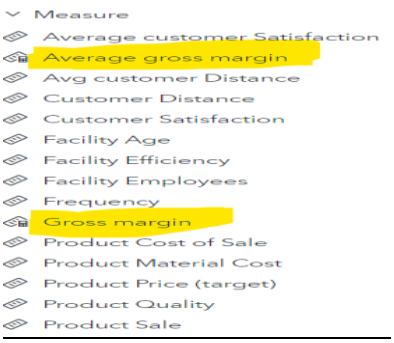
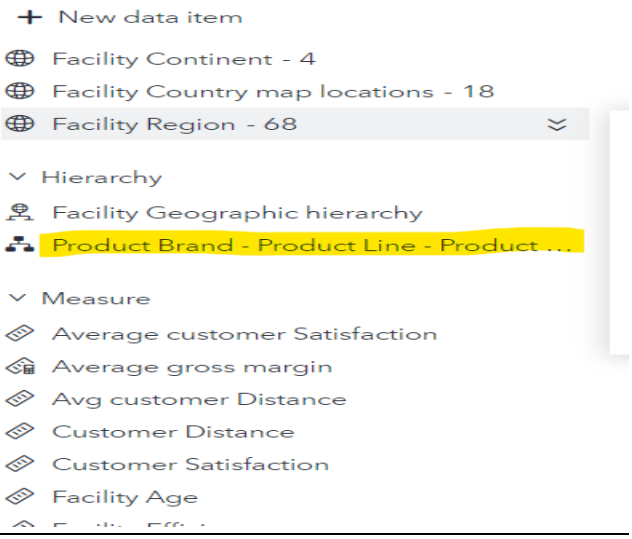
TASK -1

1.1



To make the calculated field Gross margin I choose on new data to create a calculated field inside which I choose for simple operator and choose x - y and put in the values of product sales and product cost of sales respectively in X and y to get desired output and later I converted that Gross margin to average gross from options to make a new data field as required.

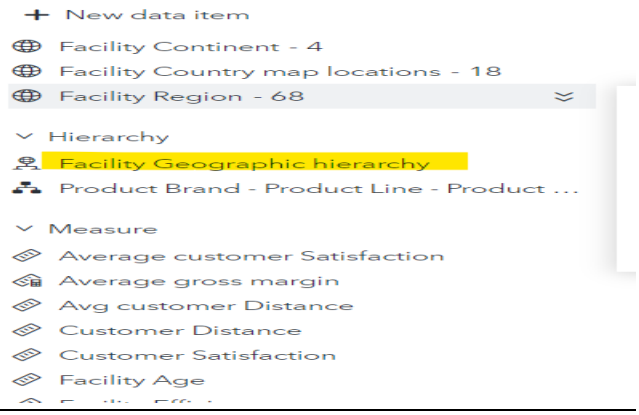
1.2



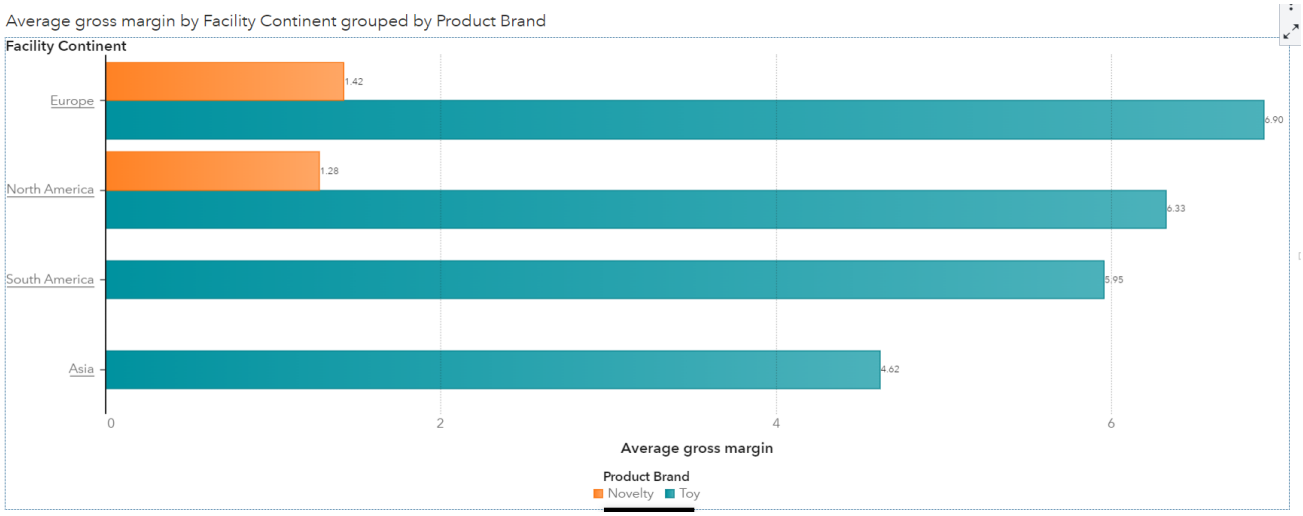
For making this field I just used new data option and selected the option Hierarchy and used the data inputs as directed one after the other to get the desired ooutput.

1.3

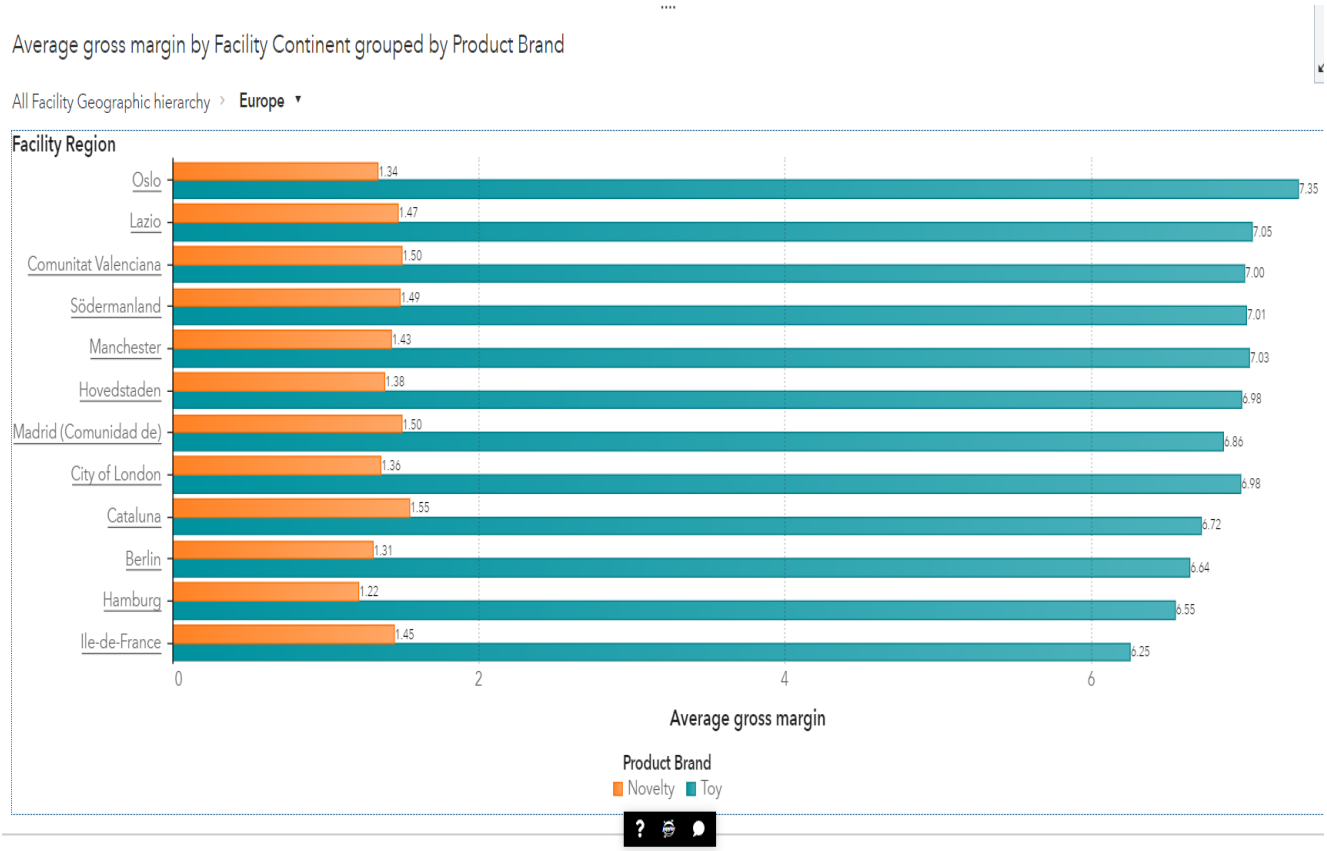
For getting geo hierarchy I first changed the classification of city, country, region and continent to geographic and then I put in the latitude and longitude values of the same and created the geo hierarchy using the same option from new data object.



