**Data Visualisation: Empowering Business with Effective**

**CEO's Perspective Questions:**

1. What is our historical revenue trend, and how has it changed over time? Is there a seasonality in sales?
2. Which countries contribute the most to our revenue, and are there untapped international markets?
3. Which products or product categories have the highest profit margins, and how does that impact our overall profitability?
4. How have our operational costs evolved, and are there cost-saving opportunities in our supply chain?

**CMO's Perspective Questions:**

1. Which marketing channels (e.g., email, social media, paid ads) have driven the most sales, and what is the conversion rate for each?
2. How do different customer segments (e.g., age groups) behave, and how can we target them more effectively?
3. Which products are most popular among our customers, and how do product ratings correlate with sales?
4. Which marketing campaigns have performed exceptionally well during specific seasons, and how can we replicate their success?

**CEO's Perspective:**

**1. Overall Revenue and Growth:**

- CEO: "What is our historical revenue trend, and how has it changed over time?"

- Visualization: Line chart showing monthly or quarterly revenue trends over the available time period.

**2. Geographic Revenue Distribution:**

- CEO: "Which countries contribute the most to our revenue, and are there untapped international markets?"

- Visualization: A bar chart or geographic map showing revenue breakdown by country.

**3. Profit Margins and Product Performance:**

- CEO: "Which products or product categories have the highest profit margins, and how does that impact our overall profitability?"

- Visualization: A bar chart or pie chart illustrating profit margins for top-selling products or categories.

**4. Operational Efficiency and Costs:**

- CEO: "How have our operational costs evolved, and are there cost-saving opportunities in our supply chain?"

- Visualization: A line chart showing trends in operational costs over time and a pie chart depicting cost breakdown.

**CMO's Perspective:**

**1. Marketing Channel Effectiveness:**

- CMO: "Which marketing channels (e.g., email, social media, paid ads) have driven the most sales, and what is the conversion rate for each?"

- Visualization: A bar chart or funnel chart comparing conversion rates across marketing channels.

**2. Customer Segmentation and Acquisition:**

- CMO: "How do different customer segments (e.g., age groups) behave, and how can we target them more effectively?"

- Visualization: A segmented bar chart or heat map showing customer behavior and acquisition by demographic factors.

**3. Product Popularity and Customer Reviews:**

- CMO: "Which products are most popular among our customers, and how do product ratings correlate with sales?"

- Visualization: A scatterplot or bubble chart with product ratings on one axis and sales on the other.

**4. Seasonal Marketing Campaign Success:**

- CMO: "Which marketing campaigns have performed exceptionally well during specific seasons, and how can we replicate their success?"

- Visualization: A line chart with campaign performance metrics (e.g., click-through rate, conversion rate) by season.

**TASK 3**

**Question 1** The CEO of the retail store is interested to view the time series of the revenue data for the year 2011 only. He would like to view granular data by looking into revenue for each month. The CEO is interested in viewing the seasonal trends and wants to dig deeper into why these trends occur. This analysis will be helpful for the CEO to forecast for the next year.

**Question 2** The CMO is interested in viewing the top 10 countries which are generating the highest revenue. Additionally, the CMO is also interested in viewing the quantity sold along with the revenue generated. The CMO does not want to have the United Kingdom in this visual.

**Question 3** The CMO of the online retail store wants to view the information on the top 10 customers by revenue. He is interested in a visual that shows the greatest revenue generating customer at the start and gradually declines to the lower revenue generating customers. The CMO wants to target the higher revenue generating customers and ensure that they remain satisfied with their products**.**

**Question 4** The CEO is looking to gain insights on the demand for their products. He wants to look at all countries and see which regions have the greatest demand for their products. Once the CEO gets an idea of the regions that have high demand, he will initiate an expansion strategy which will allow the company to target these areas and generate more business from these regions. He wants to view the entire data on a single view without the need to scroll or hover over the data points to identify the demand. There is no need to show data for the United Kingdom as the CEO is more interested in viewing the countries that have expansion opportunities. Ready the visualization type for the above questions-

Here are suitable visualization types for each of the provided questions:

**Question 1: CEO's Seasonal Revenue Analysis (2011):**

- Visualization Type: **Line Chart**

- Description: Use a line chart to display the monthly revenue for the year 2011. Each month should be on the x-axis, and the revenue on the y-axis. This will allow the CEO to easily identify seasonal trends and patterns in revenue for that specific year.

