DATA VISUALIZATION TOOLS & TECHNIQUES

CA 2 ASSIGNMENT

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DATASET:

E-Commerce Sales- The dataset for this project is a comprehensive collection of sales orders, designed to provide a detailed view of various aspects of the sales process. It includes 24 columns, each offering specific insights into different dimensions of the sales transactions. Key identifiers like Order ID and Customer ID help in tracking individual orders and customer interactions. Temporal data points such as Order Date, Ship Date, and order year/month allow for trend analysis and performance tracking over time. The inclusion of demographic information, such as City, State, Country, and Region, enables geographic segmentation and market analysis. Additionally, customer-related data such as Customer Name and Segment provide deeper understanding of customer demographics and behavior.

Furthermore, the dataset contains detailed product information, including Product ID, Category, Sub-Category, and Product Name, which is essential for product performance analysis. Financial metrics such as Sales, Profit, Discount, and Shipping Cost help in evaluating the financial health of the business and identifying areas for improvement. Operational aspects are captured through columns like Ship Mode, Order Priority, and Delivery Days, which can be used to assess and enhance supply chain efficiency. Overall, this dataset is well-suited for creating a comprehensive and insightful Tableau dashboard that will enable stakeholders to make data-driven decisions and strategize effectively.

DASHBOARD:

KEY METRICS:

- **Total Sales**: The overall revenue generated from sales, visualized through various charts and maps to provide insights into sales performance.
- **Highest Sold Category**: The product category that has generated the most sales, which can be used to highlight key products.
- **Profit**: The net earnings after all expenses are deducted from sales, showing the financial health of the business.
- **Discount**: The reductions given on products, which can affect both sales and profit margins.
- **Shipping Cost**: The expenses incurred for delivering products to customers, impacting overall profitability.
- **Sales by Ship Mode**: Distribution of sales across different shipping methods, helping to understand customer preferences.
- **Sales by Market**: Total sales segmented by different markets, showing geographical performance.
- **Discounted Sales**: Sales that included discounts, used to evaluate the impact of discounts on overall revenue.

DASHBOARD DESCRIPTION:

The Tableau dashboard is an interactive, multi-faceted tool designed to provide a comprehensive view of the sales performance and trends of a business. At its core, it features a dynamic map visualizing total sales across various regions. This map includes an informative tooltip highlighting the highest sold category in each region, allowing users to quickly grasp the most popular products. Additionally, the map serves as a filter, enabling users to drill down into specific areas and update the entire dashboard based on their selection.

A prominent bar graph on the dashboard showcases the highest sold categories, broken down by sub-category and sales, with categories distinguished by colour for better visualization. To provide insights into financial health, a dual-axis line graph displays profit and discount trends over time, revealing patterns and potential areas for strategic adjustments. A pie chart illustrates total sales by ship mode, with market segments highlighted by colour, while a tree map offers a visual breakdown of total sales by market, again using colour to differentiate market segments. Another key feature is a bar graph of discounted sales, a calculated field that compares sales across categories, also color-coded for clarity. A date range parameter adds an interactive element, allowing users to focus on specific time periods to gain more relevant insights.

This dashboard is designed to be an all-encompassing tool for stakeholders, providing them with the ability to analyse sales data from multiple angles, understand market trends, and make informed decisions to drive business growth. The combination of visual elements and interactivity ensures a user-friendly experience that brings the data to life, making complex information accessible and actionable.

Visualizations:

1. **Total Sales by Map**:
   - o **Description**: A geographic heat map showing total sales by region.
   - o **Tooltip**: Includes details of the highest sold category.
   - o **Interactivity**: Used as a filter for the entire dashboard to provide regional insights.
2. **Bar Graph of Highest Sold Category**:
   - o **Description**: A bar graph showing sales for each sub-category within the highest sold category.
   - o **Colour**: Categories are differentiated by color for easy comparison.
3. **Profit and Discount Trends**:
   - o **Description**: A dual-axis line graph tracking trends in profit and discount over time.
   - o **Purpose**: Helps to analyse the correlation between discounting strategies and profitability.
4. **Pie Chart of Total Sales by Ship Mode**:
   - o **Description**: A pie chart showing the distribution of total sales across different shipping modes.
   - o **Colour**: Segments coloured by market to show market-wise shipping preferences.
5. **Tree map of Total Sales by Market**:
   - o **Description**: A tree map displaying total sales with market segments differentiated by colour.
   - o **Purpose**: Provides a quick visual representation of market performance.
6. **Bar Graph of Discounted Sales**:
   - o **Description**: A bar graph representing sales that included discounts.
   - o **Calculation Field**: Uses a calculated field to filter and display discounted sales.
   - o **Colour**: Categories are differentiated by colour.
7. **Date Range Parameter**:
   - o **Description**: A parameter allowing users to select a date range for the analysis.
   - o **Purpose**: Provides flexibility to view metrics over different time periods, enhancing the analysis.

Dashboard Layout:

- **Map**: Placed at the top, used as a primary filter.
- **Bar Graph (Highest Sold Category)**: Positioned below the map.
- **Profit and Discount Trends**: Located to the right or below the map for trend analysis.
- **Pie Chart (Sales by Ship Mode)**: Positioned in a corner for quick reference.
- **Tree map (Sales by Market)**: Placed alongside the pie chart for market performance.
- **Bar Graph (Discounted Sales)**: Positioned for easy comparison with other sales metrics.
- **Date Range Parameter**: Placed at the top or side for easy access.

This layout ensures that the dashboard is interactive, informative, and provides a comprehensive view of the sales data.

Insights

Based on the Tableau dashboard created:

1. Total Sales by Map:

  - Insights can be derived by observing geographical variations in sales.

  - The tooltip showing the highest sold category provides instant focus on top-performing product categories across different regions.

  - Utilizing the map as a filter ensures that all other visualizations on the dashboard dynamically adjust based on the selected region, allowing for deeper regional analysis.

2. Bar Graph of Highest Sold Category:

  - Provides a clear comparison of sales performance among different product categories.

  - Including sub-categories and sales values allows for detailed insights into which specific products within the top categories are performing best.

3. Profit and Discount Trends (Line Graph - Dual Axis):

  - Offers insights into the relationship between sales profitability and discounting strategies over time.

  - Dual axes enable easy comparison between profit trends and discount percentages, highlighting correlations or discrepancies.

4. Pie Chart of Total Sales by Ship Mode and Market:

  - Shows distribution of sales across different shipping modes and markets.

  - Color coding by market provides a quick visual understanding of which markets contribute the most to overall sales.

5. Tree map of Total Sales by Market:

  - Provides a hierarchical view of sales performance across different market segments.

  - The size of each segment indicates its relative contribution to total sales, while color coding enhances visual differentiation and understanding.

6. Bar Graph of Discounted Sales (Calculated Field):

  - Highlights the impact of discounts on sales performance across various product categories.

- Color coding by category helps identify which product categories are most heavily discounted and their resulting sales performance.

These insights collectively enable stakeholders to understand geographic sales patterns, product performance across categories and regions, profitability trends related to discounting strategies, and the distribution of sales by shipping modes and markets. The dashboard's interactivity, including the map filter and parameter controls, enhances usability and facilitates deeper exploratory analysis of the dataset.