Engineering Core

Exercise: Visualizations using Tableau

EN6001

Assignment-2

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❖ Problem Statement:

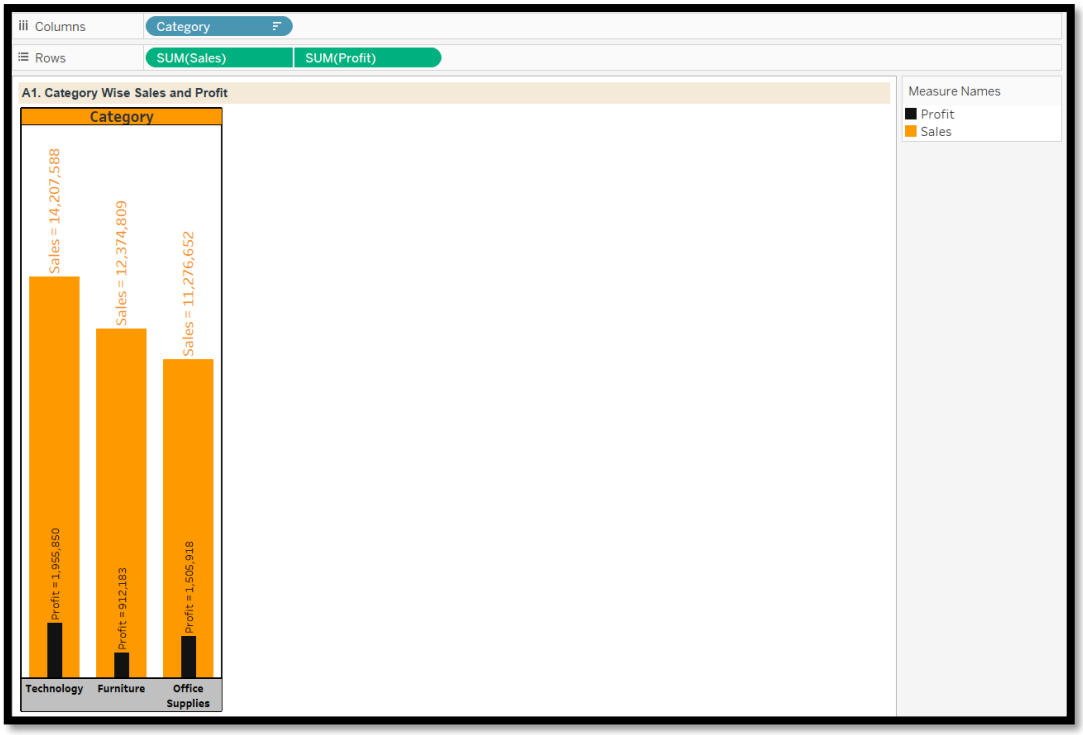
To create various visualizations as per the details provided. They will explore various features and capabilities of the tool that they learnt in the course.

❖ Chosen Color-Theme:

❖ A) Co-Relation Chart type

1. Category Wise Sales and Profit.

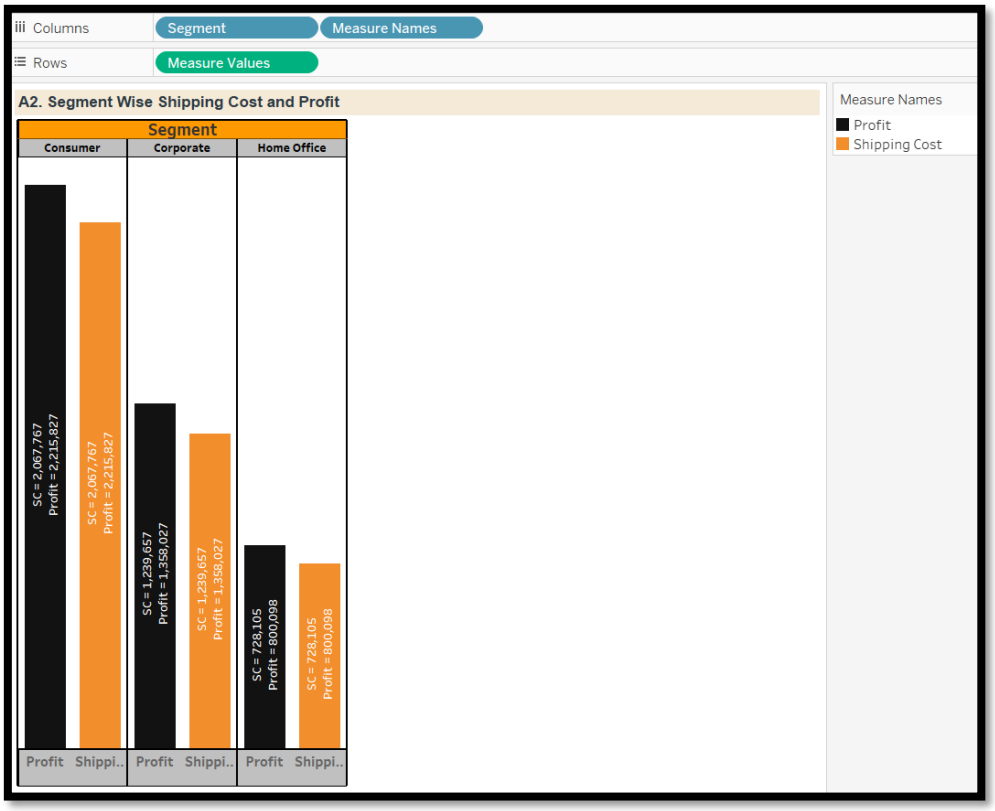
Solution:



