

Sales Performance Report

1. OVERVIEW

This report provides a comprehensive analysis of a sales dataset, covering data cleaning, preprocessing, exploratory data analysis (EDA), and key insights derived from statistical and graphical methods. The objective is to identify sales trends, seasonality, top-performing products, and regional performance, ultimately providing actionable insights for business growth.

2. Data Preparation

2.1 Data Loading and Initial Exploration

- Imported essential libraries into the Jupyter Notebook.
- Loaded the dataset and inspected the first and last few rows using appropriate methods.
- Checked the total number of rows and columns.
- Examined the data types of each column.
- Identified missing values.

2.2 Handling Missing Values

- Found missing data in several columns: 89%, 52%, 2%, and 38% missing values.
- Dropped columns with excessive missing values.
- Filled missing values using mean, median, or mode, depending on the data type.

2.3 Data Cleaning and Transformation

- Checked for duplicate records and removed them if found.
 - Converted `OrderDate` from object type to datetime format.
 - Replaced incorrect `Year` values to reflect actual years.
 - Identified and handled outliers, especially in the `Sales` column.
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3. Exploratory Data Analysis (EDA)

3.1 Sales Trends Over Time

- Analyzed sales trends across different time periods (daily, monthly, yearly).
- Identified seasonal patterns and peak sales periods.

3.2 Top-Selling Products and Categories

- Determined which products contributed the most to total sales.

- Identified the most profitable product categories.

3.3 Regional Sales Performance

- Compared sales across different regions.
- Identified high-performing and low-performing regions.

3.4 CUSTOMER SEGMENTATION ANALYSIS

- Categorized customers based on purchase patterns.
- Identified high-value customers based on frequency and total purchase amount.

4. Insights & Recommendations

4.1 Key Takeaways

- Notable sales trends and patterns were identified.
- Some products and regions performed significantly better than others.
- Customer behavior analysis provided insights into purchasing patterns.

4.2 Business Recommendations

- **Inventory Management:** Stock more of high-demand products to meet customer needs.
- **Regional Focus:** Improve marketing strategies in underperforming regions.
- **Customer Retention:** Implement loyalty programs for high-value customers.
- **Pricing Strategy:** Adjust pricing based on sales trends and customer demand.

5. Conclusion

This report provides valuable insights into sales trends, product performance, and customer behavior. By leveraging these findings, the company can optimize sales strategies, improve customer retention, and enhance overall business performance.