**Data Analytics on Coffee Shop**

This analysis leverages data from various sources to evaluate the performance and trends of a coffee shop. It examines key areas, including coffee seed supplier performance, sales comparisons between instant and filter coffee, customer feedback on water quantity, and sweetener sales trends. The analysis also evaluates seasonal sales patterns and supplier contributions to overall sales. Additionally, customer satisfaction scores are derived from feedback, and digital presence data (website traffic, social media engagement, and online sales) is analyzed to understand the impact of online activities on sales. Visualizations and insights from the data help guide marketing, inventory, and customer service strategies, enabling data-driven decision-making to optimize business performance.

**Here's an outline of what this dataset typically encompasses:**

* **Coffee Seeds Data:**
* **Supplier:** Name of the supplier providing coffee seeds.
* **Year**: Year of the transaction.
* **Seeds Bought (kg):** Quantity of coffee seeds bought in kilograms.
* **Sales Generated ($):** Revenue generated from the purchased seeds.
* **Coffee Sales Data:**
* **Date:** The date (monthly) of coffee sales.
* **Instant Coffee Sales ($):** Sales revenue generated from instant coffee.
* **Filter Coffee Sales ($):** Sales revenue generated from filter coffee.
* **Difference:** The difference between filter and instant coffee sales for comparison.
* **Customer Feedback Data:**
* **Customer ID:** Unique identifier for each customer providing feedback.
* **Water Quantity Feedback:** Customer feedback on the amount of water in coffee (Too Much, Just Right, Too Little).
* **Sweetener Sales Data:**
* **Date:** The date (monthly) of sweetener sales.
* **Sugar Sales ($):** Sales revenue generated from sugar.
* **Jaggery Sales ($):** Sales revenue generated from jaggery.
* **Sugar-Free Sales ($):** Sales revenue generated from sugar-free sweeteners
* **Digital Presence Data:**
* **Month:** The month corresponding to the data.
* **Website Traffic:** Number of visitors to the coffee shop’s website.
* **Social Media Engagement:**  Engagement level on social media platforms.
* **Online Sales ($):** Revenue generated from online sales.

**Analytics:**

**1. Supplier Performance Analysis:**

**Objective:** Identify which suppliers generate the most revenue from the sale of coffee seeds.

* **Method:** The data is grouped by supplier, and total sales generated by each supplier are calculated.
* **Insights:**
  + Suppliers are ranked based on their total sales contribution.
  + The supplier with the highest sales is identified, helping to determine which supplier should be prioritized for future purchases.

**2. Instant vs Filter Coffee Sales Comparison:**

**Objective: Compare the sales performance of instant coffee versus filter coffee.**

* **Method**: The difference in sales revenue between instant coffee and filter coffee is calculated for each month.
* **Insights**:
  + The monthly sales difference helps identify customer preferences (whether customers prefer instant or filter coffee).
  + Seasonal or promotional effects on coffee preferences are identified.

**3. Customer Feedback on Water Quantity:**

**Objective: Analyze customer feedback regarding the water quantity in the coffee.**

* **Method:** Customer feedback is categorized into three groups: "Too Much," "Just Right," and "Too Little." The frequency of each feedback type is calculated.
* **Graph Type**: **Histogram**
* **Purpose**: To visualize the distribution of customer satisfaction scores based on feedback about water quantity.
* **Description**: A histogram is used to visualize how customer satisfaction scores (ranging from 1 to 3) are distributed. This helps understand whether customers are generally satisfied with the amount of water used in their coffee.

**5. Seasonal Sales Trends:**

**Objective: Identify the seasonal trends in coffee sales, specifically for instant and filter coffee.**

* **Method**: Monthly sales data for instant and filter coffee is aggregated to detect trends over time.
* **Graph Type**: **Bar Chart**
* **Purpose**: To analyze the seasonal trends in coffee sales (both Instant Coffee and Filter Coffee).
* **Description**: A bar chart is used to show the monthly sales of Instant and Filter Coffee. The bars help visualize how coffee sales fluctuate across the months, revealing seasonal peaks and trends.

**6. Digital Presence Impact on Sales:**

**Objective: Understand how digital presence (website traffic, social media engagement, and online sales) affects overall sales performance.**

* **Method**: Monthly data on website traffic, social media engagement, and online sales is analyzed to identify correlations between digital activity and sales.
* **Graph Type**: **Multi-line Graph or Subplots**
* **Purpose**: To analyze the trends in website traffic, social media engagement, and online sales.
* **Description**: A multi-line graph is used to track how website traffic, social media engagement, and online sales evolve over time (month by month). This visualization helps understand the impact of digital presence on sales and engagement.

**7. Supply Chain Analysis:**

**Objective: Analyze the contribution of different suppliers to the overall coffee sales.**

* **Method**: Sales data is grouped by supplier to determine the total sales generated by each supplier.
* **Graph Type**: **Bar Chart**
* **Purpose**: To show the sales performance of each coffee seed supplier.
* **Description**: A bar chart is used to display total sales for each supplier, providing a clear view of which suppliers are contributing the most revenue to the coffee shop.

**8. Customer Satisfaction Analysis:**

**Objective:** Evaluate customer satisfaction based on the feedback received regarding the water quantity in coffee.

* **Method**: A satisfaction score is assigned based on feedback categories, with "Just Right" receiving the highest score. The average satisfaction score is calculated.
* **Graph Type: Histogram**
* **Purpose**: To visualize the distribution of customer satisfaction scores based on feedback about water quantity.
* **Description**: A histogram is used to visualize how customer satisfaction scores (ranging from 1 to 3) are distributed. This helps understand whether customers are generally satisfied with the amount of water used in their coffee.

**Summary of Graphs Used in the Program:**

1. **Bar Chart (Seasonal Sales Trends)**: Used to compare monthly coffee sales (Instant vs Filter).
2. **Histogram (Customer Satisfaction)**: Visualizes the distribution of customer satisfaction based on water quantity feedback.
3. **Bar Chart (Supplier Performance)**: Shows the total sales by each coffee seed supplier.
4. **Multi-line Graph (Digital Presence)**: Tracks the trends in website traffic, social media engagement, and online sales.
5. **Bar Chart (Sweetener Sales)**: Compares sales of sugar, jaggery, and sugar-free products.
6. **Bar Chart (Comparison of Coffee Seed Supplier Performance)**: Visualizes which suppliers contribute the most to total coffee seed sales.