EDA Report with Business Insights

1) Data Overview:
   -Three datasets were merged: Customers, Products, and Transactions.
   - The final dataset includes customer demographics, product details, and transaction information.
   - No significant missing data was found across the datasets.

2) Regional Sales Distribution:
   - Sales are distributed across regions, with **South America dominating sales**, contributing approximately **31.8% of total revenue**.
   - Other regions show growth potential based on their current contributions.

3) The Top-Selling Products and Categories:
   - Products with IDs P029, P079, P048, P020 and P062 are the **top-selling products**, collectively contributing to a significant portion of revenue.
   - Where, **P029** is the **highest selling product**, whereas P079 and P048 have a similar contribution of each 21.1% of total revenue.
   - Categories **'Books' and 'Electronics' dominate**, accounting for nearly 54% of sales.

4) Customer Behavior:
   - **High-value customers:** Customers with higher Average Order Values (AOV) were identified. These customers contribute the most to revenue.
   - Customers with **CustomerID C0040, C0089, C0066, C0168, and C0196**, had the **highest AOV.**
   - **Frequent buyers:** Customers with high purchase frequency were identified. Strategies to retain these customers are critical.
   - Customers with **CustomerID C0156, C0109, C0175, C0141, and C0065**, were among the **most frequent buyers list**.

5) Cross-Selling Opportunities:
   - Using **Apriori-based association rules**, strong product bundles were identified.
   - Example: Customers purchasing products P057 and P028 are highly likely to also buy P085 and P080. Bundling these products or providing targeted promotions could increase sales.

<u>INSIGHTS FOR DECISION-MAKING</u>:

- Focus on high-performing regions and identify strategies to grow underperforming ones.
- Promote top-selling products and categories while bundling complementary products.
- Reward loyal customers with high AOV or frequent purchases through discounts or exclusive offers.

<u>CONCLUSION:</u>

1) The analysis highlights key areas to **drive revenue growth through regional focus, product promotion, and customer retention strategies.**
2) **Implementing targeted cross-selling** based on the association rules can unlock new opportunities.
3) **Leveraging insights on customer behavior** and **top-performing products** can guide strategic planning to maximize profitability.