Mukesh Patel School of Technology Management and Engineering

COURSE: BUSINESS VISUALIZATION

MINI PROJECT REPORT

(1 & 2)

By-

Jas Patil (C041)

Faculty In-Charge : Prof. Archana Bhise

CONTENTS

SR. NO.	TOPIC
1.	Introduction
2.	Problem Statement
3.	Dataset and Creation of New items
4.	Mini Project 1 – Analysis and Interpretation
5.	Mini Project 2 – Analysis and Interpretation

INTRODUCTION

Data visualization is the presentation of data in a pictorial or graphical format. It enables decision makers to see analytics presented visually, so they can grasp difficult concepts or identify new patterns. With interactive visualization, we can take the concept a step further by using technology to drill down into charts and graphs for more detail, thereby interactively changing what data we see and how it's processed. This type of statistical analysis system software developed by SAS Group helps us to perform business visualization thoroughly.

Why is data visualization important?

Because of the way the human brain processes information, using charts or graphs to visualize large amounts of complex data is easier than poring over spreadsheets or reports. Data visualization is a quick, easy way to convey concepts in a universal manner – and you can experiment with different scenarios by making slight adjustments. Data visualization can also:

- Identify areas that need attention or improvement.
- Clarify which factors influence customer behavior.
- Help you understand which products to place where.
- Predict sales volumes.

Regardless of industry or size, all types of businesses are using data visualization to help make sense of their data.

Hence, the core idea of our project revolves around utilizing the features of this software to create a business report for an assigned dataset, thereby estimating, interpreting and analysing the business scenario portrayed through the elements of the dataset.

PROBLEM STATEMENT

Mukesh Patel School of Technology Management & Engineering
Program: B. Tech. (EXTC), Semester: VI (2019-2020)
Subject: Business Visualization

Instructions:

1. Table shows one student for each group (highlighted in yellow)
2. other students can join any group but not exceeding the maximum number of students per group
3. Each group should not have more than 3 students
4. Project report should have screen shot of all the details.
5. Use SAS VA to generate separate reports each project
6. Last date of submission of both projects is 30th March.

Mini Project (1)

Max Marks: 10

Marks will be based on

a) creative thinking (2)
b) working (4)
c) Interpretation (2)
d) Viva (2)

Report Generation

a) Create at least one new calculated item
b) In case data set does not have sufficient number of measure type of data items, create more calculated items
c) Report should have two sections
d) Name each section and object
e) First two sections should have objects shown in the table. objects can be duplicated if required
f) Use section prompt and report prompt
g) Choose data items in each object such that different objects of different sections can be related and can show the effect of report and section prompt
h) Use Style and Property tab to make a presentable report

Mini Project (2)

Max Marks: 20

Marks will be based on

a) creative thinking (5)
b) working (8)
c) Interpretation (2)
d) viva (5)

Report Generation

a) Generate a new report
b) First two sections should have same objects as in Report of Mini Project 1
c) Third section should be info window
d) Third section should have list table
e) Use brush and all types interaction
f) Choose data items in each object such that different objects of different sections can be related and can show the effect of interaction
g) Use display rules on the object given in table
h) Use Style and Property tab to make a presentable report

The solution requirements specified for our Group were as follows:

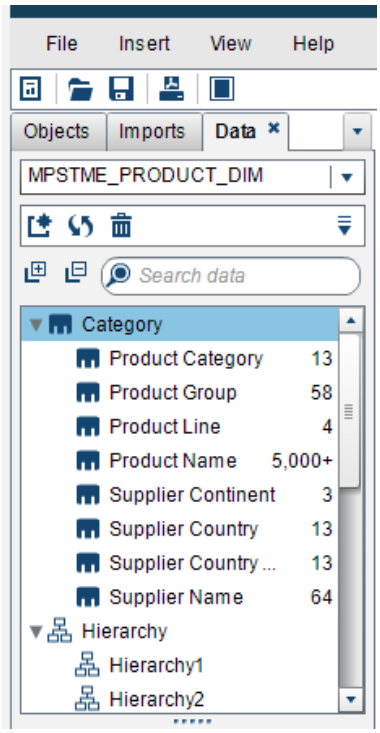
Roll Number	Name	Project no.	dataset	Objects for both projects	Objects for section and report prompt	Objects for display rule
C041	Jas Patil	6	Product_DIM	List control in second section, Bar Chart, dual axis time series plot, Bullet type gauge, cross table, tree map	Section prompt: text input Report prompt: slider	Gauge and bar chart

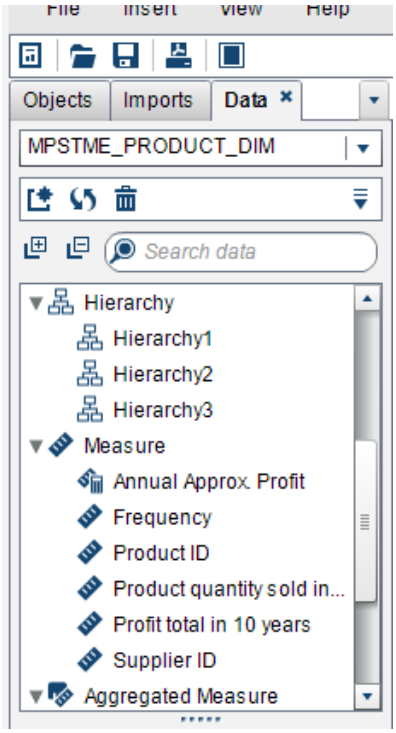
DATASET & CREATION OF NEW ITEMS

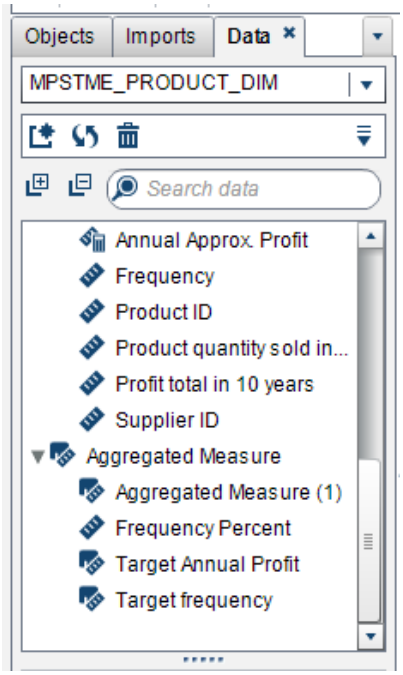
DATASET: MPSTME_PRODUCT_DIM

For Mini Project 1:

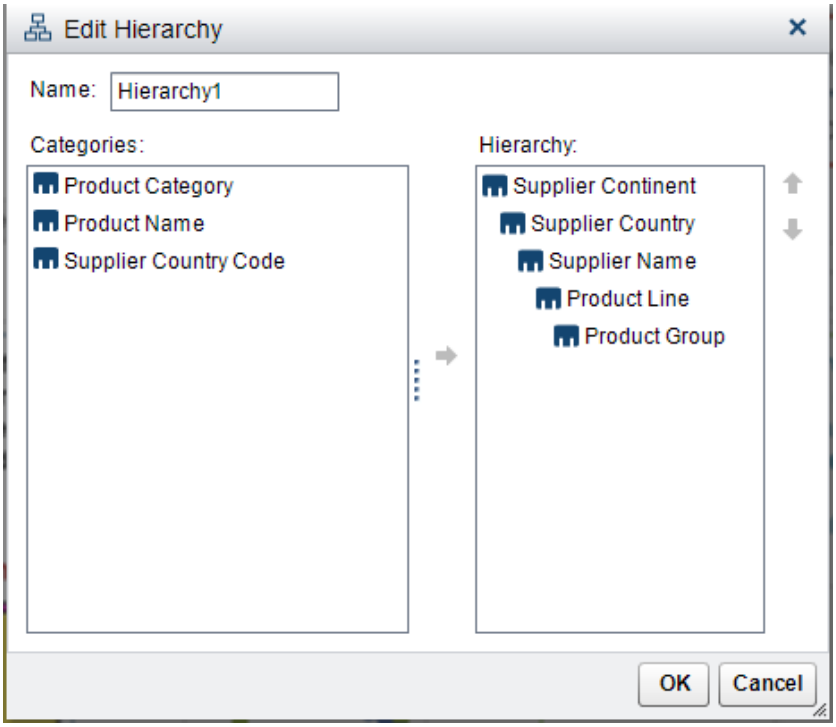
The following were the data items in the dataset-

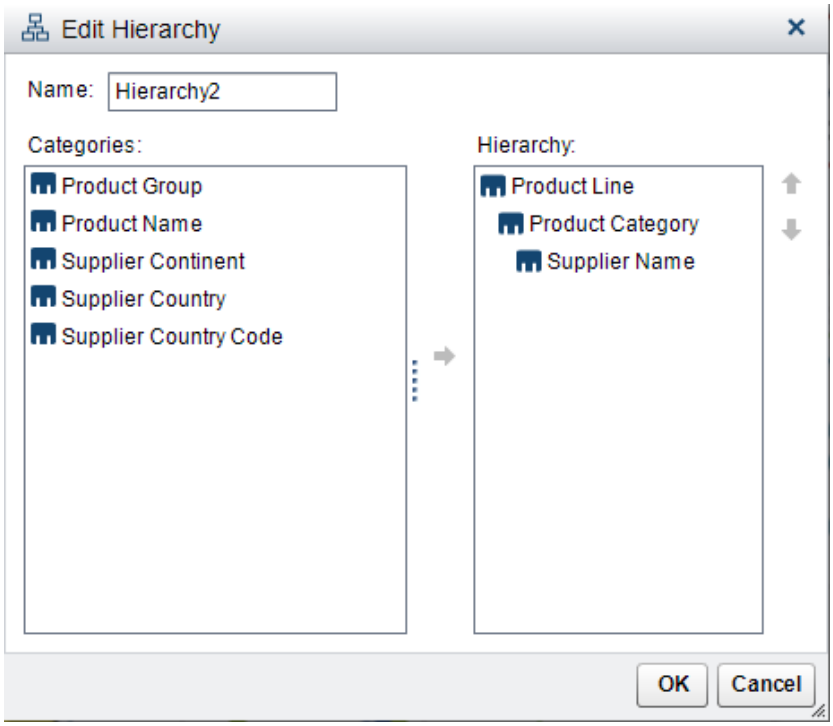






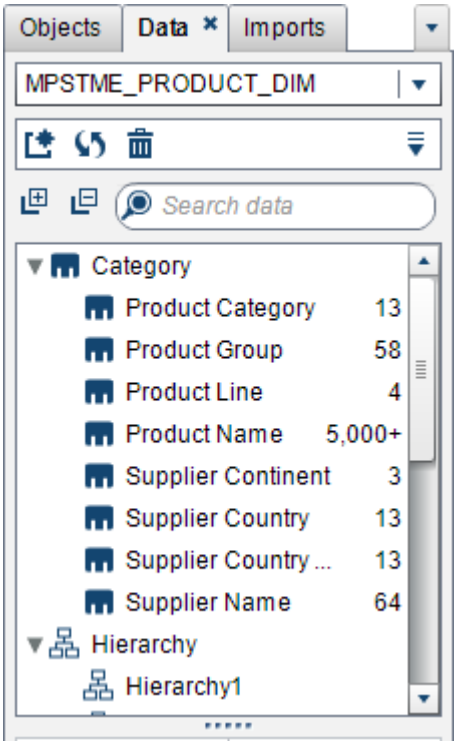
The hierarchies in this dataset were-

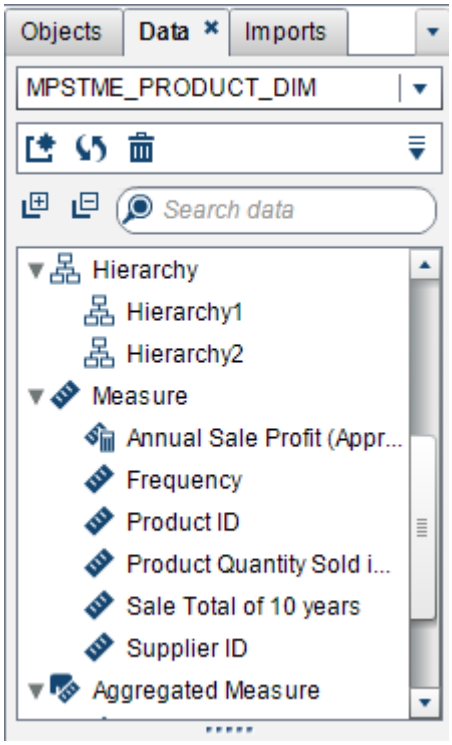


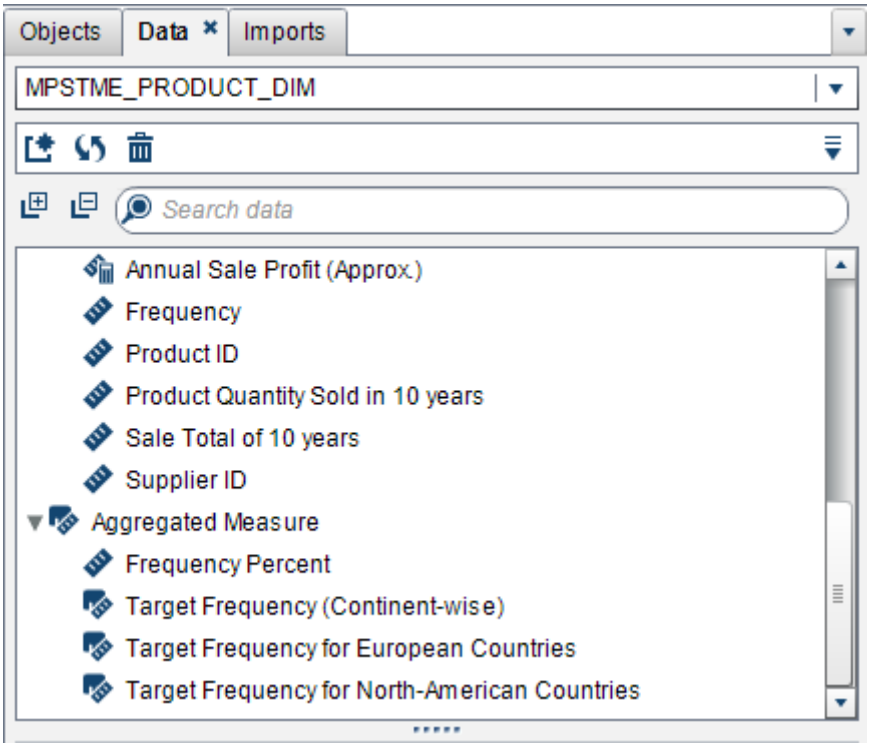


For Mini Project 2:

The following were the data items in the dataset-







New Measure/Calculated Items Generated:

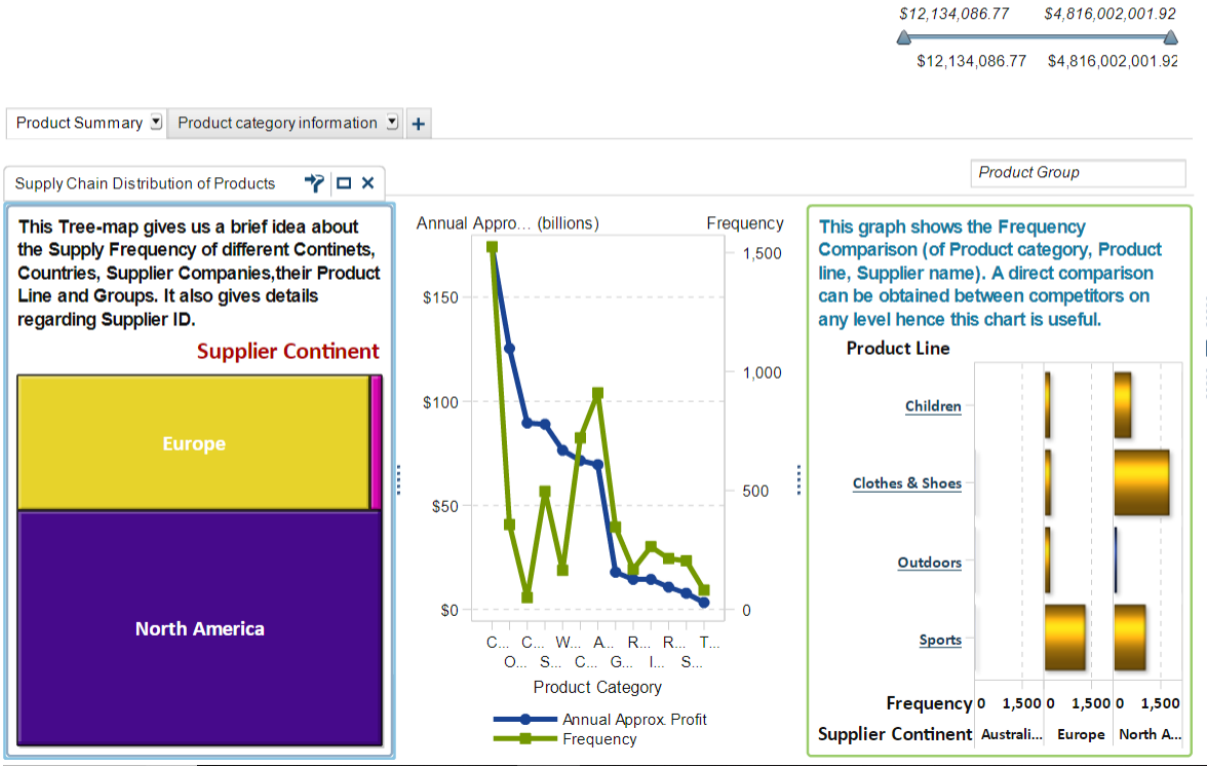
- We calculated Target Frequency (continent wise) which was set to 5504 as the sum of supply frequencies of all continents.
- As we were not having enough measure items, we duplicated- Product ID values and renamed them as Profit Total in 10 years, Supply ID values and renamed them as Product Quantity sold in 10 years, and introduced a new calculated item i.e. Annual Sale Profit (Approx.) which is given by (Profit Total in 10 years) divided by (Product Quantity sold in 10 years).
- Target Annual Profit for any supplier company was calculated as an aggregated measure and set as a standard- value was taken to be 80% of 50,000 million dollars which is the ideal annual profit.
  Target Annual Profit = $3,852,801,601.536

