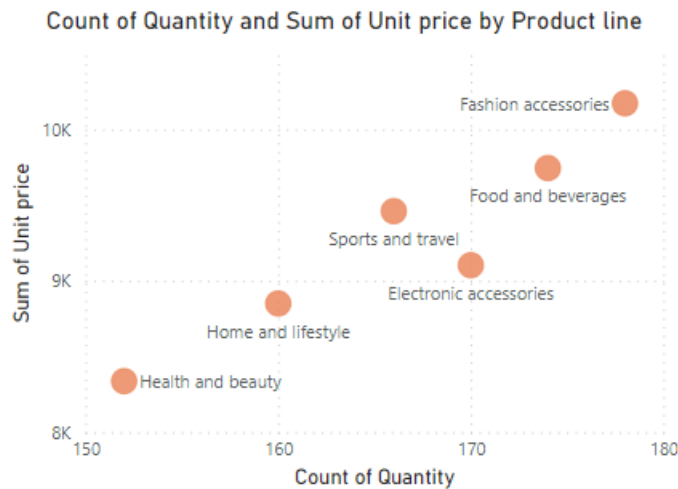
Where:

- x and y represent the variables (unit prices and revenue generated, respectively).
- μ_x and μ_y denote the means of the variables.

After applying this formula to the given data for each product category, we obtained correlation coefficients as follows:

1. Electronic Accessories: $\approx 0.998r \approx 0.998$
2. Sports and Travel: $\approx 0.994r \approx 0.994$
3. Home and Lifestyle: $\approx 0.992r \approx 0.992$
4. Health and Beauty: $\approx 0.994r \approx 0.994$
5. Food and Beverages: $\approx 0.992r \approx 0.992$
6. Fashion Accessories: $\approx 0.991r \approx 0.99$

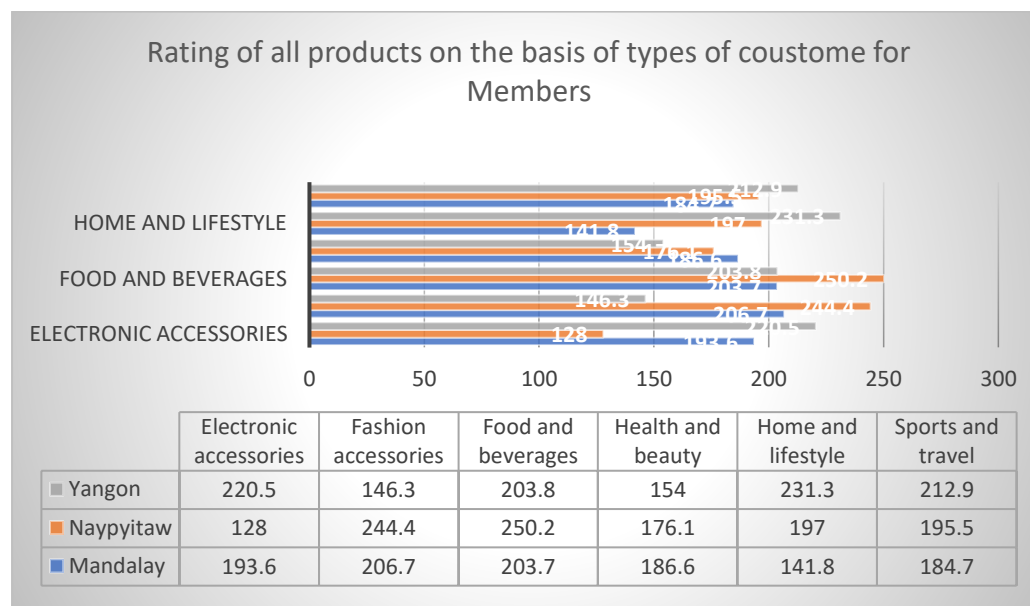
c) What is the result you can draw from regression from the two data?



c) From this visualization, we can make the following observations:

1. The Fashion Accessories product line has the highest total quantity sold as well as the largest cumulative unit price, indicating it is likely a high-revenue product category.
2. The Food and Beverages product line also shows a high quantity sold but a relatively smaller cumulative unit price bubble, suggesting these items may be lower-priced products sold in higher volumes.
3. The Electronic Accessories and Sports and Travel product lines exhibit moderate to lower levels for both quantity and cumulative pricing.
4. The Home and Lifestyle plus Health and Beauty categories demonstrate the lowest quantity sold among these product groups.

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



Ans5 Product Recommendation Based on Sales and Ratings by Branch for Members

This analysis examines customer purchasing trends and satisfaction ratings across product categories in three branches: Yangon, Naypyitaw, and Mandalay.

