

Task 1: Exploratory Data Analysis (EDA) and Business Insights

This report summarizes key business insights derived from the Exploratory Data Analysis (EDA) of customer and sales data.

1. Customer Signup Year Distribution

The bar chart displays the annual trend of customer signups. By sorting the data by year, we observe how customer acquisition has varied over time. This can help identify growth trends or periods with significant customer onboarding. For instance, a spike in signups in a particular year may indicate the success of a marketing campaign or product launch. Consistent growth signifies effective customer retention and acquisition strategies. Conversely, a decline highlights areas for improvement, such as the need for better outreach or offers.

2. Region-wise Customer Distribution

The pie chart illustrates the proportion of customers from different regions, providing insights into geographical reach and dominance. This helps in identifying key markets and potential areas for business expansion. A higher percentage in a specific region indicates its importance as a revenue contributor, whereas regions with a smaller share could be untapped markets. Tailoring marketing and product strategies to these insights ensures targeted efforts for growth.

3. Top 5 Customers by Revenue

This analysis highlights the top 5 customers contributing the most revenue, offering insights into high-value clientele. By identifying these customers, businesses can strengthen relationships through personalized services or exclusive offers. Monitoring their purchase patterns helps in designing loyalty programs and sustaining long-term profitability. This also underscores the importance of focusing on high-value segments to maximize revenue.

4. Top 10 Most Popular Products

The horizontal bar chart identifies the most purchased products by quantity. These top-selling items represent customer preferences and help in inventory planning. Businesses can optimize production, stock levels, and marketing campaigns for these products. Identifying these products also aids in cross-selling and upselling strategies, enhancing overall sales performance.

5. Revenue Contribution by Product Category

This bar chart emphasizes which product categories generate the highest revenue. Understanding category-wise revenue distribution helps allocate resources effectively, ensuring high-performing categories are prioritized while low-performing ones are re-evaluated. This insight aids in inventory planning, pricing strategies, and promotional efforts tailored to maximize profitability.

6. Sales Trends: Day and Hour Analysis

The analysis of revenue by day and hour provides insights into customer purchase behavior. High revenue on specific days highlights peak business periods, enabling effective resource allocation and promotional planning. Similarly, hourly trends reveal the most active shopping times, helping schedule marketing campaigns and optimize staffing. For example, if evenings show higher revenue, businesses can focus discounts or ads during these hours to maximize impact.