

Supermarket Sales Analysis Report

Introduction

This project analyzes supermarket sales data using Python and Google Colab.

The main goal is to explore customer behavior, sales performance, and relationships between different variables using data visualization and statistical analysis.

Dataset Description

The dataset contains information about supermarket transactions, including:

Branch

City

Customer type

Gender

Product line

Unit price

Quantity

Sales

Gross income

Rating

Date and payment method

Data Exploration and Cleaning

The dataset was loaded using the Pandas library.

Data inspection showed that there are no missing values, and all columns have appropriate data types for analysis.

Exploratory Data Analysis

Several visualizations were created to better understand the data:

Payment Method Distribution

Sales per Branch

Sales vs Rating

Gross Income by Product Line

Time Series of Sales

Correlation Heatmap

These visualizations help identify patterns, trends, and relationships in the dataset.

Advanced Analysis

- . Which branch generates the highest total revenue and why?

Based on the sales analysis, the branch with the highest total revenue is Alex.

This is mainly because it has a higher number of transactions and consistent sales across multiple product lines, which increases its overall revenue compared to other branches.

2. Do members spend more than normal customers?

Yes, members tend to spend more than normal customers.

The analysis shows that members generally have higher total sales, which may be due to loyalty benefits, discounts, or frequent visits.

3. What is the most commonly used payment method?

The most commonly used payment method is Cash.

This indicates that many customers still prefer cash payments over credit cards or e-wallets when shopping at the supermarket.

4. Which product line receives the highest average rating?

The product line with the highest average customer rating is Food and Beverages.

This suggests that customers are generally more satisfied with this category compared to others.

5. What is the relationship between unit price and quantity sold?

There is a weak negative relationship between unit price and quantity sold.

This means that as the unit price increases, the quantity sold slightly decreases, which is a common trend in retail sales.

Conclusion

The analysis provides valuable insights into customer behavior and sales trends.

Understanding these patterns can help businesses improve decision-making, marketing strategies, and overall performance.