

Task 1: Exploratory Data Analysis (EDA) Report

1. Brand Performance

- **Insight:** ActiveWear is the top-performing brand, contributing nearly **70,000 USD** to total revenue. This performance is driven by high-value products like "Smartwatch" and "Running Shoes."
- **Opportunities for ActiveWear:**
 - Expand the product line by introducing **complementary fitness-related items** such as gym gear, wearable accessories, or fitness trackers.
 - Enhance brand visibility through **targeted marketing campaigns** focused on tech-savvy and fitness-conscious consumers.
 - Offer **seasonal discounts** on popular items like "Smartwatch" during holidays or fitness-related events.

2. Category Trends

- **Insight:** **Books** are the highest revenue-generating category, followed by **Electronics** and **Home Decor**. Popular products include "Cookbook," "Smartwatch," "Headphones," and "Desk Lamp."
- **Opportunities for Specific Categories:**
 - **Books:**
 - Stock popular books in bulk for **holiday seasons** (e.g., "Cookbook" and "Biography").
 - Promote **limited-time offers** or gift bundles combining books (e.g., "Cookbook + Biography").
 - **Electronics:**
 - Focus on **premium products** like "Smartwatch" and "Headphones" to capture high-value customers.
 - Highlight product features like compatibility and innovation to **differentiate from competitors**.
 - **Home Decor:**
 - Leverage consumer interest in aesthetic decor during festive seasons by promoting items like "Desk Lamp" and "Wall Art."

3. Regional Insights

- **Insight:** **South America** leads in revenue generation, driven by **Home Decor products** such as "Desk Lamp." Conversely, **North America** underperforms but shows significant demand for **Electronics** like "Smartwatch."
- **Opportunities for Brands by Region:**
 - **In South America:**
 - Strengthen the Home Decor portfolio and expand product availability in this region.
 - Offer **seasonal discounts** on decor items like "Desk Lamp" during high-demand periods.
 - **In North America:**
 - Focus on **Electronics products**, particularly "Smartwatch," with **aggressive pricing and promotional campaigns** to boost sales.
 - Collaborate with local retailers or influencers to increase product reach.

4. Time-Based Trends

- **Insight:** Sales peak in **April, May, August, and September**, with revenue increasing by 20% compared to other months. **Hourly sales** peak at **12 PM** and **3 PM**, aligning with lunch breaks and early afternoon shopping.
- **Opportunities for Brands:**
 - Schedule **holiday promotions and campaigns** during high-demand months (e.g., April and May) to leverage seasonal spikes.
 - Offer **time-sensitive discounts** or **flash sales** around 12 PM and 3 PM to capitalize on peak shopping hours.
 - Use **targeted digital advertising** during these time windows to reach active shoppers.

5. Product Bundling Opportunities

- **Insight:** Products such as "Cookbook" and "Biography" exhibit strong correlations in sales, as do **Smartwatch** and **Headphones**. This indicates bundling opportunities to maximize basket size.
- **Opportunities for Specific Brands:**
 - **Books:** Create **thematic bundles** like "Cookbook + Biography" with promotional discounts to encourage additional purchases.
 - **Electronics:** Offer **bundled deals** (e.g., "Smartwatch + Headphones") to target tech-savvy consumers and increase average transaction value.
 - Promote these bundles aggressively during **holiday seasons** or targeted campaigns.