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Assignment Tasks:

Task 1: Exploratory Data Analysis (EDA) and Business Insights

1. Exploratory Data Analysis (EDA)

- **Revenue by Region**:
  South America leads in revenue generation with $219,352.56, followed by Europe ($166,254.63) and North America ($152,313.40).
- **Most Purchased Categories**:
  The "Books" category is the most purchased (681 units), followed by "Home Decor" (639 units) and "Electronics" (627 units).
- **Top-Selling Products**:
  The "ActiveWear Smartwatch" is the best-selling product with 100 units sold, closely followed by "SoundWave Headphones" (97 units).
- **Monthly Sales Trends**:
  Sales peak in July ($71,366.39) and September ($70,603.75), indicating seasonal demand.
- **Loyal Customers**:
  Paul Parsons is the top-spending customer, contributing $10,673.87 in revenue.

2. Insights:

- **South America as a Revenue Leader**
  South America leads in revenue generation with $219,352.56, contributing 33% of total sales, followed by Europe and North America. This highlights significant purchasing power and demand in the region. Businesses can focus on expanding operations, improving logistics, and tailoring marketing strategies for this region. Customized promotions targeting local preferences and improving delivery efficiency can enhance customer satisfaction and encourage repeat purchases. Analyzing customer behaviour and product preferences can help identify new opportunities for growth. Strengthening brand presence through partnerships or collaborations with local influencers can further boost market share in this high-potential region.
- **Books as a Dominant Category**
  The "Books" category is the top-performing segment, with 681 units sold, outperforming Home Decor (639 units) and Electronics (627 units). This reflects strong demand for affordable, knowledge-based products. Businesses can capitalize on this trend by expanding the book catalog, offering bundled discounts, or creating subscription services for avid readers. Targeted promotions during holiday seasons or back-to-school periods can drive higher sales. Collaborations with publishers for exclusive editions or author-signed copies could attract more buyers. Encouraging customer reviews and ratings for books can improve product visibility and influence potential customers, solidifying this category's revenue dominance.
- **Electronics Drive Demand**
  Electronics, led by the "ActiveWear Smartwatch" (100 units sold), are high-demand

products. Other popular items include "SoundWave Headphones" and "HomeSense Desk Lamp." This highlights the consumer interest in innovative tech products. Businesses should bundle these products with related accessories, offer seasonal discounts, or launch exclusive deals to further boost sales. Highlighting unique product features through targeted advertisements can attract tech-savvy customers. Feedback analysis can reveal areas for improvement and future upgrades. Partnering with manufacturers for exclusive launches or limited editions can ensure sustained growth in this category.

- **Seasonal Sales Trends**
  Sales peak during July ($71,366.39) and September ($70,603.75), indicating seasonal demand, possibly tied to festivals, holidays, or back-to-school shopping. Businesses should leverage these months with early-bird offers, exclusive campaigns, and discounts. New product launches or promotional bundles during these periods can attract more customers. Studying the drivers of seasonal peaks can help replicate these strategies in other months to balance sales across the year. Proper inventory planning during peak months can also prevent stockouts and missed sales opportunities.

- **High-Value Customers Drive Revenue**
  Paul Parsons, the top customer, contributes $10,673.87, with the top 10 customers accounting for a substantial portion of revenue. Personalized loyalty programs offering exclusive discounts, VIP perks, and early sale previews can strengthen engagement. Tailored marketing campaigns based on preferences and purchase history can boost spending. Understanding behaviors of high-value customers can help identify similar prospects and replicate retention strategies, ensuring consistent revenue growth.

- **Underperforming Categories**
  The "Clothing" category lags with 590 units sold, indicating low demand or ineffective marketing. Conducting surveys to understand preferences, improving product variety, and running ads showcasing unique features can help. Seasonal campaigns or influencer collaborations could enhance visibility. Region-specific strategies based on demographic analysis and offering bundle discounts or loyalty rewards may also boost performance.

- **Price-Driven Demand**
  Moderately priced products like "ActiveWear Smartwatch" and "SoundWave Headphones" perform better than higher-priced items, reflecting a preference for affordability. Businesses can introduce mid-range versions of premium products and offer discounts on higher-priced items. Dynamic pricing strategies during peak seasons can improve sales without compromising profitability.

- **Repeat Purchases and Small Transactions**
  Frequent repeat purchases from top customers, such as Paul Parsons, emphasize the importance of loyalty programs. Small transactions (1-2 units) dominate sales. Encouraging larger orders through volume discounts, "Buy One Get One" offers, or free shipping thresholds can increase the average order size and revenue. Monitoring small-order customers can also reveal upselling opportunities.