Exploratory Data Analysis (EDA) Report

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1. Overview of the Dataset

This dataset consists of the following files:

- **Customers.csv**: Contains customer profile information.
- **Products.csv**: Contains product details available in the store.
- **Transactions.csv**: Contains transaction records including customer, product, and transaction details.

2. Key Insights from EDA

Insight 1: Total Revenue

- The total revenue generated by all transactions is **$689,995.56**.
  This figure provides an overall picture of the business's performance, showing substantial revenue.

Insight 2: Top 10 Products by Revenue

- The top 10 products contributing the most revenue are as follows:

Rank	Product Name	Revenue ($)
1	ActiveWear Smartwatch	39,096.97
2	SoundWave Headphones	25,211.64
3	SoundWave Novel	24,507.90
4	ActiveWear Jacket	22,712.56
5	ActiveWear Rug	22,314.43
6	TechPro Headphones	19,513.80
7	BookWorld Cookbook	19,221.99
8	BookWorld Sweater	18,743.79
9	TechPro Textbook	18,267.96
10	ActiveWear Cookware Set	18,083.73

- **ActiveWear Smartwatch** generates the most revenue, making it the most profitable product.
- The other top products are in the **electronics** and **clothing** categories, which are key drivers of sales.

### Insight 3: Top 10 Customers by Lifetime Value

- The top 10 customers by lifetime value (total amount spent) are as follows:

Rank Customer ID Lifetime Value ($)

Rank	Customer ID	Lifetime Value ($)
1	C0141	10,673.87
2	C0054	8,040.39
3	C0065	7,663.70
4	C0156	7,634.45
5	C0082	7,572.91
6	C0188	7,111.32
7	C0059	7,073.28
8	C0028	6,819.57
9	C0099	6,715.72
10	C0165	6,708.10

- **Customer C0141** is the highest spender, contributing significantly to the overall revenue.
- This information can help prioritize loyalty programs or personalized marketing for these high-value customers.

3. EDA Visualizations

Revenue by Region

Monthly Revenue Trend
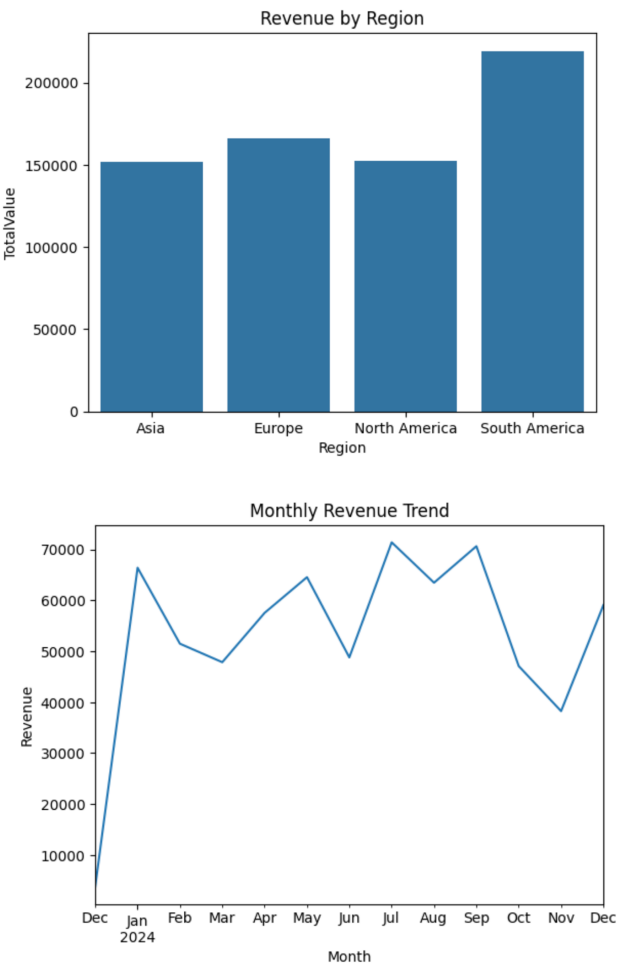
4. Conclusion

The exploratory data analysis highlights key insights into the revenue generation by products and customer lifetime value. **ActiveWear Smartwatch** is the highest revenue-generating product, while **Customer C0141** is the top contributor to overall revenue. These insights can guide targeted marketing, product strategy, and customer retention efforts.