

# Exploratory Data Analysis and Business Insights Report

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This report presents the results of an exploratory data analysis (EDA) conducted on an eCommerce Transactions dataset, consisting of three files: [Customers](#), [Products](#), and [Transactions](#). The goal is to understand customer behavior, product performance, and overall sales trends to derive actionable business insights.

## Exploratory Data Analysis

### 1. Overview of sales by category

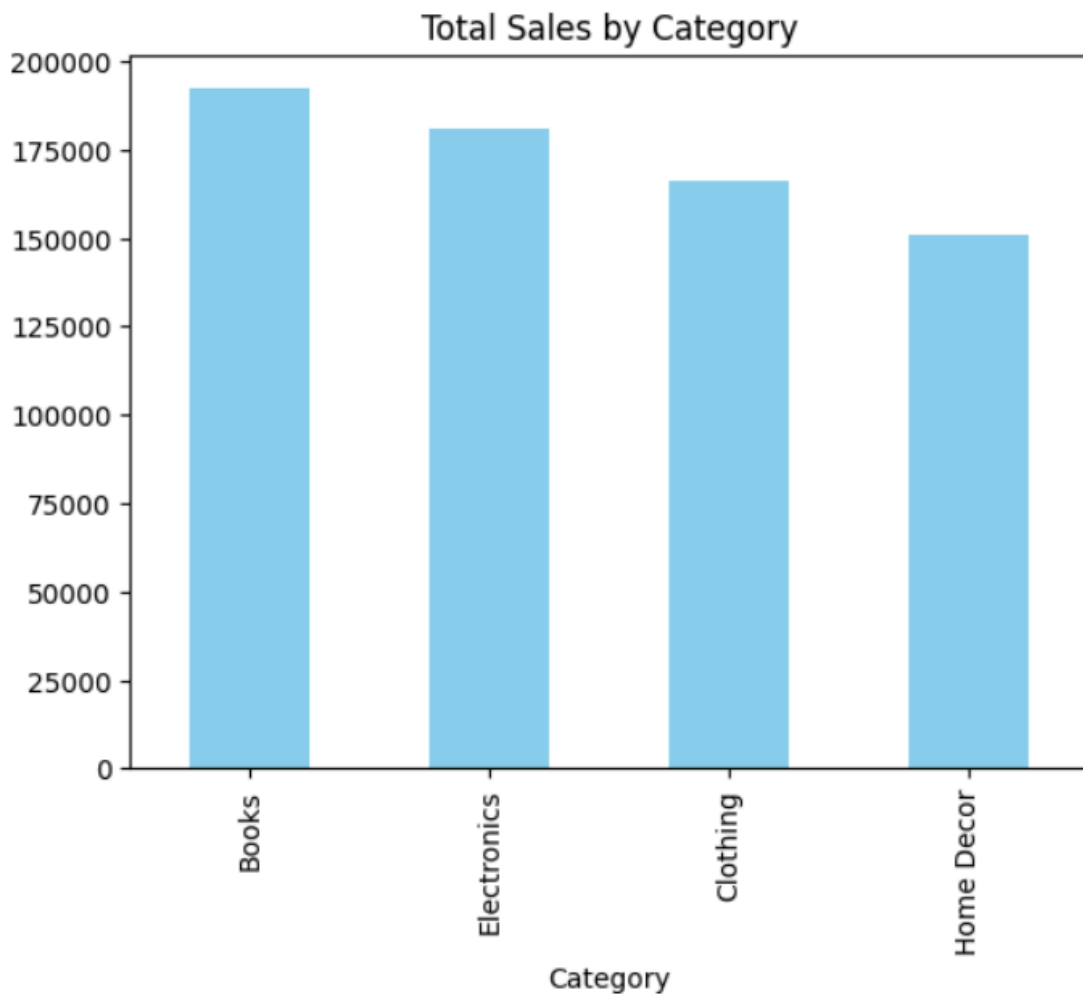
The analysis shows the contribution of each product category to the overall revenue: The sales are primarily driven by four categories, Books, Electronics, Clothing, and Home Decor.

Findings:

- Books lead with \$192147.47 in sales.
- Electronics follow closely with \$180783.50 in sales.

- Clothing and Home Decor contribute \$166,170.66 and \$150,893.93 in sales, respectively.

Actionable Insight: Strengthen marketing and inventory strategies for high-performing categories like Books, ensuring consistent stock and visibility to maintain their dominance.

