

Task-1: Business insights from the Exploratory Data Analysis (EDA)

1)Revenue Concentration by Region:

High Revenue Regions: Regions with taller bars indicate higher customer concentrations, representing key markets for revenue generation.

Targeted Strategies: High-performing regions can be prioritized for focused marketing and resource allocation.

Visual Clarity: Count labels and distinct bar colours provide easy interpretation of regional customer distributions.

Growth Opportunities: Regions with lower customer counts may need targeted campaigns or deeper analysis to improve performance.

Market Segmentation: The visualization enables region-specific planning to tailor strategies for better engagement and revenue growth.

Actionable Data: Enhanced with borders and labels, the chart ensures precise identification of opportunities and performance gaps.

2) Price Distribution for Each Category:

Price Variation Across Categories: Boxplots highlight the range of prices for each category, including outliers, medians, and quartiles, making category comparisons straightforward.

Median Insights: Median price values displayed above each boxplot provide a quick understanding of typical prices in each category.

Category Comparisons: Categories with wider interquartile ranges indicate greater price variability, suggesting diverse product offerings or pricing strategies.

Outlier Detection: The boxplot makes it easy to identify outliers, which may represent premium-priced or discounted products.

Data-Driven Strategy: Insights on pricing distributions help refine pricing strategies or identify opportunities for competitive pricing in specific categories.

3)Top 10 Sales Over Time:

Top Sales Identification: The plot highlights the top 10 transactions with the highest sales values over time, offering key insights into peak sales periods.

Sales Trends: The line plot shows how total sales fluctuate over time, indicating significant sales spikes and trends across dates.

Visual Clarity: Markers and a distinct line colour improve readability and help quickly identify the highest sales events.

Actionable Insights: The top 10 sales moments can guide future promotional strategies, as businesses can target periods that yield the highest revenue.

Performance Analysis: The graph enables businesses to pinpoint sales peaks and identify factors contributing to those high-performing periods.

4) Top Spenders:

Top Spenders Visualization: The pie chart identifies the top 10 customers by total spending, providing a clear view of major revenue contributors.

Emphasized Slices: Exploding specific slices highlights key customers, helping to focus on those with the highest spending.

Percentage Insights: Each slice shows the percentage of total spending contributed by each customer, facilitating comparison between top spenders.

Custom Colours & Design: The colour gradient from the Viridis palette visually distinguishes the customers, enhancing the chart's appeal and readability.

Actionable Insights: This chart helps businesses target their highest-value customers for loyalty programs, personalized promotions, or other retention strategies.

5) Popular Products:

Top Selling Products: The bar plot displays the top 10 products by quantity sold, highlighting the most popular items in the dataset.

Product Comparison: The plot enables easy comparison of quantities sold for each product, with distinct colour coding for each product.

Visual Clarity: Rotated x-axis labels make product names readable, and colour differentiation improves the clarity of the visualization.

Sales Performance Insights: This chart identifies best-selling products, providing actionable insights for inventory management and marketing strategies.

Actionable Strategy: Focusing on high-performing products can help businesses optimize stock levels and target promotions to boost sales.

6) Monthly Sales Trend:

Monthly Sales Overview: The scatter plot reveals the total sales trend across each month, providing a clear picture of seasonal performance.

Sales Peaks & Dips: The diamond markers help highlight months with high or low sales, making it easy to identify sales peaks and drops.

Visual Clarity: The use of a custom marker (diamond) and colour (green) improves the plot's visual appeal and clarity.

Monthly Comparison: Rotated x-axis labels ensure that each month is easily readable, enhancing the comparison across different periods.

Strategic Insights: The plot helps identify trends, enabling businesses to adjust strategies for low-performing months or capitalize on high sales months.