MINI PROJECT 1

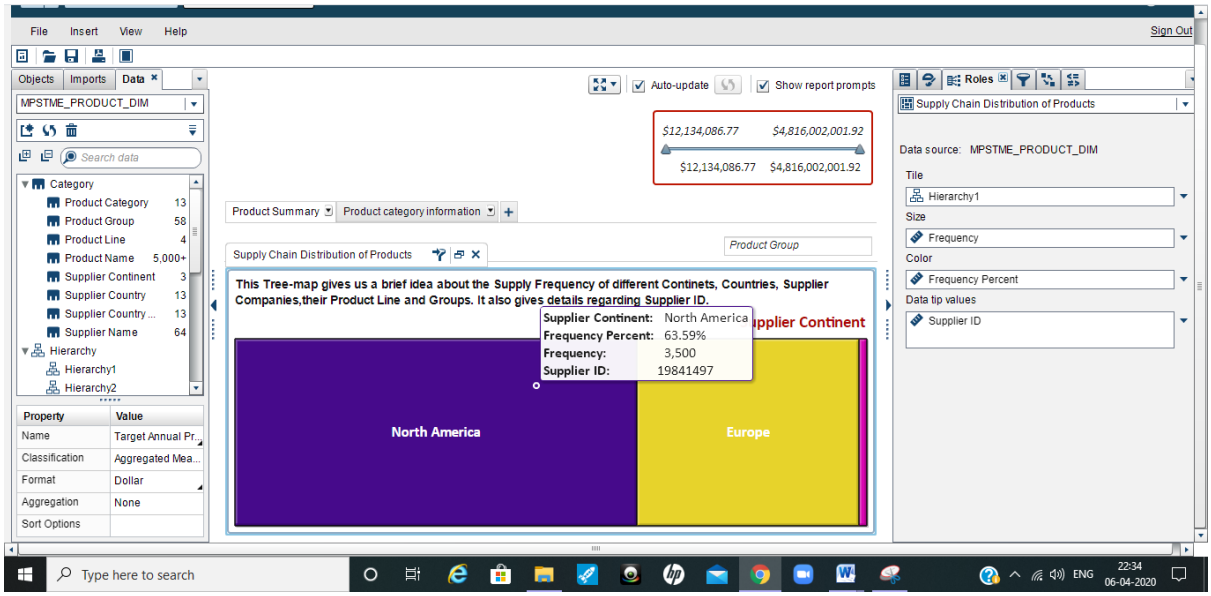
Analysis and Interpretation

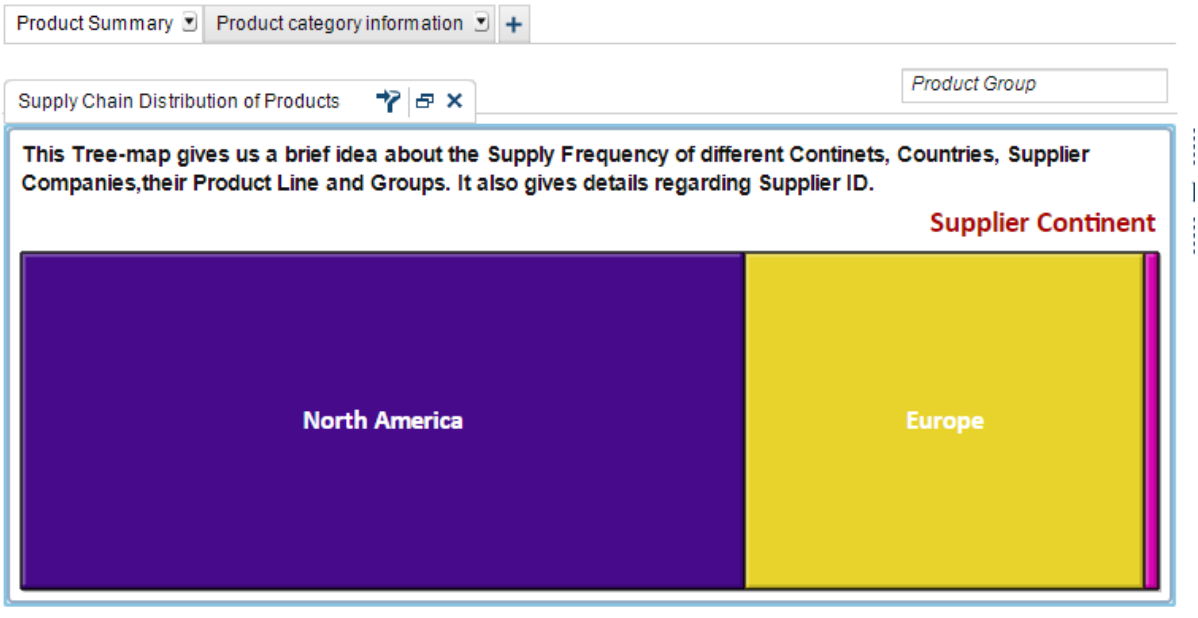
We created two sections and obtained various objects pertaining to this dataset as shown below. Section 1 gave the basic idea of the products and their supplier countries and continents whereas, Section 2 gives information regarding the product category, the difference between target frequency and current frequency for every continent, the difference between target profit and current profit.

The Report Prompt has the Annual Profit Spectrum by which we can directly filter and analyse the report concerning a particular range of profit value.



The first object is that of a TREEMAP which signifies “Supply Chain Distribution of Products”. The hierarchy 1 employed depicts the flow of images when drill down action is performed. The roles panel for the same is-





Product Summary | Product category information | +

Supply Chain Distribution of Products

Product Group

This Tree-map gives us a brief idea about the Supply Frequency of different Continets, Countries, Supplier Companies,their Product Line and Groups. It also gives details regarding Supplier ID.

All Hierarchy1 > North America

Supplier Country

Product Summary | Product category information | +

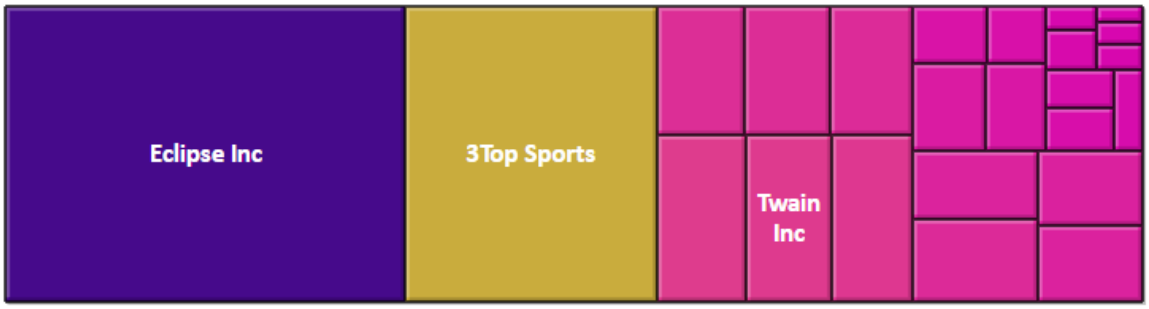
Supply Chain Distribution of Products

Product Group

This Tree-map gives us a brief idea about the Supply Frequency of different Continets, Countries, Supplier Companies,their Product Line and Groups. It also gives details regarding Supplier ID.

All Hierarchy1 > North America > United States

Supplier Name



Product Summary | Product category information | +

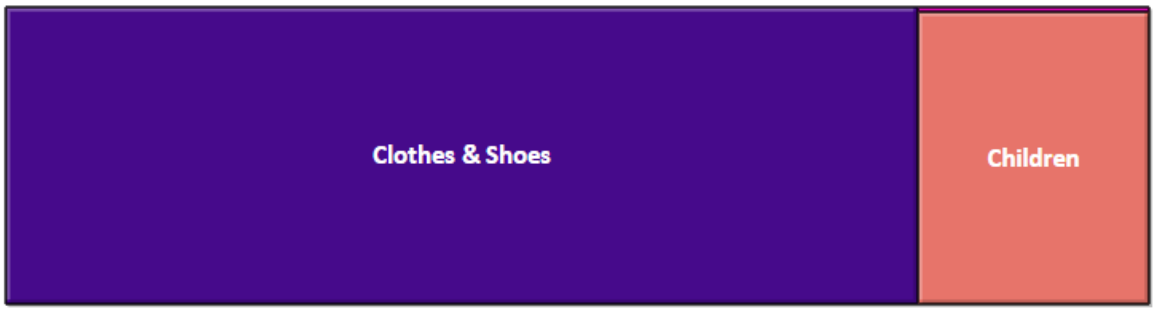
Supply Chain Distribution of Products

Product Group

This Tree-map gives us a brief idea about the Supply Frequency of different Continets, Countries, Supplier Companies,their Product Line and Groups. It also gives details regarding Supplier ID.

All Hierarchy1 > North America > United States > Eclipse Inc

Product Line



Auto-update | Show report prompts

$12,134,086.77 $4,816,002,001.92

$12,134,086.77 $4,816,002,001.92

Product Summary | Product category information | +

Supply Chain Distribution of Products

Product Group

This Tree-map gives us a brief idea about the Supply Frequency of different Continets, Countries, Supplier Companies,their Product Line and Groups. It also gives details regarding Supplier ID.

All Hierarchy1 > North America > United States > Eclipse Inc > Clothes & S...

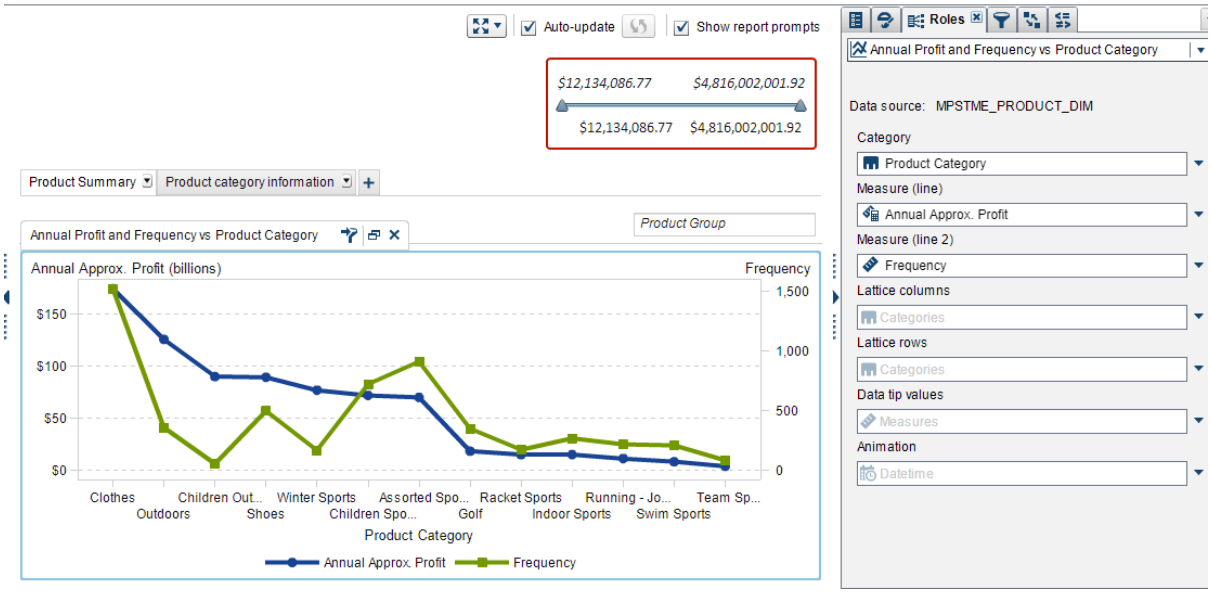
Product Group

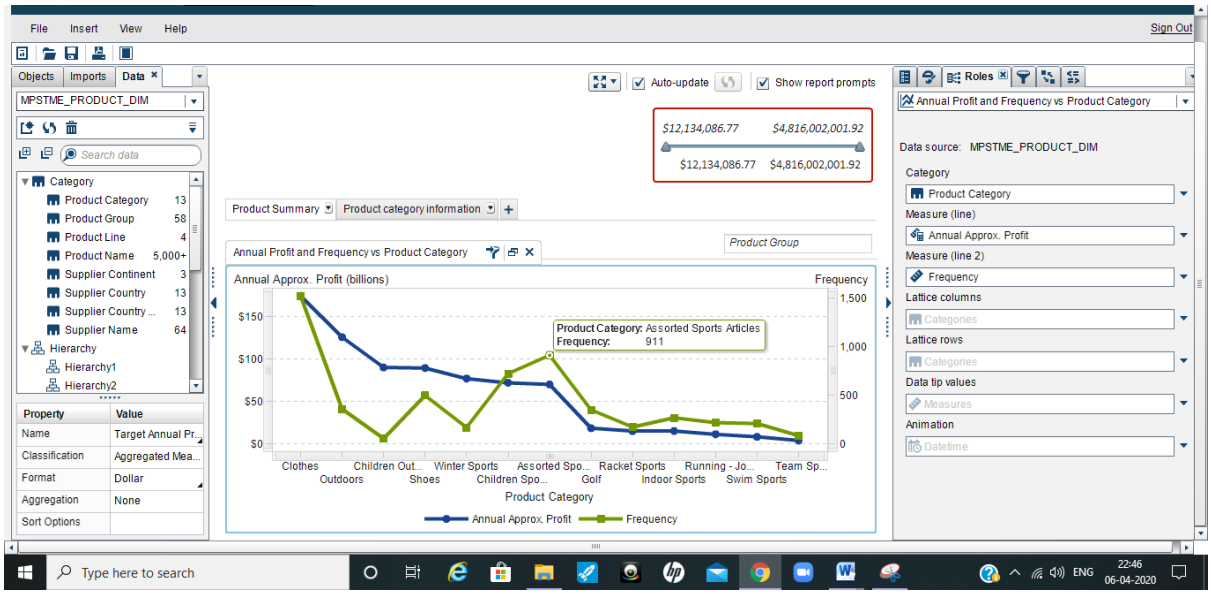
In this tree map tile is Hierarchy1, Size = Frequency, Color = Frequency Percent and data tip value is Supplier ID. Now Hierarchy1 consists of Supplier continent, Supplier Country, Supplier Name, Product Line and Product group. Since color varies on frequency percent hence color changes from dark blue to sky blue as the frequency decreases. Similarly, bigger the size of the tile, larger is the frequency corresponding to it. Data tip valued is Supplier ID so when we'll place our cursor corresponding supplier id will be displayed.

From the above map we can interpret that North America is the largest supplier continent as compared to Europe and Australia/Pacific. On drilling down further we find that there are two supplier countries within North America (i.e. US and Canada) and USA is the larger supplier as compared to Canada .Moreover, we find that Eclipse Inc. is the supplier name which is contributing largest among other suppliers in US. Moving down the hierarchy we find that that it supplies Clothes and Shoes and Children product and in the end of the hierarchy we find the product line with respect to Eclipse Inc.

Our second object was Dual axis Line chart in which Approximate Annual Profit and Frequency were the two measure items placed on the axes and Product group was the category item. We had created a new calculated item called Annual Profit.

We can interpret that it is necessary that increase in frequency need not cause an increase in Annual profit. In the graph we can see that for children sports (profit is 7.1 billion) the frequency (722) is more than winter sports (164) but the profit is less than winter sports (profit is $7.6 billion).