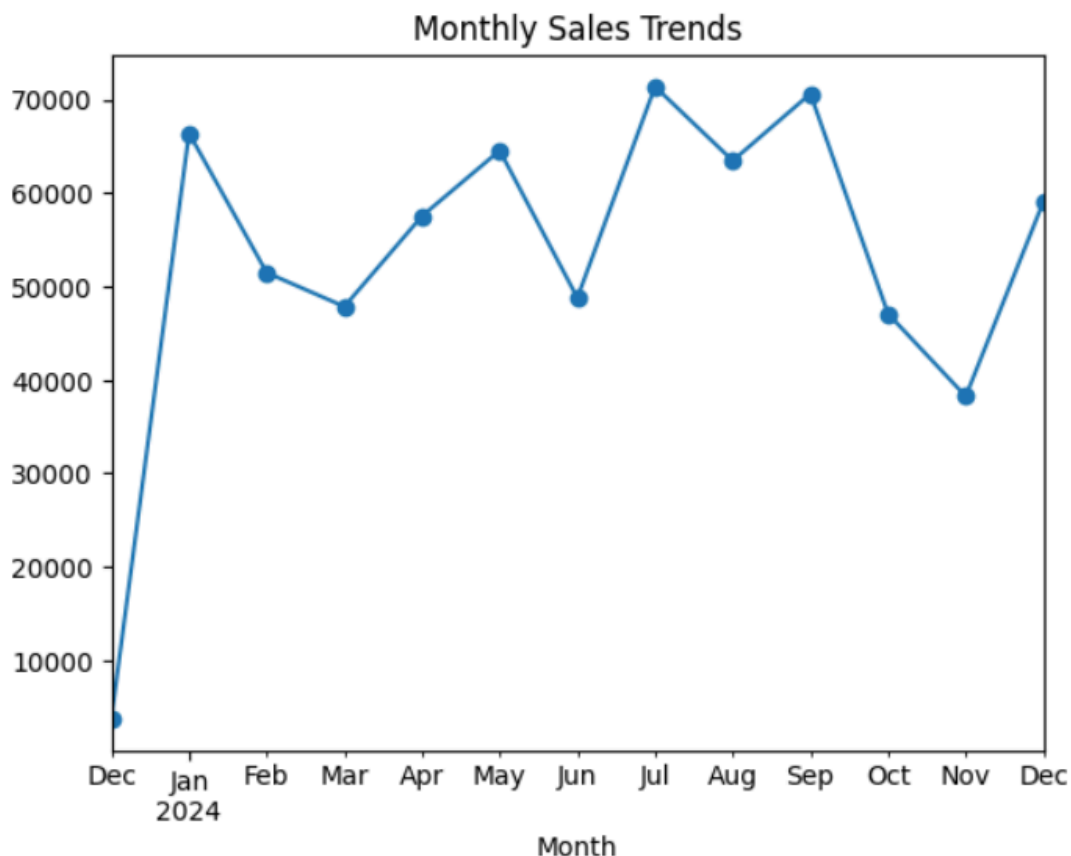


## 2. Monthly sales trend

Sales show notable fluctuations throughout the year.

- The highest sales were recorded in January 2024 (\$66,376.39).
- The lowest monthly sales occurred in December 2023 (\$3,769.52).
- There is a peak in July 2024 with \$71,366.39, indicating strong mid-year performance.

Actionable Insight: Capitalize on seasonal spikes by launching targeted promotions and offers during these months to enhance revenue and customer engagement.