Inference: This Graph shows us the category wise sales and profit where Technology has the highest profit and sales then Furniture has second highest sales but its profit is less as compared to office supplies. This means Technology and office supplies are doing good w.r.t their sales but we need to see why Furniture is not growing in terms of profit even its sales are good.

2. Segment Wise Shipping Cost and Profit

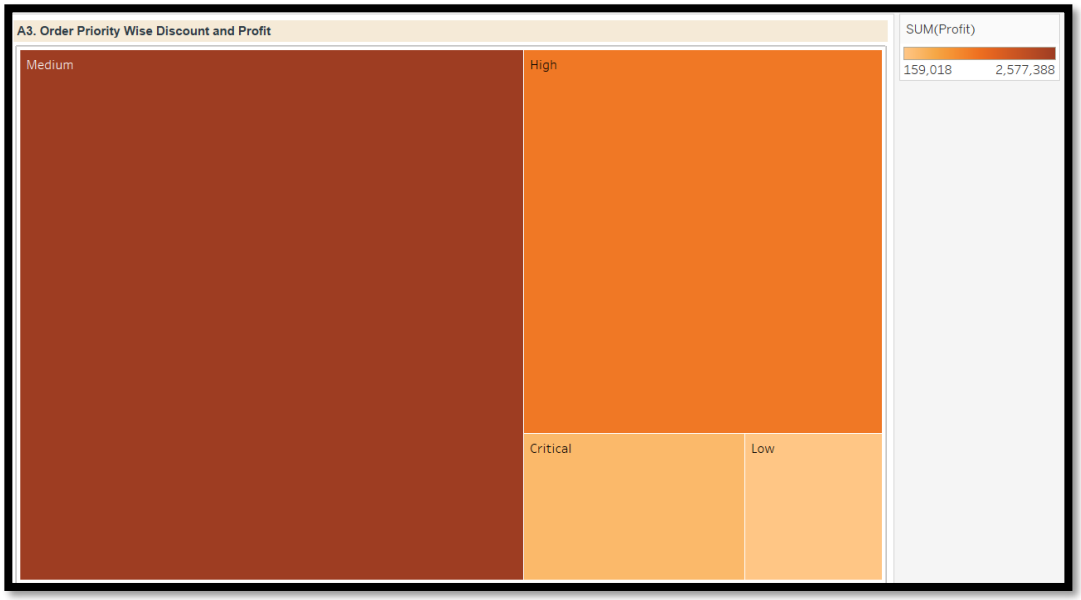
Solution:



Inference: This Graph shows us the Segment wise shipping cost and profit where the consumer segment has the highest profit and shipping cost then corporate and the least is home-office. And the Corporate are good as of now but we need to be concentrated more about profit on Home Office. Secondly, we need to find ways to reduce shipping cost in consumer segment.