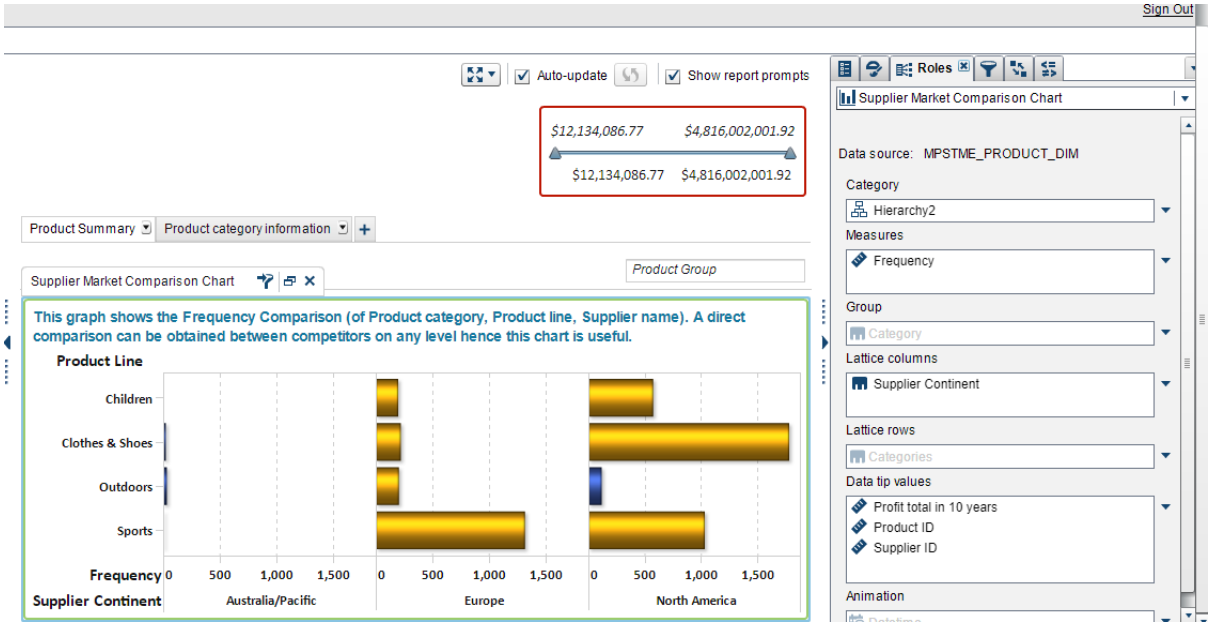




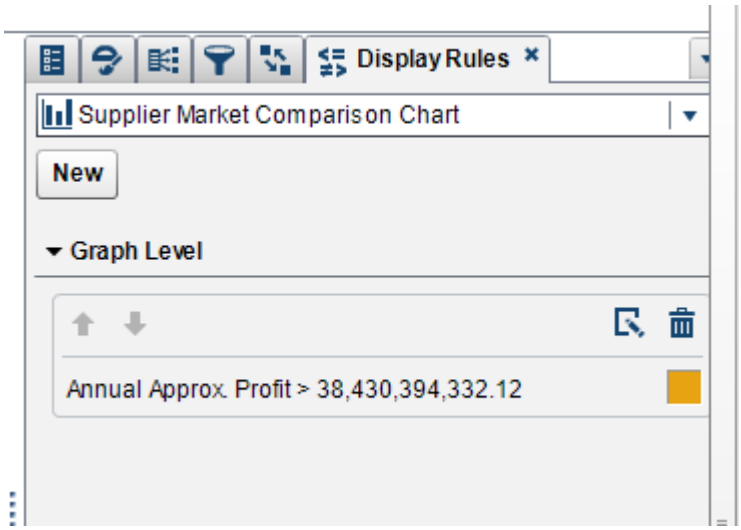
Our 3rd object was Bar chart in which we had Product Line in category, Frequency as measure item and Supplier Continent in Lattice Column. Thus, this graph shows the frequency of Product line for each Continent. We had created a display rule wherein if annual profit is greater than 80% of max value then colour must be saffron else show blue for the bar.

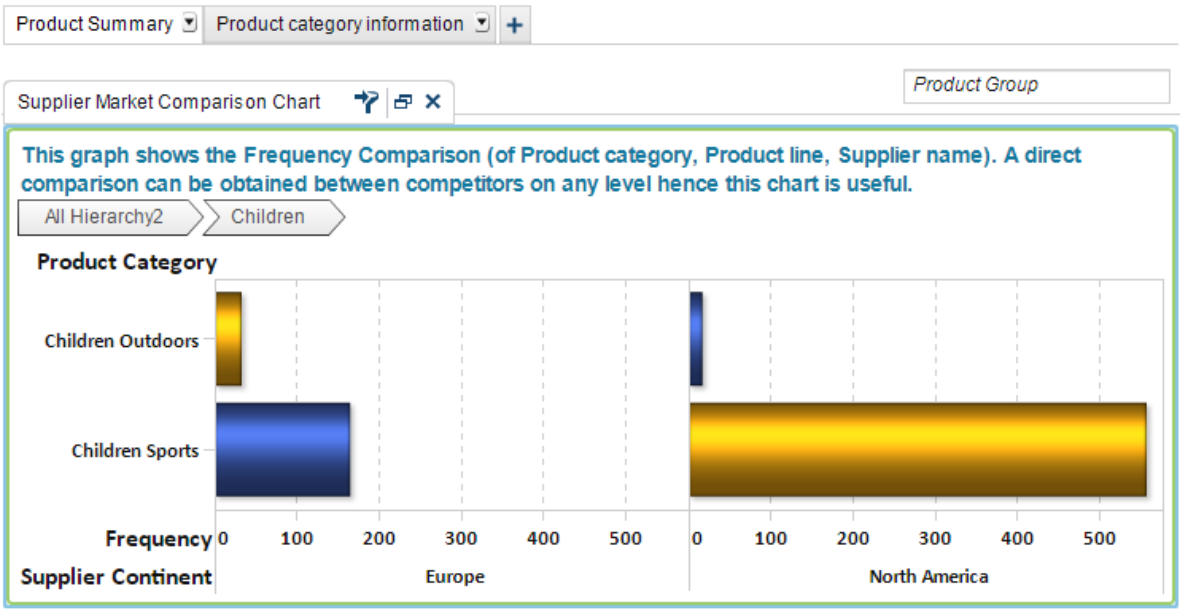
We can infer that Australia/Pacific does not supplies Children products whereas the other continents (North America and Europe) supply all the products in the product line. From this graph, we can say that North America is

the largest Supplier followed by Europe and Australia. Although North America is the largest supplier but it is lagging behind in sports product line as a supplier. Europe is leading in Sports and Outdoor supply market. Moreover, we have created a hierarchy hence, clicking on child product line we find the product categories under child product line and further clicking on children outdoors category we find that Scandinavian Clothing is the supplier name which supplies largest amount of outdoor clothing and is based in Europe.

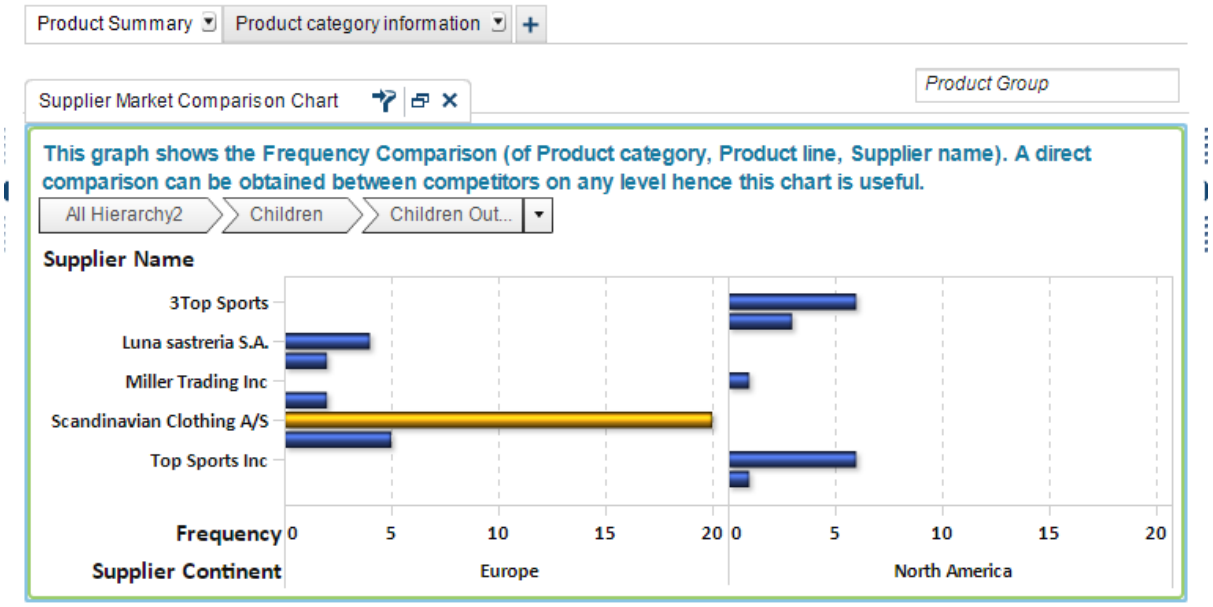


Display Rule application-

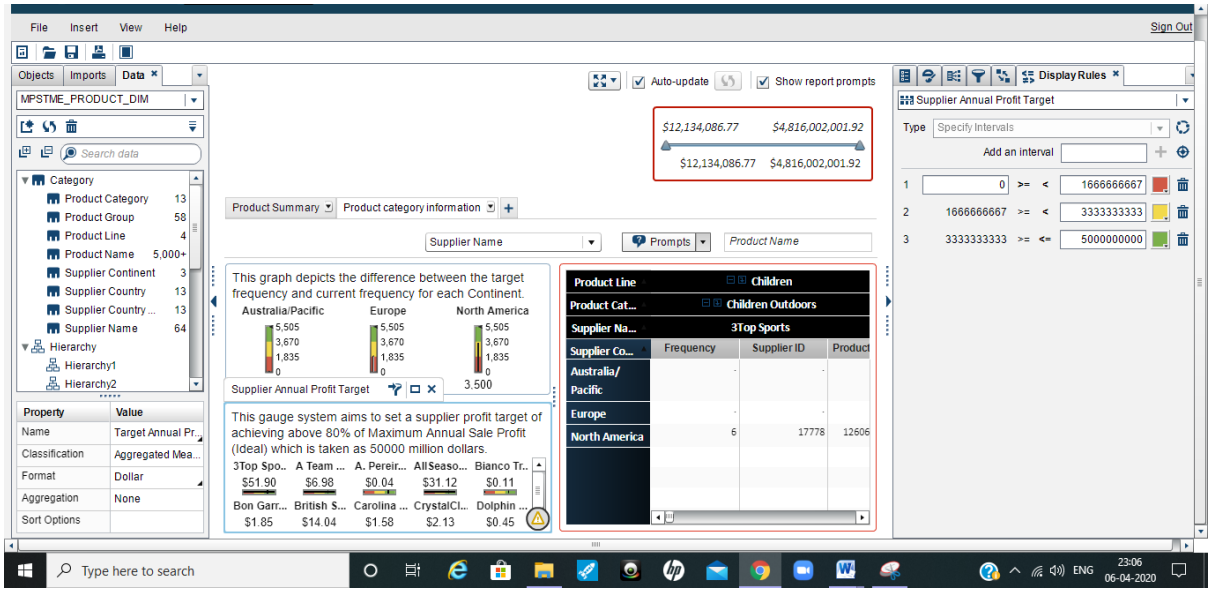




As we could infer, that in Children Outdoors Product category, 'Scandinavian Clothing A/S' is the largest and the best supplier in terms of profit margin amongst all the continents.

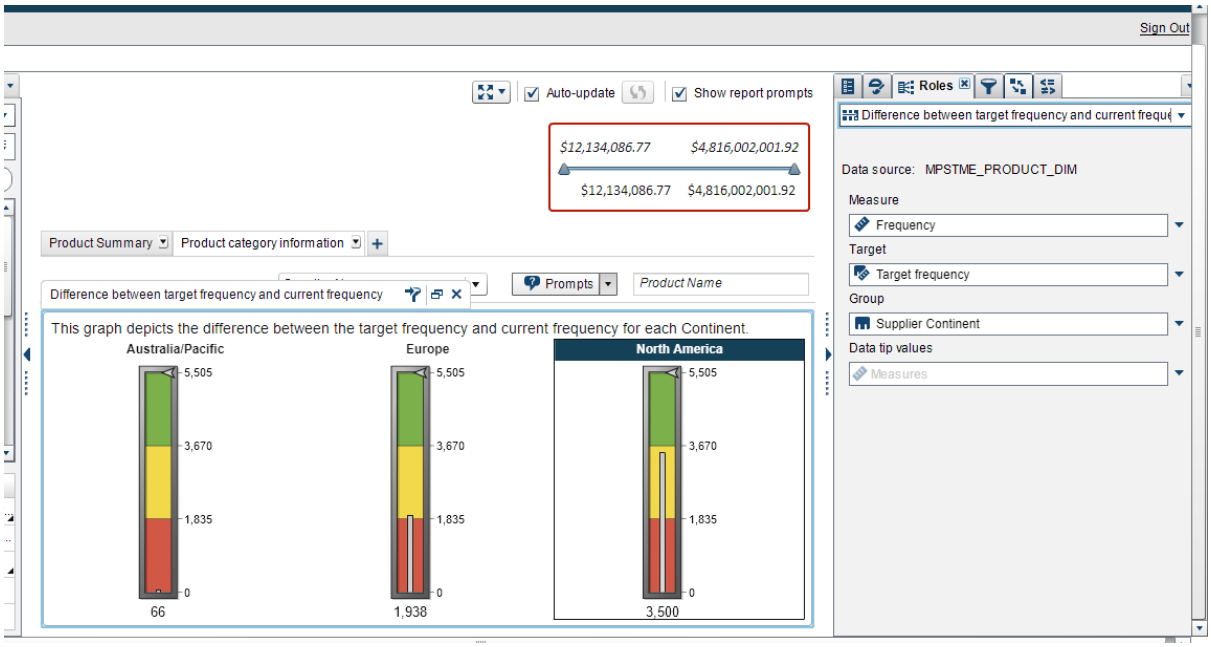


Section 2 comprises of the following elements giving us information about the 'Product Category Information' –



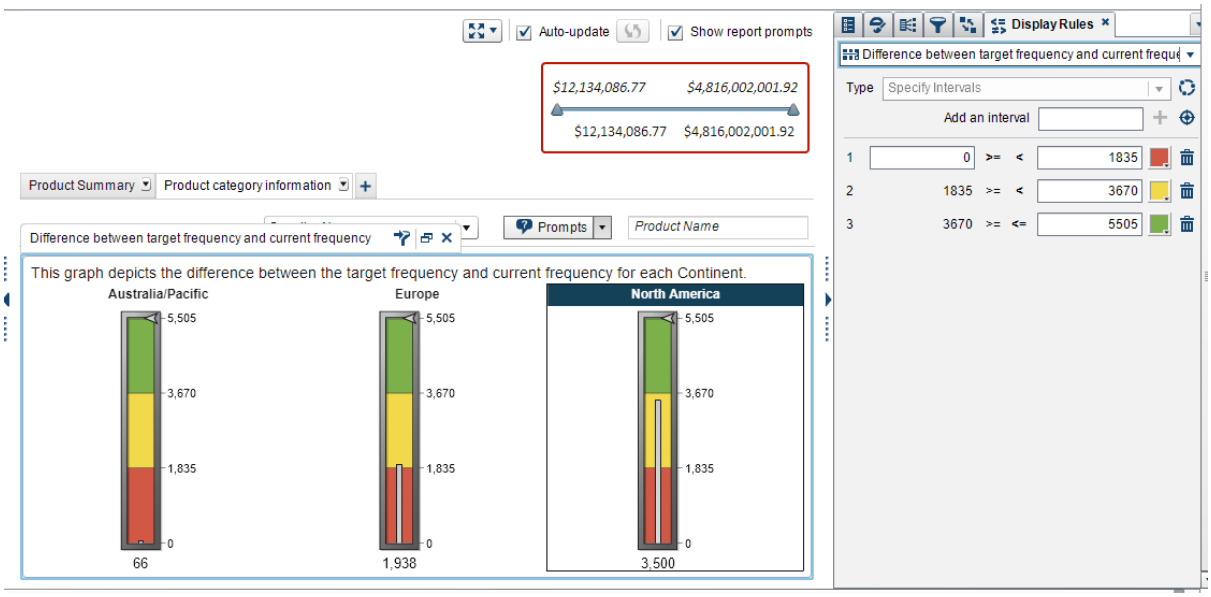
Two gauges and one Crosstable is used for analysis.

The first gauge system depicts the ‘Difference between target frequency and current frequency’. This graph depicts the difference between the target frequency and current frequency for each Continent.

