

Retail Sales Analysis Problem

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Business Context:

A global retail company operates across multiple regions and sells a wide range of products in different categories. They serve a variety of customer segments with diverse purchasing behaviors. Over the years, the company has collected transactional data and now aims to leverage this data to gain actionable insights. The management's primary goal is to identify trends, optimize profitability, and improve customer satisfaction.

Your task as a **Data Analyst** is to analyze the provided dataset and deliver recommendations to the management for improving business operations.

Download the dataset: [Link](#)

Dataset Details

The dataset includes the following fields:

1. **Order ID:** Unique identifier for each transaction.
2. **Order Date:** Date when the order was placed.
3. **Region:** Geographical region where the order was made (North, South, East, West).
4. **Customer Segment:** Type of customer (Individual, Corporate, or Small Business).
5. **Product Category:** Category of the product (Electronics, Clothing, Home Appliances).
6. **Product Name:** Name of the purchased product.
7. **Sales:** Revenue generated from the sale.
8. **Quantity:** Number of units sold.
9. **Discount (%):** Percentage discount applied to the order.
10. **Profit:** Profit earned from the transaction.

Tasks and Problems

1. Regional and Category Performance Analysis

Objective: Evaluate how different regions and product categories contribute to the business's success.

- Calculate total sales and total profit for each region.
- Identify the region with the highest profitability.
- Compare the sales and profit performance of each product category.

Deliverables:

- A table summarizing regional sales and profit.
- A bar chart comparing product category performance.

2. Customer Segmentation Analysis

Objective: Gain insights into customer behavior based on segments.

- Analyze the total sales and profits for each customer segment.
- Determine which customer segment contributes most to sales and profitability.
- Identify popular product categories within each customer segment.

Deliverables:

- A table summarizing segment-wise sales and profits.
- A pie chart showing the contribution of customer segments to total sales.

3. Discount and Profitability Impact

Objective: Understand how discounts affect sales and profitability.

- Examine the correlation between discount percentage and total sales.
- Analyze whether higher discounts lead to reduced profit margins.
- Determine the discount range that maximizes profitability.

Deliverables:

- A scatter plot visualizing the relationship between discount percentage and profit.
- A table summarizing sales and profit by discount ranges.

4. Seasonal and Time-Based Trends

Objective: Identify sales patterns and trends over time.

- Analyze monthly and quarterly sales trends.
- Identify peak sales months for each region and product category.
- Detect patterns in returned or canceled orders across time.

Deliverables:

- A line chart showing monthly sales trends.
- A heatmap visualizing sales distribution by category and month.

5. Product Profitability Optimization

Objective: Optimize profitability by identifying underperforming products.

- Identify products with high sales but low profit margins.
- Analyze the relationship between product prices, costs, and profitability.
- Recommend pricing or promotional strategies to improve profits.

Deliverables:

- A summary table showing low-margin products.
- A report with recommendations for product pricing optimization.

6. Customer Demographics Insights

Objective: Understand how customer demographics influence sales and profits.

- Analyze sales and profit contributions by age group and gender.
- Determine which demographic groups prefer specific product categories.
- Evaluate which income level contributes most to profitability.

Deliverables:

- A table summarizing demographic-wise sales and profits.
- A bar chart comparing sales contributions by age group and gender.

7. Actionable Recommendations

Objective: Provide actionable insights to the management.

- Suggest strategies to improve sales in underperforming regions or customer segments.
- Recommend product categories or customer segments to target for higher profitability.
- Identify inefficiencies in operations, such as high return rates, and propose solutions.

Deliverables:

- A detailed report summarizing key findings and recommendations.
- A dashboard with key metrics and visualizations.