Below is a drillable chart to show the avg. gross margin in two categories as required. This bar chart is suitable for showing such a comparison as it creates no cognitive load on the audience mind with justified use of colors to differentiate between the two product groups following Bertin's semiology of graphics for hue.



Example of task 1.3 drillable chart showing data for selected continent Europe



TASK-2

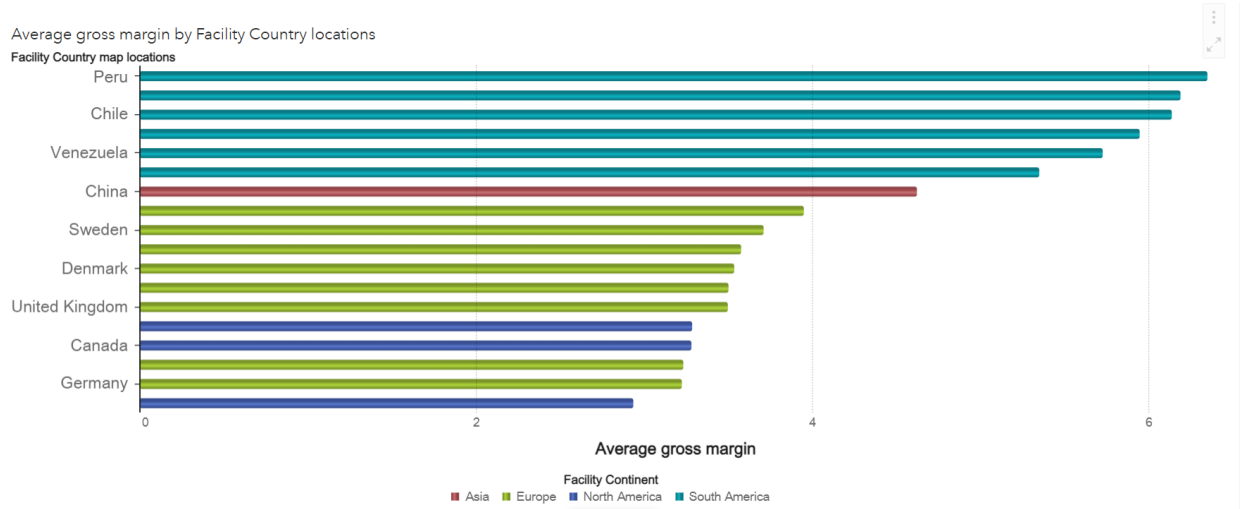
2.1

This chart is made using the cross tab option as asked in the task with the values put into add data role are facility continent, country, product sale and created data object Average gross margin.

