

2.The Cage supplied you with their IT spend data. Using the available data, create a Microsoft Power BI report showing the following:

a.Add a slicer to filter data by the IT Area, IT Sub Area, and Sales Region data

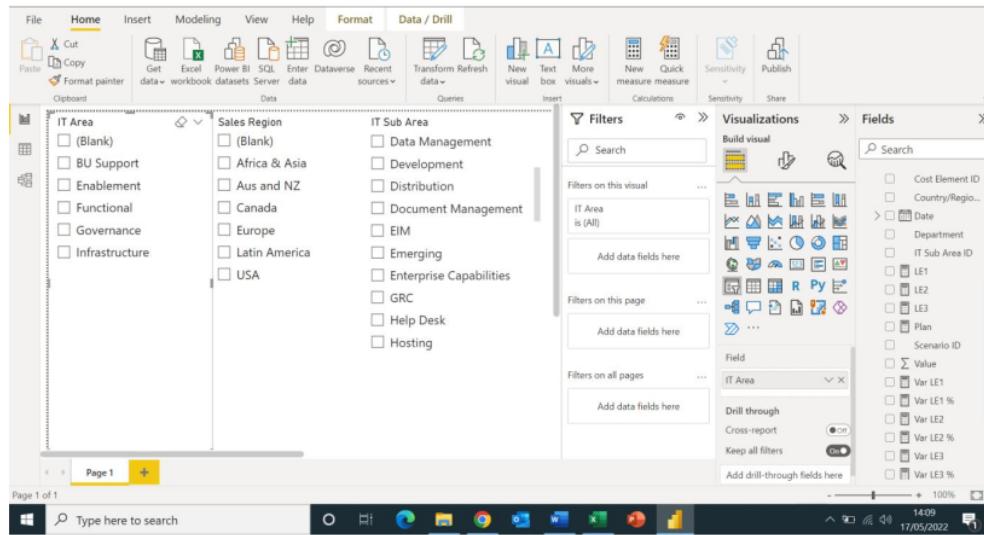


Figure 2.2.1 Slicer for the IT Area, IT Sub Area, and Sales Region data

b.Add a visual to represent the percentage of Var Plan, Var LE1, Var LE2, and Var LE3

For the purpose of analysing the estimated values and how much the planned values differ from the actual values, each Var variable is shown separately. Select the Gauge chart to display the var percentage along with the var value.

Var Plan:

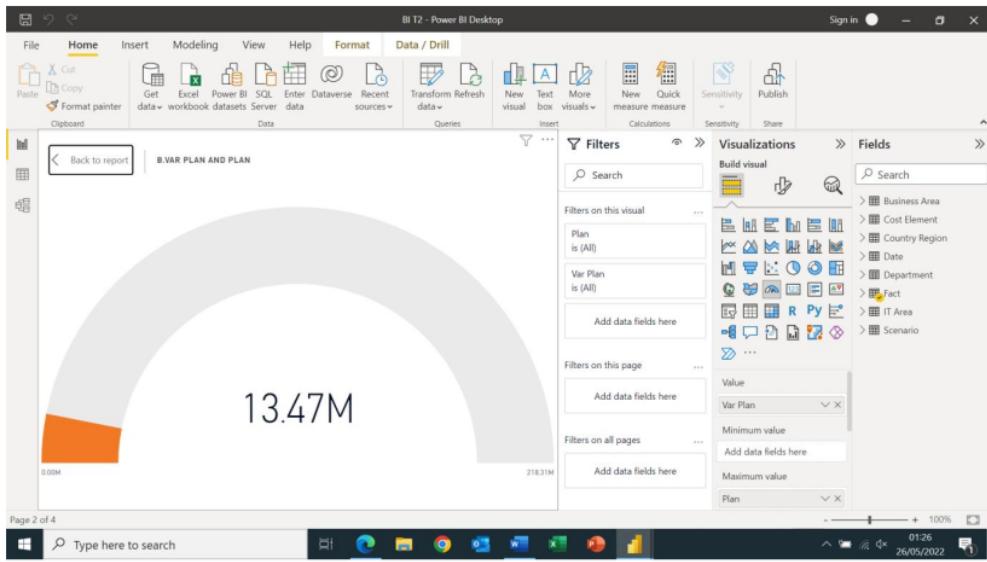


Figure 2.2.2 Gauge for Var Plan

Fig 2.2.2 indicate that the total sum of Cage's cost plan is higher 13.47M than actual.

Var LE1:

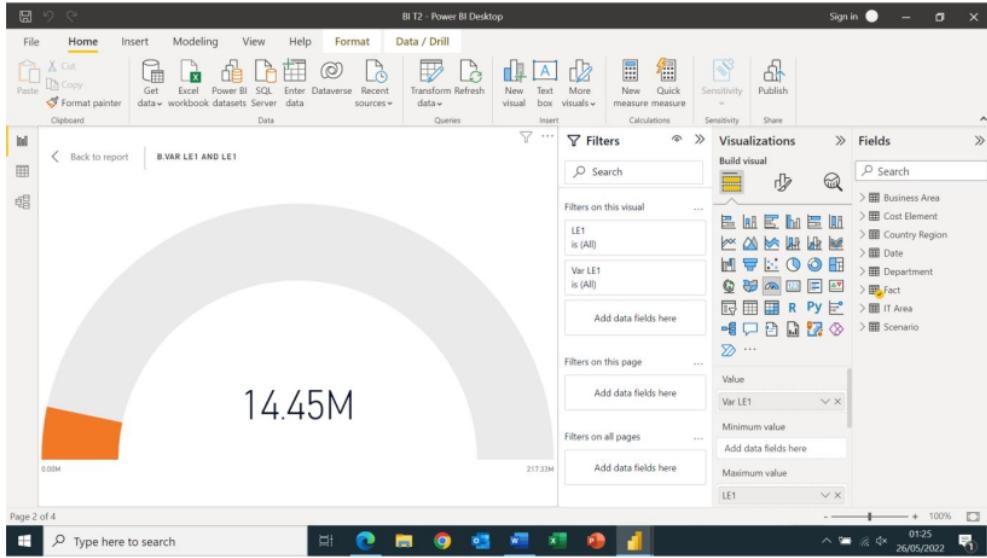


Figure 2.2.3 Gauge for Var LE1

Fig 2.2.3 indicate that the total sum of Cage's LE1 is 14.45m higher than actual.

Var LE2:

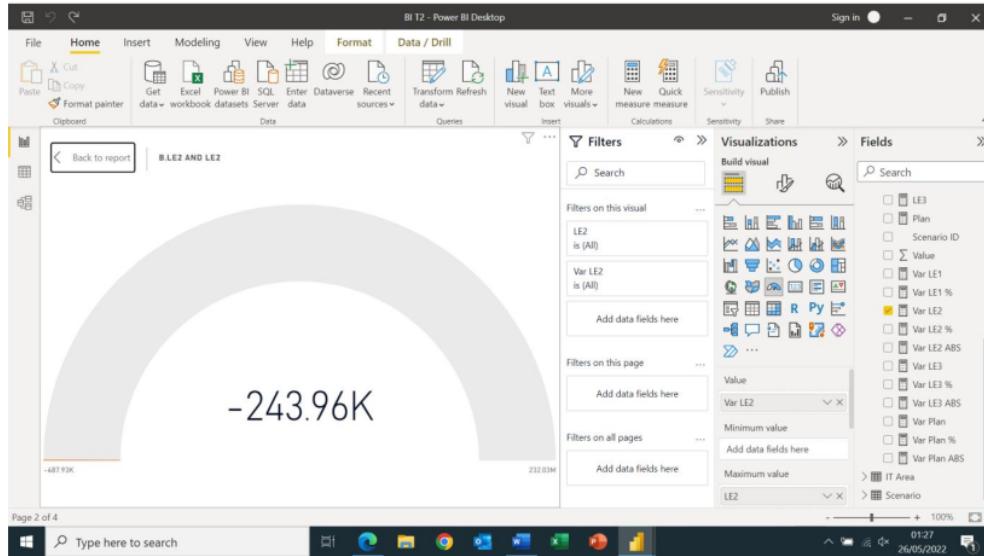


Figure 2.2.4 Gauge for Var LE2

Fig 2.2.4 indicate that the total sum of Cage's LE2 is -243.96K lower than actual.

Var LE3:

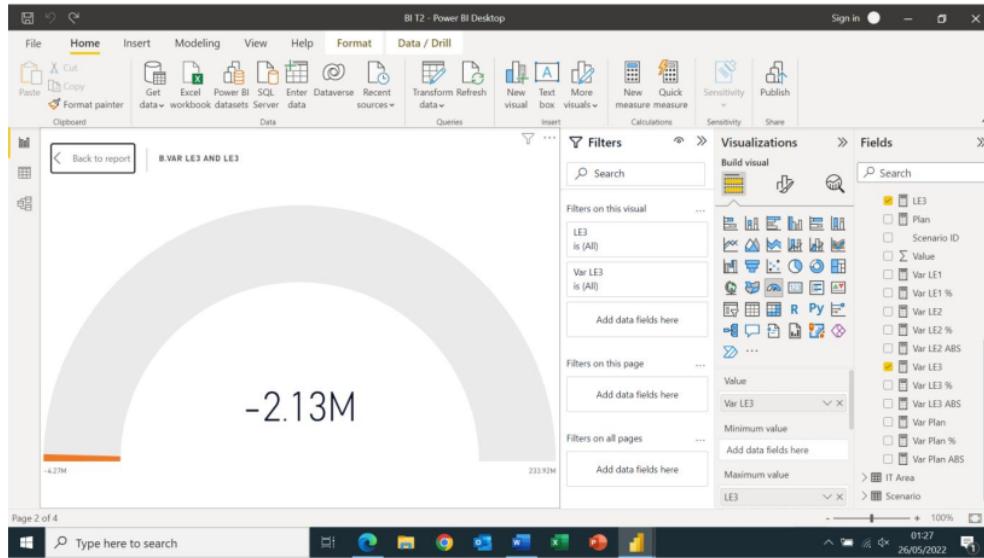


Figure 2.2.5 Gauge for Var LE3

Fig 2.2.5 shows that the total sum of LE3 is 2.13M lower than actual.

