

# Exploratory Data Analysis (EDA) Report

## ➤ Objective:

- To explore the provided eCommerce Transactions dataset and derive actionable insights by examining its structure, key statistics, and patterns.

## ➤ Key Findings:

### ➤ Dataset Overview:

- Customers Dataset: Contains 200 unique customers across 4 columns (`CustomerID`, `CustomerName`, `Region`, `SignupDate`).
- Products Dataset: 100 products categorized into 4 types (`Books`, `Electronics`, `Clothing`, `Home Decor`).
- Transactions Dataset: 1,000 transaction records with no missing or duplicate data.

## ➤ Regional Insights:

### ➤ Customer distribution:

- South America: 59 customers (29.5%)
- Europe: 50 customers (25%)
- North America: 46 customers (23%)
- Asia: 45 customers (22.5%)

## ➤ Product and Category Performance:

- Top Products Sold: Products `P059` and `P054` (46 units each).

## ➤ Revenue by Category:

- Books: \$192,147.47
- Electronics: \$180,783.50
- Clothing: \$166,170.66 - Home Decor: \$150,893.93

➤ Monthly Sales Trends:

- Sales peak in \*\*July 2024\*\* with \$71,366.39.
- Seasonal spikes observed in January, March, and July.

➤ Customer Spending:

- Most customers spend between \$2,000 and \$5,000, with a maximum spend of \$10,673.87.
- Pareto Insight: 20% of customers drive the majority of sales.

➤ Visual Insights:

- Bar Chart: Distribution of customers by region.
- Horizontal Bar Chart: Top 5 products by quantity sold.
- Line Chart: Monthly sales trends from December 2023 to December 2024.
- Bar Chart: Revenue by product category.
- Histogram: Customer spending distribution with KDE overlay.

➤ Recommendations:

- Focus marketing efforts on South America, which holds the largest customer base.
- Prioritize Books and Electronics categories for promotions.
- Plan campaigns for seasonal peaks in January, March, and July.
- Develop loyalty programs for high-value customers to boost retention.