Facility Continent	Facility Country map locations	Product Sale	Average gross margin
Asia	China	16645	4.62
Europe	Denmark	234614	3.54
	France	296303	3.23
	Germany	689530	3.22
	Italy	445738	3.50
	Norway	409697	3.95
	Spain	1560412	3.58
	Sweden	607665	3.71
	United Kingdom	1501642	3.50
North America	Canada	969520	3.28
	Mexico	406205	3.29
	United States	22832243	2.94
South America	Argentina	57805	6.19
	Brazil	455194	5.95
	Chile	282672	6.14
	Colombia	200706	5.35
	Peru	376081	6.35
	Venezuela	325704	5.73

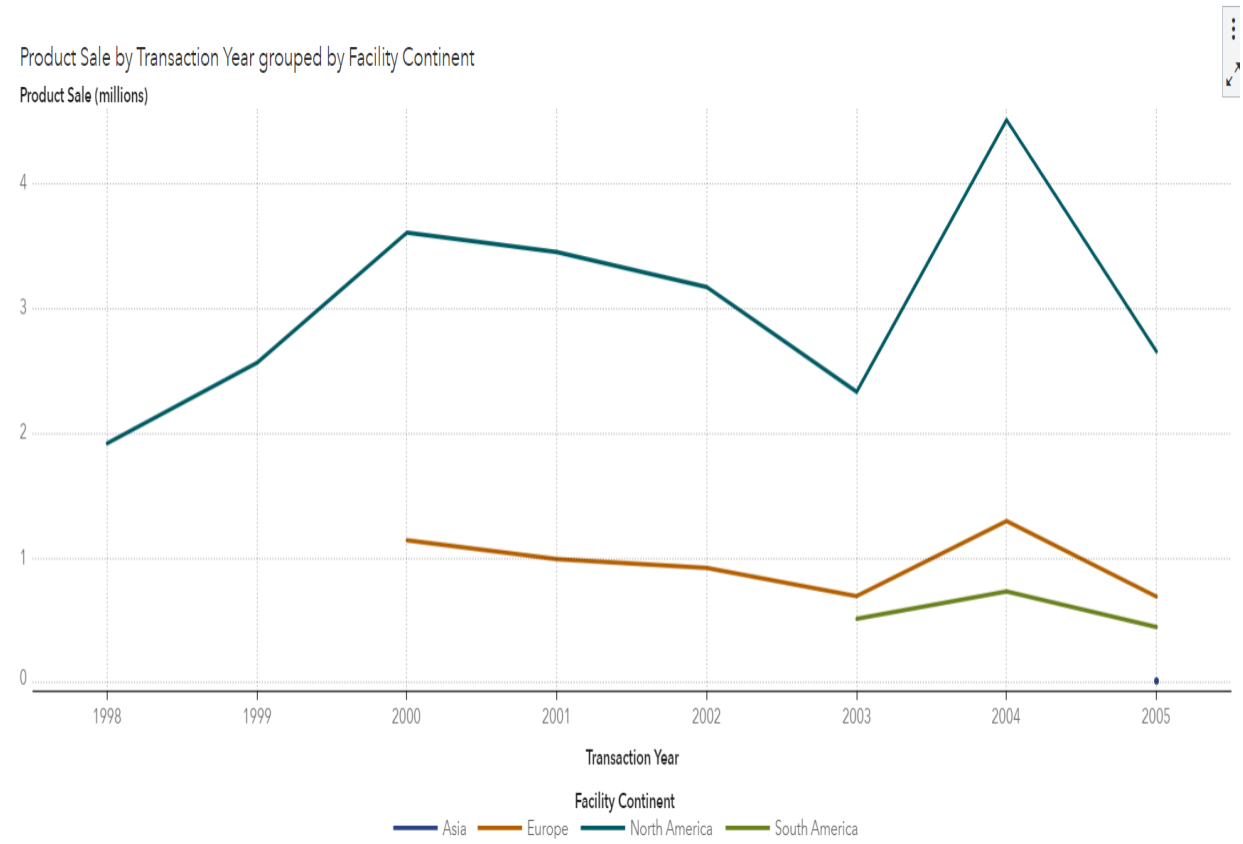
2.2

For the above subtask bar graph was one of the efficient options as we had to compare multiple countries which otherwise would look cluttered if we used some other sort of visualisation. I used hue to differentiate the countries belonging to different continents following Bertin's semiology of graphics.



