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Exploratory Data Analysis Report

Presented by

Om Wanjari



ZEOTAP

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1. Introduction

This report presents an exploratory data analysis (EDA) of eCommerce transactions, focusing on customer behavior, sales trends, and product performance. The goal is to derive meaningful business insights that can help optimize marketing strategies, inventory planning, and customer engagement.

The dataset consists of three key files:

- **Customers.csv** – Contains customer details such as ID, name, region, and signup date.
- **Products.csv** – Contains product details such as ID, name, category, and price.
- **Transactions.csv** – Contains transaction details such as ID, customer ID, product ID, date, quantity, and total value.

2. Dataset Overview

Dataset Characteristics

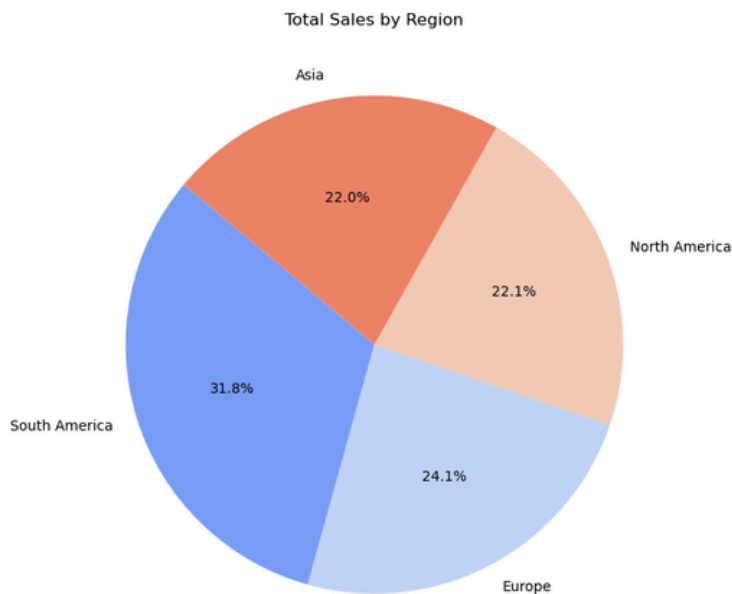
File Name	No. of Rows	No. of Columns	Missing Values	Duplicates
Customers.csv	200	4	0	0
Products.csv	100	4	0	0
Transactions.csv	1000	7	0	0

Preprocessing Steps

- Converted date columns (SignupDate, TransactionDate) to datetime format.
- Checked for duplicates and missing values (none found).
- Merged datasets for better analysis.

3. Exploratory Data Analysis (EDA)

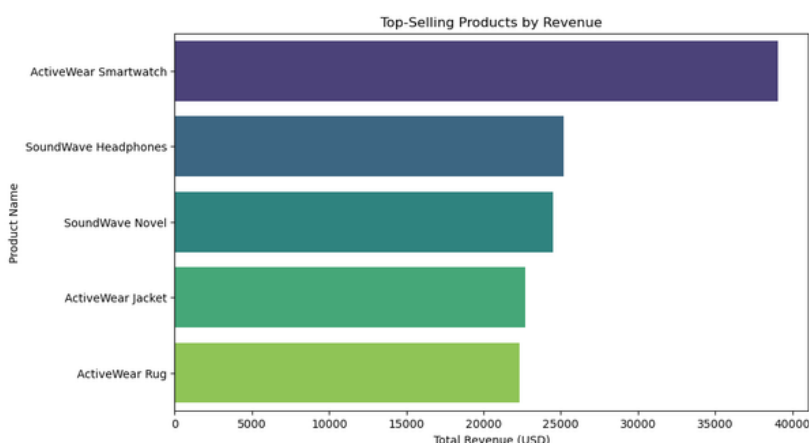
1.Region with Highest Sales



South America has the highest total sales (\$219,352.56), followed by Europe and North America.

Recommendation: Focus on marketing and promotions in high-performing regions.