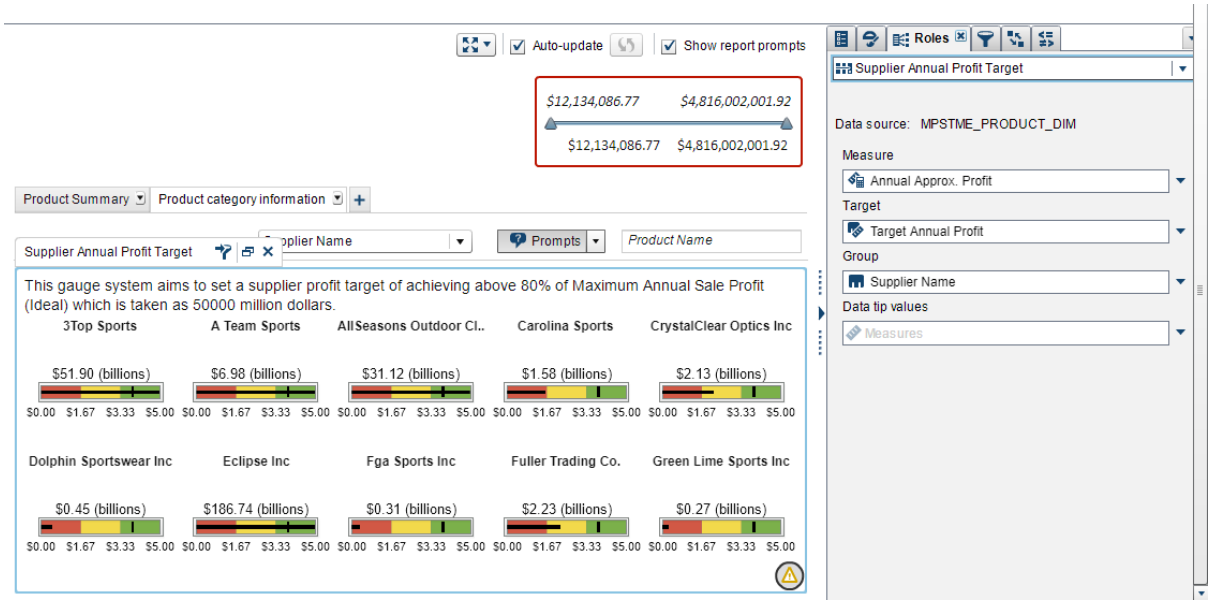


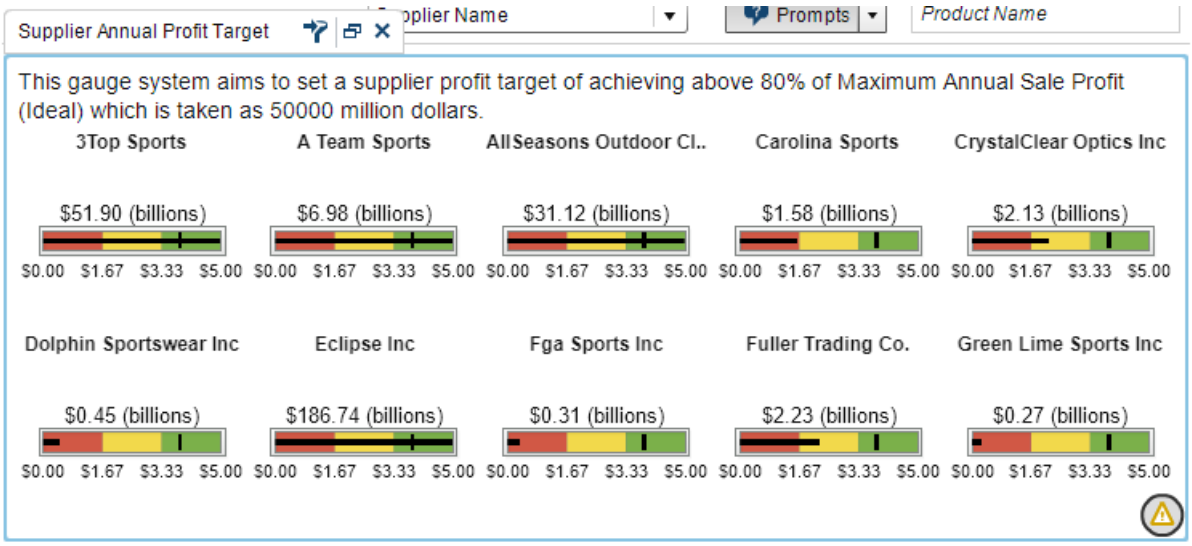
The display rules applied are as follows –

The Target to be achieved by each continent was 5504. Hence, using auto-populate, intervals were added.

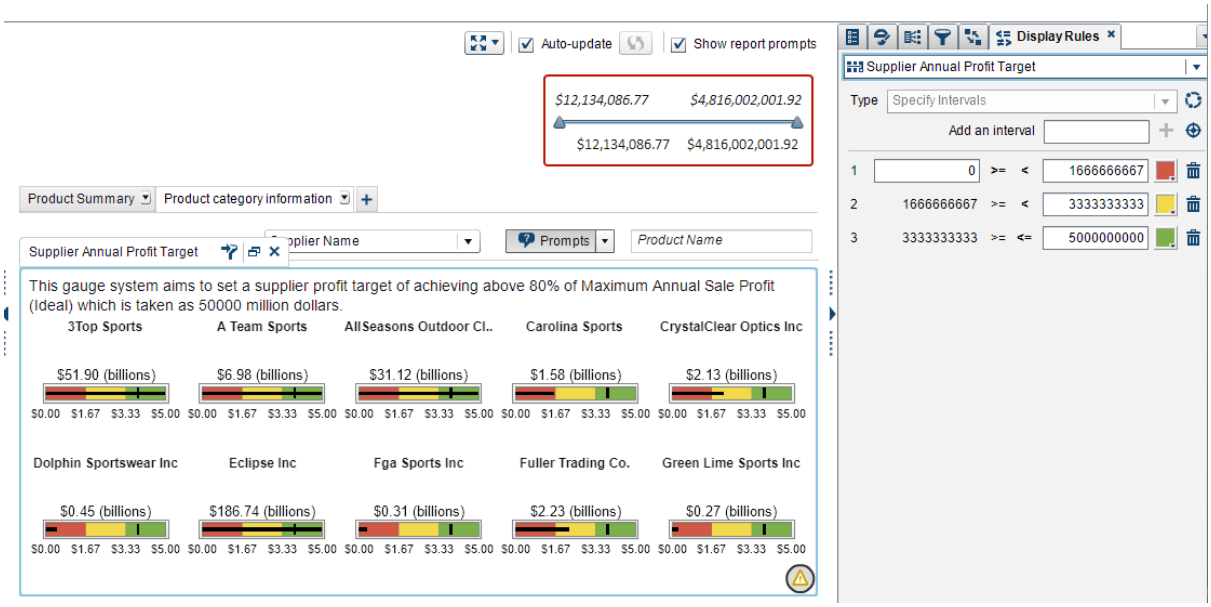


The Second Gauge system is as follows-



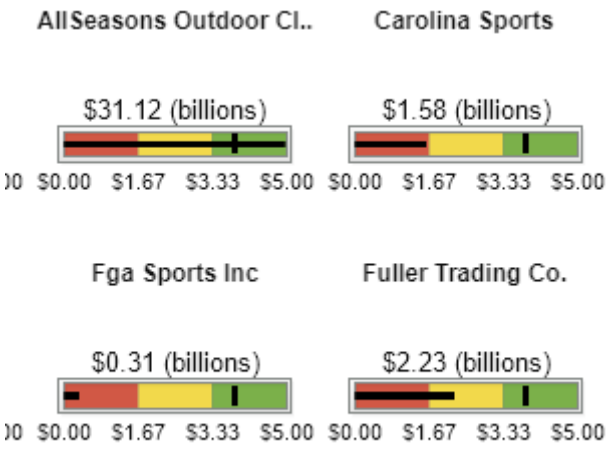


The display rules were set as follows-

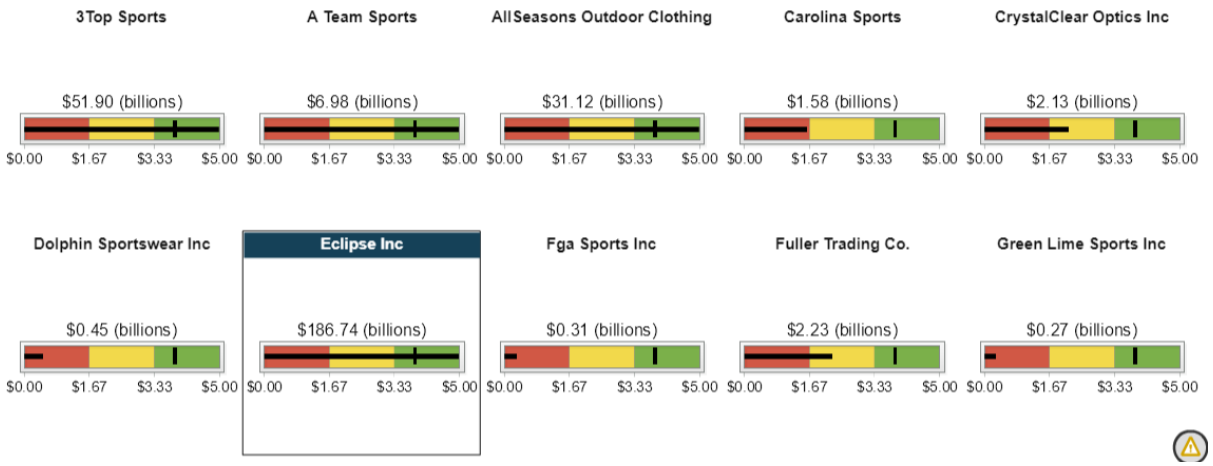


The values were calculated as red showing profit under 25% of Target Annual Profit, Yellow showing values under 50% and Green showing values above 80% respectively.

The vertical line in the graph signifies the Annual Target Profit margin set for each supplier. We can infer one of the examples that incase of ‘All Seaasons Outdoor Clothing’ has crossed the target annual profit achieving Annual Sale Profit equal to $31,123,226,562.02 whereas ‘Fuller Trading Co.’ fails to achieve the target securing only $2,230,253,182.82.



Supplier Annual Profit Target



This gauge system aims to set a supplier profit target of achieving above 80% of Maximum Annual Sale Profit (Ideal) which is taken as 50000 million dollars.

- Eclipse Inc has the highest Annual Sale Profit which is equal to $166.74 billion.
  This company is based in United States in the continent North America.

- This is the largest supplier company among all the three continents.

- Green Lime Sports Inc has the lowest Annual Sale Profit which is qual to $0.27 billion.

Tabular Dataset for Supplier Details

Product Line	Children										
Product Cat...	Children Outdoors										
Supplier Na...	3Top Sports				AllSeasons Outdoor Clothing				Luna sastreria S.A.		
Supplier Co...	Frequency	Supplier ID	Product ID	Annual Approx. Profit	Frequency	Supplier ID	Product ID	Annual Approx. Profit	Frequency	Supplier ID	Product ID
Australia/ Pacific											
Europe									4	18968	8404004001
North America	6	17778	1260600600270	$425,447,384.50	3	2316	630300300088	$816,451,165.92			

- 3Top Sports has the highest frequency (equal to 6) for *Product Category* -Children Outdoor in the *Product Line* –Children with an Approx. Annual profit equal to $4.254 billion.

- AllSeasons Outdoor Clothing has the lowest frequency (equal to 3) for same with Approx. Annual Profit equal to $8.164 billion.

MINI PROJECT 2

Analysis and Interpretation

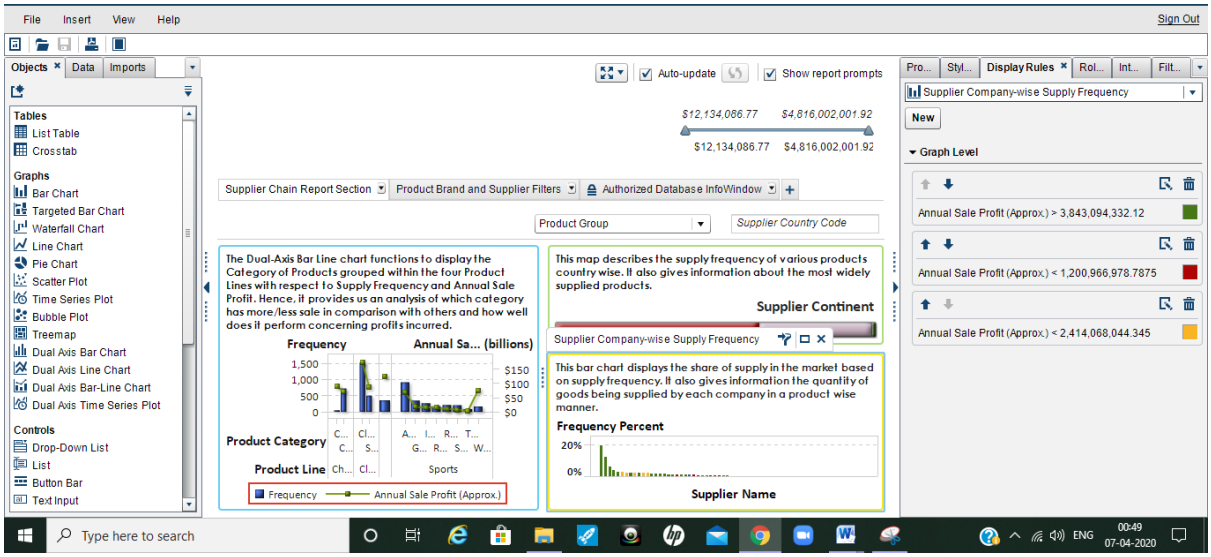
We created three sections-

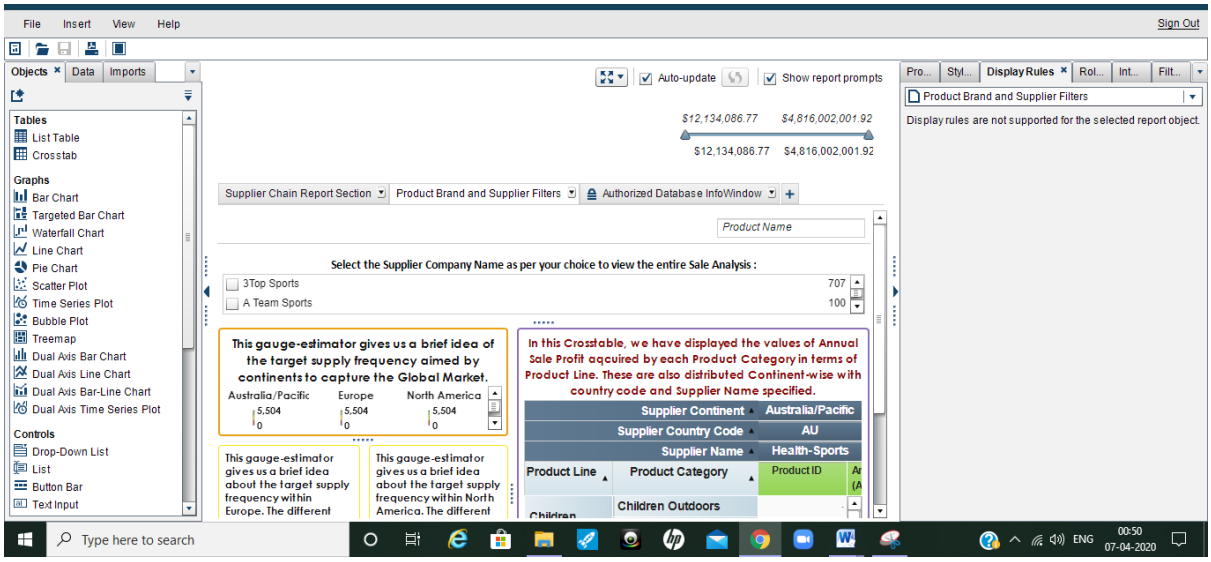
1st Section – Supplier Chain Report Section

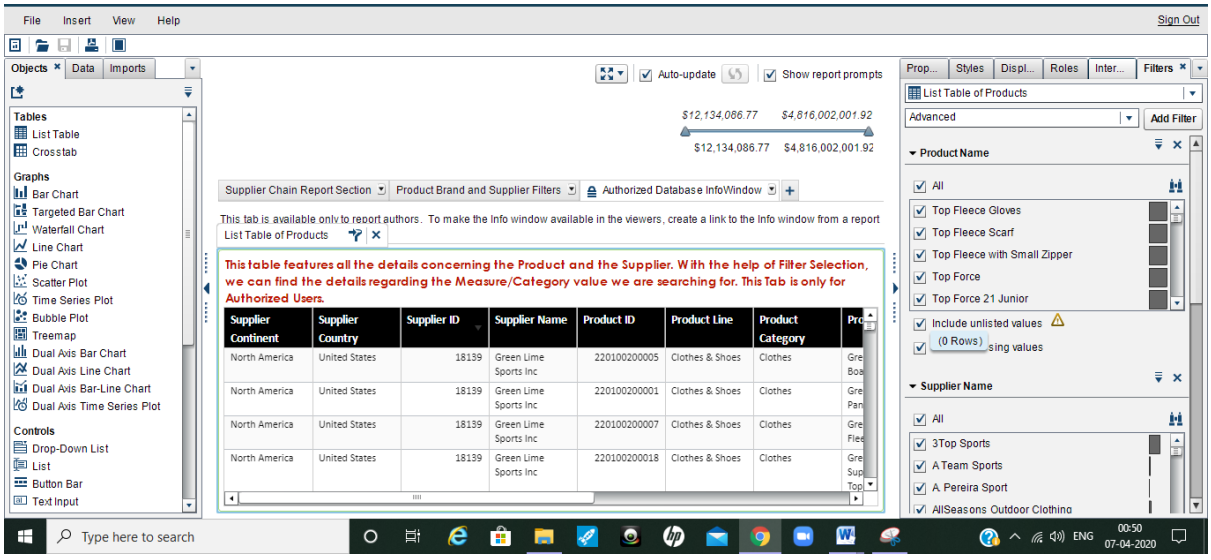
2nd Section – Product Brand and Supplier Filters

