

REPORT

Customer Segmentation and Sales Analysis

1. Introduction:

Objective:

The goal of this analysis is to segment the customer base of a retail company, identify sales trends, and provide actionable insights to improve sales strategy. By using RFM (Recency, Frequency, Monetary) analysis and sales data trends, we will develop strategies that target key customer segments and optimize sales performance.

2. Data Cleaning:

Dataset Overview:

The dataset used in this analysis contains **363 rows** and **10 columns**. The data comprises various types:

- *Categorical/Text*: Customer ID, Order ID, Product ID, Product Name, Category, Region
- *Temporal/Date*: Order Date
- *Numeric/Integer*: Quantity
- *Numeric/Float*: Unit Price, Total Amount

Data Preprocessing Steps:

- *Missing Values*: After running `.info()`, no missing values were identified.
- *Duplicate Records*: The dataset was checked for duplicates using `.duplicated().sum()`, and no duplicates were found.
- *Date Format Standardization*: The 'Order Date' column was standardized using `'pd.to_datetime()'` to ensure consistent date formats across the dataset.

Outcome:

After data cleaning, the dataset contains **363 rows** and **10 columns**, with no missing values or duplicate records. All date formats have been standardized.

3. Customer Segmentation (RFM Analysis):

Methodology:

The customers were segmented using RFM analysis, which categorized customers based on:

- *Recency*: How recently they purchased.
- *Frequency*: How often they purchased.
- *Monetary*: How much they spent.

Key Customer Segments:

- *At-Risk Customers*: 187 customers (51.52%)
- *New Customers*: 113 customers (31.13%)
- *High-Value Customers*: 63 customers (17.36%)

Results:

- **51.52%** of the customers are at-risk, potentially requiring re-engagement strategies.
- **31.13%** of the customers are new, offering opportunities for loyalty-building.
- **17.36%** of the customers are high-value, contributing significantly to the company's revenue.

4. Sales Trend Analysis:

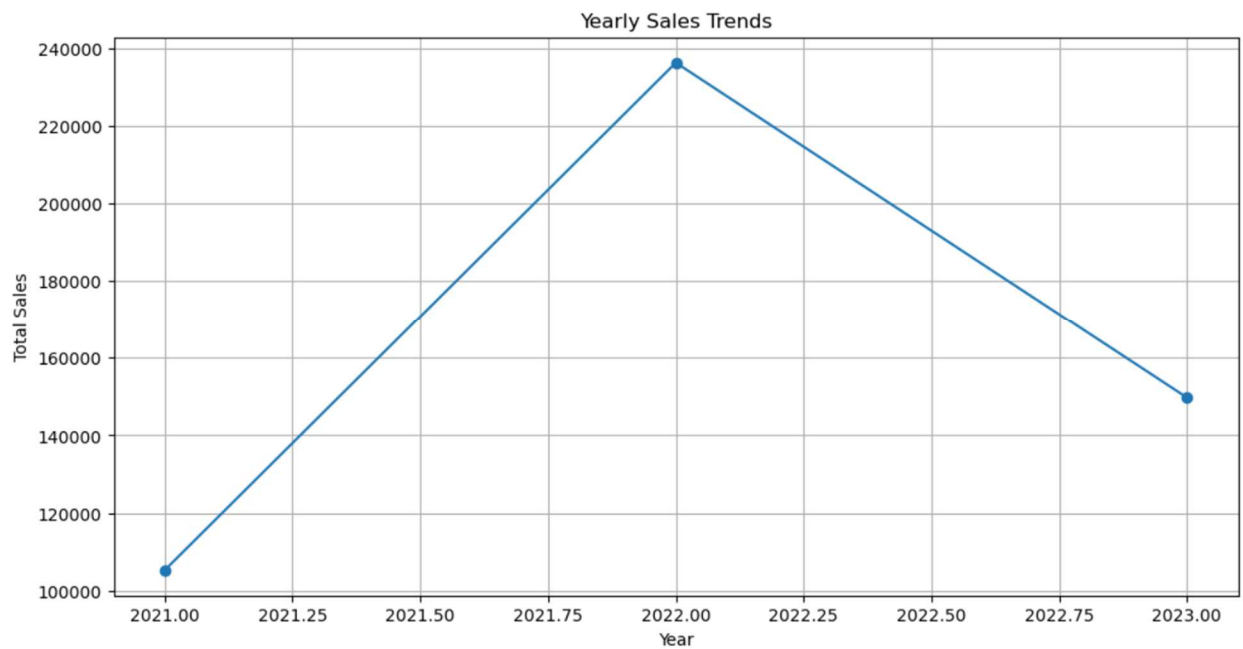
Yearly Sales Trends:

