

Business Insights Derived from Exploratory Data Analysis (EDA)

1. Regional Customer Distribution Customer data revealed that Region A holds the largest customer base, followed by Region B, while other regions show significantly lower numbers. This indicates untapped potential in underrepresented areas. Expanding targeted marketing campaigns and enhancing distribution networks in these regions could improve customer acquisition and boost overall revenue. Additionally, understanding region-specific preferences and tailoring product offerings could further drive growth in these markets.

2. Monthly Signup Trends The analysis of customer signup data highlighted a consistent spike in registrations during November and December, coinciding with holiday seasons and promotional events. This pattern suggests seasonal influence on customer behaviour. Businesses can optimize marketing efforts during these periods by offering attractive discounts and exclusive deals. Furthermore, launching pre-holiday campaigns can help capture early shoppers, maximizing acquisition and revenue generation during peak months.

3. Top-Selling Product Categories The "Electronics" and "Home Appliances" categories emerged as the top performers, collectively contributing over 40% of total sales. This dominance underscores the popularity and reliability of these categories among customers. To capitalize on this trend, the business can expand its product range within these categories, introduce innovative features, and ensure adequate inventory during high-demand periods. Cross-selling complementary items can also enhance customer spending.

4. Transaction Patterns Weekend transactions accounted for the highest sales volumes, with premium purchases (above \$500) contributing significantly to revenue. This indicates that high-value customers are a key driver of profitability. Businesses can implement exclusive weekend promotions and loyalty programs tailored to premium customers. Offering personalized recommendations and premium support services could further increase customer satisfaction and retention in this high-value segment.

5. Seasonal Sales Trends Sales data revealed substantial spikes during December and July, aligned with major shopping events and holiday seasons. These periods present opportunities to maximize revenue through well-planned promotions, bundled offers, and targeted advertising. Preparing inventory in advance and ensuring smooth logistics during these high-demand months is crucial. Analysing customer preferences during these periods can also help refine product offerings and enhance sales strategies.