Overall, All the Gauge charts show that the estimated and planned values do not differ much from the actual values. Var value are only a small percentage of the total means that the prediction accuracy is relatively high. The forecast in the first quarter (LE1) and planned deviations from the true value are the largest, indicating that the forecast error is most severe in the first quarter. Since the sum method of aggregation was used, it cannot be concluded that the worst accuracy of the forecast and planned values can be found in the first quarter and the analysis needs to be continued backwards.

c.Add a visual to compare the values of Var LE1% and Var LE2% by cost element group

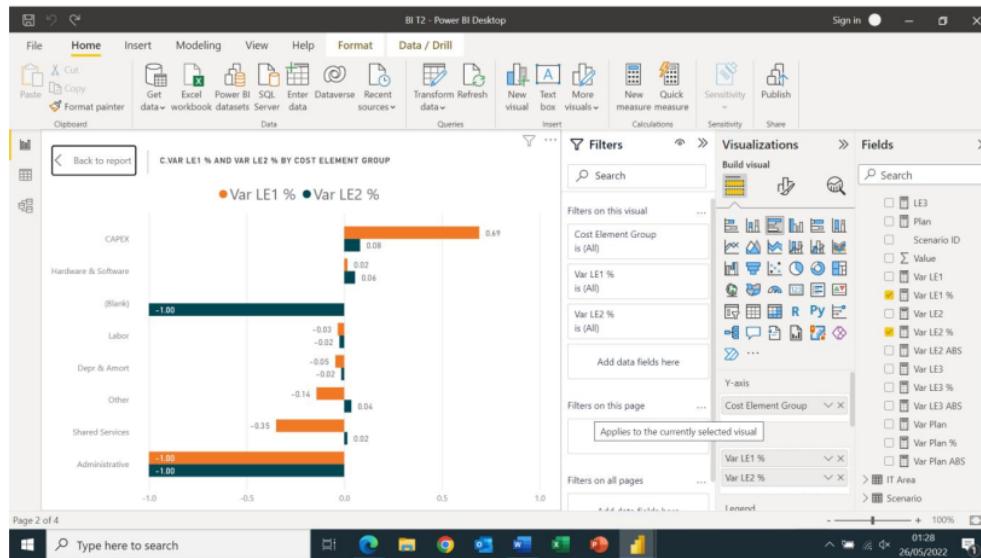


Figure 2.2.6 Histogram for Var LE1% and Var LE2% by cost element group

Because of the small number of variables and for ease of comparison, bar charts have been chosen for analysis. It can be seen that the larger difference between Var LE1% and Var LE2% for CAPEX indicates a best improvement in forecasts among cost group, while the lack of change in the administrative cost group indicates that there is no improvement in their forecasts. All groups, except the administrative and hardware & software groups, were able to improve their forecasts better in the second quarter.

d. Compare the Actual Sales, Actual/Plan, Amount, and Value information by IT area

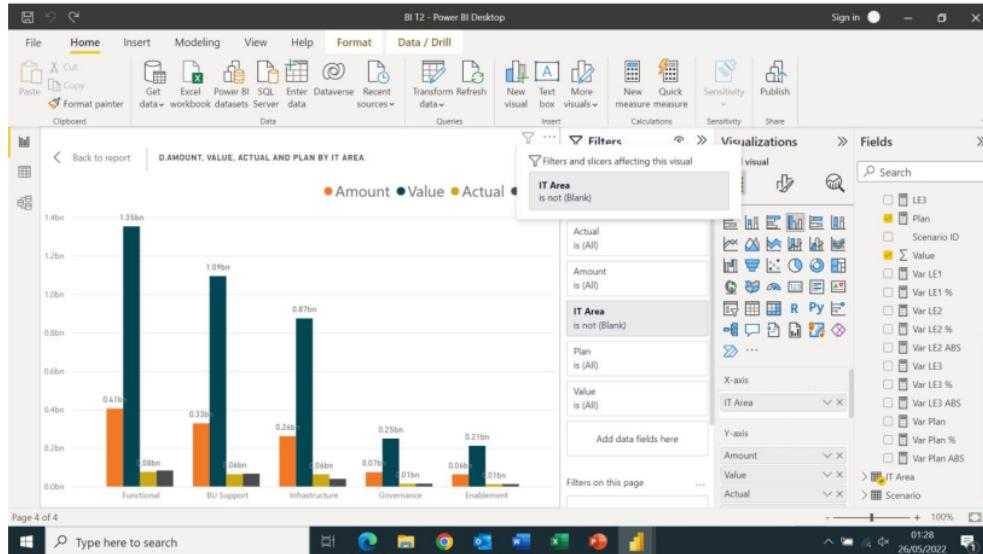


Figure 2.2.7 Histogram for the Actual Sales, Actual/Plan, Amount, and Value information by IT area

The figure shows that the Functional has the highest value among the it areas. Enablement has the lowest value. Bu support and Infrastructure have the same high level of expenditure It is clear that case's current it spending is mainly focused on functional.

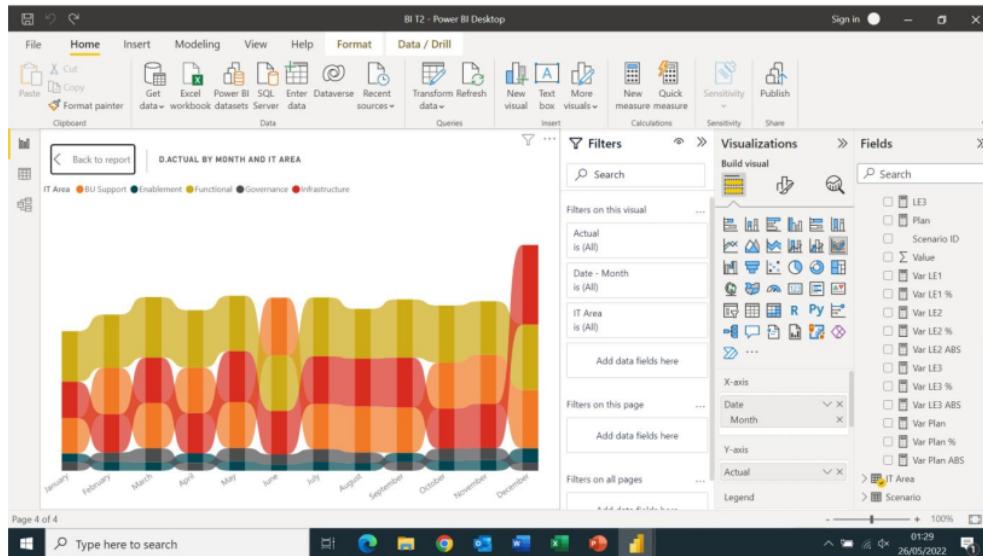


Figure 2.2.8 Ribbon Chart for the Actual by IT area and month

Try using the Ribbon chart to compare the ACTUAL values in terms of time, and you can see that the ribbon chart represents the ranking and the values. In most months the Functional field is higher, except for June, when BU support is highest.

e.Add a visual to represent the values of Var Plan% and Var LE3% by country and sales region

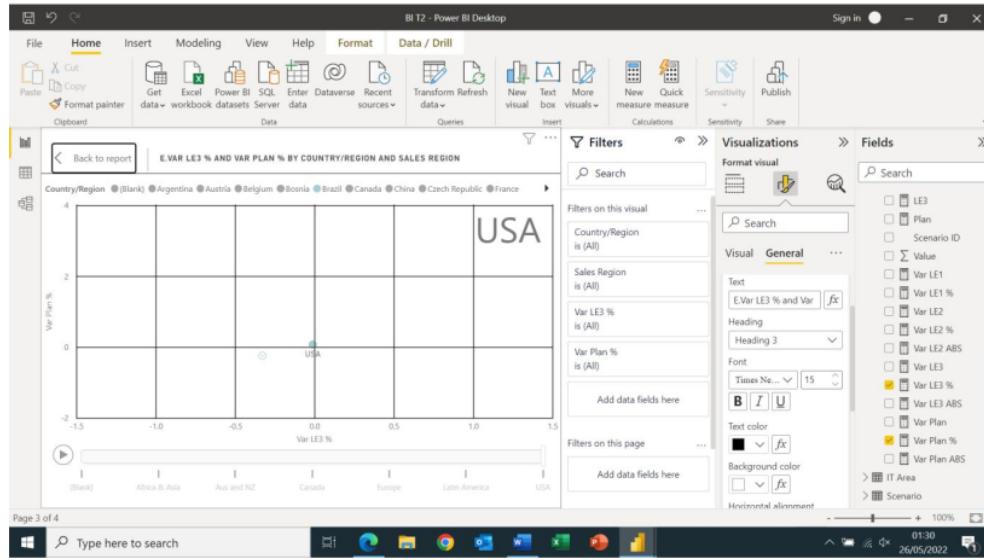


Figure 2.2.9 Scatter chart for Var Plan% and Var LE3% by country and sales region

As countries are subdivisions under sales regions, in order to be able to show Var Plan% and Var LE3% at the same time, a scatter plot animation was adopted to show the data for countries under different sales regions separately. With the origin as the centre point, an outward shift along the x-axis indicates a large error in the third quarter for that country. An outward shift along the y-axis indicates that the country has a large planning error.