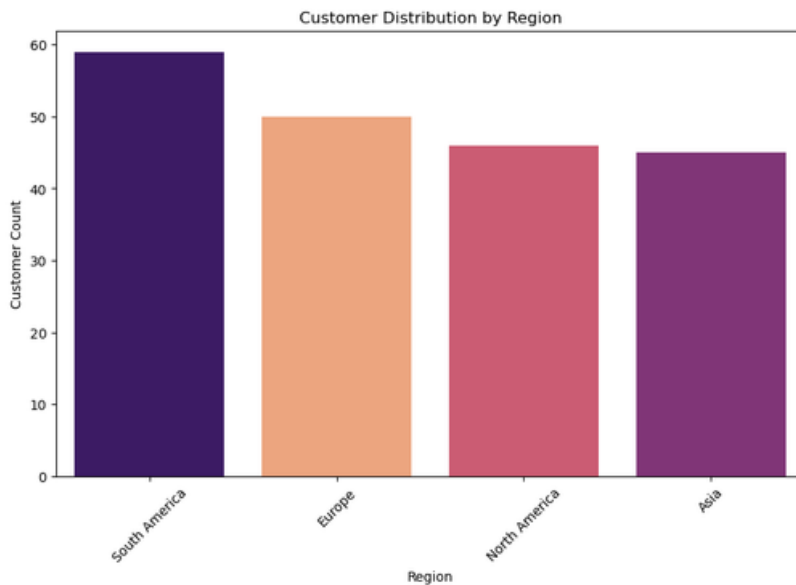
2.Top-Selling Products by Revenue



The highest-grossing product is ActiveWear Smartwatch with \$39,096.97 in revenue.

Recommendation: Offer discounts or bundles for high-selling products to boost revenue.

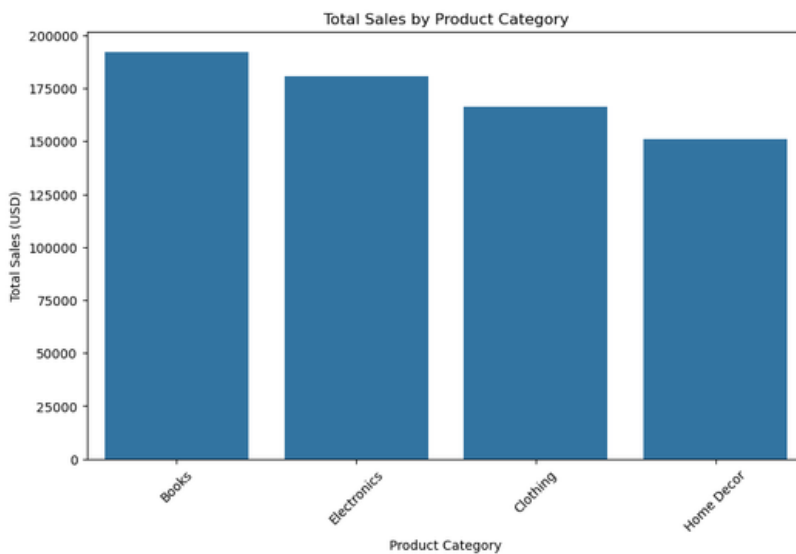
3. Customer Distribution by Region



The highest number of customers reside in South America, followed by Europe, North America, and Asia.

Recommendation: targeted promotional campaigns in South America region can further enhance sales.

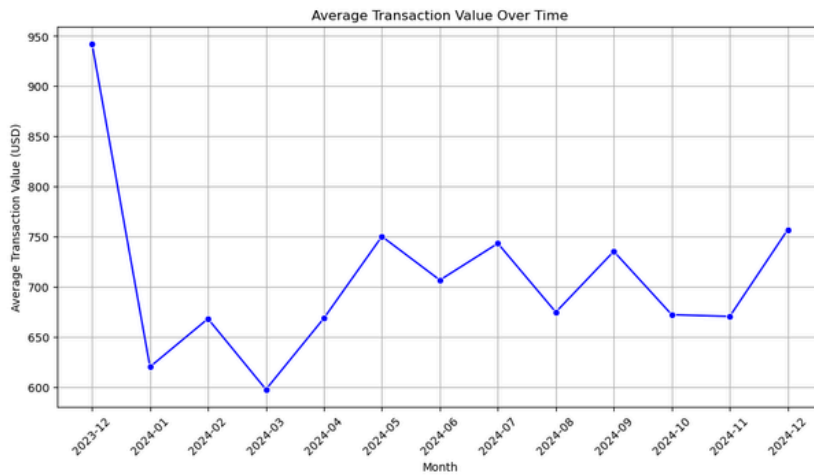
4. Product Category Performance



Books and Electronics generate the highest revenue (\$192K and \$180K respectively).

Recommendation: Increase advertising for high-revenue categories.

5.Average Transaction Value Over Time



The average transaction value varies across months, ranging from \$597 to \$942.

Recommendation: Implement dynamic pricing strategies to capitalize on peak months.

4. Business Insights

Key Findings & Actionable Insights

South America is the top revenue-generating region.

Focus on expanding product offerings and localized marketing campaigns.

The "ActiveWear Smartwatch" is the highest-selling product.

Offer discounts or bundle deals to increase sales.

Customer signups peak in certain months.

Align promotional campaigns with high-signup periods.

Books and Electronics categories are the most profitable.

Prioritize inventory and marketing efforts for these categories.

Transaction values fluctuate over time.

Implement seasonal pricing strategies to maximize profits.

5. Conclusion

This analysis provides valuable insights into customer behavior, product performance, and sales trends. Based on the findings, businesses can refine marketing strategies, optimize product offerings, and enhance customer acquisition efforts.