

# SUPERMARKET SALES DATA ANALYSIS

**Aim:** To analyze supermarket sales data to gain insights into product performance across different branches and customer payment methods in various cities, segmented by gender.

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## Project Explanation:

This project was carried out using Python and Excel. The dataset contains **14 columns** and **1,000 rows**, with the following columns:

Invoice ID, Branch, City, Customer Type, Gender, Product Line, Unit Price, Quantity, 5% Tax, Total, Date, Time, Payment, COGS, Gross Margin %, Gross Income, and Rating.

## Exploratory Data Analysis (EDA):

1. Examined the data structure.
2. Handled null values, duplicates, and missing data.
3. Created correlation tables and heatmaps.

## Data Preprocessing:

New columns (Month, Year, Day, Weekday) were created to extract detailed insights from the data.

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## Reports Generated:

1. **Gender Membership Analysis:** A report showing counts of members and non-members by gender in each city.
2. **Gender Distribution:** A bar graph comparing male and female counts alongside product sales quantities in three branches.
3. **Branch-Level Insights:** Sales data for different product lines across branches A, B, and C.
4. **Count of Product line Sold in Each City:** Brief Detail About the Qty Sold Out.
5. **Count of Various Payment in each city:** Brief Detail About the Payment Method Used.
6. **Count Of Gender uses to Pay various Payment Methods:** Detail about the Payment Method Used By Gender.
7. **Gender Spends of Various Products :** which Gender Spend Of In Most Of the Product.
8. **Bar Graph On Which Payment Method is Used More.**
9. **Weekdays Gender Spends More Capital.**
10. **Which gender payes the high tax on Quantity.**
11. **Per Day Tax Collection Of 5 % On Total In City.**
12. **Bar Graph On Busiest Weekdays & Busiest City.**
13. **In Each City Quantity wise unit price and Tax on Total amount.**
14. **In Which WeekDay Tax Collection Of 5 % On Total In City.**
15. **5% Tax Collection On Per Hrs Basis.**
16. **5% Tax on Each Product Against Gender**

**Key Highlight:** The report on **product sales quantities by branch** revealed significant trends.

**Example:** In branches A, B, and C, electronic accessories sales in Branch C were notably low. A solution to address this involves **rotating stock to branches with higher demand**, ensuring better product turnover.

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### Key Insights:

1. **Product Sales:** Most products sell equally across branches, but **electronic accessories sell the most in Branch C.**
2. **Cash Payments:** Female customers in **Naypyitaw** predominantly use cash.
3. **Busiest Days:** The busiest weekdays are **Tuesday and Thursday.**
4. **City Analysis:** While all three cities are busy, **Yangon is the busiest overall.**
5. **Payment Methods:**
  - Male customers prefer **e-wallets** to avoid carrying cash and reduce taxes associated with credit cards.
  - In **Mandalay** and **Yangon**, e-wallets are widely used, whereas in **Naypyitaw**, cash is the preferred payment method.
6. **City-Specific Product Focus:**
  - **Mandalay:** Increased focus on **fashion accessories** and **sports products** can boost sales.
  - **Naypyitaw:** Prioritize **fashion accessories** and **food and beverages.**
  - **Yangon:** Emphasize **electronic accessories** to cater to demand