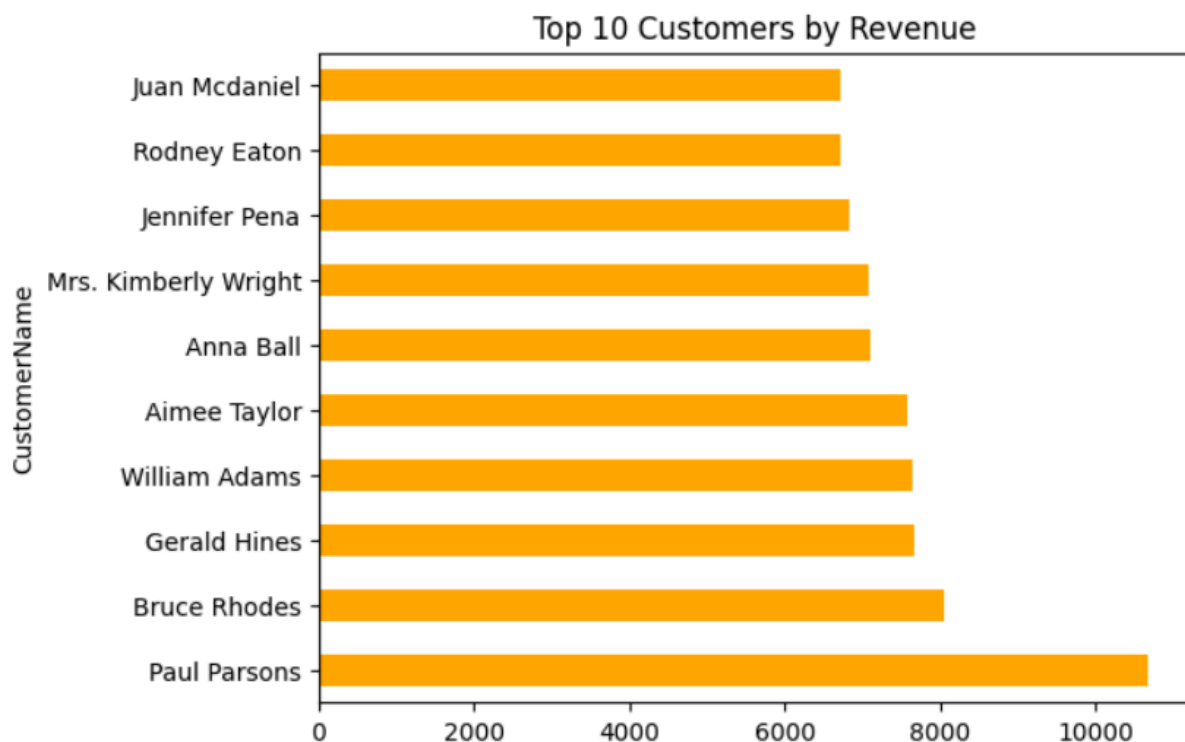


### 3. Top 10 Customers by Revenue

The top 10 customers generate significant revenue.

- Paul Parsons is the highest spender with \$10,673.87.
- Other top customers include Bruce Rhodes and Gerald Hines, contributing \$8,040.39 and \$7,663.70, respectively.

Actionable Insight: Implement personalized loyalty programs, exclusive offers, and VIP treatment to maintain strong relationships with top customers and incentivize repeat business.