The yearly sales trends show consistent growth:

- **2021**: \$105,273.01

- **2022**: \$236,292.16

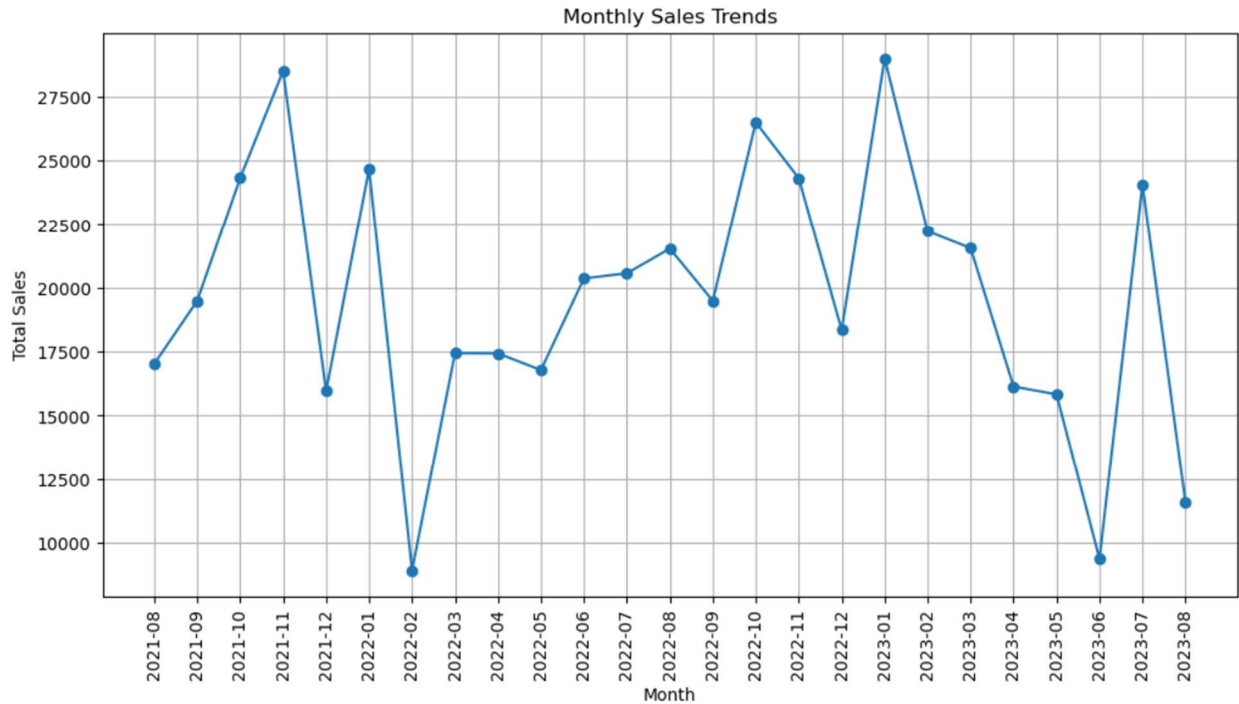
- **2023**: \$149,733.33



Monthly Sales Trends:

Sales fluctuated across the months, with some notable peaks:

- **Highest monthly sales** in **November 2021** (\$28,496.76) and **January 2023** (\$28,984.86).
- **Lowest monthly sales** in **February 2022** (\$8,925.77).



Top Performing Product Categories:

The top 5 product categories by total sales are:

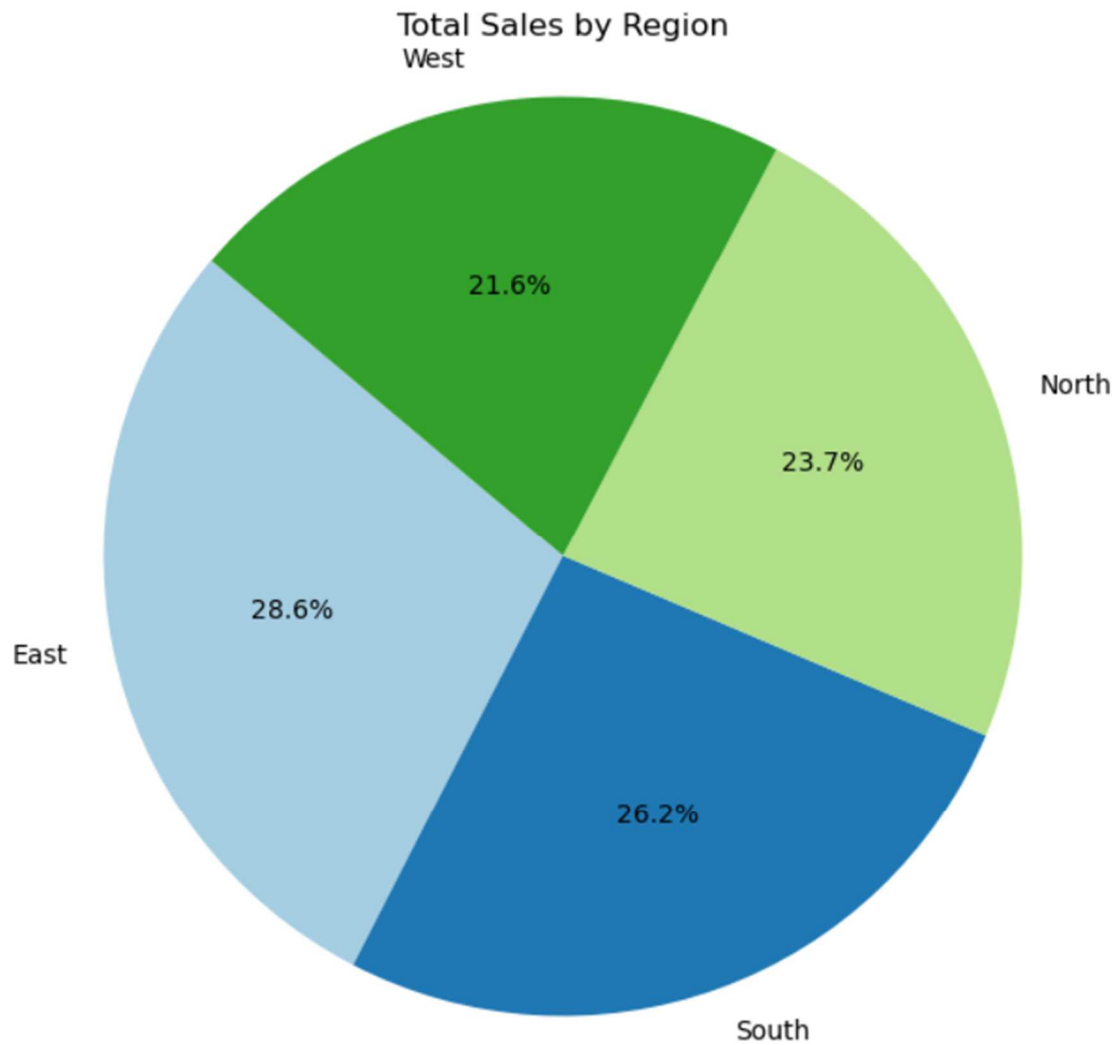
1. *Books*: \$115,120.41
2. *Electronics*: \$101,544.99
3. *Clothing*: \$94,677.73
4. *Home & Kitchen*: \$92,568.42
5. *Accessories*: \$87,386.95



Regional Sales Distribution:

The **East** region contributed the highest sales (**28.6%**), followed by:

- **North:** 23.7%
- **South:** 26.2%
- **West:** 21.6%



5. Recommendations:

Targeting High-Value Customers:

High-Value Customers contribute significantly to revenue. Strategies to enhance their experience and maintain their loyalty include:

- *Personalized Offers and Rewards:* Offer personalized discounts or rewards based on their purchase history.
- *Loyalty Programs:* Develop a tiered loyalty program with exclusive benefits for high-value customers.

Engaging At-Risk Customers:

At-Risk Customers may be showing signs of disengagement. Strategies to re-engage these customers and prevent churn include:

- *Personalized Re-Engagement Campaigns:* Send targeted offers or discounts to encourage them to return.
- *Surveys:* Use surveys to understand their reasons for disengagement and address their concerns.

- Expanding Product Categories:

Focus marketing efforts on the top-performing product categories, and consider expanding these categories with complementary products.

-Optimizing Regional Sales:

Increase inventory or tailor marketing campaigns for regions with the highest sales (e.g., East), to further boost revenue.

-General Sales Strategy:

Based on the sales trends, focus marketing and promotions during **November** and **January**, which have shown peak sales.

6. Conclusion:

The analysis identified critical customer segments, such as high-value, at-risk, and new customers, and key sales trends across products and regions. By implementing the recommended strategies, the company can improve customer retention, optimize product offerings, and enhance regional sales performance. Ultimately, these actions will drive overall sales growth and success.