3. Order Priority Wise Discount and Profit

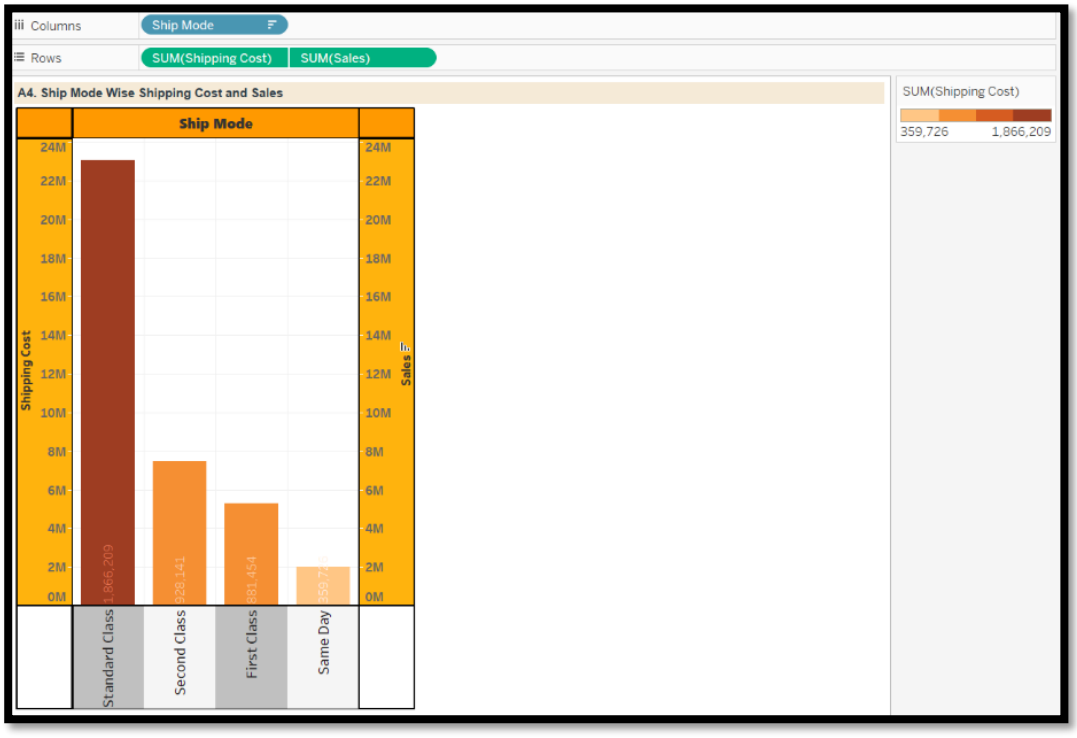
Solution:



Inference: This Graph shows us the Order Priority Wise Discount and profit where the "Medium priority" has the highest profit and Discount then High then Critical and the least is Low and as of now we have to look in the critical & Low priority profits and must find ways to either improve them or keep more products of Medium and High priority.

4. Ship Mode Wise Shipping Cost and Sales

Solution:

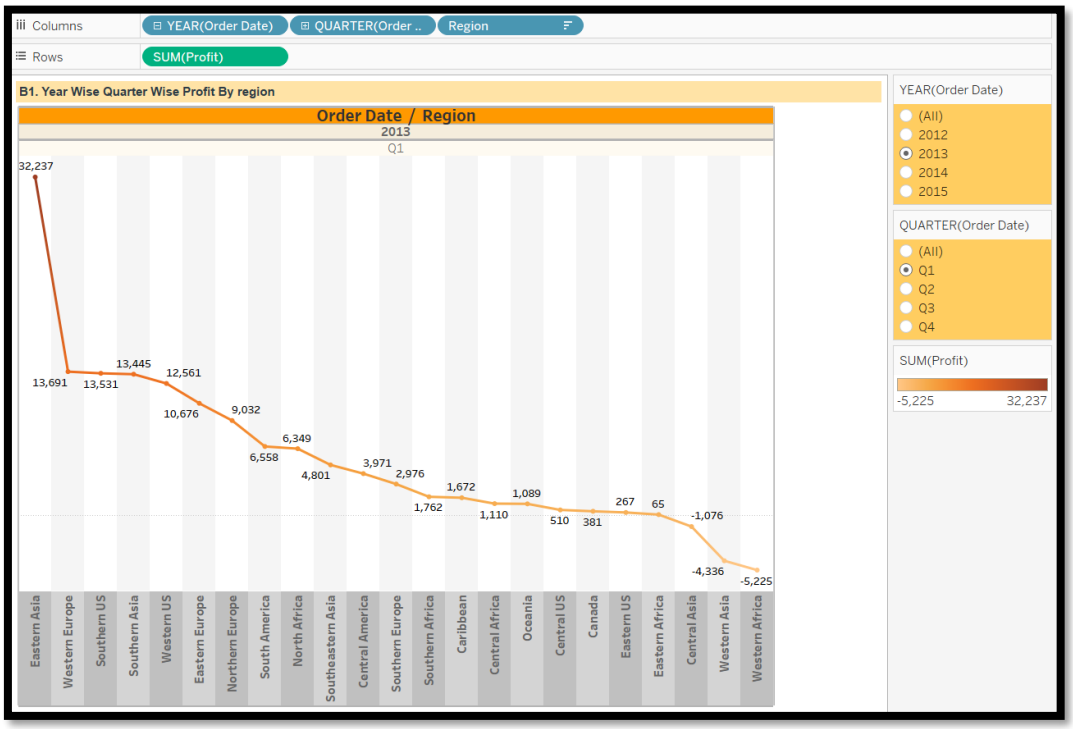


Inference: This Graph shows us the Ship mode Wise Shipping Cost and sales where the Standard class has the highest Shipping Cost and sales then Second class then First class and the least are Same day. For now, Same day has given the cheaper sales so we have to concern more about it. others are pretty good. Secondly, we need to find ways to reduce shipping cost for Standard-Class.

❖ B) Trend Line Chart type

1. Year Wise Quarter Wise Profit By region

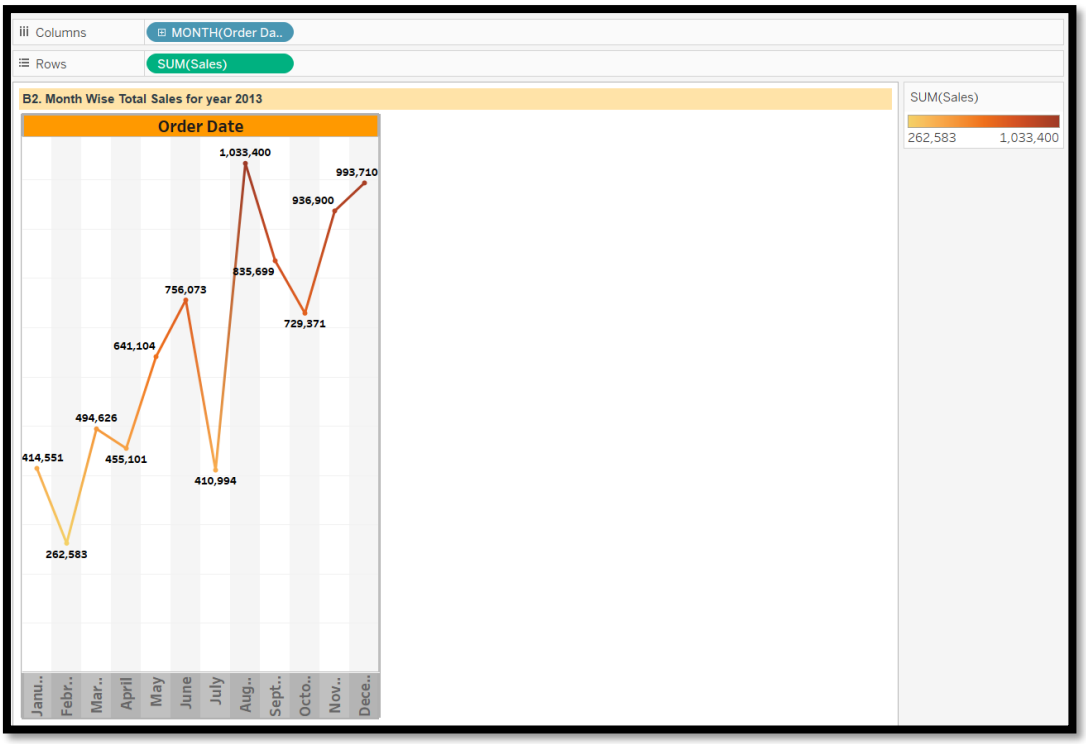
Solution:



Inference: This Trend Line Graph shows us the Year Wise Quarter Wise Profit by Region So here we put filter in Quarter and year and then we choose the Quarter and Year so the graph will show the respective year wise quarter wise profit by region.

