

TASK-1

Exploratory Data Analysis (EDA) and Business Insights

Introduction:

The provided dataset consists of three files: Customers.csv, Products.csv, and Transactions.csv. Using these datasets, exploratory data analysis (EDA) was performed to identify key trends, patterns, and actionable business insights. The findings are summarized below.

Business Insights :

- **Top Customers by Spending:** The top 10 customers contribute a significant proportion of the company's revenue. These high-value customers are crucial to the business's financial performance. By introducing loyalty programs, personalized offers, and exclusive promotions, the company can enhance customer retention and increase lifetime value from these customers.
- **Top-Selling Products:** A small subset of products accounts for the majority of sales in terms of quantity sold. These top-performing items reflect high customer demand and popularity. To leverage this trend, the company can consider bundling these products with less popular items or offering discounts to encourage bulk purchases, further increasing their sales performance.
- **Regional Trends:** Spending behaviour and product preferences differ significantly across regions. For instance, certain products or categories might perform better in specific regions. The company can design regional marketing campaigns tailored to local preferences to maximize customer engagement and conversion rates.
- **Customer Segmentation by Buying Behaviour:** Customers can be segmented into frequent and occasional buyers based on their purchase frequency. Frequent buyers contribute a significant portion of revenue, while occasional buyers represent an untapped opportunity. Sending targeted emails, limited-time discounts, or product recommendations to occasional buyers could convert them into loyal customers and boost overall revenue.
- **Price Sensitivity and Revenue Optimization:** Low-priced products drive high transaction volumes but do not necessarily yield high revenue. Upselling or cross-selling higher-margin items to customers purchasing low-priced products could improve profitability. Additionally, offering tiered pricing or premium versions of popular products may attract higher spending from existing customers.

Key Visualizations:

- **Top 10 Customers by Total Spending:** A bar plot revealed the highest spending customers, emphasizing their importance to the business.
- **Top 10 Products by Quantity Sold:** A bar plot highlighted the products with the highest demand, indicating opportunities for promotional campaigns.

Recommendations:

1. **Enhance Customer Retention:** Focus on retaining top customers through loyalty programs and personalized services.
2. **Optimize Product Strategy:** Promote top-selling products through strategic bundles and discounts.
3. **Localize Marketing Efforts:** Tailor campaigns to regional preferences based on spending patterns.
4. **Increase Customer Engagement:** Target occasional buyers with incentives to increase their purchase frequency.
5. **Boost Profit Margins:** Leverage upselling and cross-selling strategies to maximize revenue from low-priced product buyers.

Conclusion:

By understanding customer behaviour, product performance, and regional trends through EDA, the company can implement data-driven strategies to improve revenue, customer satisfaction, and market competitiveness. These insights provide actionable recommendations to optimize business performance and unlock growth opportunities.