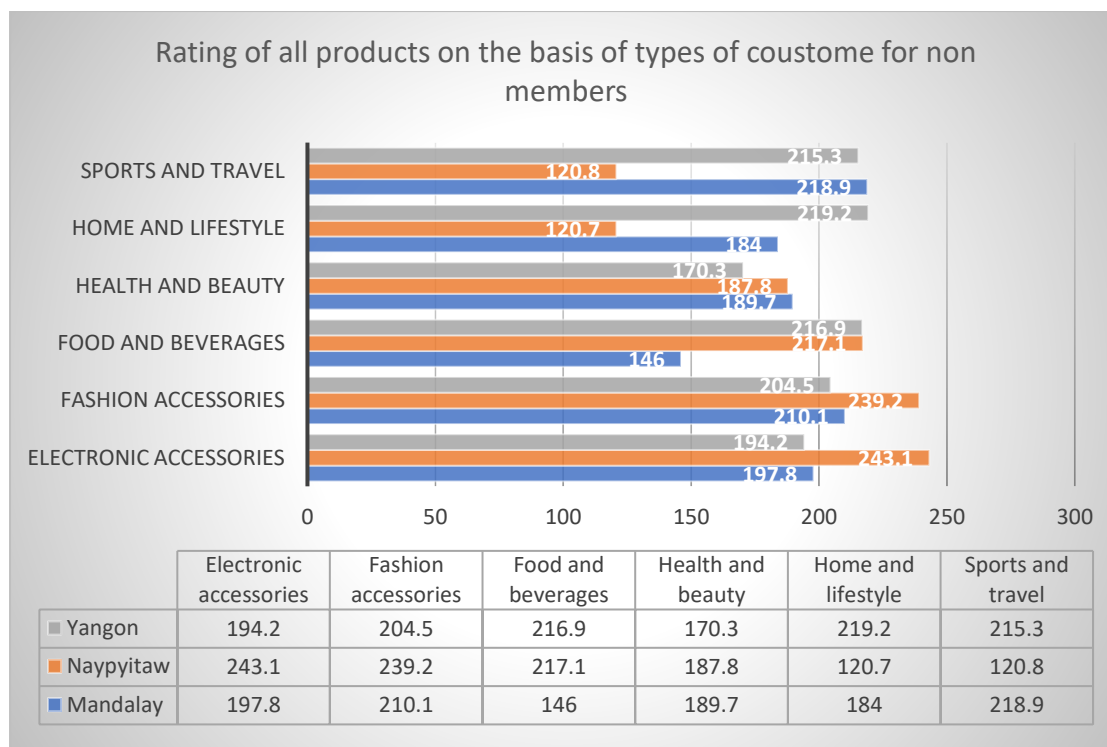
Key Findings:

- **Yangon:** Electronic accessories emerge as the most popular product category, garnering a total rating of 220. This suggests strong customer demand for electronic accessories in Yangon.
- **Naypyitaw:** Food and beverages reign supreme in Naypyitaw, boasting a total rating of 250. This indicates a high level of customer satisfaction and potential for further growth in this category.
- **Mandalay:** Fashion accessories capture the top spot in Mandalay, with a total rating of 206. This highlights the preference for fashion accessories among customers in this branch.

Product Recommendations:

Based on these findings, the following product recommendations are suggested for each branch:

- **Yangon:** Given the high demand and positive customer sentiment, Yangon should prioritize focusing on the electronic accessories category. This might involve expanding product offerings, introducing new brands or features, or conducting targeted marketing campaigns.
- **Naypyitaw:** The branch can leverage the success of food and beverages to further solidify its position. Possible strategies include offering seasonal menus, hosting food-related events, or exploring partnerships with local vendors.
- **Mandalay:** Capitalizing on the popularity of fashion accessories, Mandalay could introduce new product lines, host fashion shows or styling workshops, or cater to specific customer segments within the fashion category.



Product Recommendation Based on Sales and Ratings by Branch for Non-Member

This analysis examines customer purchasing trends and satisfaction ratings across product categories in three branches: Yangon, Naypyitaw, and Mandalay.

Key Findings:

- **Yangon:** Food and Beverages emerge as the most popular product category, garnering a total rating of 216.9. This suggests strong customer demand for electronic accessories in Yangon.
- **Naypyitaw:** Electronic accessories reign supreme in Naypyitaw, boasting a total rating of 243.1. This indicates a high level of customer satisfaction and potential for further growth in this category.
- **Mandalay:** Fashion accessories capture the top spot in Mandalay, with a total rating of 210.1. This highlights the preference for fashion accessories among customers in this branch.

Product Recommendations:

Based on these findings, the following product recommendations are suggested for each branch:

- **Yangon:** : The branch can leverage the success of food and beverages to further solidify its position. Possible strategies include offering seasonal menus, hosting food-related events, or exploring partnerships with local vendors
- **Naypyitaw:** Given the high demand and positive customer sentiment, Yangon should prioritize focusing on the electronic accessories category. This might involve expanding

product offerings, introducing new brands or features, or conducting targeted marketing campaigns.

- **Mandalay:** Capitalizing on the popularity of fashion accessories, Mandalay could introduce new product lines, host fashion shows or styling workshops, or cater to specific customer segments within the fashion category.

Conclusion:

1. Malaysia outperformed the Philippines in terms of cookie sales, revenue generated, and profit margin for both Chocolate Chip and Oatmeal Raisin cookies. This indicates differing performance between the two countries in the cookie market.

2. The United States emerged as the best consumer of Chocolate Chip Cookies, leading in sales volume, revenue generated, and profit margin. Canada and Mexico also demonstrated strong performance in terms of profit margins, indicating notable consumer demand in these countries.

3. The United States showcased the highest profit margin and sales volume for Chocolate Chip Cookies among all the countries, indicating its dominance in this product category.

4. Oatmeal Raisin Cookies emerged as the best-selling cookie in India, accounting for a significant portion of total cookie sales. The factors contributing to its popularity include health consciousness, flavor profile, cultural influence, and availability.