PHASE 5

SUBMISSION

A. Share the GitHub repository link containing the project's code and files:

Link: https://github.com/Lokesh-alive/Product-Sales-Analysis.git

B. Provide instructions on how to replicate the analysis and generate visualizations using IBM Cognos:

Replicating the analysis and generating visualizations using IBM Cognos involves several steps. Below are the instructions on how to perform this analysis:

1. Data Source Connection:

   - Ensuring that we have access to our dataset in IBM Cognos. Connecting to our data source, where you have columns for four unit columns, four revenue columns and a date column.

2. Data Preparation:

   - Checking our data is clean and structured. Verify that our date column is in the proper date format. If necessary, transform or clean the data to remove duplicates or inconsistencies.

3. Create a New Report:

   - Opening IBM Cognos and creating a new report to begin our analysis.

4. Select Data:

   - Choosing the appropriate data source and selecting the relevant data columns:

     - Date: Place this on the X-axis of your visualizations.

     - Unit Columns (Q-P1,Q-P2,Q-P3,Q-P4): These will be used to group and segment our data.

     - Revenue Columns (S-P1,S-P2,S-P3,S-P4): These will be used for our measures.

5. Build Visualizations:

   - Creating the visualizations that we need to analyze our data. For each analysis task:

Examples:

   a. Top-Selling Products:

   - Using a bar chart or table.

   - Placing the product (unit) on the X-axis and total revenue on the Y-axis.

   - Sorting the products by revenue in descending order.

b. Peak Sales Periods:

- Creating a line chart or time series chart.

- Placing the date on the X-axis and total revenue on the Y-axis.

- Adjust the chart settings to emphasize peaks, if necessary.

c. Customer Preferences:

- Utilize pie charts, bar charts, or crosstabs.

- Displaying customer preferences by unit.

- Allowing users to filter by customer segments or specific products.

6. Filters and Parameters:

- Implementing filters and parameters to allow users to customize their analysis. Creating parameters for date ranges, units, and other relevant dimensions, as needed.

7. Aggregations and Calculations:

- Calculating total revenue for each unit or product and any other metrics (e.g., average revenue per unit) using IBM Cognos functions.

8. Sorting and Grouping:

- Grouping the data by date, product, or unit to provide insights based on the user's preferences. Adjust sorting and grouping based on our analysis objectives.

9. Interactive Elements:

- Enabling interactivity in our visualizations, allowing users to drill down, filter, and explore the data further.

10. Security and Permissions:

- Setting up user permissions and access control to ensure data security and restrict access to sensitive information.

11. Testing and Validation:

- Thoroughly testing our reports and visualizations to ensure accuracy and user-friendliness.

12. User Training:

- Providing training to end-users on how to access, filter, and interpret the reports effectively.
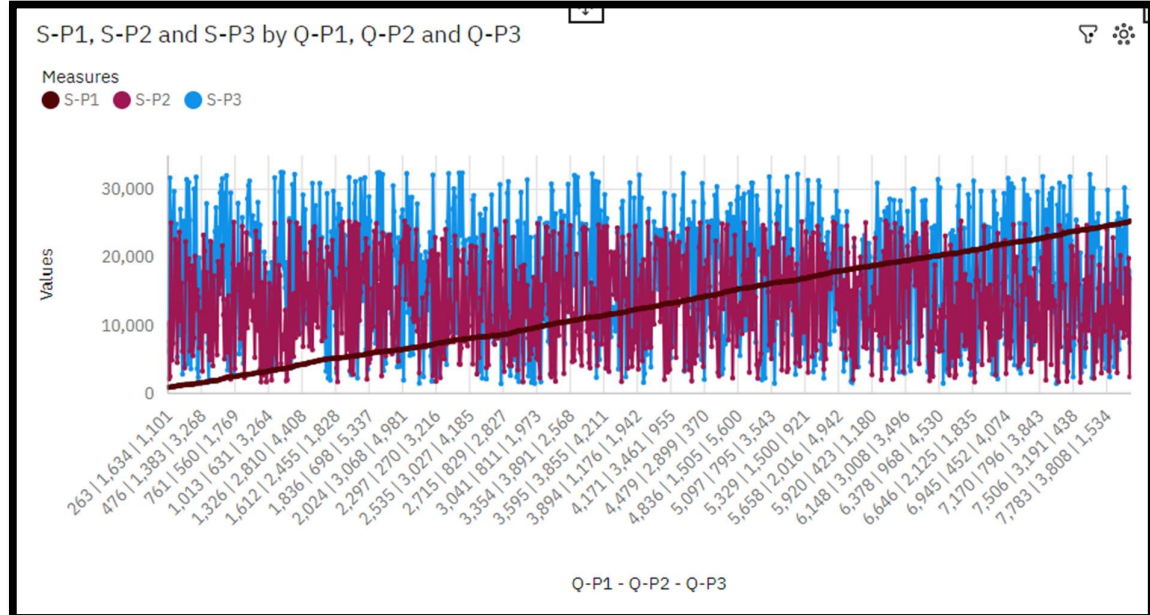
13. Documentation:

- Creating a documentation detailing data sources, report definitions, and instructions for users to reference.