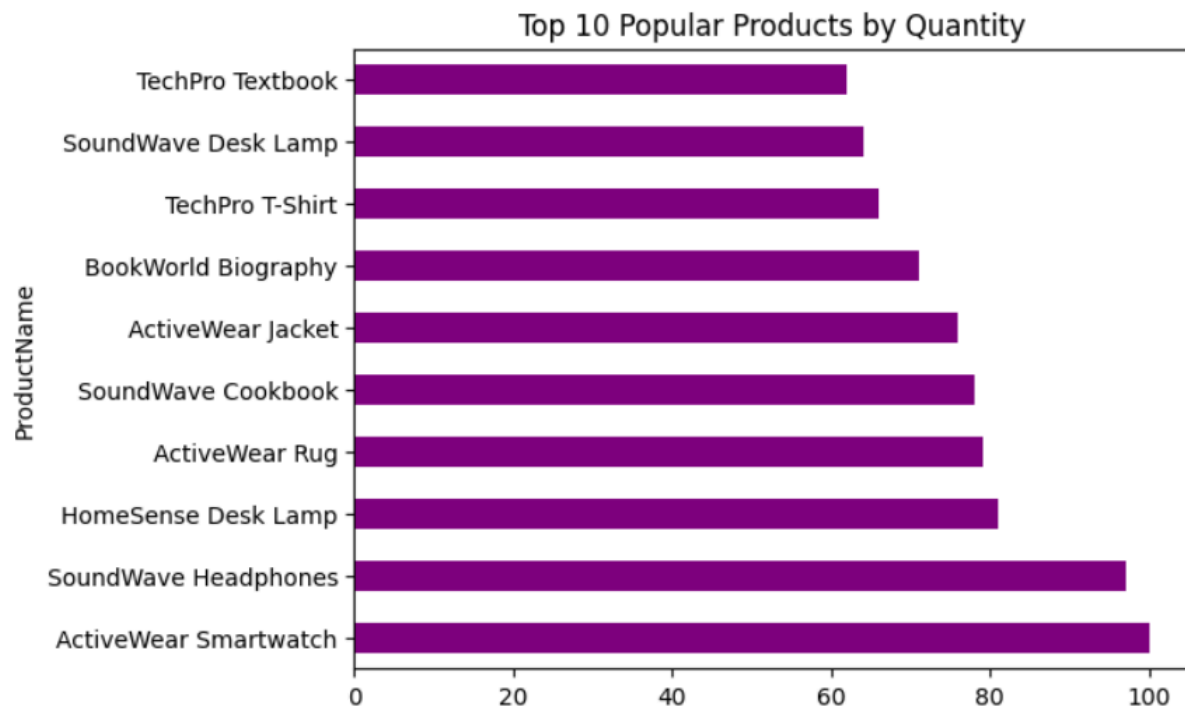


## 4. Most popular products by quantity sold

Some products have high sales in terms of quantity.

- The most sold product is the ActiveWear Smartwatch with 100 units.
- Other popular products include SoundWave Headphones (97 units) and HomeSense Desk Lamp (81 units).

Actionable Insight: Continue to promote popular products like the ActiveWear Smartwatch and SoundWave Headphones, as they are clearly in demand. Analyze customer reviews and feedback for potential improvements or new product variations. Bundle these high-quantity, low-cost items with premium products to increase average order value and profitability, while appealing to customers seeking value-for-money.

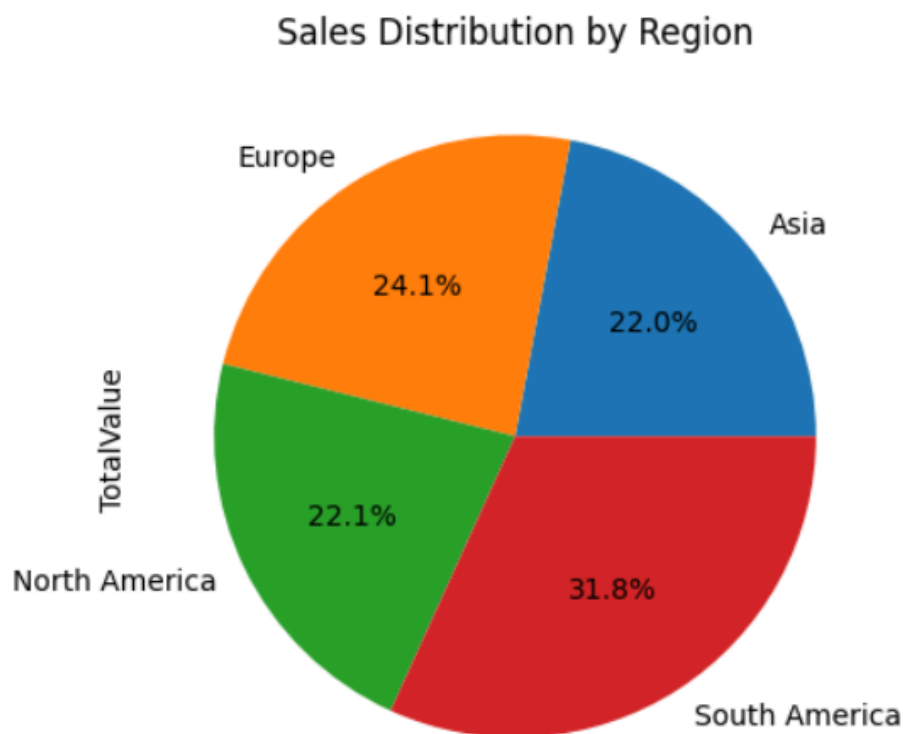


## 5. Regional Distribution of Sales

Sales are fairly well distributed across regions.

- South America has the highest sales with \$219,352.56, accounting for over 30% of total sales.
- North America and Europe follow with \$152,313.40 and \$166,254.63, respectively.
- Asia has slightly lower sales, with \$152,074.97.

Actionable Insight: South America is a critical market, contributing the largest share. Focus on expanding efforts in regions with high sales to maintain growth.