2. Month Wise Total Sales for year 2013

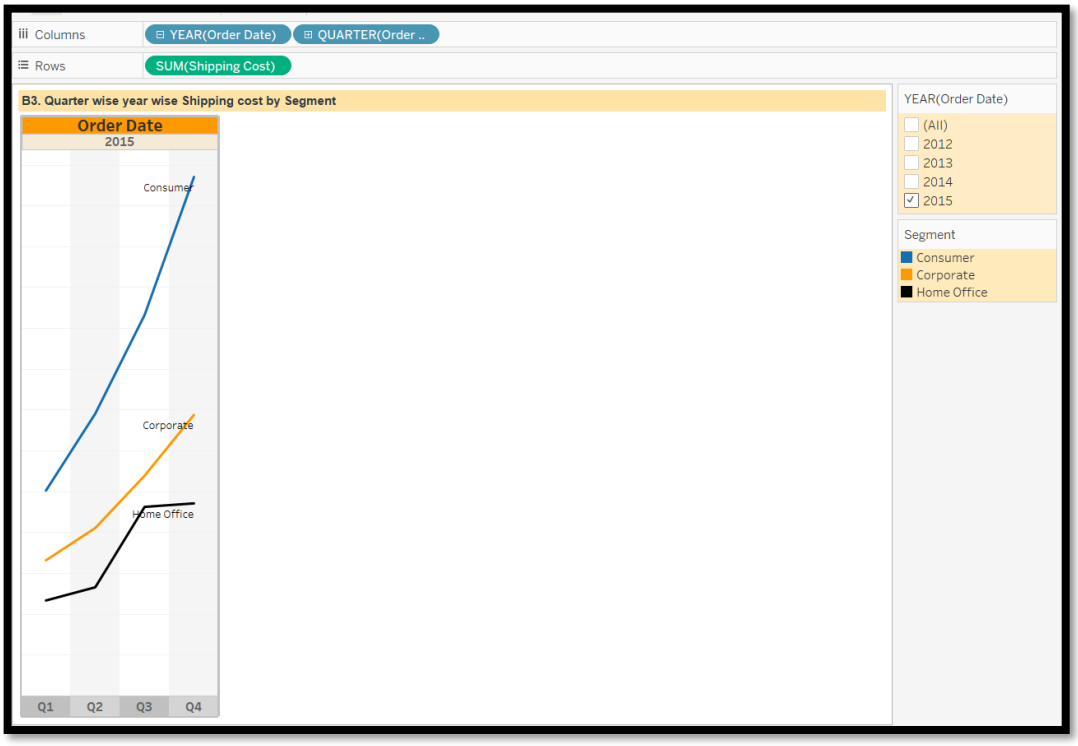
Solution:



Inference: This Trend Line Graph shows us the Month wise total sales for 2013 and we see to the chart then we got to know that in the month February there is the least sales. And we need to know why that happened in February 2013 so that we can plan accordingly for coming February's.