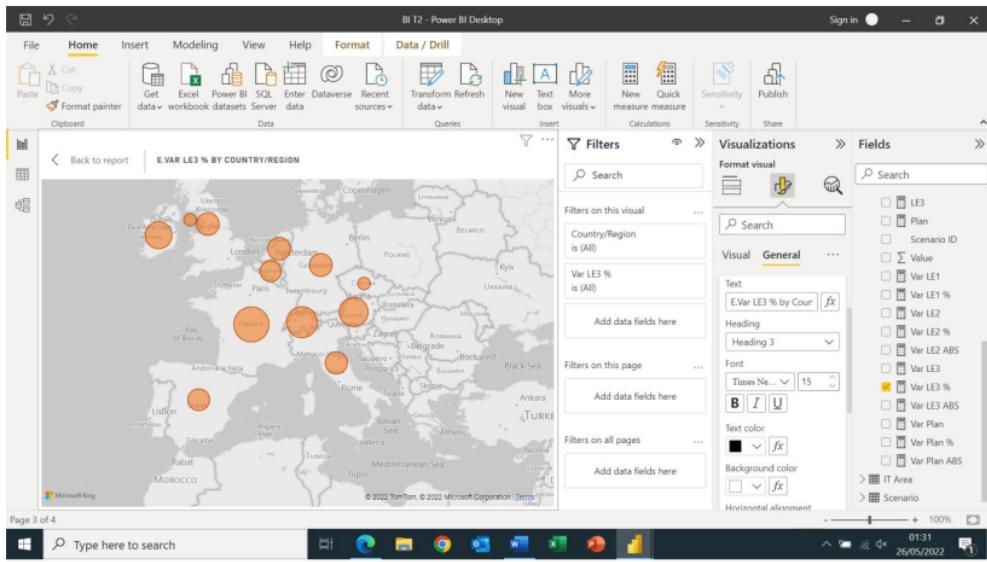


Figure 2.2.10 Map for Var LE3% by country/region

Also try to use map to represent the VAR values for different regions. Map provides a better visualisation of the distribution of sales areas. the larger the circle shows the worse the prediction.

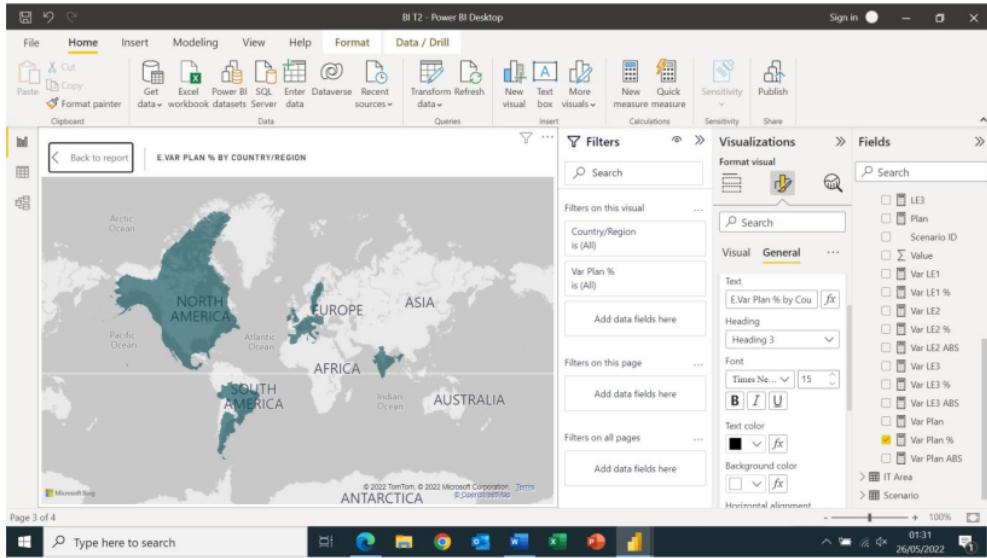


Figure 2.2.11 Filled Map for Var Plan% by country/region

And the use of filled maps to indicate the VAR values for different regions. The distribution of Cage's sales areas can be clearly seen.

f.Add a visual to compare the values of Var Plan% by IT area and business area

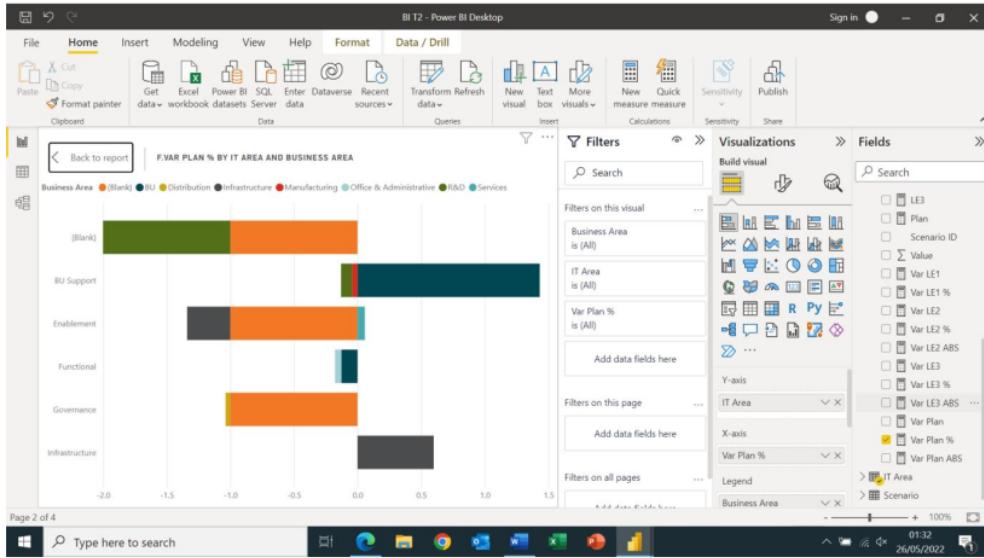


Figure 2.2.12 Stacked bar chart for Var Plan% by country and sales region

As the Var plan % in the it area and the business area are to be compared. The stack bar chart was chosen for comparison. The chart clearly shows the component of business area in the IT area and its Var plan % value. Bu support has the highest var value, while disturbance in governance has the lowest var value. shows the largest error in the BU plan under the field Bu support by Cage and the smallest error in the Distribution field under Governance.

g.Add a visual to present the Var Plan, Var Plan%, and Actual Sales by business area and period

Because var percentages and var units are different, they are not directly comparable in the same chart. They need to be converted into two different chart types to facilitate comparison. Here use line and clustered column chart. Use line to represent the Var plan%. And use clustered chart to compare Var plan and Actual with small multiples to divide to chart according to different business areas.

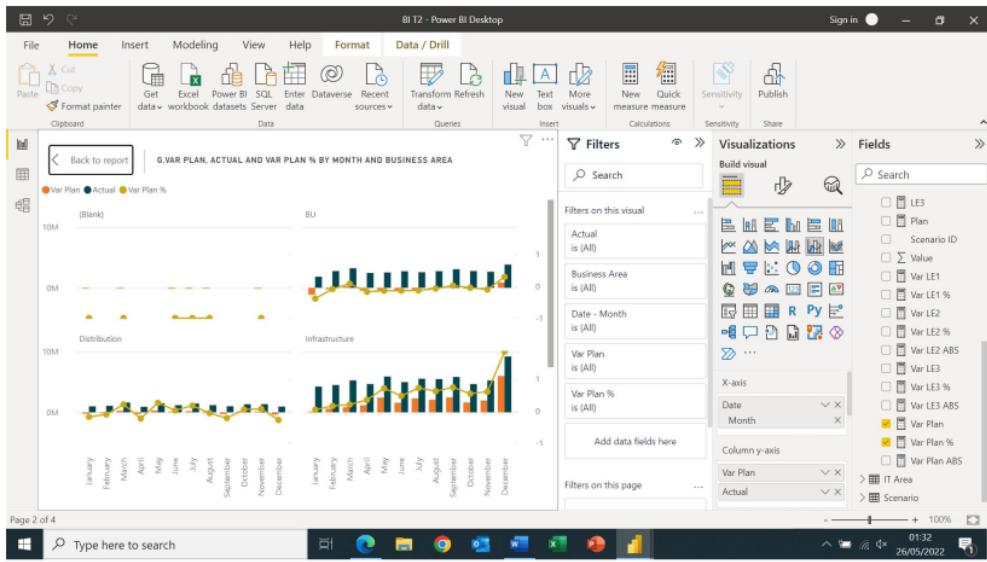


Figure 2.2.13 Line and clustered chart 1 for Var Plan, Var Plan%, and Actual Sales

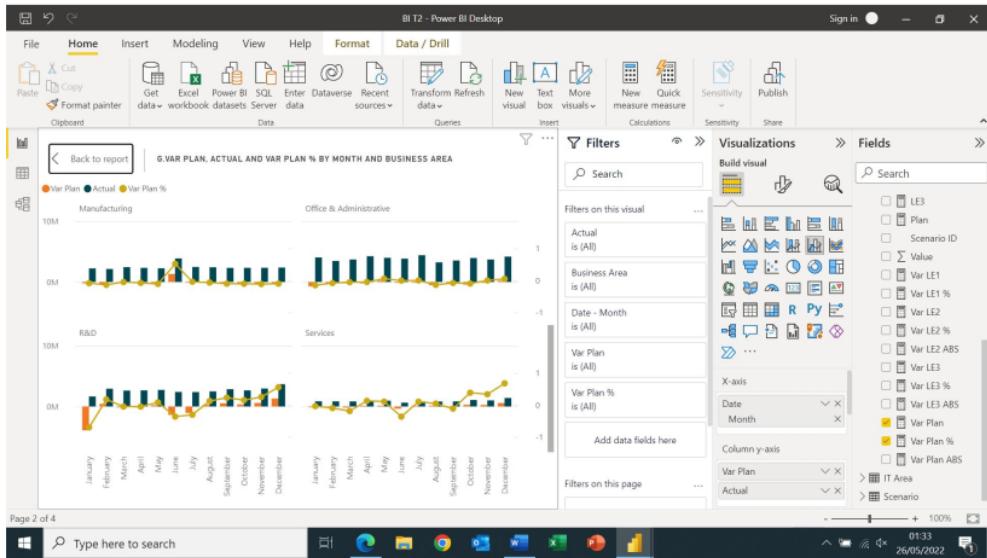


Figure 2.2.14 Line and clustered chart 2 for Var Plan, Var Plan%, and Actual Sales

From Figures 10, 11 it is clear to conclude that Cage's Office & Administrative performs best in terms of planned forecasts, with smaller deviations from its planned forecasts in the presence of higher actual data. Infrastructure, on the other hand, has the highest deviation values and there is a tendency for the deviations to become progressively larger as time

progresses. The same is true for Manufacturing and R&D and BU. Var plan suddenly increases significantly in a given month.

Summary and analysis

With regard to the design of the dashboard, we have two guidelines:

- 1.The charts must be grouped according to different analyses. Charts with different functions cannot be grouped together in one dashboard.
- 2.The diagrams must can be clearly seen on the dashboard. Means that each chart must adjust to the right size. The aim is for the decision maker or analyst to be able to see the information they need at a glance, without having to spend more time looking at it.