2.3

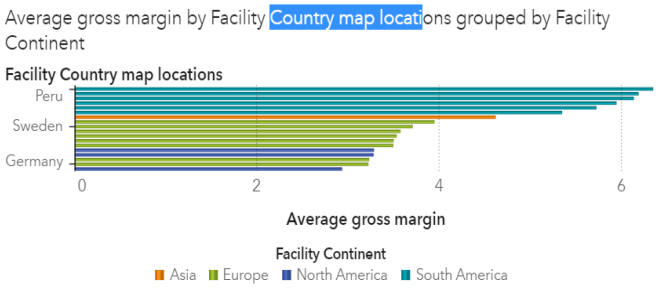
This graph as per the title shows the sale of products against the time which is in years for four different continents which are mentioned in the legend below with different colors for each continent and the sale seems lowest for Asia which is just like a dot at the lowest end of the graph.

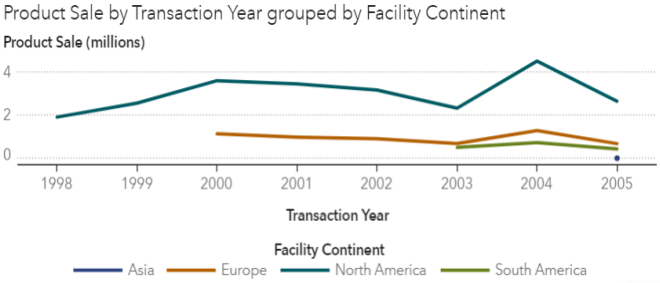


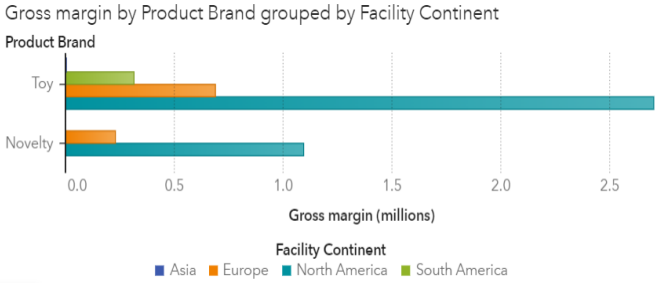
2.4

This is a dashboard as required in the subtask combining all the four visualisations, this report shows corresponding trends of sales by product, country and time for the ease of the stakeholders who can get a deeper insight into the sales considering different parameters like country product category and the time of sale. Such reports are crucial for identifying the KPI's.

Facility Country map locations	Facility Continent	Product Sale	Gross margin
Argentina	South America	57805	11,497.38
Brazil	South America	455194	85,646.07
Canada	North America	969520	152,225.58
Chile	South America	282672	53,532.39
China	Asia	16645	2,449.23
Colombia	South America	200706	36,604.41
Denmark	Europe	234614	37,455.65
France	Europe	296303	45,132.89
Germany	Europe	689530	109,878.64





