Task-1 Business insights based on EDA

1. ## Customer Sign-Up Trends:
   Analysing customer sign-up trends reveals a steady increase in user engagement, with noticeable spikes in November and December, likely due to holiday shopping and year-end sales. These spikes highlight seasonal opportunities to maximize customer acquisition through targeted marketing campaigns, such as holiday promotions or limited-time discounts. Additionally, consistent growth in other months indicates that customer acquisition strategies are effective year-round. However, a slight dip in sign-ups during summer months suggests potential opportunities to introduce mid-year promotions or events to sustain engagement. Leveraging these insights can help align marketing efforts with periods of higher customer activity.

2. **Cross-Selling Opportunities**
   Given the dominance of Books and the strong revenue from Electronics, businesses could explore cross-selling opportunities, such as bundling e-readers with digital books or offering study desks (from Home Decor) alongside book purchases. This strategy not only improves sales across multiple categories but also enhances customer satisfaction by addressing complementary needs. This can attract customer bases from both books as well as electronics giving us a surplus.

3. **Revenue by Region and Category Trends**
   The heatmap of revenue by category in top-performing regions reveals **South America** as the leading region in overall revenue, especially for **books and electronics**. **North America** contributes majorly to **Electronics. Europe** shows strong demand for **fashion and beauty products**, while **Asia-Pacific** contributes significantly to **home appliances**. To maximize revenue, businesses should focus on region-specific strategies, such as promoting books and electronics in South America, electronics in North America and emphasizing fashion-related marketing in Europe. Additionally, the products that falls behind in regions such as books in Asia, Home décor in North America should be

addressed by using strategies such as discounts or sales to increase the revenue coming from them.

4. **Transaction Frequency by Month**
   The line plot of transaction frequency by month reveals a peak in transactions during **November**, which aligns with holiday shopping seasons like Black Friday. Meanwhile, there is a noticeable dip during **July and August**, suggesting lower customer activity in mid-summer. Businesses can run mid-year promotions or introduce loyalty rewards to boost transactions during the slower months while doubling down on marketing during high-transaction months.

5. **Dependency on Books and the Need for Diversification**
   The chart highlights Books as the primary revenue driver, indicating a reliance on this category. While this reflects strong demand, over-dependence poses risks if customer preferences shift. To diversify revenue, businesses should invest in Electronics and Clothing, which show potential for growth. Seasonal promotions like back-to-school sales for laptops or winter fashion discounts could drive increased engagement in these categories. Expanding inventory and launching targeted campaigns for these segments can create a balanced revenue mix, reducing reliance on Books while tapping into the growing demand for Electronics and Clothing to ensure sustainable growth.