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During the exploratory data analysis, five key insights were identified that shed light on customer behaviour and sales trends.

The first insight was derived from analyzing the customer distribution by region. It was observed that a significant portion of customers come from regions like North America and Europe, indicating that these regions represent the company's primary market. In contrast, regions such as Asia and Africa are underrepresented. This suggests an opportunity for the company to expand into less represented regions through targeted marketing efforts and customized product offerings. By understanding regional distribution, the company can strategically focus on areas for growth.

The second insight focused on the distribution of product prices. The analysis revealed that most products are moderately priced, appealing to a broad, price-conscious audience. However, there is a smaller number of high-priced products in the company's inventory. This opens up the possibility of introducing more premium-priced products to cater to high-end customers. By recognizing how prices are distributed, the company can better align its pricing strategy to customer expectations while also exploring new product lines that attract higher-spending customers.

The third insight came from examining total sales over time. The data showed a consistent level of sales throughout the year, with notable spikes during specific times such as holidays or promotional periods. This highlights the importance of understanding seasonal trends and planning marketing campaigns around these peak periods. By aligning promotional efforts with these sales spikes, the company can maximize revenue during high-demand times. Additionally, this insight can inform inventory management to ensure that popular products are well-stocked during peak sales periods.

The fourth insight revealed that certain product categories, particularly electronics and clothing, are the most popular among customers. These categories consistently generate the highest sales, making them essential to the company's core product offerings. On the other hand, categories like books and home décor are less popular. The company can use this information to enhance marketing efforts for underperforming categories or focus on expanding best-selling categories to drive even greater sales.

Finally, the fifth insight centred on the average transaction value by region. The analysis showed that customers in North America have the highest average transaction value, followed by customers in Europe. This suggests that customers in these regions are more likely to make larger purchases or buy higher-priced products. In contrast, regions with lower average transaction values may indicate a preference for more affordable products. This insight can help the company tailor its pricing strategy and promotional efforts to suit the purchasing behaviour of customers in different regions.

The EDA process was conducted using Python libraries such as pandas, seaborn, and matplotlib. After cleaning and merging the data from customer, product, and transaction datasets, various visualizations were generated to uncover meaningful patterns and trends. This allowed for a deeper understanding of customer purchasing behaviour, regional sales performance, and product category preferences. The insights gained from this analysis can guide business decisions aimed at improving sales strategies, optimizing marketing efforts, and exploring opportunities for product line expansion. Overall, the EDA process played a vital role in deriving actionable insights to support business growth.