3rd Section – Authorized Database InfoWindow

The three sections are depicted as follows:



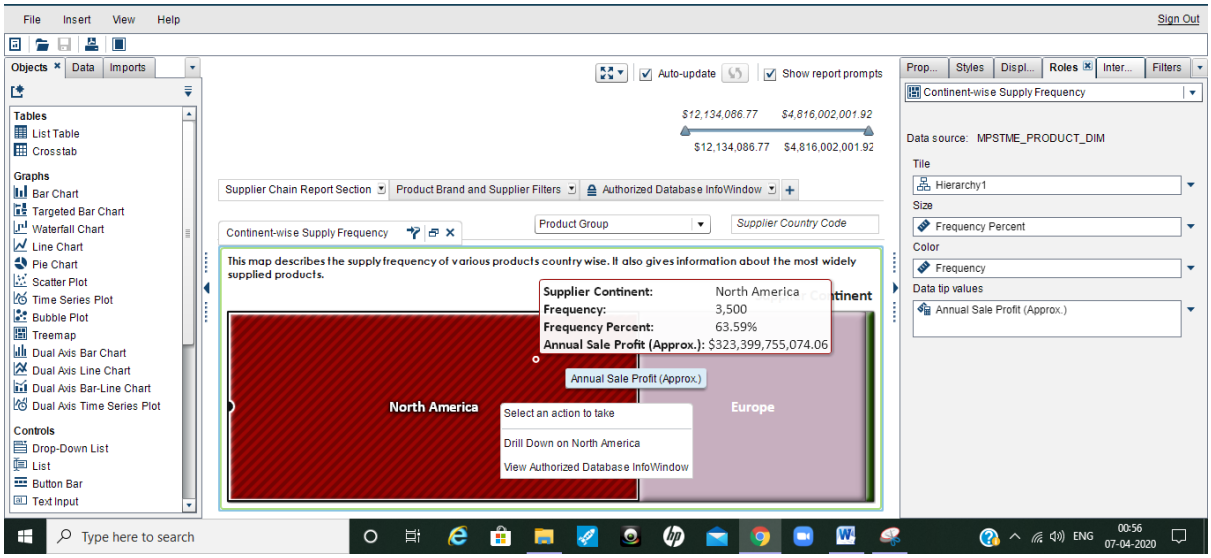

File Insert View Help
Sign Out
Objects Data Imports
Tables
List Table
Crosstab
Graphs
Bar Chart
Targeted Bar Chart
Waterfall Chart
Line Chart
Pie Chart
Scatter Plot
Time Series Plot
Bubble Plot
Treemap
Dual Axis Bar Chart
Dual Axis Line Chart
Dual Axis Bar-Line Chart
Dual Axis Time Series Plot
Controls
Drop-Down List
List
Button Bar
Text Input
Auto-update
Show report prompts
$12,134,086.77 $4,816,002,001.92
$12,134,086.77 $4,816,002,001.92
Supplier Chain Report Section
Product Brand and Supplier Filters
Authorized Database InfoWindow
Product Name
Select the Supplier Company Name as per your choice to view the entire Sale Analysis :
3Top Sports 707
A Team Sports 100
This gauge-estimator gives us a brief idea of the target supply frequency aimed by continents to capture the Global Market.
Australia/Pacific Europe North America
5,504 5,504 5,504
0 0 0
This gauge-estimator gives us a brief idea about the target supply frequency within Europe. The different
This gauge-estimator gives us a brief idea about the target supply frequency within North America. The different
In this Crosstable, we have displayed the values of Annual Sale Profit acquired by each Product Category in terms of Product Line. These are also distributed Continent-wise with country code and Supplier Name specified.
Supplier Continent Australia/Pacific
Supplier Country Code AU
Supplier Name Health-Sports
Product Line
Product Category
Product ID
Children Outdoors
Pro... Styl... Display Rules Rol... Int... Filt...
Product Brand and Supplier Filters
Display rules are not supported for the selected report object.
Type here to search
ENG
00:50
07-04-2020


File Insert View Help
Sign Out
Objects Data Imports
Tables
List Table
Crosstab
Graphs
Bar Chart
Targeted Bar Chart
Waterfall Chart
Line Chart
Pie Chart
Scatter Plot
Time Series Plot
Bubble Plot
Treemap
Dual Axis Bar Chart
Dual Axis Line Chart
Dual Axis Bar-Line Chart
Dual Axis Time Series Plot
Controls
Drop-Down List
List
Button Bar
Text Input
Auto-update
Show report prompts
$12,134,086.77 $4,816,002,001.92
$12,134,086.77 $4,816,002,001.92
Supplier Chain Report Section
Product Brand and Supplier Filters
Authorized Database InfoWindow
This tab is available only to report authors. To make the Info window available in the viewers, create a link to the Info window from a report
List Table of Products
This table features all the details concerning the Product and the Supplier. With the help of Filter Selection, we can find the details regarding the Measure/Category value we are searching for. This Tab is only for Authorized Users.
Supplier Continent
Supplier Country
Supplier ID
Supplier Name
Product ID
Product Line
Product Category
North America United States 18139 Green Lime Sports Inc 220100200005 Clothes & Shoes Clothes
North America United States 18139 Green Lime Sports Inc 220100200001 Clothes & Shoes Clothes
North America United States 18139 Green Lime Sports Inc 220100200007 Clothes & Shoes Clothes
North America United States 18139 Green Lime Sports Inc 220100200018 Clothes & Shoes Clothes
Prop... Styles Displ... Roles Inter... Filters
List Table of Products
Advanced
Add Filter
Product Name
All
Top Fleece Gloves
Top Fleece Scarf
Top Fleece with Small Zipper
Top Force
Top Force 21 Junior
Include unlisted values
(0 Rows)
Supplier Name
All
3Top Sports
A Team Sports
A Pereira Sport
AllSeasons Outdoor Clothing
Type here to search
ENG
00:50
07-04-2020

In the 1st Section, we have three object windows which are concerning the following business stats

1st Object - Continent-wise Supply Frequency (TreeMap)

The roles panel for the same-

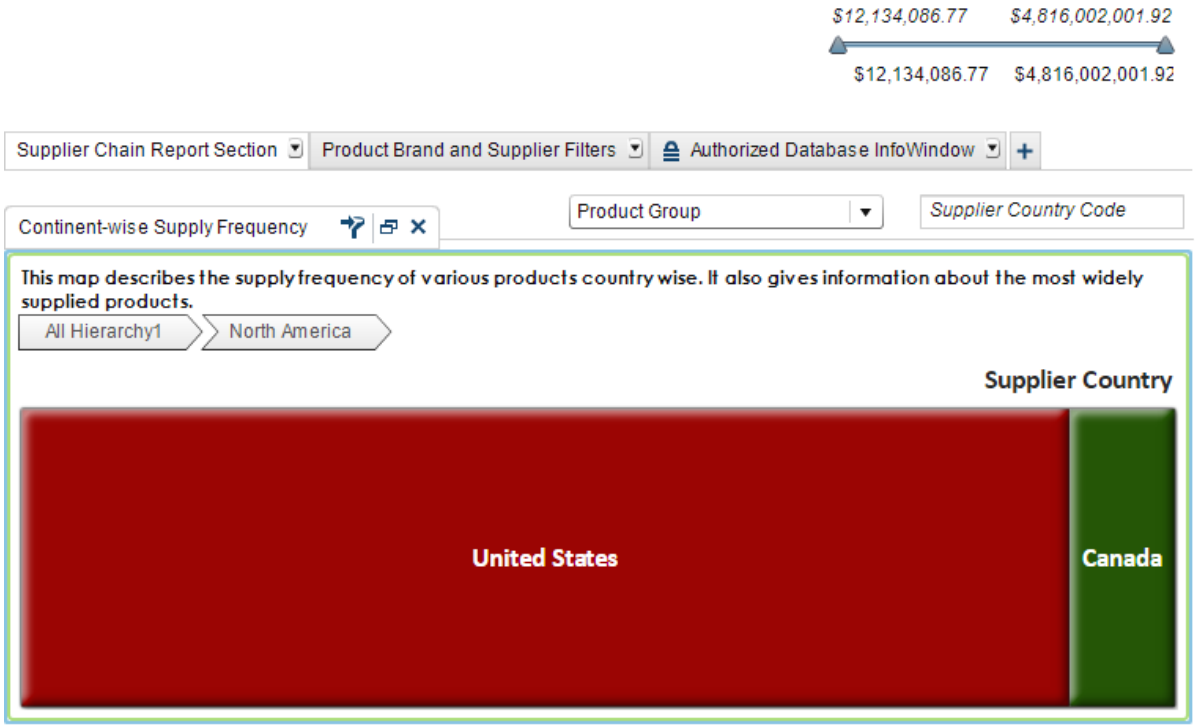


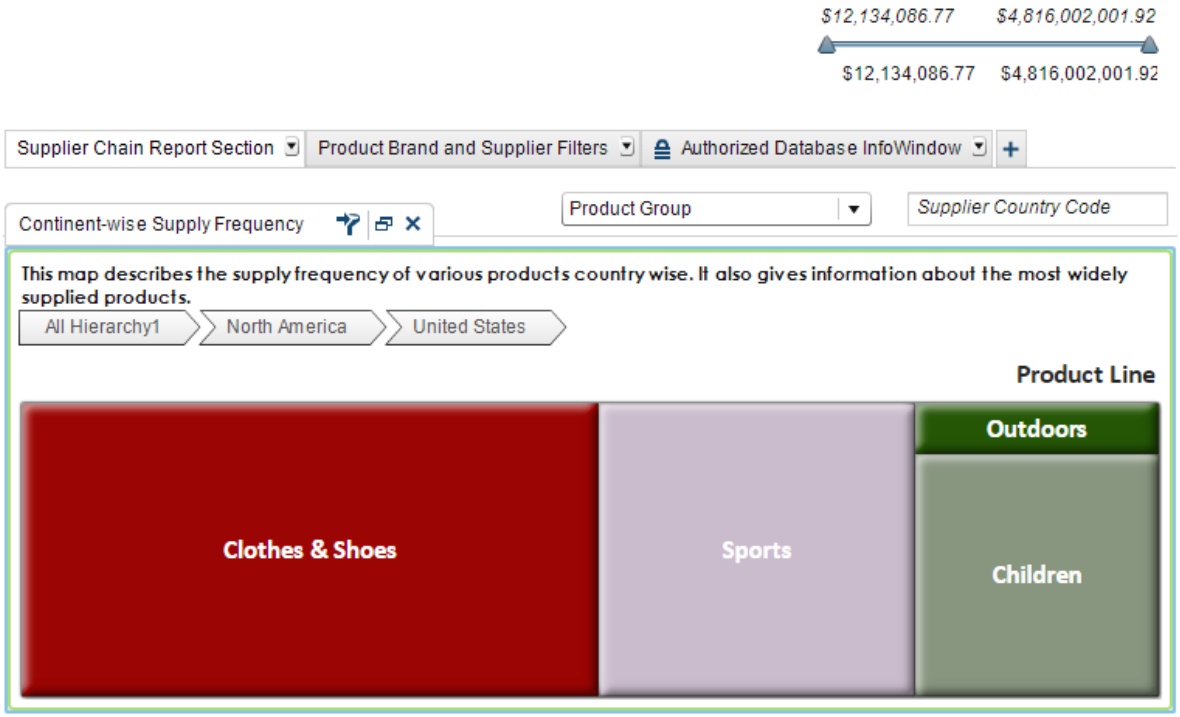
As we have used Hierarchy 1, when we drill down to any tile-

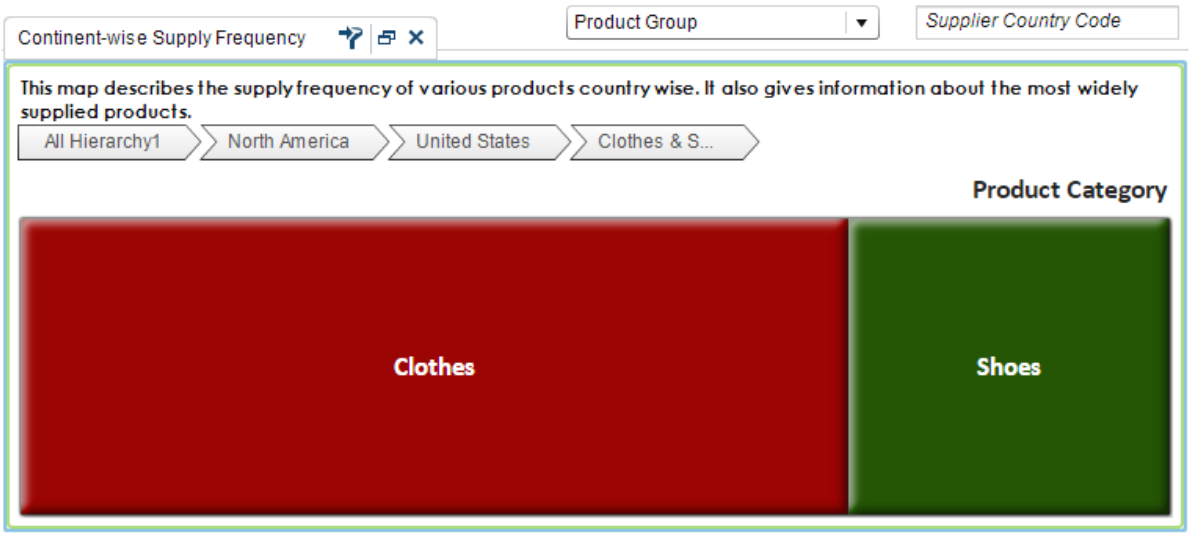
We get two options : one being the action to drill down to the next layer in Hierarchy (ex. Drill Down on North America) or View Authorized Database InfoWindow. This is because we have used InfoWindow link interaction for this object. Thereby any tile could be linked to the infowindow (which is viewable

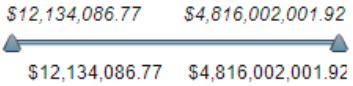
to report authors only) and all the details regarding the particular Product/Supplier/Continent etc. can be extracted.