After collating the charts, this report divides all the charts into two main categories according to the purpose of the analysis done: Var analysis and regional analysis as below:

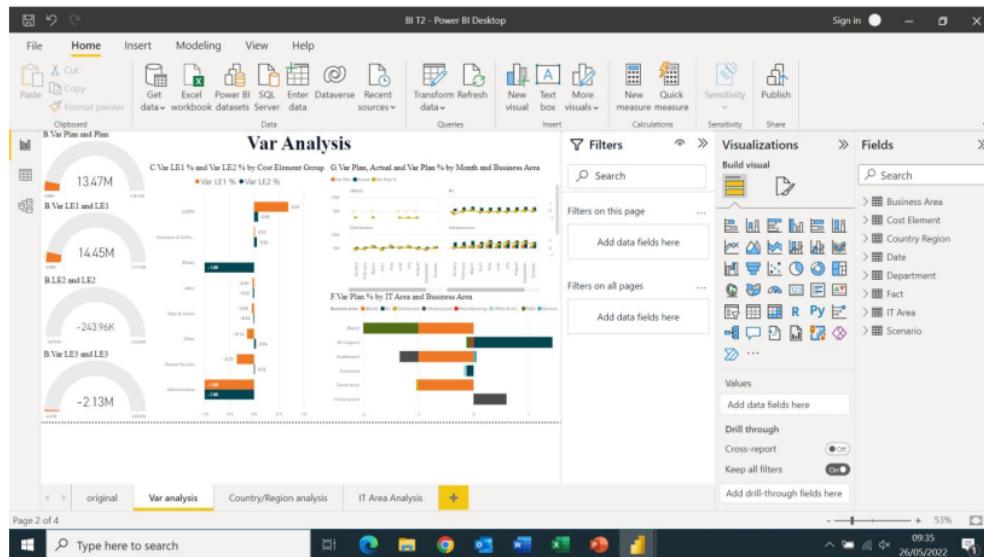


Figure 2.2.15 Dashboard of Var Analysis

Cage's Var Analysis are shown, and in general Cage's forecasts are getting better over time. With the spread in the Cost element group being mainly in Capex and Administration. The deviations in the Business area are mainly in R&D and BU, while in the IT AREA the

deviations are mainly in BU SUPPORT and Enablement. there are also some missing values which are not discussed here.

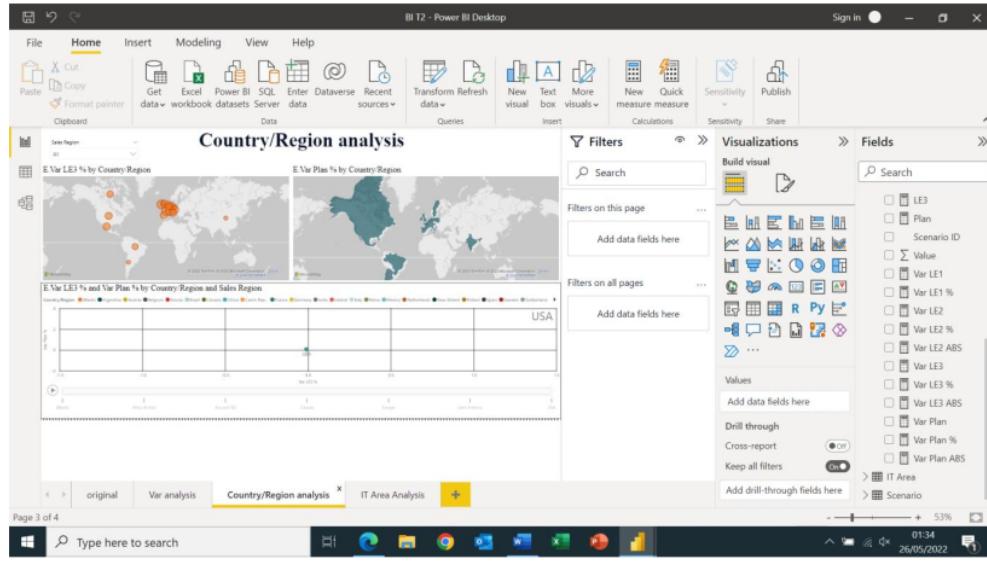


Figure 2.2.16 Dashboard of Country/Region Analysis

The Dashboard of Country/Region Analysis show forecast variation mainly on Switch land and Turkey. The Cage can focus on that if they want to improve in the future.

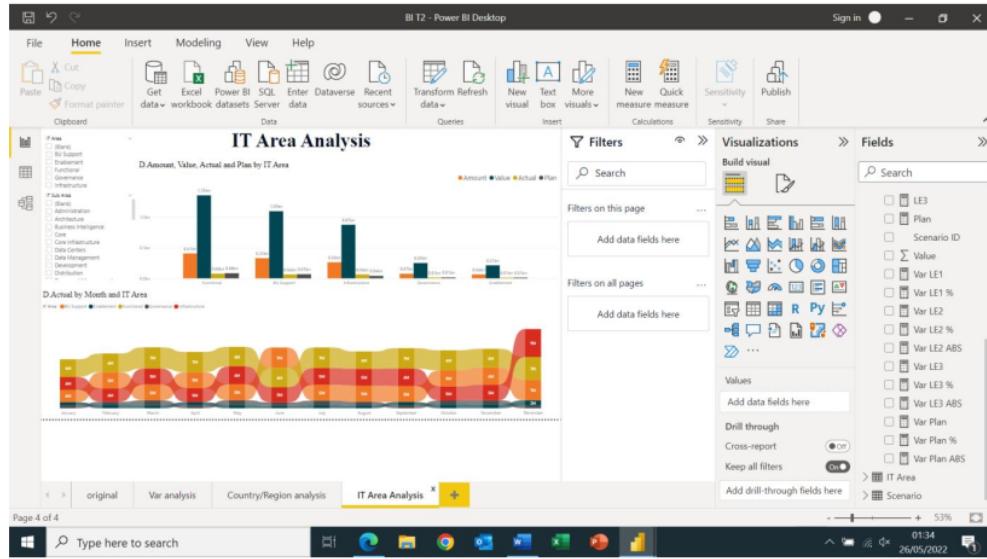


Figure 2.2.17 Dashboard of IT Area Analysis

The Dashboard of IT Area Analysis can indicate the IT spend data in IT Area. The specific analysis has already been analysed above.

2. The Cage supplied you with Budget, Forecast, and Actual data. Using the data provided, create a Microsoft Power BI report showing the IT spend over all areas of the business by doing the following:

a. Add a visual to represent the Actual year to date versus the full year budget

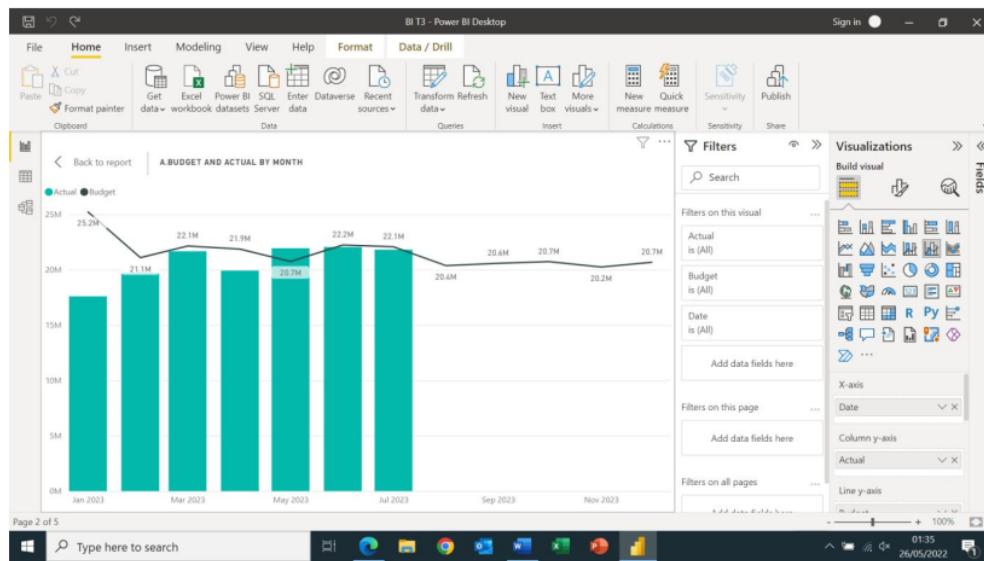


Figure 2.3.1 Line and clustered column chart

The use of two charts, one for budget and one for actual, allows for better presentation and comparison. Because the two figures are close to each other, the problem of interference caused by too proximity is avoided. The chart shows that Cage's forecast for the first month was inaccurate and much higher than the actual value, with the forecast becoming more accurate later.

b.Add a visual to represent the Forecast and Budget by data

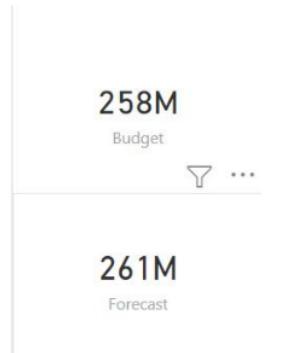


Figure 2.3.2 Card of Forecast and Budget by data

Use Card function can directly show the number of Budget and Forecast. The current total budget is 258M compared to the total forecast of 261M.

c.Add a visual to represent the Actual, Budget, and Forecast by year, quarter, and month

Month:

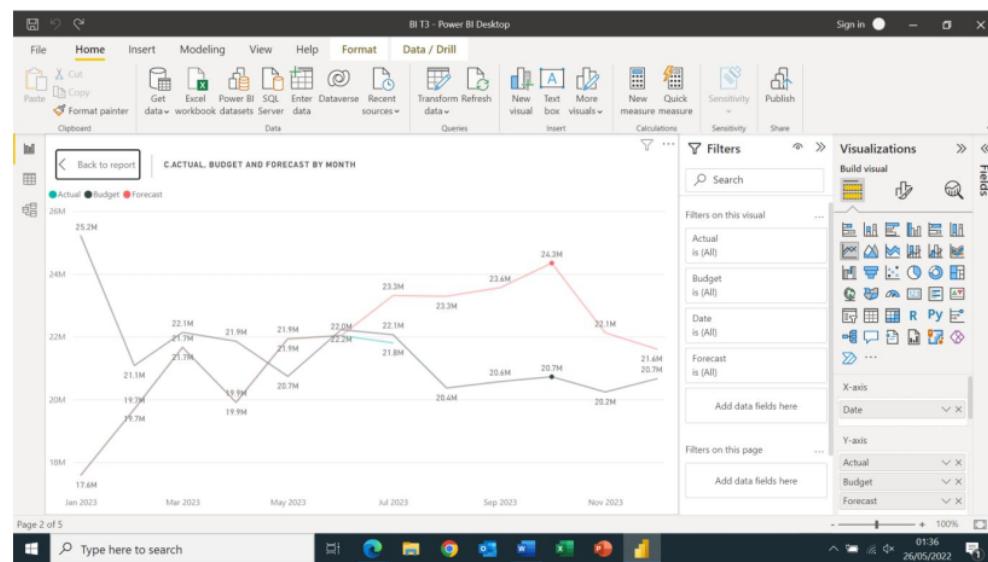


Figure 2.3.3 Line chart of the Actual, Budget, and Forecast by month

Line charts are the classic presentation of time series data. With the exception of the first month's data, which was volatile, the overall data forecast was very good and highly overlapping with the Actual data. With the exception of the July data, it largely coincides with the forecast curve. This indicates that Cage's IT spend is very effective in forecasting. Forecast figures for the second half of the year are significantly higher than budgeted and are a potential crisis for Cage if accuracy continues to be maintained. For the full year figures, the forecast is slightly above budget. Overall situation is okay with a slight risk of not making ends meet.

Quarter:

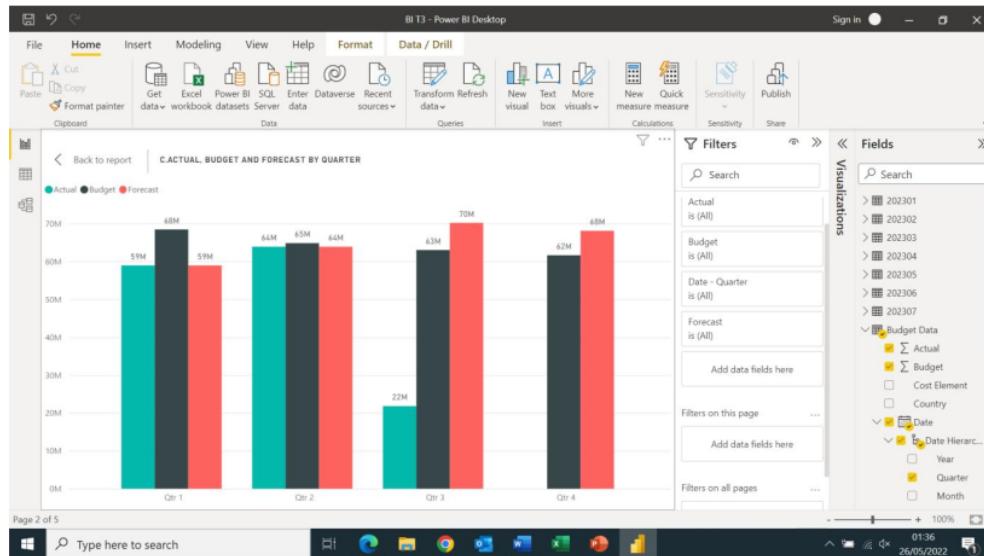


Figure 2.3.4 Bar chart of the Actual, Budget, and Forecast by quarter

The quarterly data is only 4 due to the small number of x-axis variables. It is not easy to display with a line chart, so a bar chart is used instead. The graph shows that the Actual data Q3 is falling fast because the Actual data is only up to July and is not informative later on. The first two quarters can be seen that the true and forecast values are basically the same and the forecast accuracy is good. Budgets were lower in the first two quarters, indicating that the company was operating better. The second two quarters are below the forecast and if the forecast accuracy can be maintained, Cage's budget will not be able to meet the operational needs in the latter two quarters.

Year:

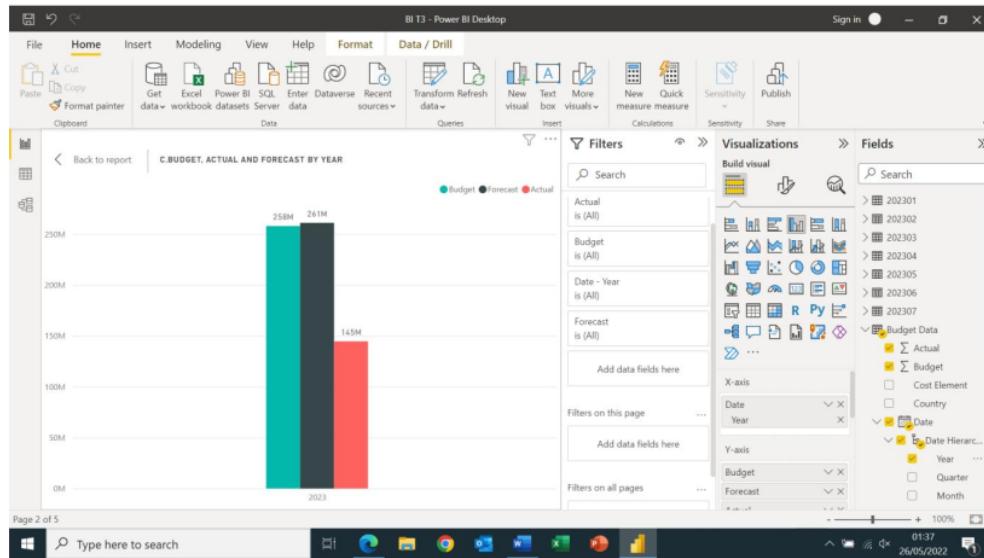


Figure 2.3.5 Bar chart of the Actual, Budget, and Forecast by year

d.Add a visual to represent the Running total for Actual, Budget and Forecast across dates – you will need to write three DAX measures

DAX measures:

```
RT Actual = if(SUM('Budget Data'[Actual])>0,CALCULATE(SUM('Budget  
Data'[Actual]),FILTER(ALLSELECTED('Budget Data'),'Budget  
Data'[Date]<=MAX('Budget Data'[Date]))),BLANK())
```

```
RT Budget = if(SUM('Budget Data'[Budget])>0,CALCULATE(SUM('Budget  
Data'[Budget]),FILTER(ALLSELECTED('Budget Data'),'Budget  
Data'[Date]<=MAX('Budget Data'[Date]))),BLANK())
```

```
RT Forecast = if(SUM('Budget Data'[Forecast])>0,CALCULATE(SUM('Budget  
Data'[Forecast]),FILTER(ALLSELECTED('Budget Data'),'Budget  
Data'[Date]<=MAX('Budget Data'[Date]))),BLANK())
```

For the full year figures, the forecast is slightly above budget. Overall situation is acceptable, with a slight risk of not making ends meet

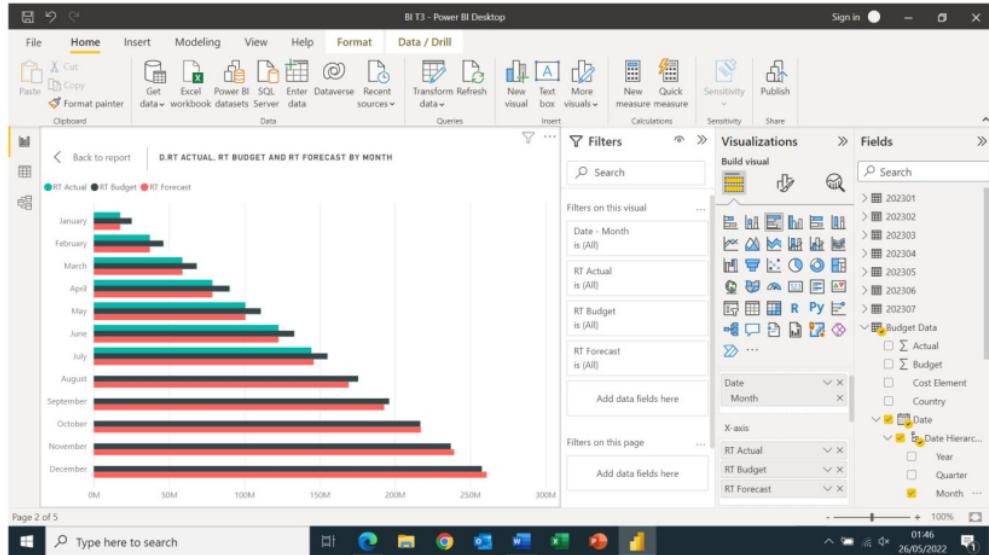


Figure 2.3.6 Bar chart of the Actual, Budget, and Forecast by month

Waterfall charts can also be a good representation of cumulative volumes.

