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Description automatically generatedTeam Name: **Golden Team**

Team Member: 1- Ahmed Abd Elnaby

2- Hazem Mohamed

**Data explanation**

1. **Invoice ID:**
   * Description: A unique identifier for each sale.
   * Data Type: object (string), which is a text identifier for each sale.
2. **Branch:**
   * Description: The name of the branch where the sale took place.
   * Data Type: object (string), indicating the location of the sale.
3. **City:**
   * Description: The city where the branch is located.
   * Data Type: object (string), defining the geographical location of the branch.
4. **Customer type:**
   * Description: The type of customer, whether a regular or a loyal customer.
   * Data Type: object (string), distinguishing the customer type to determine the type of service or promotion.
5. **Gender:**
   * Description: The gender of the customer.
   * Data Type: object (string), useful for analyzing demographic data of customers.
6. **Product line:**
   * Description: The product category or type of the sold product.
   * Data Type: object (string), identifying the types of products sold.
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   Description automatically generated**Unit price:**
   * Description: The price per unit of the product.
   * Data Type: float64, indicating the individual price of the product.
8. **Quantity:**
   * Description: The quantity of the product sold.
   * Data Type: int64, representing the number of units sold.
9. **Tax 5%:**
   * Description: The value of the 5% tax on sales.
   * Data Type: float64, representing the tax added to the total price.
10. **Total:**
    * Description: The total price of the invoice, including base price and taxes.
    * Data Type: float64, the final amount of the invoice after taxes.
11. **Date:**
    * Description: The date of the sale.
    * Data Type: object (string), which needs to be converted to a datetime type for better analysis.
12. **Time:**
    * Description: The time of the sale.
    * Data Type: object (string), which needs to be converted to a time type for better analysis.
13. **Payment:**
    * Description: The payment method used in the transaction (e.g., cash, credit card).
    * Data Type: object (string), specifying the payment method used by the customer.
14. **COGS (Cost of Goods Sold):**
    * Description: The cost of the goods sold, related to production or purchasing the product.
    * Data Type: float64, representing the production or purchase cost of the product.
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    Description automatically generated**Gross margin percentage:**
    * Description: The percentage of gross margin on sales.
    * Data Type: float64, indicating the percentage of gross profit as a percentage of revenue.
16. **Gross income:**
    * Description: The gross income or profit after deducting the cost of goods sold.
    * Data Type: float64, representing the gross profit achieved from the sale.
17. **Rating:**
    * Description: The customer's rating of the product or service.
    * Data Type: float64, which could be a numerical rating used to gauge customer satisfaction.

**Summary:**

* **Text Columns (object):** Include categorical information such as invoice ID, branch name, city, customer type, gender, product line, and payment method.
* **Numeric Columns (float64, int64):** Include quantitative and financial information such as unit price, quantity, tax, total price, cost of goods, gross margin, and gross income.
* **Temporal Columns (datetime, time):** Pertaining to the date and time of the sale.

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Description automatically generated**Sales Analysis**

**Introduction**

This report provides a comprehensive analysis of the company's sales data, aiming to understand various sales patterns, including the impact of factors such as seasons, gender, and payment methods.

1. **Sales Overview**
   * **Total Sales for February:**
     + Total sales for February: $97,219.37
   * **Sales by Product Category in February:**
     + Electronics Accessories: $17,362.91
     + Fashion Accessories: $19,009.86
     + Food and Beverages: $20,000.36
     + Health and Beauty: $14,602.26
     + Home and Lifestyle: $12,434.38
     + Sports and Travel: $13,809.61
   * **Notes:** The highest sales were in the "Food and Beverages" category, while the lowest sales were in the "Home and Lifestyle" category.
2. **Seasonal Sales Analysis**
   * **Total Sales by Season:**
     + Spring: $109,455.51
     + Winter: $213,511.24
   * **Notes:** Sales in winter were significantly higher than in spring, indicating greater purchasing activity in winter, possibly due to holidays and the end of the year.
3. **Sales Analysis by Payment Method**
   * **Total Sales by Payment Method:**
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       Description automatically generatedCash: $112,206.57
     + Credit Card: $100,767.07
     + E-Wallet: $109,993.11
   * **Notes:** The payment method "Cash" was the most used, followed by "E-Wallet" and "Credit Card."
4. **Profit Analysis**
   * **Total Profit by Branch:**
     + Branch A: $5,057.16
     + Branch B: $5,057.03
     + Branch C: $5,265.18
   * **Notes:** The highest profit was in Branch C compared to the other branches.
   * **Total Profit by Product Category:**
     + Electronics Accessories: $2,587.50
     + Fashion Accessories: $2,585.99
     + Food and Beverages: $2,673.56
     + Health and Beauty: $2,342.56
     + Home and Lifestyle: $2,564.85
     + Sports and Travel: $2,624.90
   * **Notes:** The highest profit was in the "Food and Beverages" category, and the lowest profit was in the "Health and Beauty" category.
5. **Sales Analysis by Customer Type and Gender in February**
   * **Total Sales by Customer Type and Gender in February:**
     + Member Customers (Female): $31,827.59
     + Member Customers (Male): $18,468.46
     + Regular Customers (Female): $24,507.97
     + Regular Customers (Male): $22,415.36
   * **Notes:** Female member customers had the highest sales, followed by male regular customers.
6. **Sales Analysis by Time of Day**
   * **Sales by Hour of the Day:**
     + Note: Detailed results were not provided in the data. This analysis is expected to help identify peak hours and times of lower sales.
7. **Sales Plot Based on Ratings**
   * **Scatter Plot Showing the Relationship Between Ratings and Sales:**
     + Notes: This plot helps understand how customer ratings affect total sales.

**Recommendations**

1. **Increase Focus on High-Selling Product Categories:**
   * Enhance strategies to boost sales in categories such as "Food and Beverages" and "Electronics Accessories."
2. **Strengthen Winter Marketing Strategies:**
   * Consider enhancing marketing strategies and discounts during winter due to higher sales in this season.
3. **Improve E-Payment Experience:**
   * Enhance the online payment experience to attract more customers, as the e-wallet was one of the most used payment methods.
4. **Target Customers Based on Gender and Type:**
   * Tailor special offers for female member customers as they show higher sales.

**Conclusion:** This analysis provides valuable insights into sales performance and how to improve it for better results in the future.