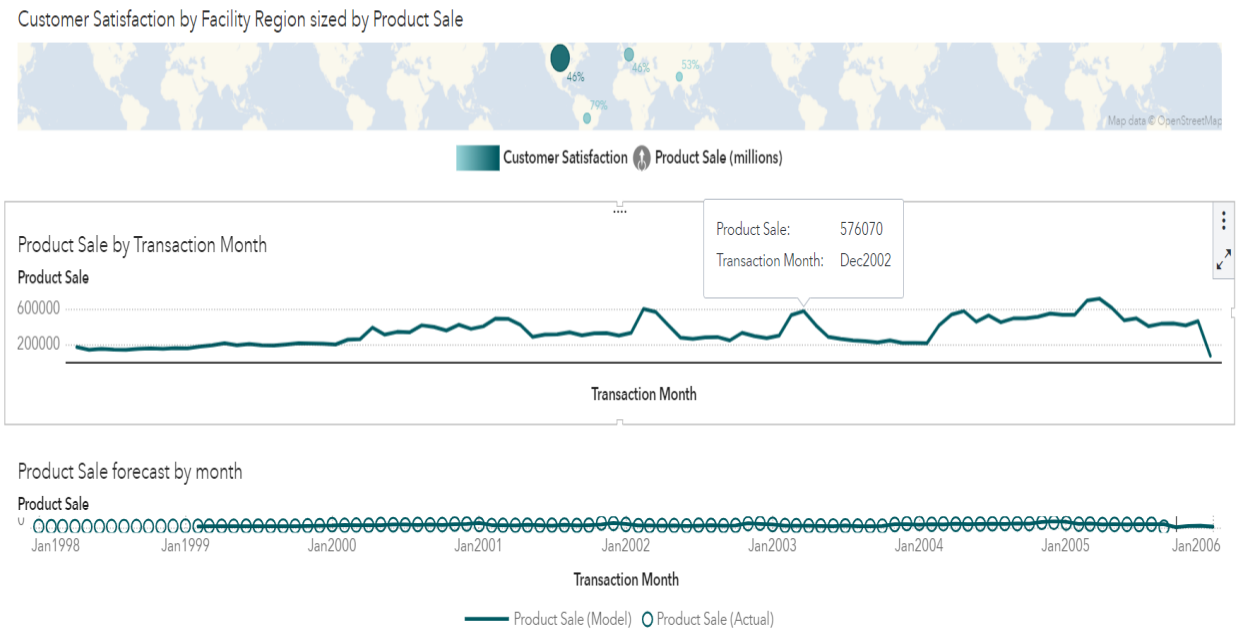


TASK-3

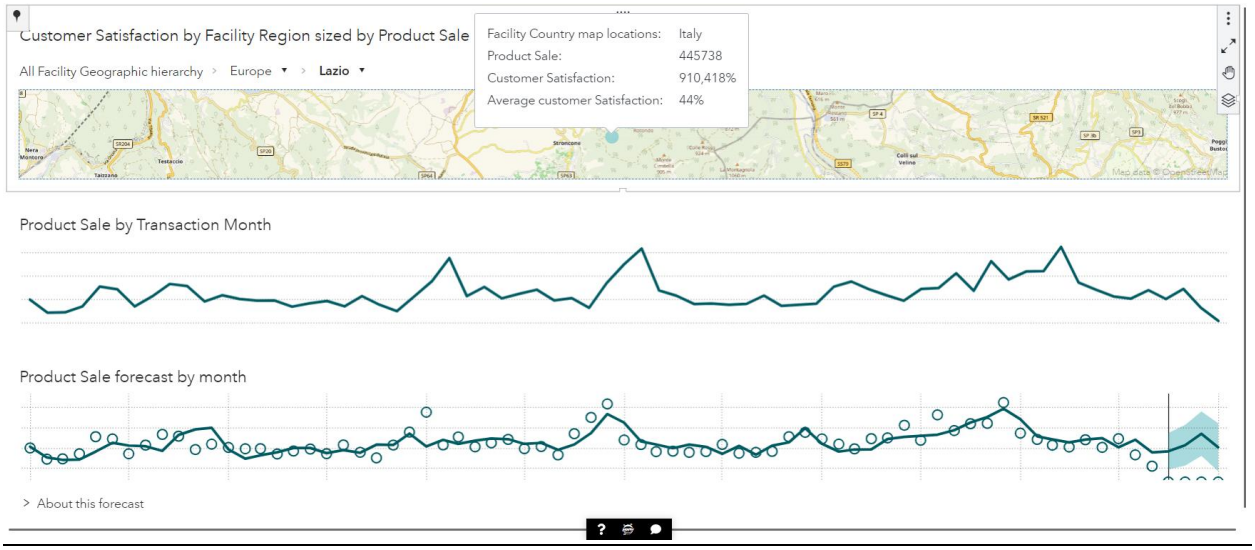
3.1, 3.2, 3.3

In this task we are asked to create a drillable visualization in which we can just click on the Continent > country > Region > city any of these on the drillable map to get the corresponding trends of customer satisfaction towards the products of that facility and the sales as well for the selected item In the map along with a four month forecast using the SAS predictive features. So I used the same geo hierarchy created in the first task while assigning roles for my visualisation and have used dot sizes to show the varying sales facility wise and the color for depicting the customer satisfaction which is also mentioned below in the legend. Further below there is a sales trend month wise which is dynamic and changes as per the location