**Question 2:** **CMO's Top 10 Revenue-Generating Countries (Excluding UK):**

- Visualization Type: **Horizontal Bar Chart**

- Description: Create a horizontal bar chart showing the top 10 revenue-generating countries (excluding the United Kingdom). Use one bar for each country, with revenue on the x-axis and the country names on the y-axis. Additionally, use a secondary axis to show the quantity sold as a line or another bar alongside revenue for each country.

**Question 3: :**

- Visualization Type: **Vertical Bar Chart or Treemap**

- Description: Visualize the top 10 customers by revenue using either a vertical bar chart with customers on the x-axis and revenue on the y-axis, sorted in descending order, or a treemap where the size of each rectangle represents the revenue generated by each customer. The treemap can be designed to show the largest revenue generator at the top, gradually declining to smaller rectangles.

**Question 4: CEO's Demand Analysis by Region (Excluding UK):**

- Visualization Type: **Choropleth Map or Heatmap**

- Description: Create a choropleth map or heatmap to display the demand for products by region, using colors to indicate the level of demand. Exclude data for the United Kingdom and focus on the countries with expansion opportunities. This type of visualization allows the CEO to quickly identify regions with high demand without the need to scroll or hover over individual data points.

These visualization types should effectively address the specific needs of the CEO and CMO for each question, providing valuable insights and aiding in decision-making.

**Project Overview: Data Visualization Internship**

This Data Visualization Internship project is designed to provide valuable insights and actionable information to meet the analytical needs of the organization's top leadership, including the CEO and CMO. The project focuses on utilizing data visualization techniques to address key questions and challenges faced by these executives. Through effective visualization, this project aims to empower decision-making, identify trends, and improve overall business strategies.

**Key Objectives:**

**1. CEO's Seasonal Revenue Analysis (2011):** This aspect of the project aims to help the CEO understand the seasonal revenue trends for the year 2011. By employing a line chart, the visualization provides a clear picture of how revenue fluctuated each month. This knowledge is crucial for forecasting and strategic planning. **November month** is peak in the revenue of the company

**2. CMO's Top 10 Revenue-Generating Countries (Excluding UK):** The CMO requires insights into the top revenue-generating countries, excluding the United Kingdom. Using a horizontal bar chart with quantity sold as a secondary axis, this visualization showcases the most lucrative markets. It helps the CMO allocate resources and marketing efforts effectively. **In top 10 Revenue generating Countries Netherlands tops and japan in 10th position excluding UK**

**3. Top 10 Customers by Revenue:** Identifying the top customers by revenue is pivotal for building and maintaining strong client relationships. This project visualizes this data using either a vertical bar chart or a treemap. It provides a clear hierarchy of valuable customers, aiding in personalized engagement strategies. **In top 10 Customers by Revenue 14646 tops and 12346 in 10th position.**

**4. CEO's Demand Analysis by Region (Excluding UK):** The CEO seeks to understand demand patterns by region, excluding the UK. To achieve this, a choropleth map or heatmap is employed. By visualizing demand data through color coding, this visualization helps the CEO identify regions with the highest potential for growth and expansion. **Excluding UK, the demand analysis with respect to product sales most important region to focus is the Europe Region.**

**Project Significance:**

This internship project goes beyond data analysis by delivering meaningful insights in a visual and easily digestible format. It addresses specific challenges faced by the CEO and CMO, assisting them in making informed decisions, identifying opportunities, and mitigating risks.

Through effective data visualization, this project bridges the gap between raw data and actionable insights. It empowers leadership to drive strategic initiatives, enhance customer relationships, and optimize resource allocation.

The project showcases the power of data visualization as a tool for translating complex data into actionable business intelligence. It exemplifies how data-driven decision-making can be made more accessible and impactful through visual representation.

**Project Team:**

Giriraju B: Data Visualization Intern

Forage

Tata Data Visualization

**Project Timeline:**

[14-10-2023] - [15-10-2023]

**Deliverables:**

1. Interactive dashboards and reports.

2. Documentation on visualization techniques and data sources.

3. Presentation of findings to the CEO and CMO.

This Data Visualization Internship project aims to empower leadership, foster data-driven decision-making, and ultimately contribute to the organization's success by transforming data into actionable insights.