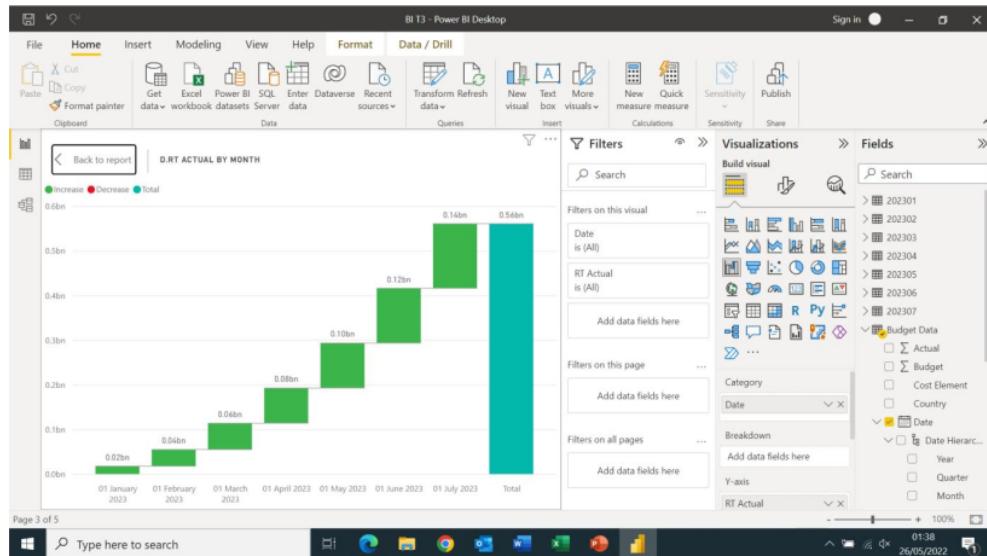


Figure 2.3.7 Waterfall chart of the Actual by month

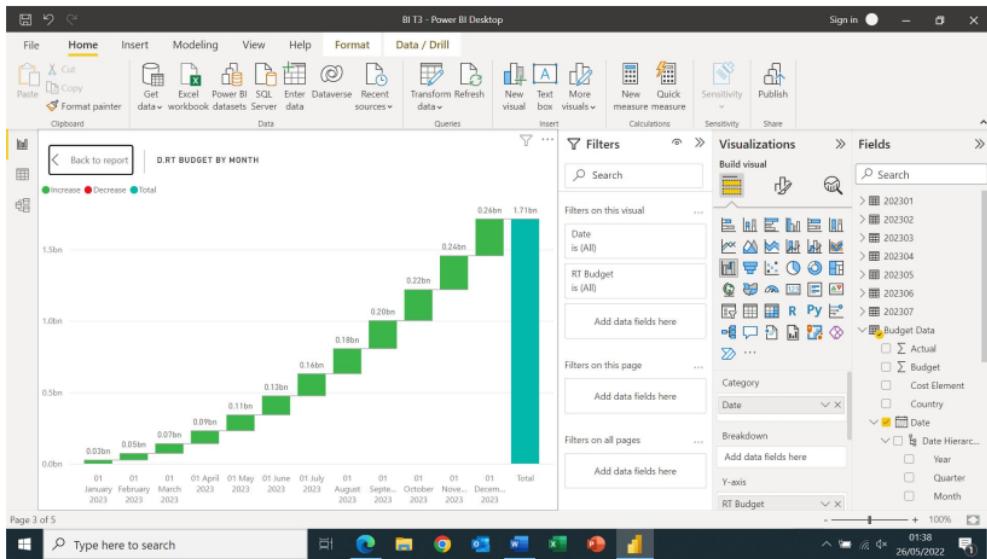


Figure 2.3.8 Waterfall chart of the Budget by month

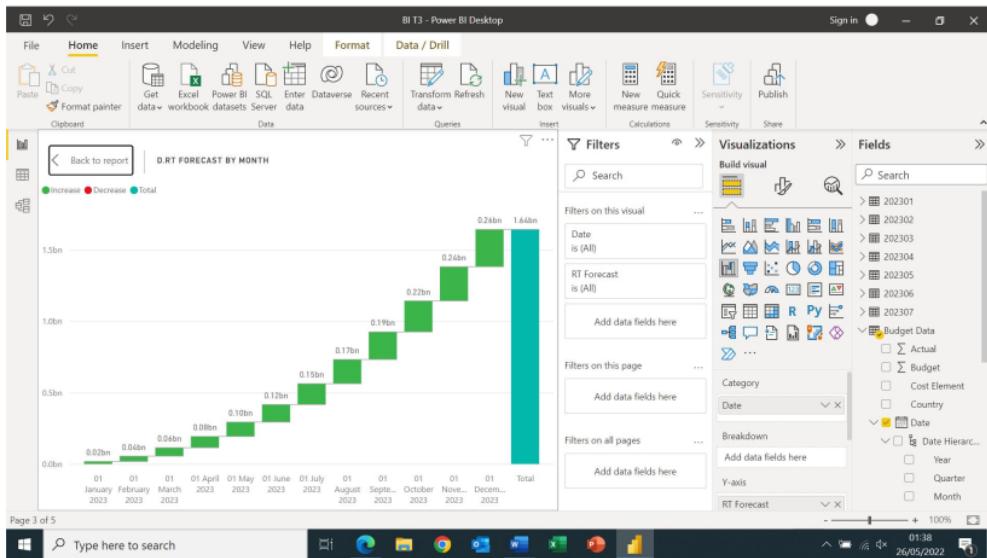


Figure 2.3.9 Waterfall chart of the Forecast by month

Through waterfall chart can clearly see the increase trend of each month and easily compare to other month. The conclusion that can be drawn from the three graphs above is that the trend of growth is basically increasing month by month and is increasing.

d. Add a visual to represent the Budget versus Forecast and Budget % versus Forecast % difference by date

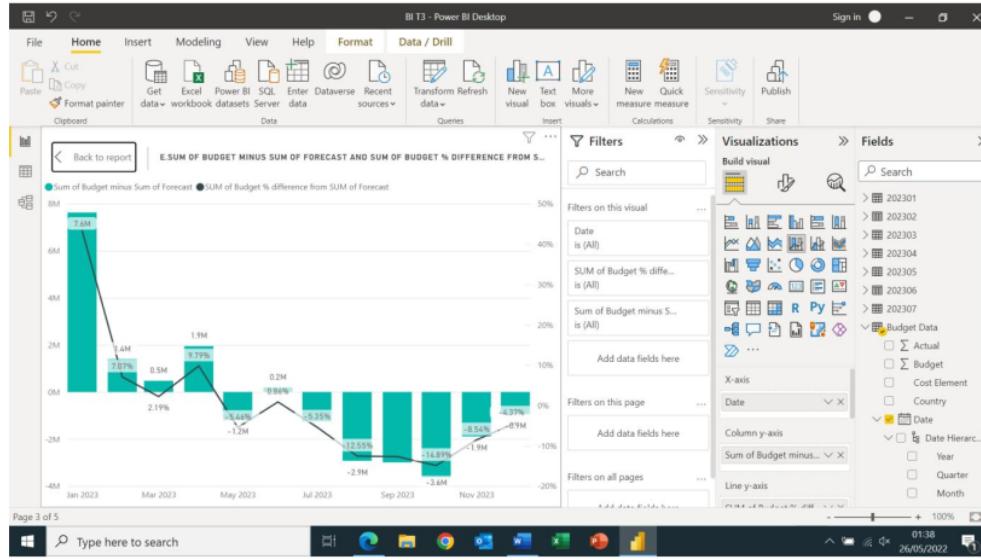


Figure 2.3.10 Line and stacked column chart of the Forecast by month

In order to represent budget versus forecast, and variance data trends for budget % versus forecast % are essentially the same, to enable a clearer presentation of the data for the different units. A line chart and bar chart are used to show them together. As can be seen from the graph, the variance in cage's forecasts decreases month by month, but starts to widen again from July and then starts to decrease again after October.

f.Add a visual to represent the Budget versus Forecast % by Region, in ascending order

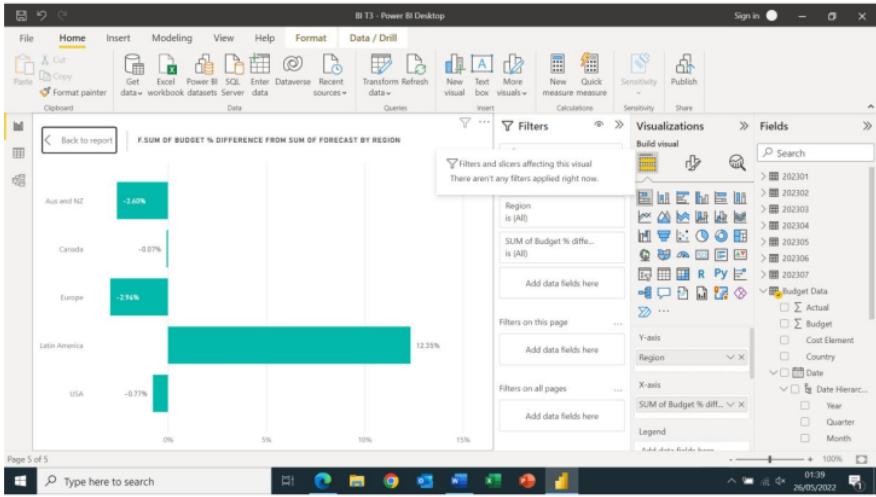


Figure 2.3.10 Stacked column chart of Budget versus Forecast % by Region

As can be seen from the graph, cage forecasts the difference to be concentrated in Latin America and the United States. They amount to 24.52% and 7.86% respectively. and is under-forecasting, which is a negative effect.

g.Add a visual to represent the Budget versus Forecast % by Cost Element, in ascending order

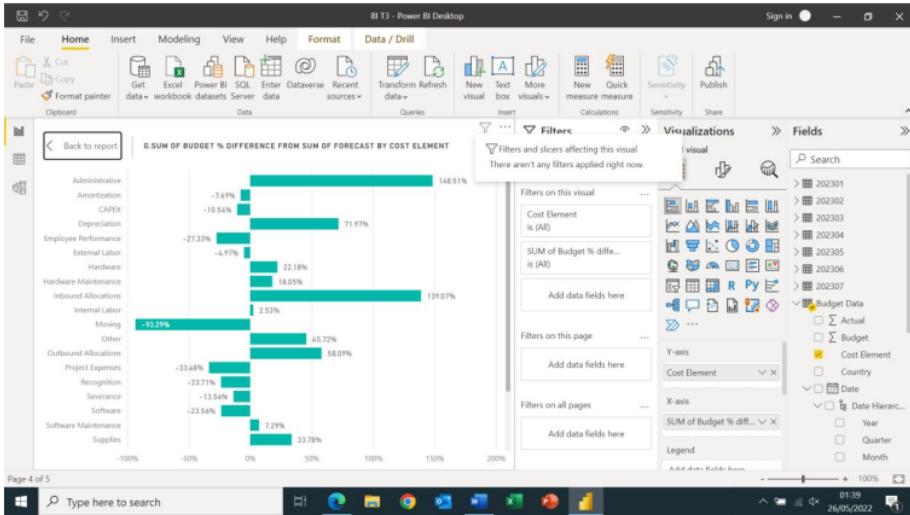


Figure 2.3.11 Stacked column chart of Budget versus Forecast % by Cost Element

In Administrative and Inbound Allocation, the forecast costs are much higher than budgeted, indicating that Cage intends to reduce budgets in these two directions. In the cost element, the Moving forecast is much higher than the forecast, indicating that Cage is planning to move next, and only then will it set a much higher budget than forecast for the Moving cost item.