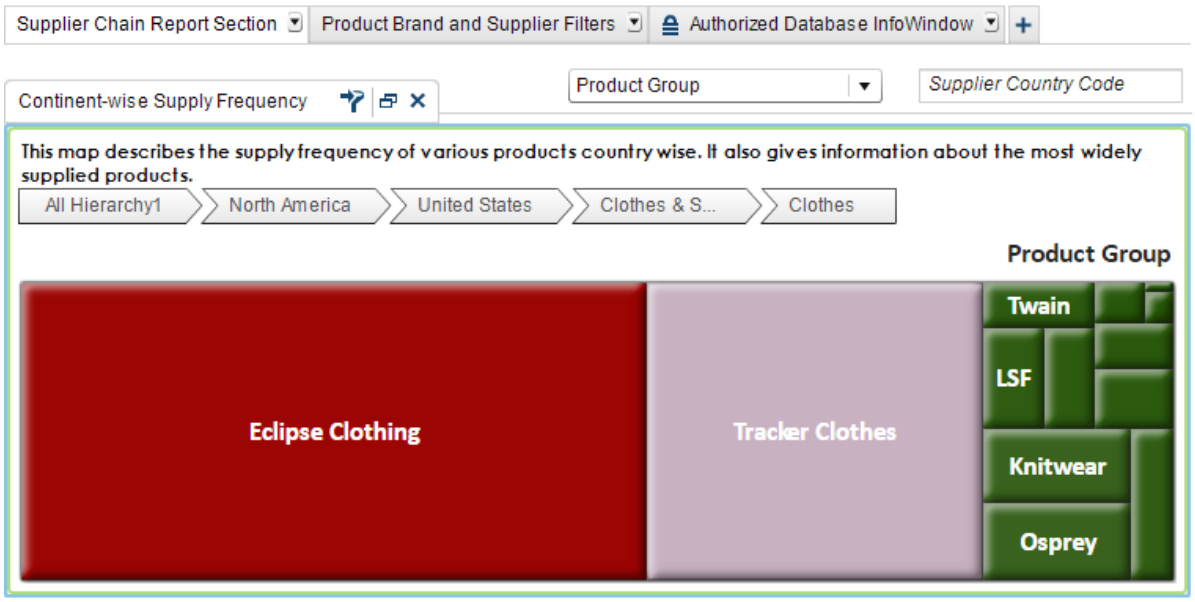
On further drilling down the hierarchy, we get-





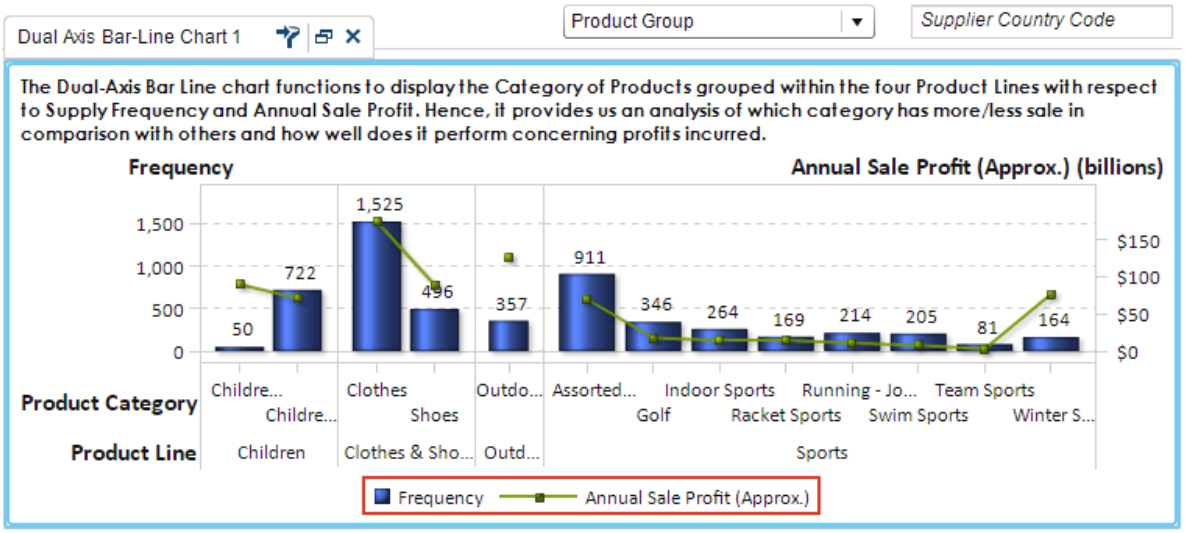




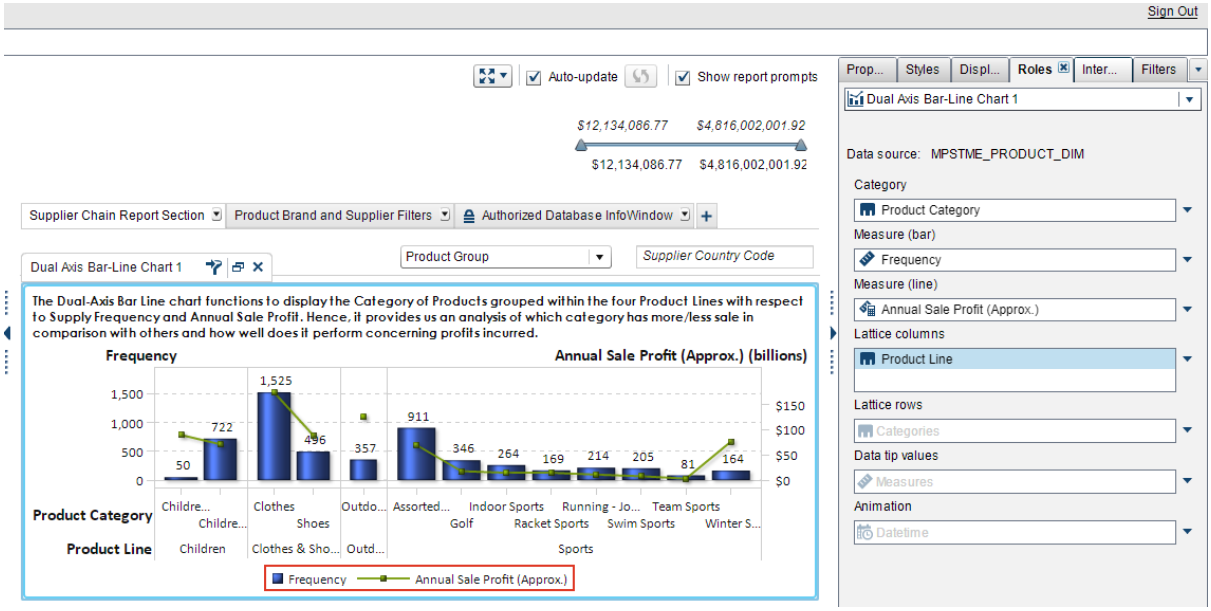


Hence, as the tile size corresponds to Frequency Percent, we can say for the last drill, Product Group Eclipse Clothing has the highest frequency percent because it is the largest tile amongst all. The dark red colour also indicates that it has the highest supply frequency.

2nd Object - Dual Axis Bar Line Chart for Product Categories



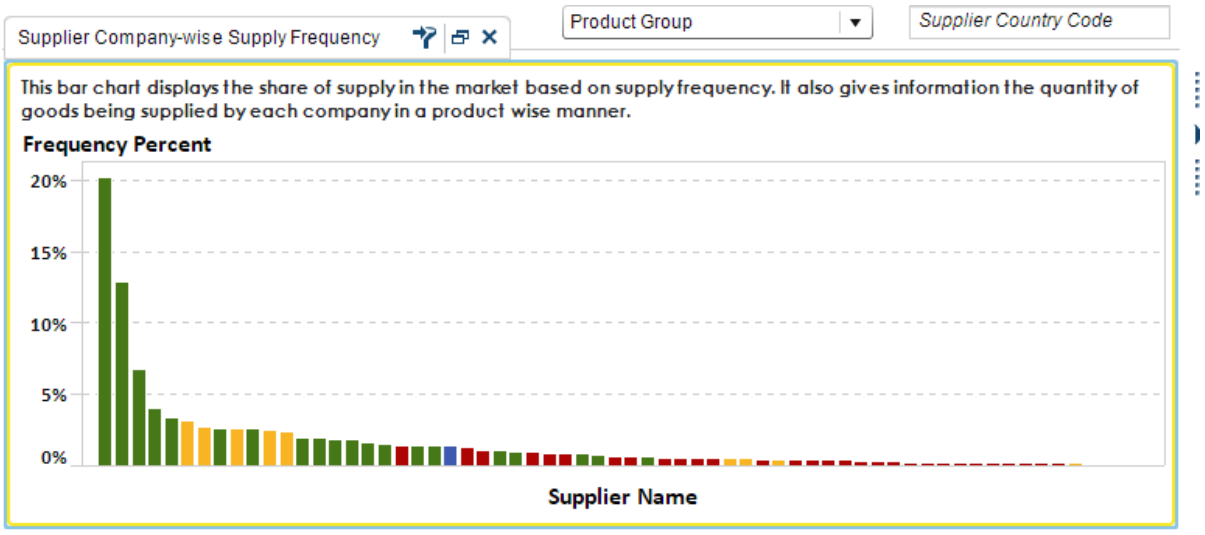
The roles panel for this object is-



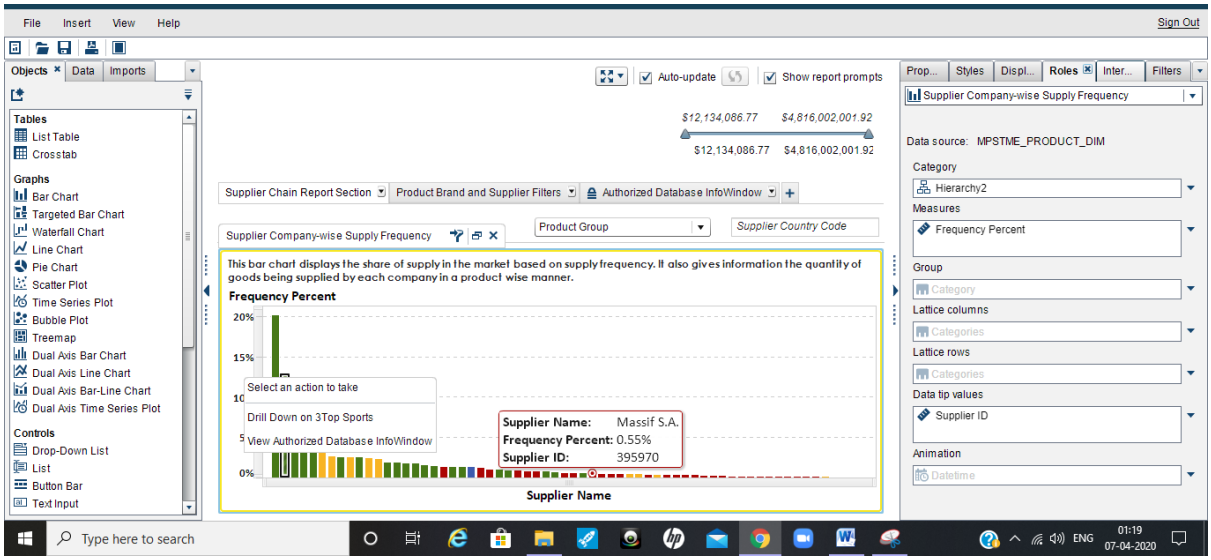
Looking at this graph, we can infer that there need not be any linear relation between Frequency and the Annual sale profit between different product categories. It is clearly seen in the first picture that some companies have low supply frequency but still end up capturing the profit market in comparison with its competitor categories. For example, The product Category ‘Racket Sports’ has its supply frequency 169 and annual sale profit equal to $14,503,934,064.99 which is very less in comparison to ‘Winter Sports’ which has its supply frequency lesser being 164, but still capturing a high profit gain

annually equal to $76,539,887,620.82. That makes almost 6 times of the profit of the latter one.

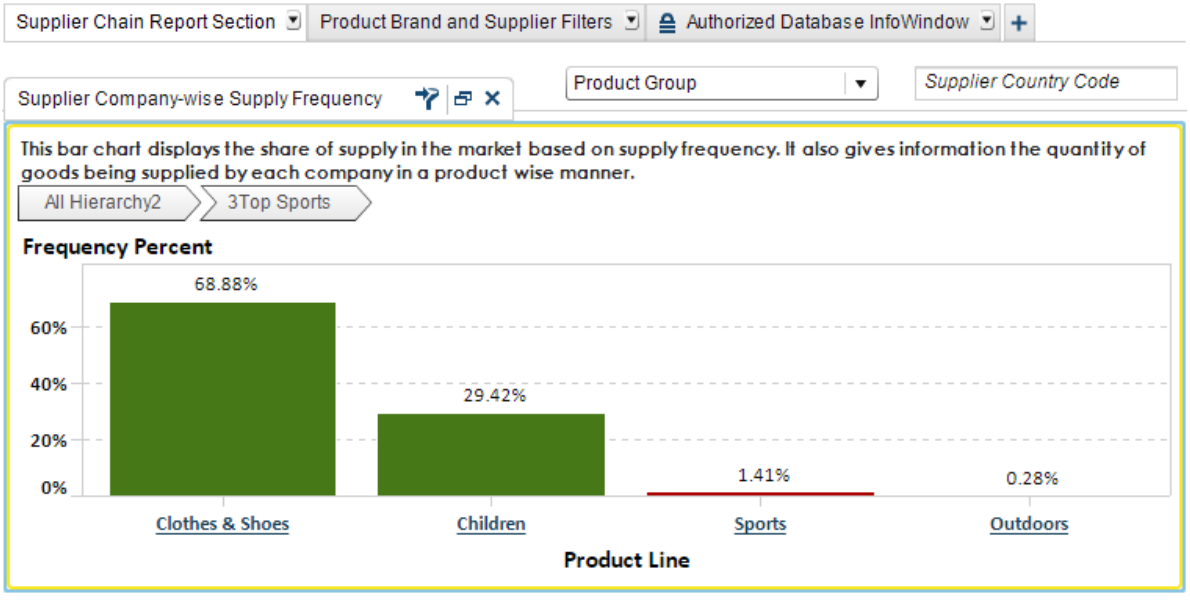
3rd Object - Supplier Company-wise Supply Frequency (Bar Chart)

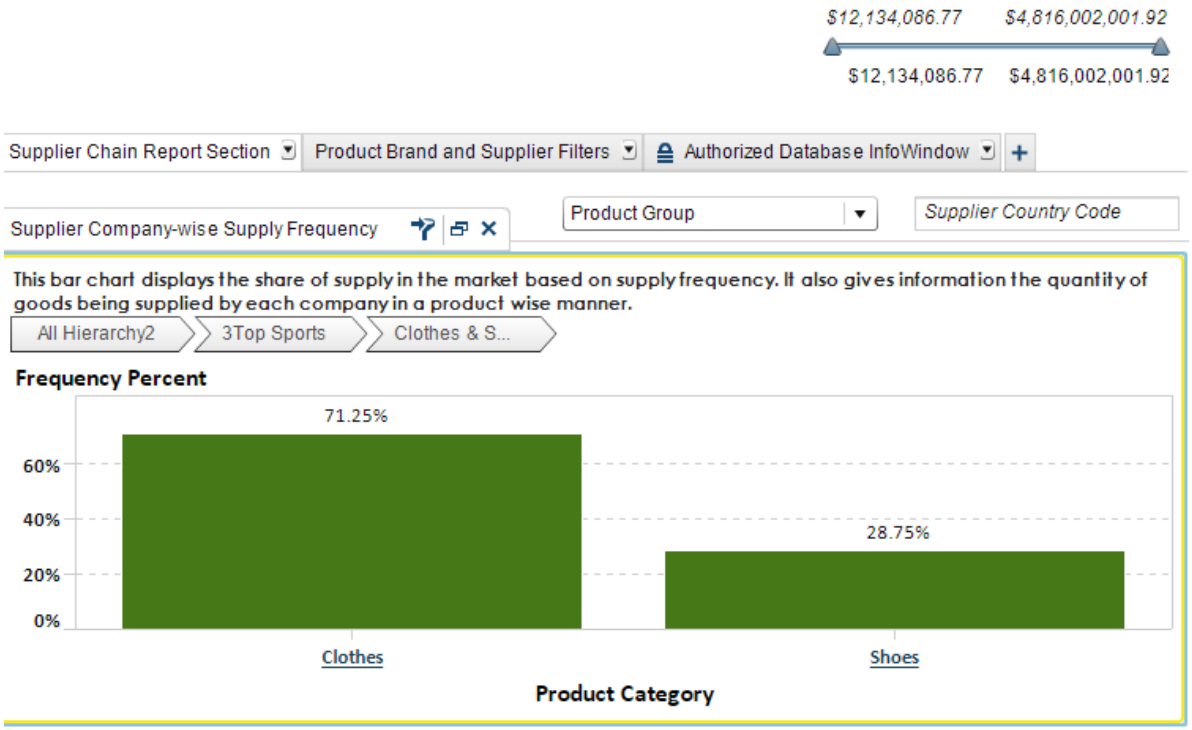


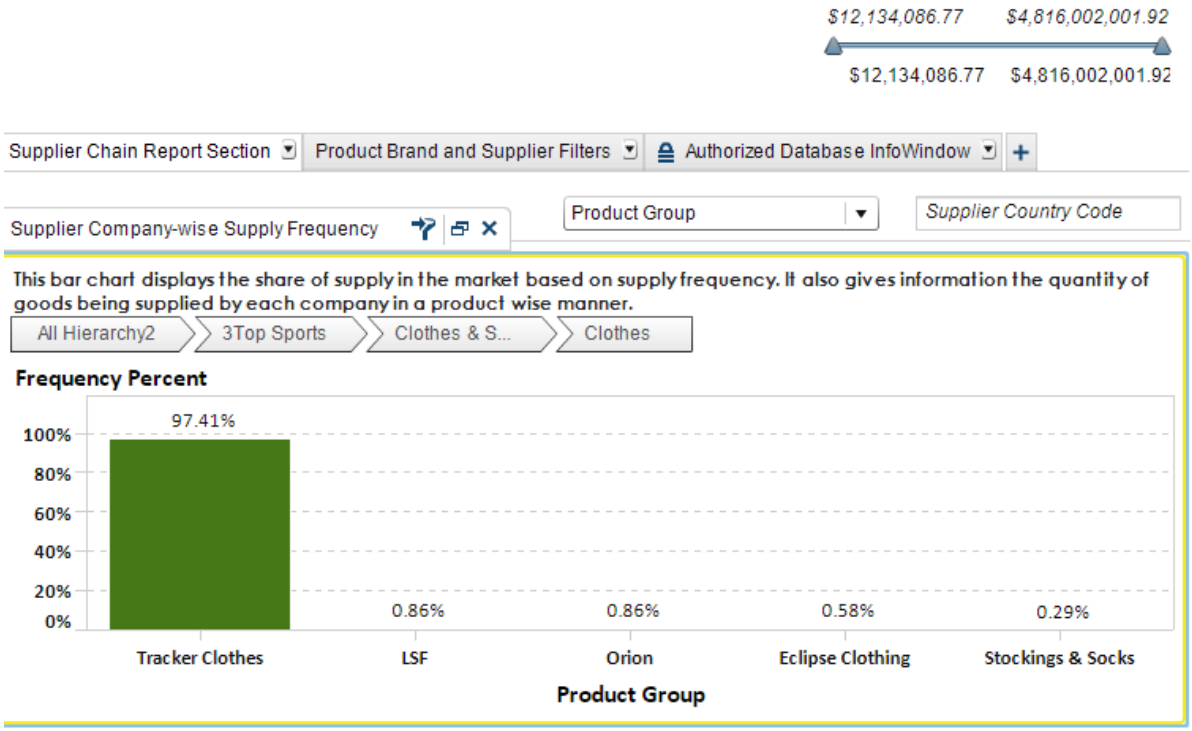
The Roles panel and Drilling down the hierarchy for this object is-