3. Quarter wise year wise Shipping cost by Segment

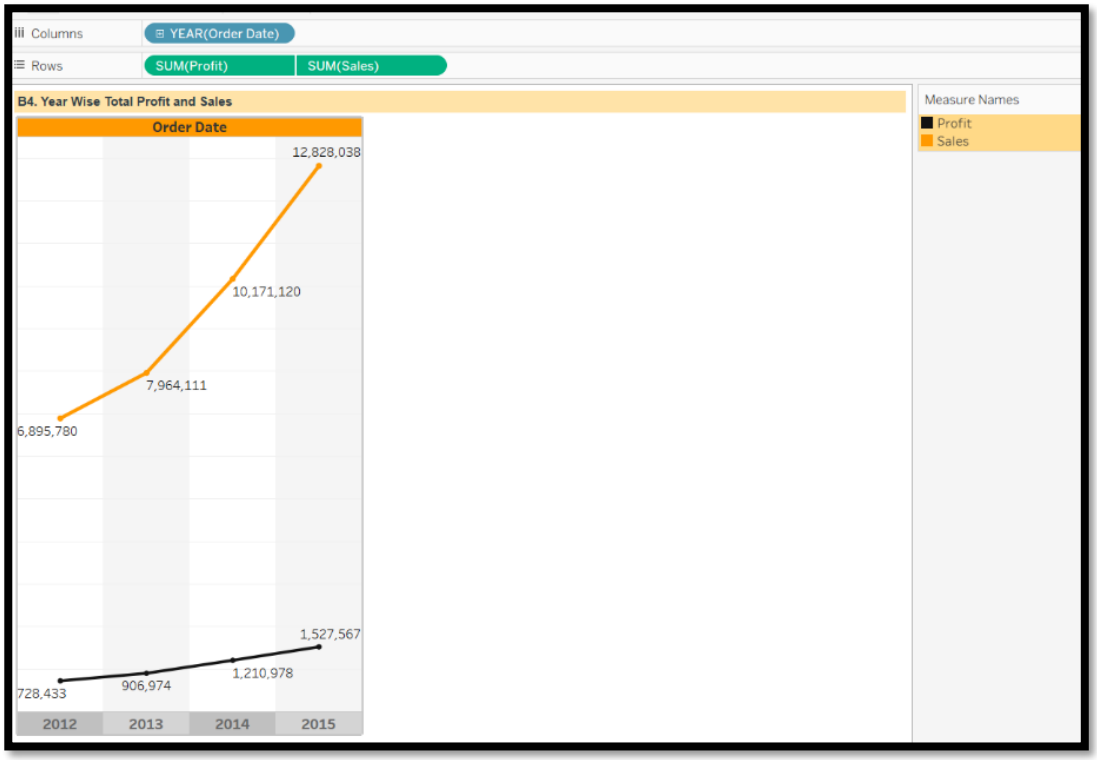
Solution:



Inference: This Trend Line Graph shows us the Quarter Wise year Wise Shipping Cost by segment where the blue colour shows us the Consumer shipping cost, the orange colour shows us the corporate Shipping Cost and the black colour sows the Home Office Shipping cost. For now, we need to concentrate more on Home office. Secondly, shipping cost has increased significantly in consecutive years so we need to keep a control on it too.

4. **Year Wise Total Profit and Sales**

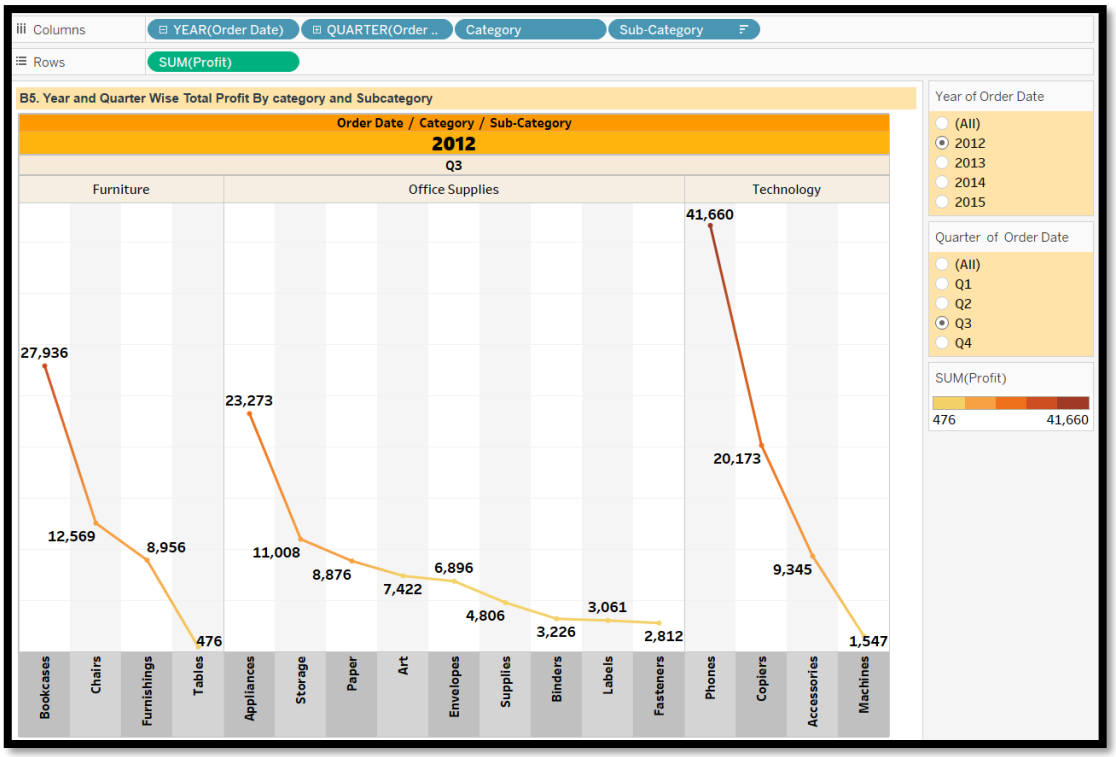
Solution:



Inference: This Trend Line Graph shows us the Year Wise Total Profit and Sales where the Black section of graph will show the Profit and the Orange graph will show the Sales. The sales have increased a lot between year 2014 and 2015 but the profit didn't increase accordingly.