h. Add a visual to represent the Budget versus Forecast % by IT Area, in ascending order

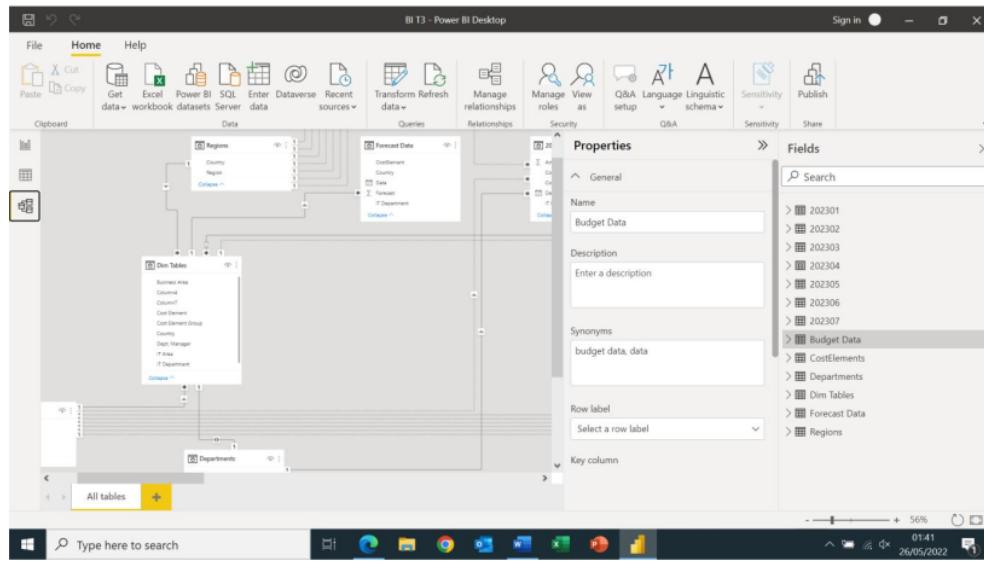


Figure 2.3.12 Change connection between tables

Change the relationship between the tables to create a join. Relink Budget table to dim table in order to connect department table.

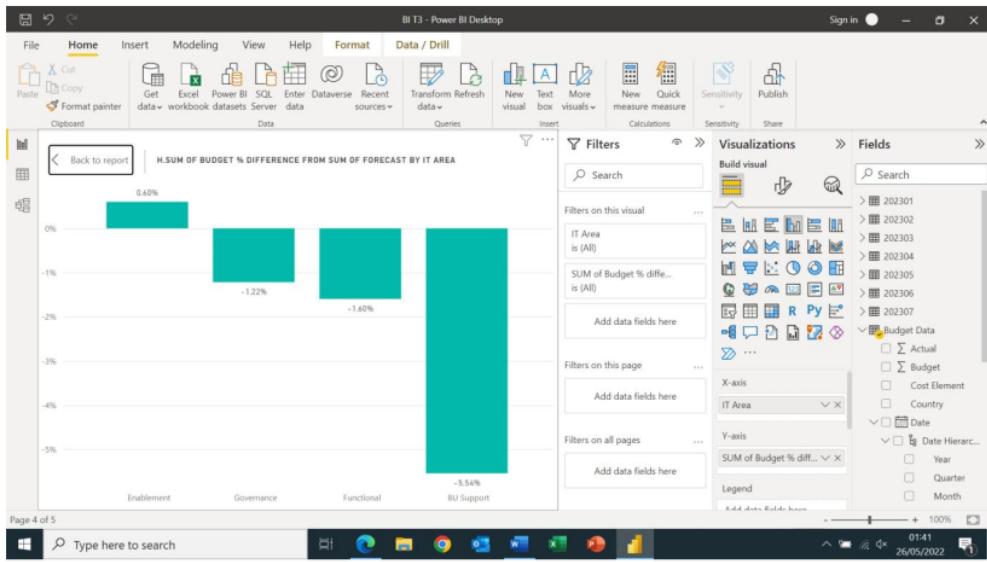


Figure 2.3.13 Change connection between tables

i.Add a slicer for the region

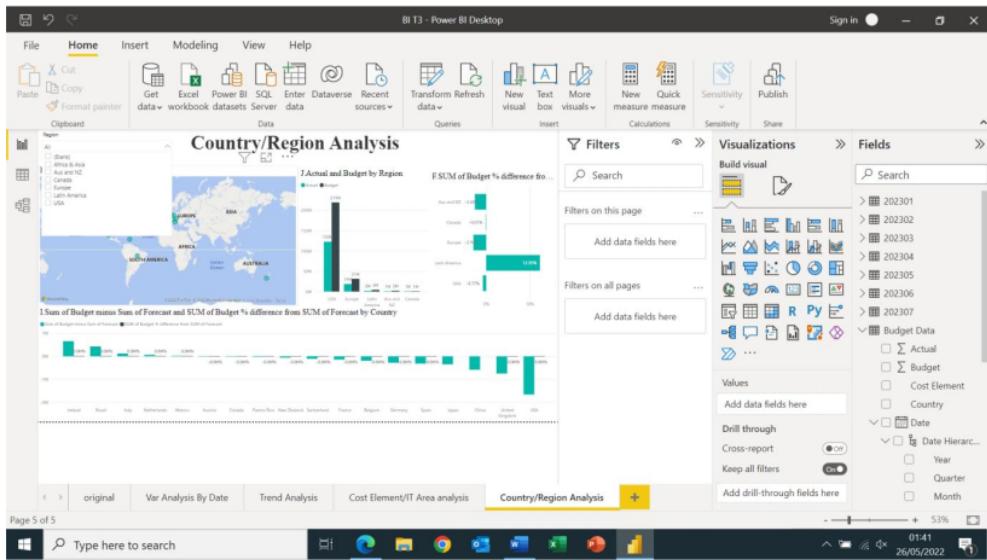


Figure 2.3.14 A slicer for the region

j.Add a visual to represent the Actual and budget by region

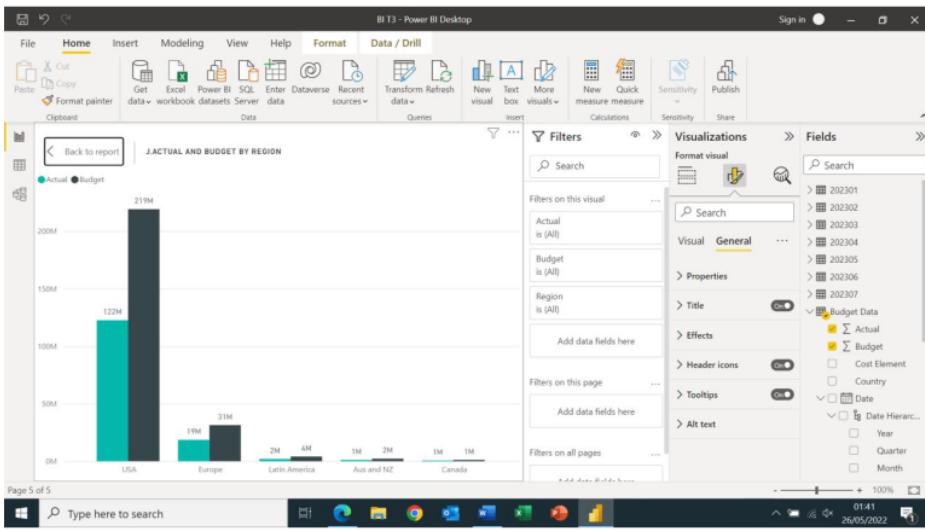


Figure 2.3.15 Clustered column chart of the actual and budget by region

As the real data is less than one year old, there is not much comparative value, but it is clear that Cage has developed its main focus in Europe and has the highest budget for Europe. The budget for Canada is the lowest. It can be seen that the company's main markets are currently concentrated in Europe, Africa& Asia and the USA.

k.Add a visual to represent the Actual by country

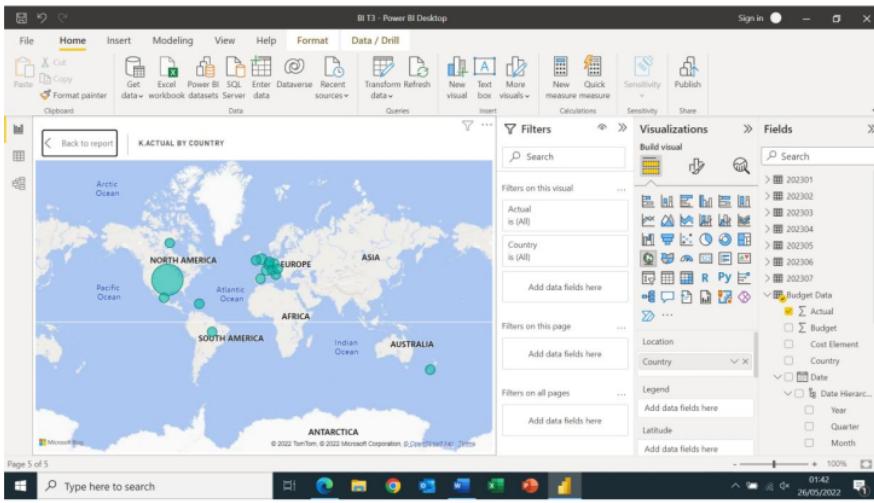


Figure 2.3.16 Map of the actual data by country

Using map chart, it is clear that Cage with the highest actual cost share are USA, where Cage has invested the most.