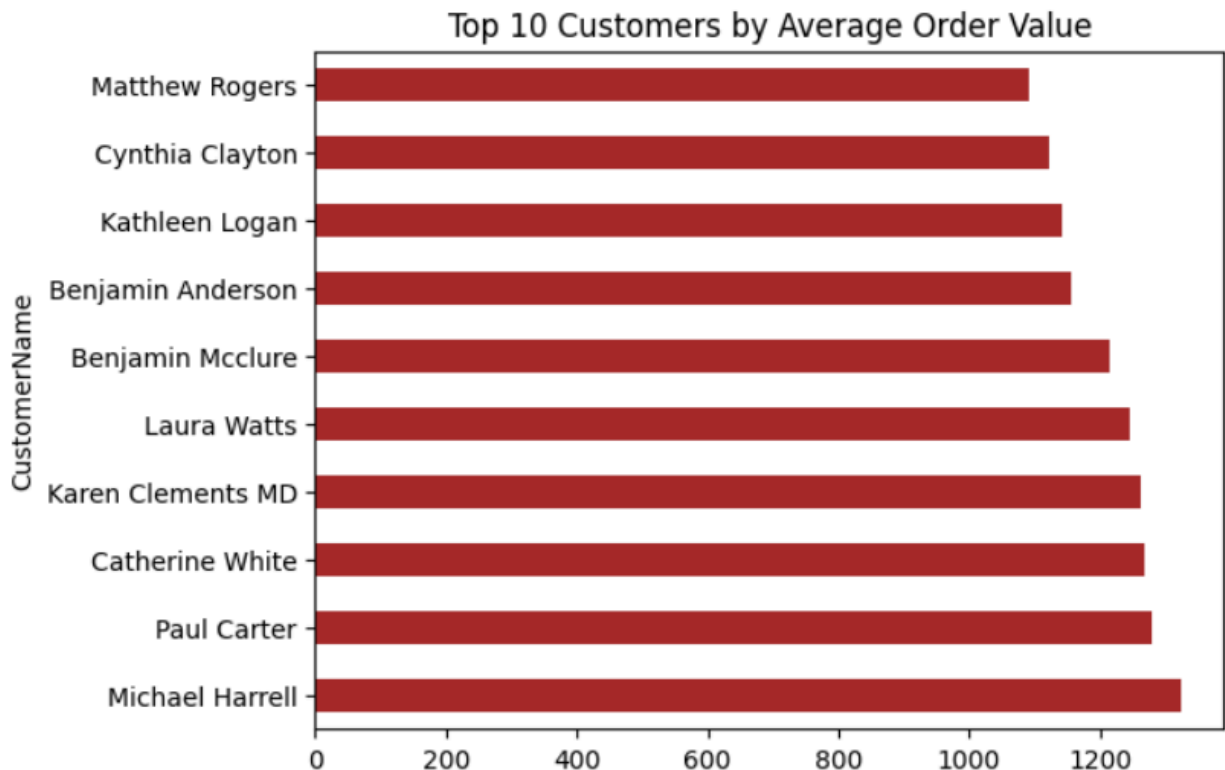


## 6. Average Order Value (AOV) Analysis

Customers with higher average order values (AOV) are also contributing significant revenue.

- Michael Harrell has the highest AOV at \$1,323.13.
- Other notable customers include Paul Carter (\$1,278.11) and Catherine White (\$1,266.43).

Actionable Insight: Continue to nurture and expand the South American market with targeted strategies while exploring further growth in North America and Europe for broader market reach.



# Visualizations

[Link to Jupyter Notebook](#)

- **Bar Chart: Total Sales by Category**

(This chart will show the relative contribution of different categories like Books, Electronics, Clothing, etc.)

- **Line Chart: Monthly Sales Trends**

(This chart will display the sales fluctuations over the months, highlighting peaks in January, July, and December.)

- **Horizontal Bar Chart: Top 10 Customers by Revenue**

(This chart will list the top customers and their revenue contributions, emphasizing their importance to the business.)

- **Horizontal Bar Chart: Most Popular Products by Quantity**

(This chart will showcase the most sold products, such as the ActiveWear Smartwatch and SoundWave Headphones.)

- **Pie Chart: Regional Sales Distribution**

(This chart will visually break down sales across regions, showing that South America is the leading market.)



## Conclusion

This report uncovers strategic opportunities to drive business growth by focusing on category leadership, seasonal demand, customer retention, effective bundling of popular products, and regional market dominance. By addressing these areas with tailored strategies, the company can further enhance performance and optimize revenue generation.