14. Maintenance and Updates:

- Regularly updating the reports to reflect changing data and evolving business needs.

**C. Include example outputs of the visualizations and derived insights :**

1. Line :

Insights:

- Q-P1 7910 has the highest total S-P1 due to Q-P2 1290.
- Q-P3 5703 has the highest values of both S-P1 and Q-P4.
- 7910 S-P1 at over 50 thousand is 97% higher than the Q-P4 of over 1500.
- 3407 S-P1 at over 67 thousand is 96% higher than the Q-P4 of over 2500
- 5703 S-P1 at over 54 thousand is 93% higher than the Q-P4 of nearly 4 thousand.
- S-P1 and Q-P4 diverged the most when Q-P1 is 7826, and when S-P1 was nearly 49 thousand higher than the Q-P4.
- S-P1 and Q-P4 diverged the most when Q-P2 is 3407, and when S-P1 was nearly 65 thousand higher than the Q-P4.
- S-P1 and Q-P4 diverged the most when Q-P3 is 5703, and when S-P1 was nearly 51 thousand higher than the Q-P4.
- Q-P1 1846 has the highest Total Q-P4 but is ranked #471 in Total S-P1.
- Q-P2 3407 has the highest Total S-P1 but is ranked #37 in Total Q-P4.
- Q-P2 3855 has the highest Total Q-P4 but is ranked #22 in Total S-P1.
- Q-P2 3407 has the highest S-P1 at over 67 thousand, out of which Q-P1 7501 contributed the most at almost 24 thousand.
- 7996 has a S-P1 of over 25 thousand for Q-P2 2672.
- 4430|1942|3211 (0.2 %), 4351|276|2337 (0.2 %), 5704|808|891 (0.2 %), 3941|3098|282 (0.2 %), and 3855|1015|1746 (0.2 %) are the most frequently occurring categories of Q-P1 - Q-P2 - Q-P3 with a combined count of 10 items with S-P1 values (1.1 % of the total) .
- 4430|1942|3211 (0.2 %), 4351|276|2337 (0.2 %), 5704|808|891 (0.2 %), 3941|3098|282 (0.2 %), and 3855|1015|1746 (0.2 %) are the most frequently occurring categories of Q-P1 - Q-P2 - Q-P3 with a combined count of 10 items with S-P2 values (1.1 % of the total) .
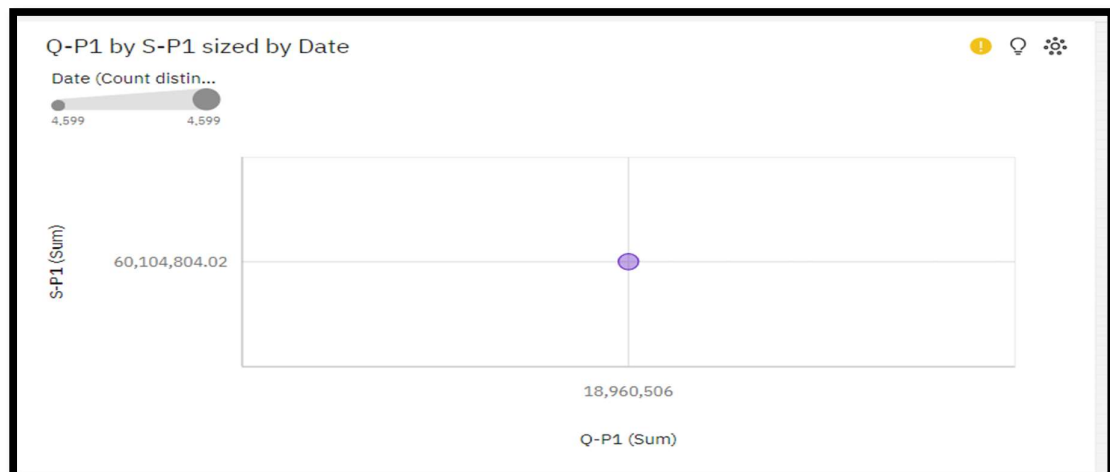
2. Stacked column:
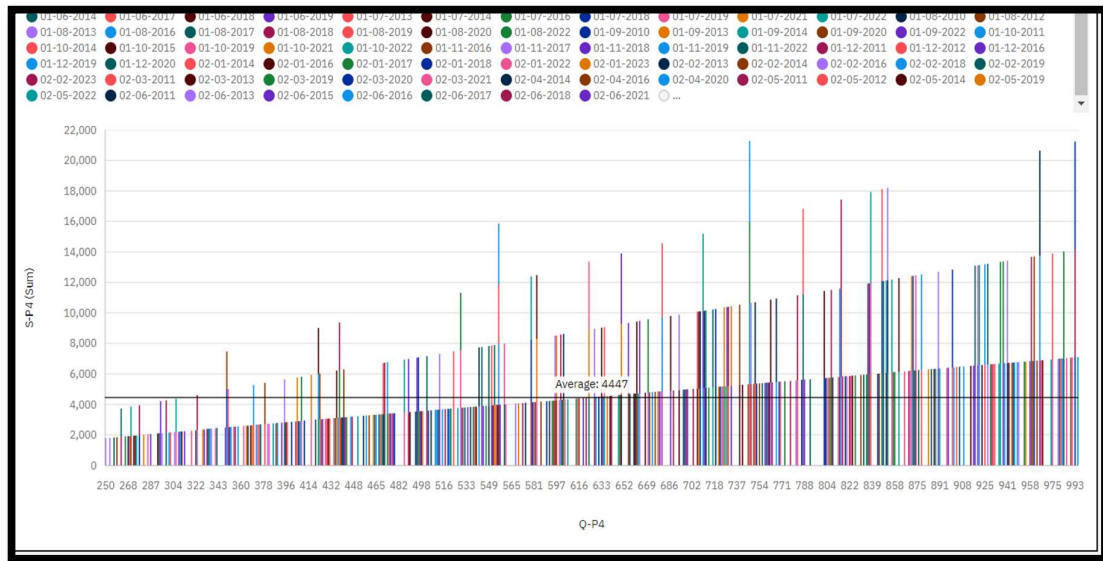
Insights:

- Q-P4 934 has the highest total S-P4 due to Date 12-08-2014.
- 25-12-2018 Q-P1 at nearly eight thousand is 61% higher than the S-P4 of over three thousand.
- 257 Q-P1 at over 17 thousand is 68% higher than the S-P4 of nearly 5500.

3.Bubble:

Insights:
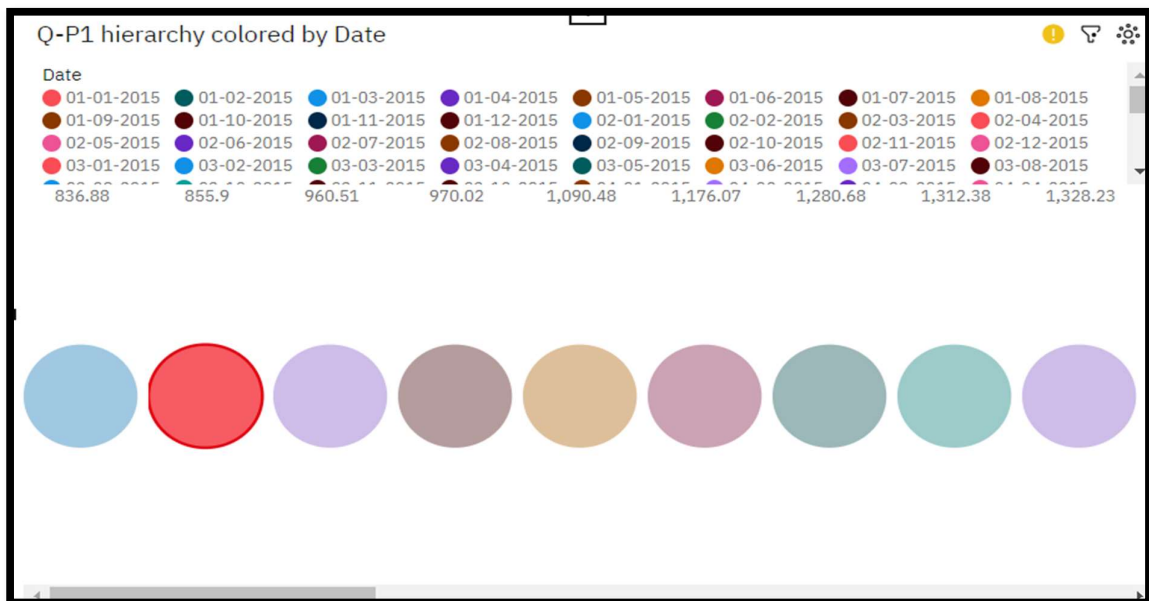- The total number of results for S-P1, across all Q-P1, is over 4500.

4.Decision Tree:

Insights:

- Q-P2 Strongly derives S-P2(96.1%)

5.Hierachy Bubble:

Insights:

- Date 31-9-2015 has the highest Unaggregated Q-P1 but is ranked #125 in Total Q-P4.
- Date 27-03-2015 has the highest Total Q-P4 but is ranked #49 in Unaggregated Q-P1.