1.Add a visual to represent the Budget versus Forecast & Budget versus Forecast % by country

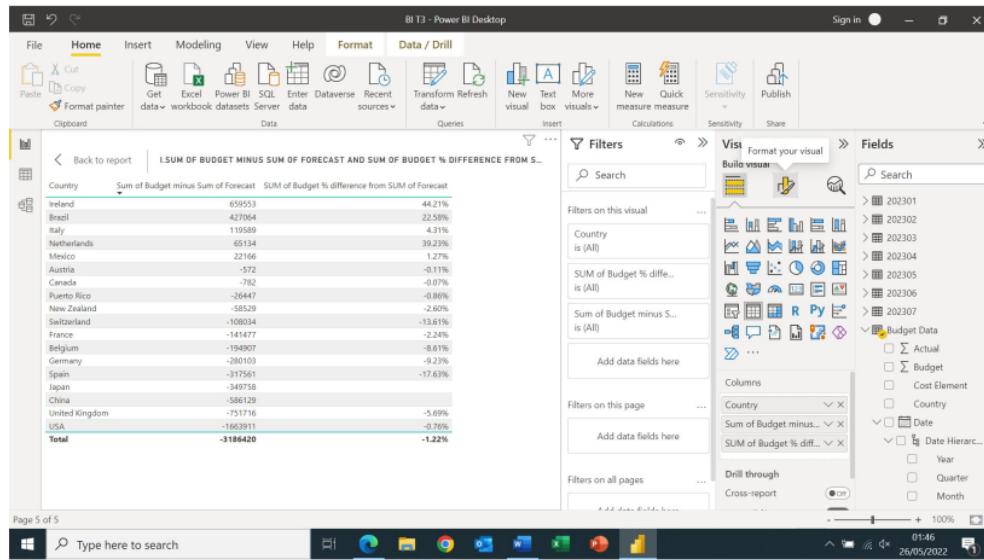


Figure 2.3.17 Form of the Budget versus Forecast & Budget versus Forecast % by country

Use The use of tables gives a clearer picture of the original data and makes it easier to compare data with different units. As can be seen from the table, the US has the largest variance, while the percentage variance is largest for Ireland.

Summary and analysis

After organising the diagrams above according to their purpose, different dashboards were created for Cage decision makers to analyse, depending on the purpose of the analysis:

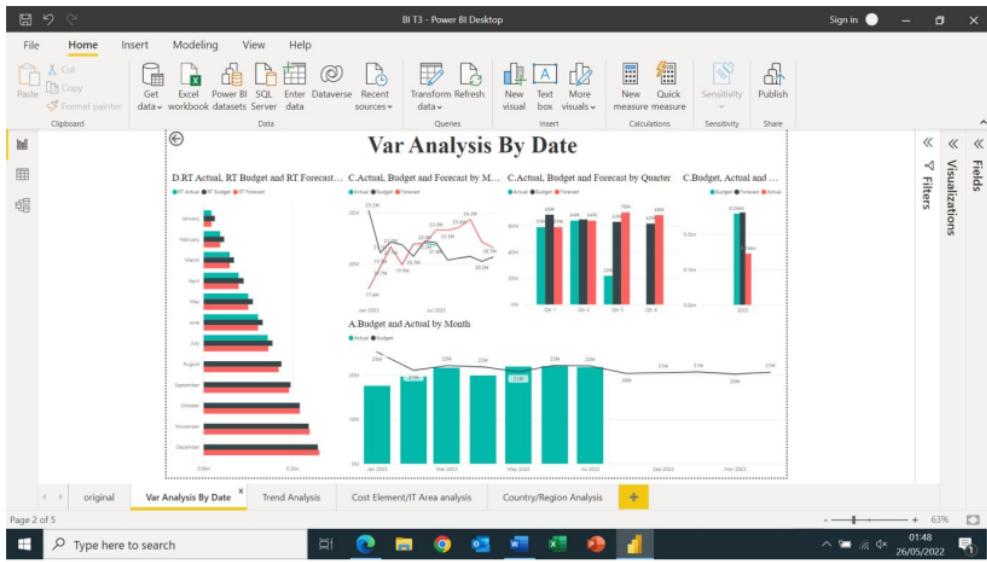


Figure 2.3.18 Dashboard of Var Analysis by Date

Var Analysis dashboard to show the variance through date. Cage's forecast performance was generally better in the first two quarters, the latter time could not be compared due to the lack of actual values, and it can only be judged that the discrepancies between the later forecast and the budget are relatively large, and more attention needs to be paid to the later results for analysis.

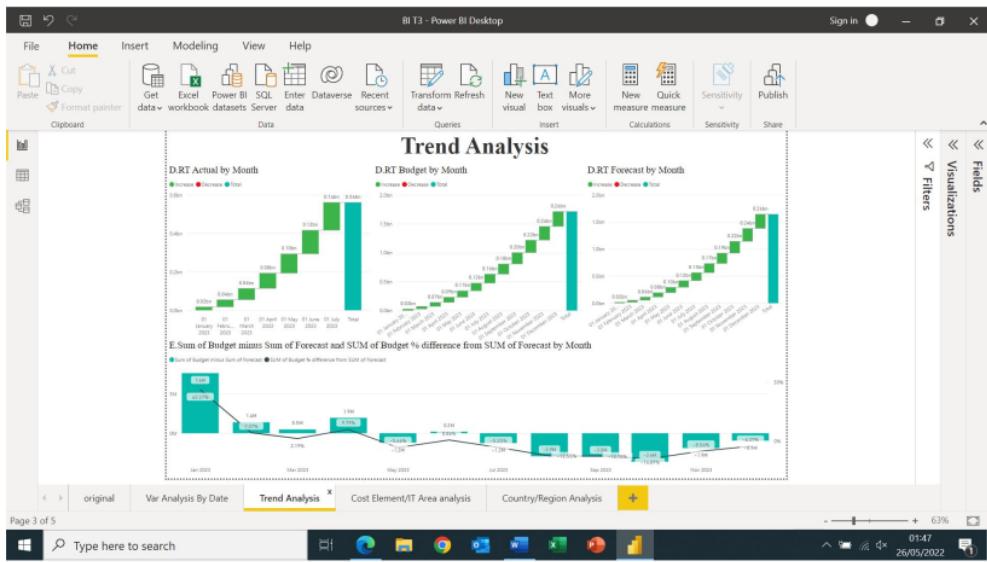


Figure 2.3.19 Dashboard of Trend Analysis

The trend analysis uses a combination of waterfall and line & bar charts to create a visual representation of Cage's actual, budgeted and forecast data for the year 2023. It can be seen that Cage's budget for 2023 is rising, indicating an overall optimistic expectation for the company's operations.

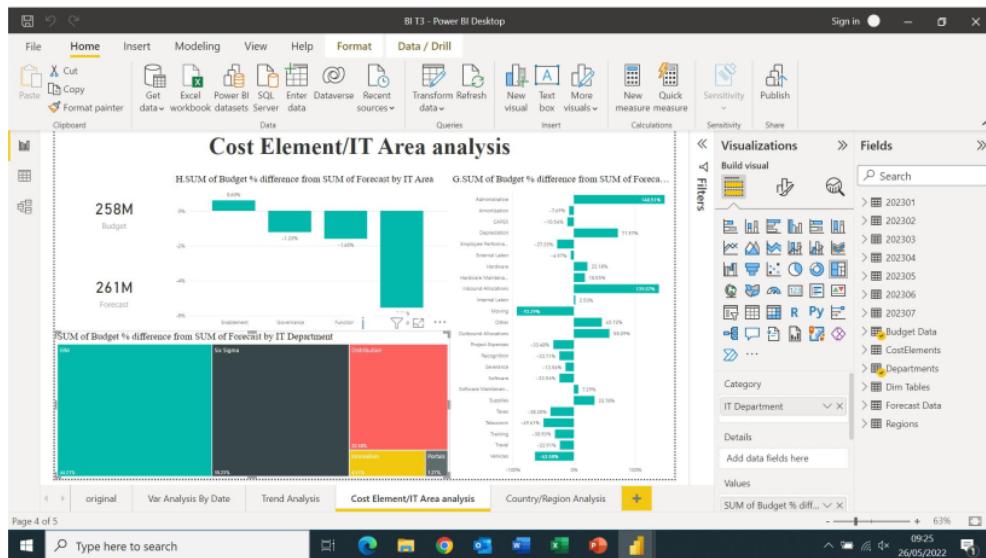


Figure 2.3.20 Dashboard of Cost Element/IT Area Analysis

Figure 2.3.20 shows how the budget variance varies across the different cost elements and under the IT Area. The variance has been analysis above.

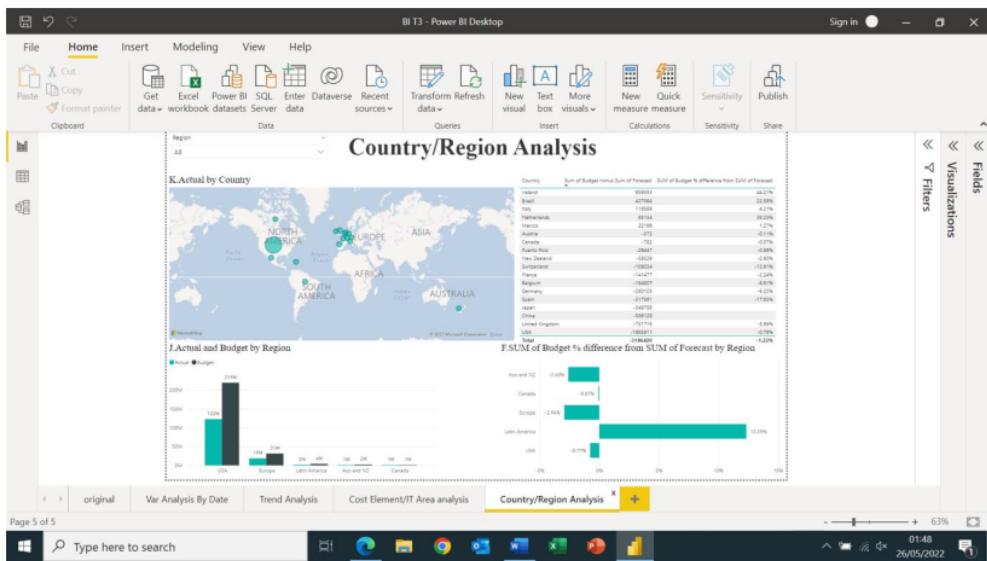


Figure 2.3.21 Dashboard of Country/Region Analysis

Figure 2.3.21 The Dashboard shows actual, forecast, and budgeted cost data for Cage under different countries/ regions. It indicates that the Cage put their budge most on Latin America and USA by region and country.

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