$12,134,086.77 $4,816,002,001.92
$12,134,086.77 $4,816,002,001.92







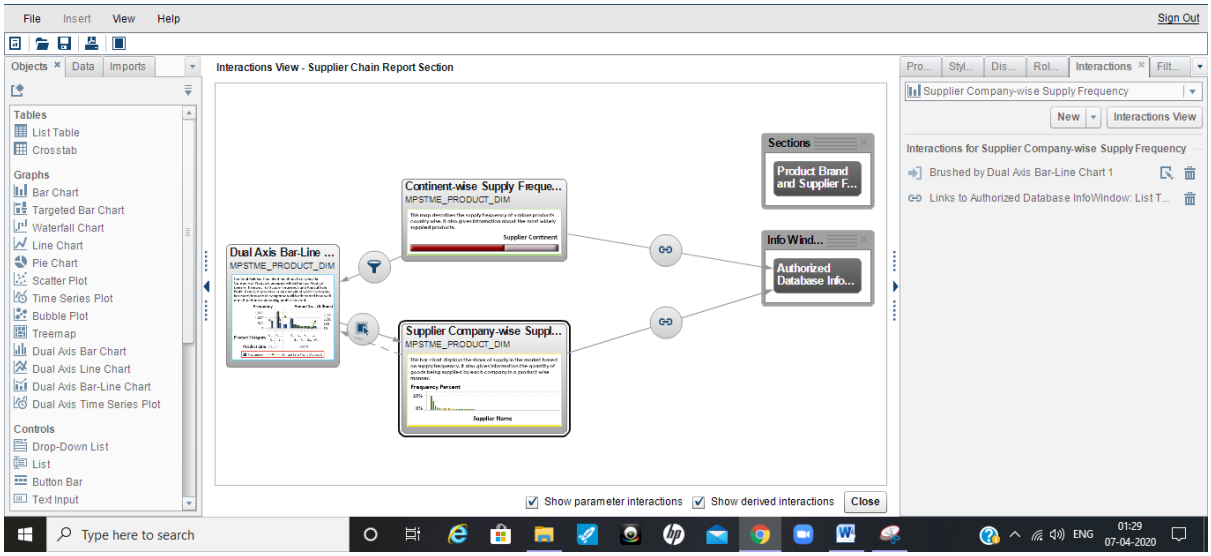
In this Drill down action, we realized that under the Supplier Name '3 Top Sports', it supplies 97.41% of Clothes from the Product group 'Tracker Clothes', 0.86% from 'LSF', 0.86% from 'Orion', 0.58% from 'Eclipse Clothing' and lowest being 0.29% of product group 'Stockings and Socks'.

The Display Rules applied on the Bar chart are as follows-

Companies gaining profit under 25% highlighted as RED, under 50% are highlighted as ORANGE and above 80% as GREEN. This kind of division helps us to select a supplier keeping in mind the profits incurred by its company.

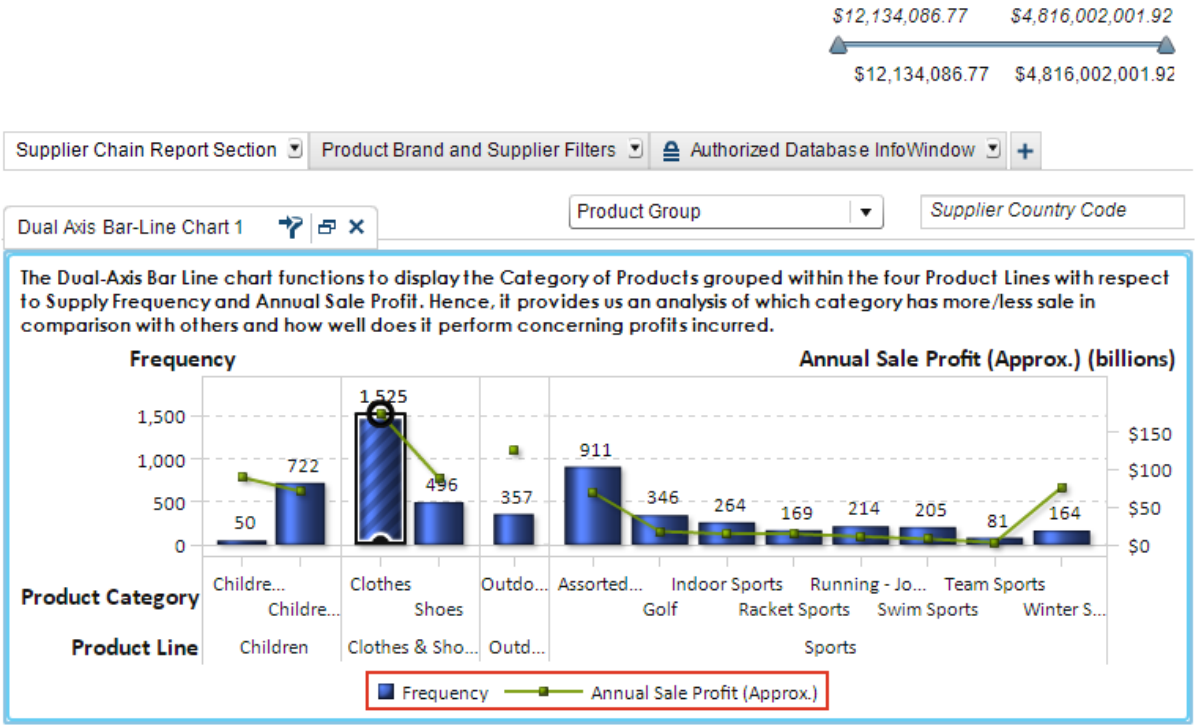
We have also applied interactions between different objects in this section :

Interaction View



Considering one case to depict interaction (brush type)-

We select a product category from the dual axis bar line chart-

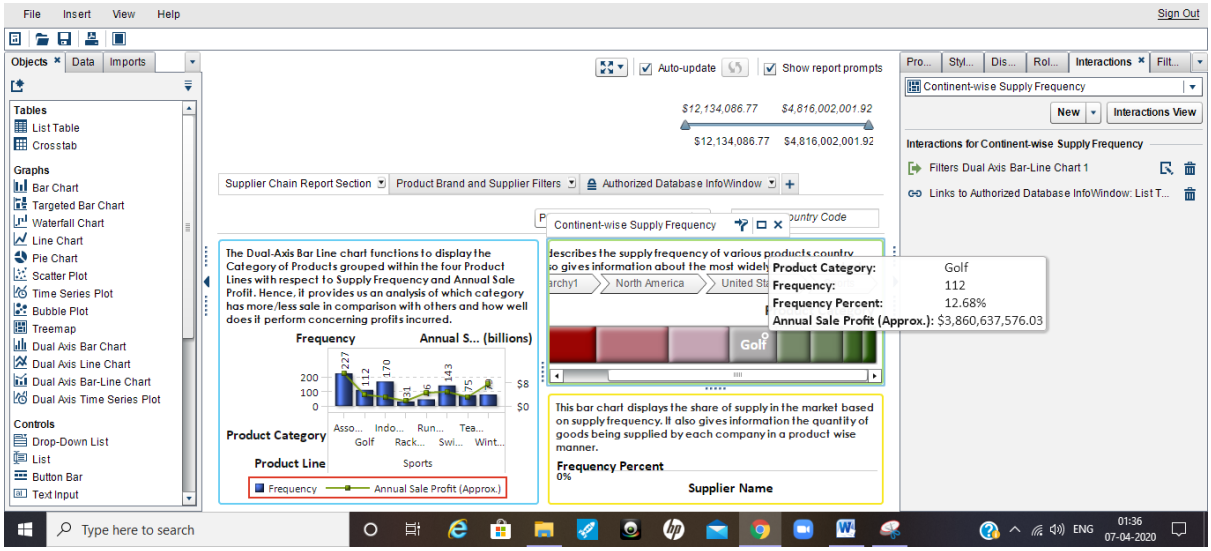


Now, if we want to know which all suppliers in the market are supplying the product category ‘clothes’, we look onto the bar chart –

The highlighted values show the supplier company names.

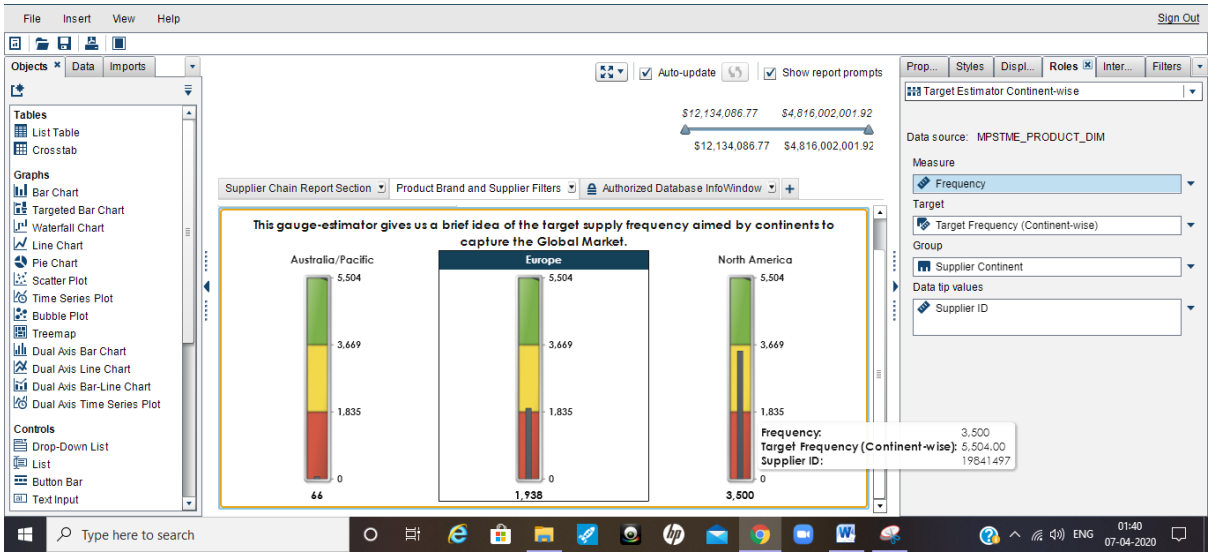
The significance of this interaction is that it helps us to identify the supplier based on our product needs within a big market of suppliers. Plus, it also helps us to choose them considering the annual profit whose idea is given by the colour mapped display rule.

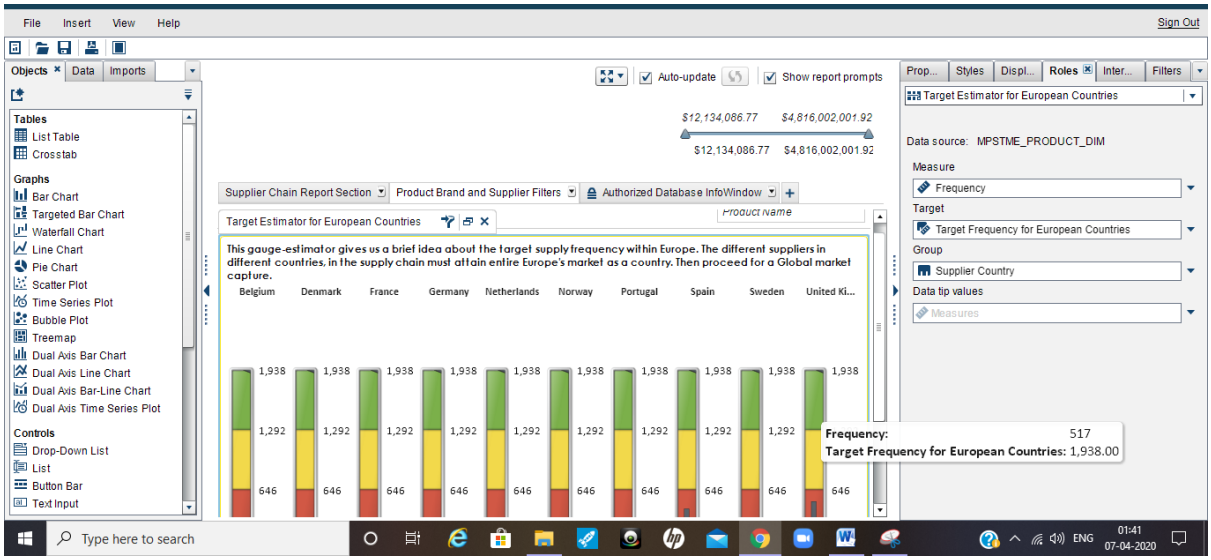
The tree map also filters the Dual axis Bar Line chart-



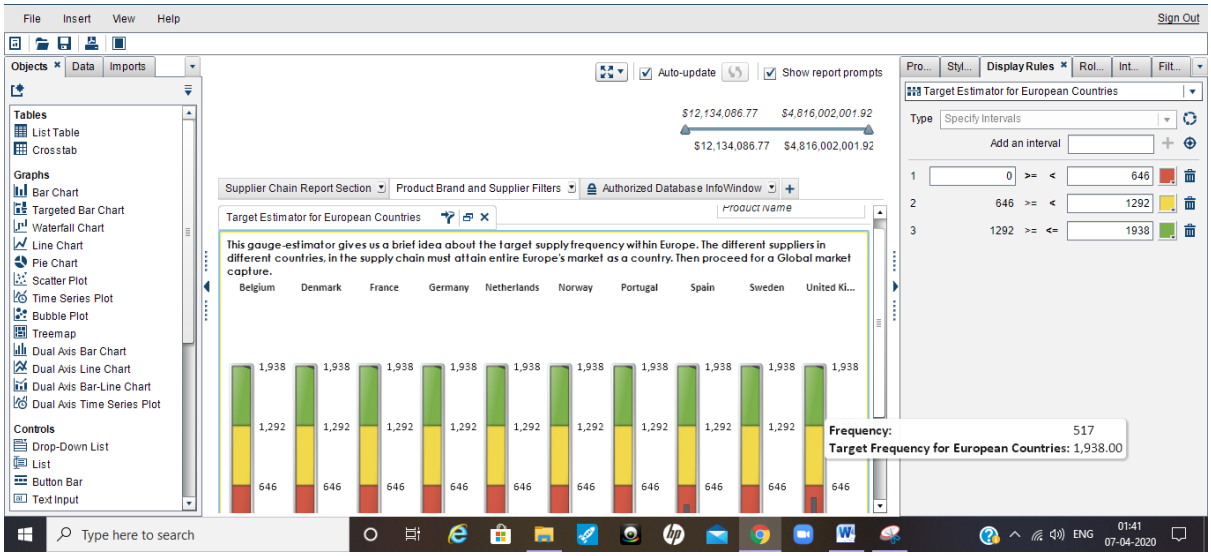
The Section Prompt consists of Text Input : Supplier Country Code and Drop-Down List : Product Group. This helps us to filter out the entire section as per our need.