that we select in the above map and below the sales chart we have a sales forecast as well which was required in the sub task which was made using the SAS features from the object

selection tile and at the end of the forecast towards the below right we can see the prediction of future four months sale as required in the subtask.

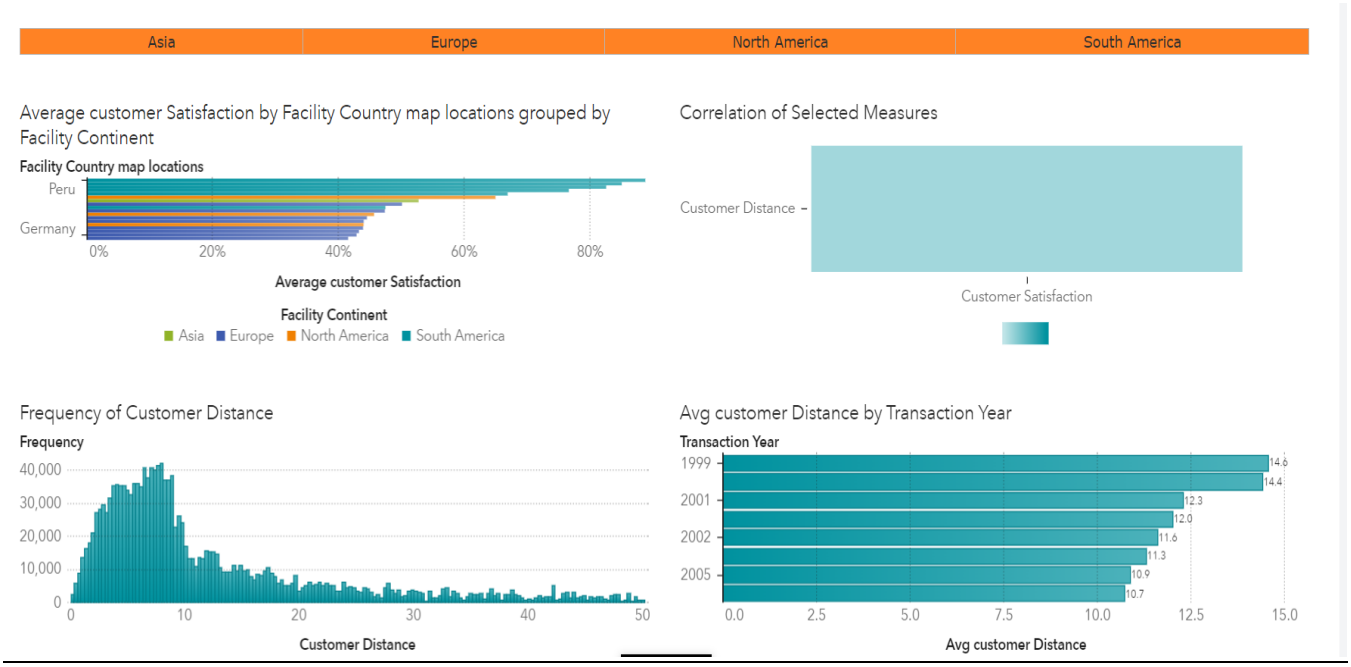


This is an example of drillable feature of the above visualization which shows the sales trend by month in the second chart followed by a forecast in the last chart for the same city of Lazio in Italy. We can use this feature to see the trends at any level we want continent country city or region as per the requirement. This task is made considering the pointers of Steele & Illinsky as it is simple, beautiful and gives ample information with a touch of novelty.



