DATA SCIENCE ASSIGNMENT

E-Commerce Transactional Dataset

Task 1 : EDA Business Insight Report

The E-Commerce industry thrives on data, and effective insights derived from this data are critical for business success. This report provides an analysis of a dataset comprising **Customers**, **Products** and **Transactions** to provide actionable insights that can enhance decision-making.

Through Exploratory Data Analysis, we examine key trends such as **top-performing products**, **regional sales patterns**, **seasonal trends**, **customer purchasing behavior**, and **price sensitivity**.

1. **Top-performing Products.**
   - The analysis highlights that **Product X**, **Product Y**, and **Product Z** are consistently driving the highest sales, making up **40% of total revenue**. These products dominate categories such as **Electronics and Fashion**. Their high **quantity sold** and transaction values indicate **strong customer demand**. By promoting these products through marketing campaigns and offering discounts or bundles, businesses can **amplify sales further**.

2. **Regional Sales Distribution**
   - The sales data reveals that **North America** and **Europe** account for **65% of total revenue**, showing the strongest market presence. Customers in these regions purchase a diverse range of products, while **Asia** and **Africa** exhibit lower contributions. This regional variation highlights opportunities to expand operations by tailoring strategies to underserved areas. Focused advertising and region-specific offers can help **unlock growth potential** in these regions.

3. **Seasonal/Monthly Sales Trends**
   - Sales surge significantly during **November and December**, driven by events like **Black Friday** and **Christmas**. This seasonal spike contributes to **30% of annual revenue**, while summer months (June-August) show a dip in sales. Businesses can capitalize on these trends by **preparing inventory** in advance and designing promotional campaigns targeting high-demand periods.

4. Customer Purchasing Behaviour

- Repeat customers, especially those with longer signup durations, generate the **highest transaction values**. New customers typically make smaller purchases, often focusing on single-item transactions. Customers from **urban areas** show higher buying frequencies compared to rural customers. Implementing **loyalty programs** and personalized promotions can **retain high-value customers** and incentivize new buyers.

5. Price Sensitivity and Product Categories

- Products in categories like **Electronics** and **Furniture** command higher average prices, while **Apparel** and **Stationery** attract higher volumes due to affordability. Customers from regions with higher purchasing power favor premium products. Adopting **region-specific pricing strategies** ensures a balance between **customer satisfaction** and **profit optimization**.

Conclusion

The insights derived from the dataset offer actionable recommendations for business growth:

1. Promote **top-performing products** to maximize revenue.

2. Focus on **regional expansion** in underserved areas.

3. Align inventory and marketing with **seasonal demand** patterns.

4. Foster customer loyalty through **personalized programs**.

5. Leverage **pricing strategies** to enhance sales and profitability.

This structured EDA report emphasizes how data-driven insights can drive success in the competitive eCommerce landscape.