5. **Year and Quarter Wise Total Profit By category and Subcategory**

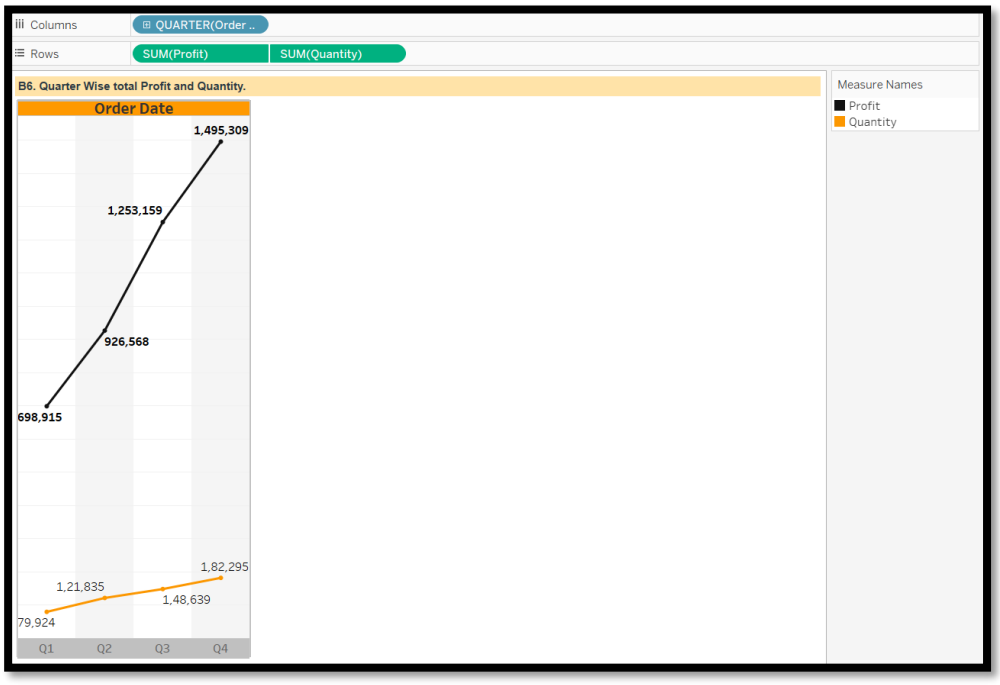
Solution:



Inference: This Trend Line Graph shows us the Year and Quarter Wise Total Profit by Category and Sub-Category So here we put filter in quarter and year and then we choose the Year and quarter so the graph will show the respective Year and Quarter Wise Total Profit by category and Subcategory. And if we see the graph properly in year 2012 Quarter 1 has the least profit and we can also find out the least profit for different years by changing the year.

6. Quarter Wise total Profit and Quantity.

Solution:



Inference: This Trend Line Graph shows us the Quarter Wise Total Profit and Quantity. This graph is only for the year 2012 and in this Quarter 1 has the least profit and Quantity. This tells that the companies profit increased in quarter-4 and quarter-1 has least profit w.r.t quantity.

❖ C) Group/Sets, Matrix Report, Tabular Report - Draw Various Charts, use various colour options, tooltips, labels, background colors, fonts, etc.