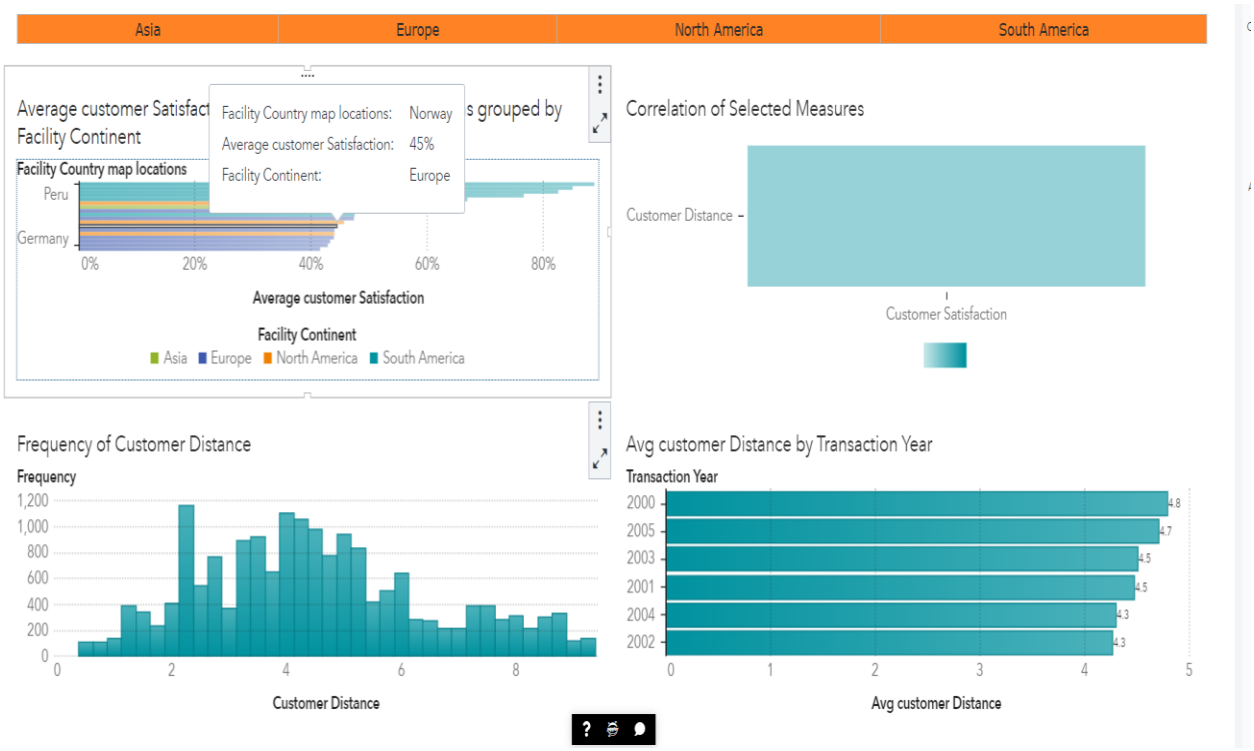
TASK-4

On task we have tried to create a button bar first with the help of available button option I objects tile towards left of UI and then used the values of facility continents in them for users to select a particular continent to see the values of. Further we used a bar chart to shoe average customer satisfaction across the selected countries also this bar chart is drillable made using actions on the right by linking all the graphs together in the actions tile. Now for the selected country we can see all the required matrices just by clicking on the desired company. As we can see the correlation between customer and customer distance in the second chart which is a weak correlation on top right.



Task 4 example for country drillable chart

This is an example of drillable bar chart above in which we can see we have the matrices for the selected continent and country.



4.4

With the help of the correlation chart I was able find a positive strong correlation between customer satisfaction and 'Sales representative rating' which is one of the KPI in the business.