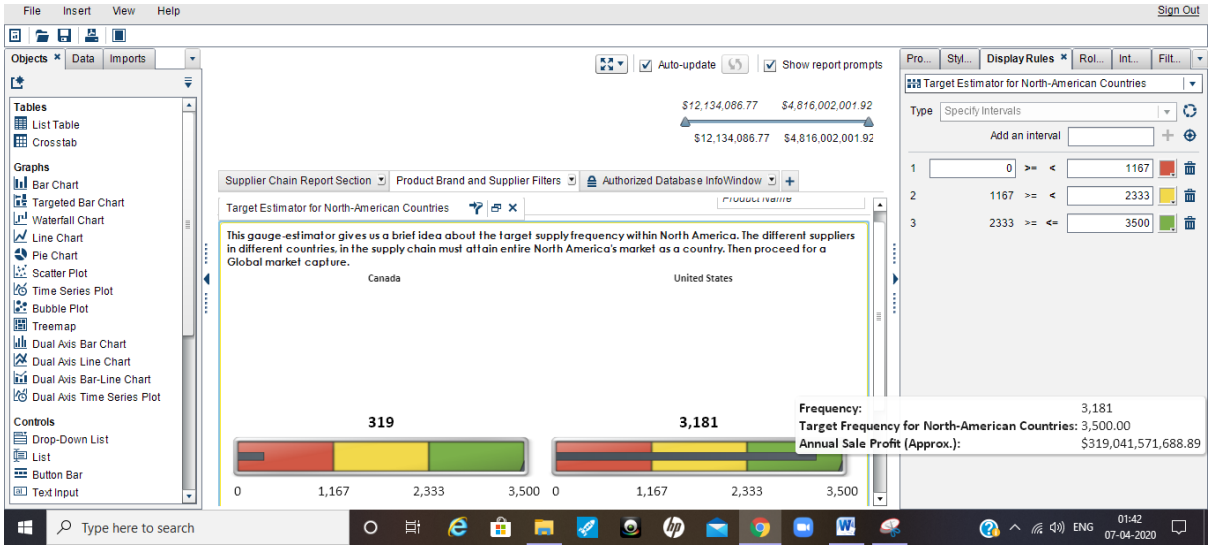
The **second section** consists of the following objects –



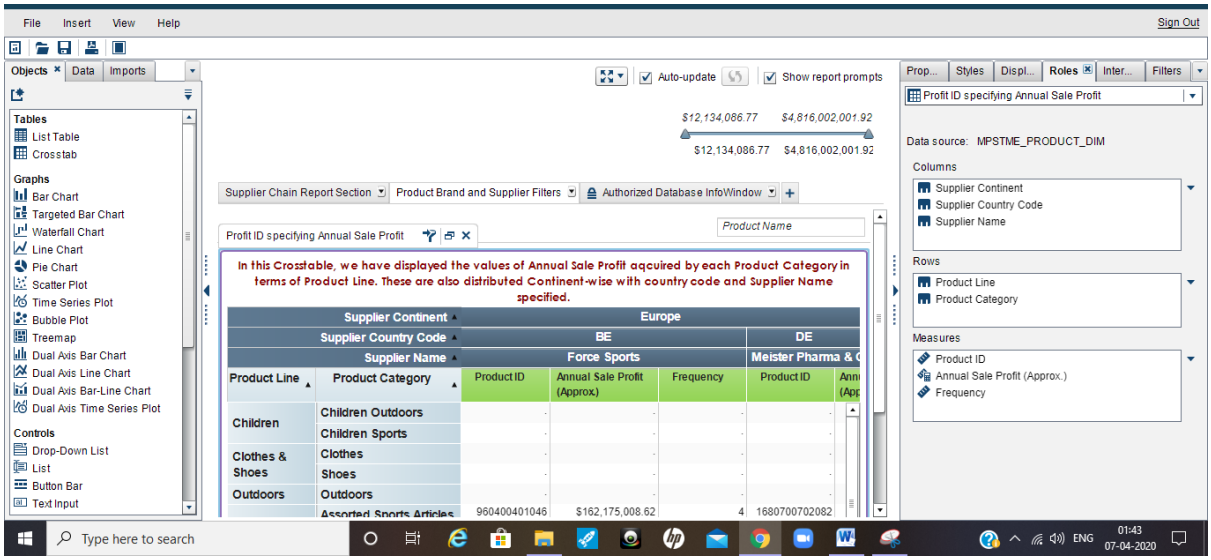


Display Rule :

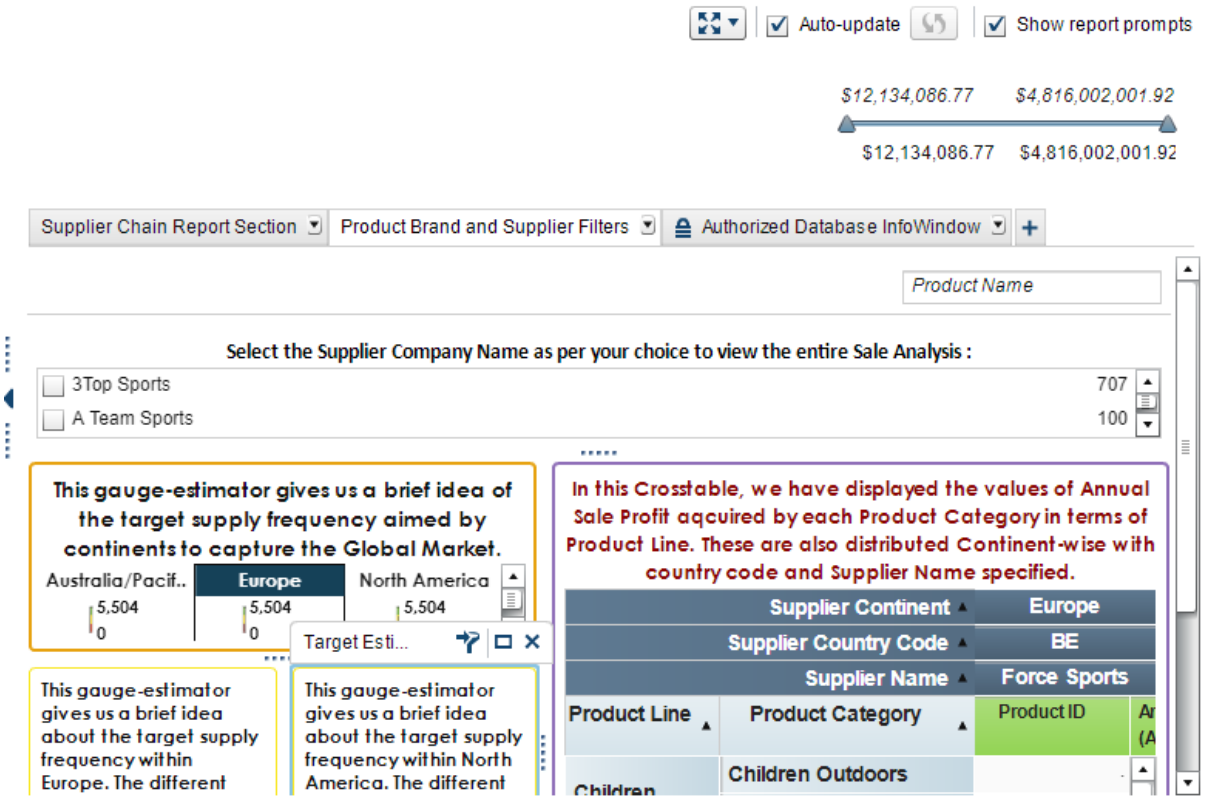




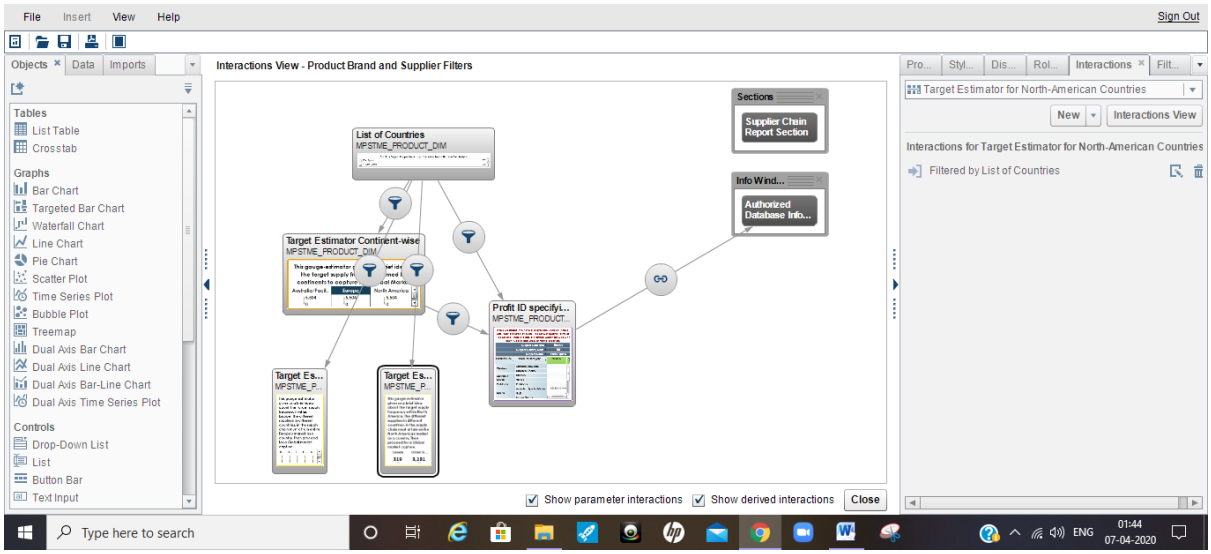
The crosstable consists of –



The Report and Section Prompt consist of –



The Interaction View for the Second section is as follows-



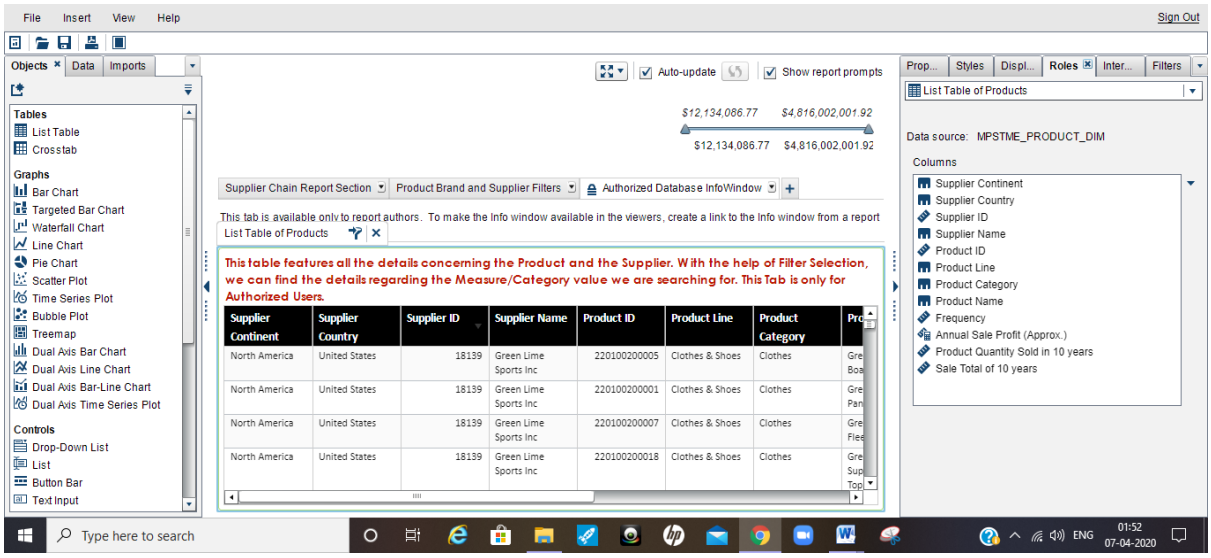
Interpretation – The project represents a grim scene for the global market. The supply is down worldwide, except for the United States. The United States seems to have a strong consumer market, which is helping it thrive in these difficult times. Australia/Pacific seems non-existent on the global scenario, and seems to be the worst hit. Europe is in a bad condition, but it is better than the Australia/Pacific. The supply has taken a hit, which naturally means that the consumption has also suffered, since enough quantity of goods is not being supplied. It is a scenario in which both the producers and the consumers are the big losers.

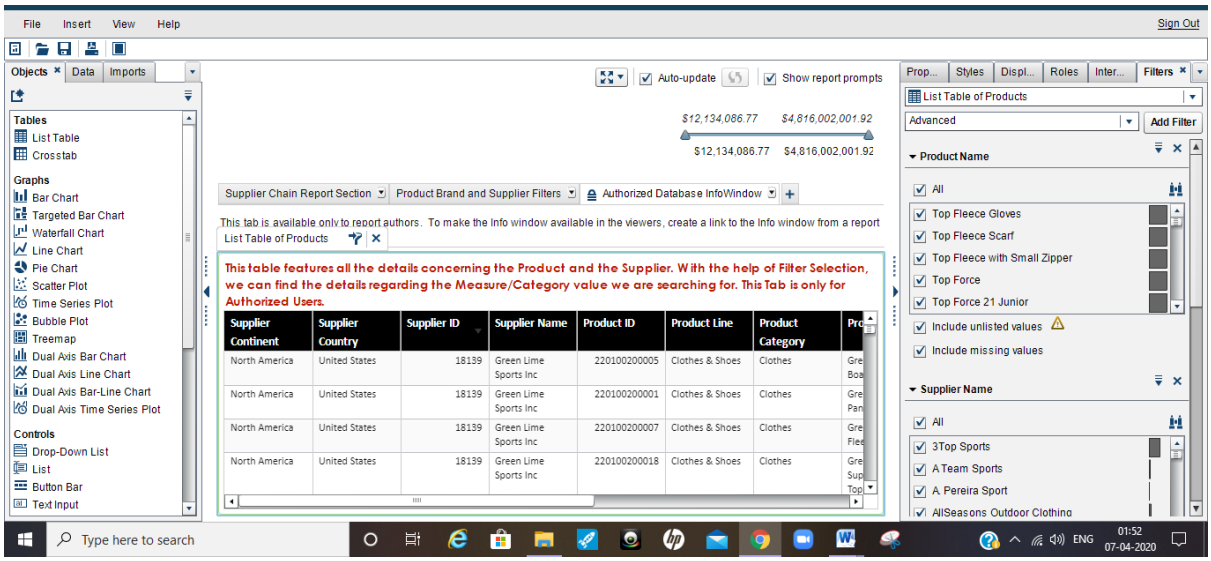
The InfoWindow Section is the last section which gives us an idea about the Entire dataset at a time. Since, we have used interactions with the crosstable, bar chart and so on. Any Product or Supplier name or Product Id value can be drilled down to the infowindow. This is a very important aspect when it concerns the report authors because all the details are available to the author at a time when he clicks on any item that he wants to have more knowledge about.

The infowindow has all the entries of the dataset in our case. We have also added colour mapped values in a bullet indication which will show the colours

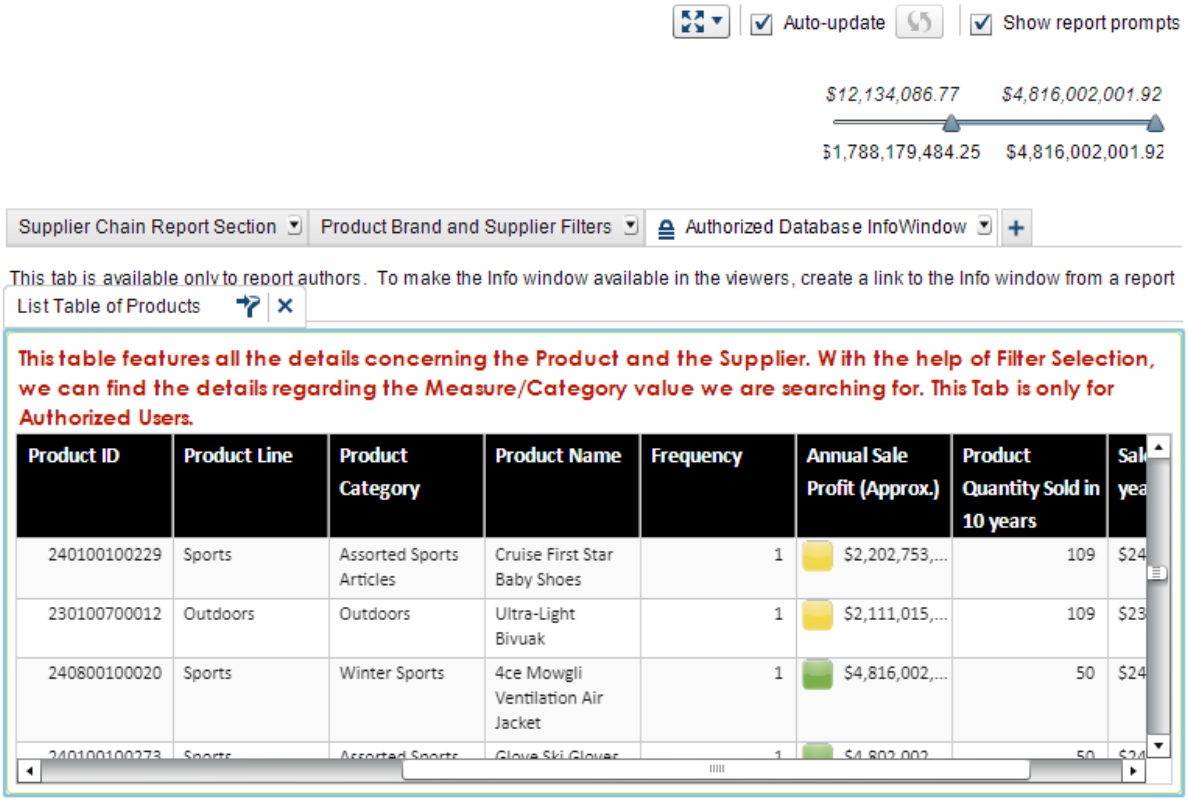
red, orange or green based on the classification explained earlier in the project.

We can also use normal filters to find the details regarding a particular item.





The effect of change in the slider which decides the Annual Sale Profit (Approx) Value is reflected in the infowindow. The change of colours indicates the same.



From this project, we can conclude that that the United States has the strongest market in the world. Its high value is enough to cover for the poor performance of Canada, and also to make North America the strongest inter-continental market, and the best global market. The United States also is the best performing country, boasting numbers which are the best in the given scenario.

----------X—X---X---X---X----------