

# Exploratory Data Analysis and Business Insights

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## Summary

The exploratory data analysis (EDA) found that South America boasts the largest customer base, with Europe following closely behind, while Asia and North America show similar numbers. The standout products in this landscape are the ActiveWear Smartwatch and SoundWave Headphones, both have seen significant sales success.

## Data Observations:

- Missing Values:** No missing values are present in any of the datasets, so they are clean.
- Customers Data:**
  - 200 unique customers from 4 regions.
  - Signup dates span multiple years, with some dates repeated (e.g., Nov 11, 2024, appears 3 times).
- Products Data:**
  - 100 unique products across 4 categories.
  - Price range: \$16.08 to \$497.76, with a mean price of \$267.55.
- Transactions Data:**
  - Contains 1000 transactions.
  - Quantity ranges from 1 to 4 per transaction, with an average total value of \$689.99.

## Key Insights from EDA:

- Revenue by Category:**
  - Books generate the highest revenue (\$192K), with Electronics close behind (\$181K).
  - Clothing has the highest average revenue per transaction (\$729).
- Regional Distribution:**
  - Most customers are from South America (59), followed by Europe (50).
  - Asia and North America have nearly equal representation (45-46).
- Top-Selling Products:**
  - The *ActiveWear Smartwatch* is the most sold product (100 units), followed by *SoundWave Headphones* (97).
- Customer Signup Trends:**
  - 2024 saw the highest number of customer signups (79), indicating recent business growth.
- Home Decor's Potential:**
  - While it has the lowest average revenue per transaction (\$608), it sells a significant quantity (639), indicating demand.

Graphs on Insights:

