

Sales Data Analysis Report

Problem Statement Overview

The objective of this analysis is to derive actionable insights from the sales data of a company. This data, sourced from the **train.csv** file, includes details on sales transactions, customer segments, product categories, and geographical information. The analysis aims to uncover patterns and trends in sales, customer behavior, and product performance, which can guide strategic decisions for business growth and customer engagement.

Data Overview

The dataset consists of 9,800 records with 18 columns, including **Order ID**, **Order Date**, **Ship Date**, **Segment**, **Category**, **Sub-Category**, **Sales**, and others. It covers various aspects of each sales transaction.

Data Preparation and Cleaning

- Missing values in the **Postal Code** column were filled with zeros, and the column was converted to an integer type.
- The dataset was checked for duplicates, and none were found.

Analysis and Insights

Customer Segmentation and Sales

- **Unique Customers in Segments:** The Consumer segment had 409 customers, the Corporate segment had 236, and the Home Office segment had 148.
- **Total Sales by Segment:** The Consumer segment led in sales (\$1,148,061), followed by the Corporate segment (\$688,494), and the Home Office segment (\$424,982).
- **Sales by Category in Segments:** Technology products were dominant in sales, especially in the Home Office segment (42.92%).

Customer Order Frequency

- A group of highly engaged customers were identified, with the top 10 customers placing between 12 and 17 orders each.

Sales Distribution by Region and Category

- **Order Breakdown by Region:** The West region had the highest number of orders (1587), followed by the East (1369).
- **Sales by Category in Regions:** The Technology category had a significant sales share across all regions, especially in the East and South.

Frequently Sold Categories

- Office Supplies was the most frequently sold category (60.30% of sales), followed by Furniture (21.20%) and Technology (18.50%).

Top Products in Each Sub-Category

- Top-selling products were identified for each sub-category, including high-value items like the **Canon imageCLASS 2200 Advanced Copier**.

Sales Trends Over Time

- **Yearly Sales Trend:** Sales showed a positive growth from 2015 to 2018, with 2018 recording the highest sales (\$722,052).
- **Monthly Sales Trend:** Sales varied significantly month-to-month, with peaks in certain months (e.g., September 2015 and November 2018).
- **Monthly Sales by Category:** The distribution of sales by category varied each month, indicating seasonal trends in purchasing behavior.

Conclusion

The analysis reveals key insights into customer behavior, sales trends, and product performance. The Consumer segment is the primary market with the highest sales, and Technology products have a significant share in sales across all customer segments and regions. The data indicates seasonal and monthly variations in sales patterns, especially for Technology products, suggesting the potential for targeted marketing and inventory strategies. Office Supplies maintain steady demand throughout the year, while Furniture and Technology categories exhibit more variability.