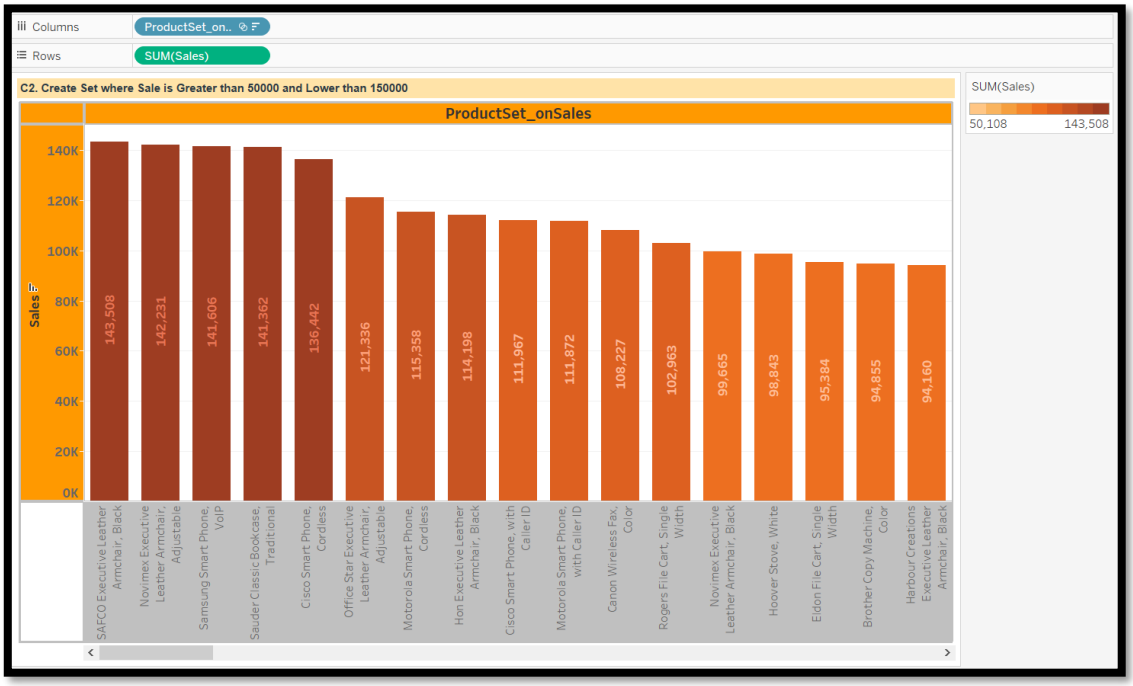
1. By Using Sets create top 10 Products by Sales

Solution:

Inference: In this graph by using sets, we have to creates top 10 product by sales and for that I'd make the sets of the products for top 10 and then find out the top 10 products and their sales.

2. Create Set where Sale is Greater than 50000 and Lower than 150000 (w. r. t. to product name)

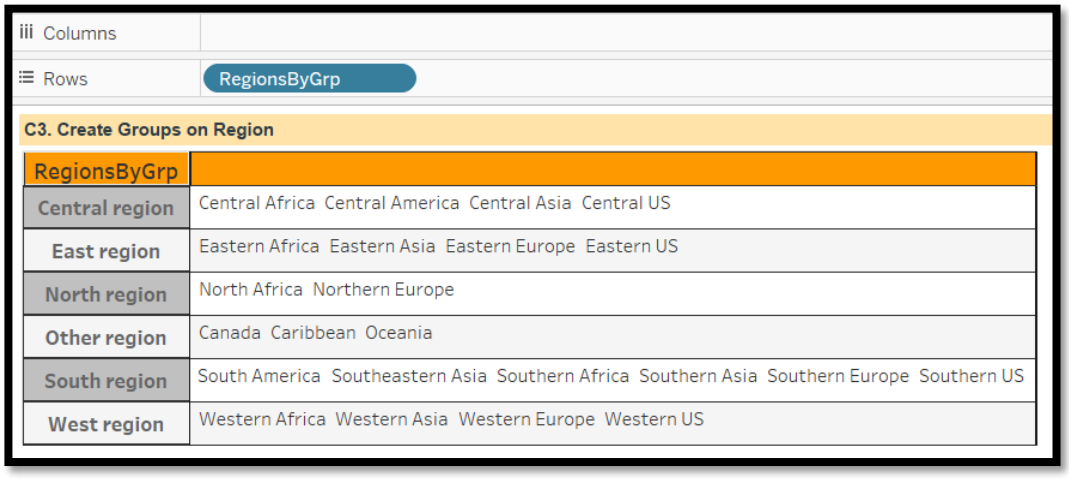
Solution:



Inference: In this graph we have to create the set where the sales is greater than 50000 and lower than 150000 by products so here I'd make the set of sales with the condition where the sales is greater than 50000 and lower than 150000 and then I'd plot this with respect to the sum of sales.

3. Create Groups on Region

Solution:

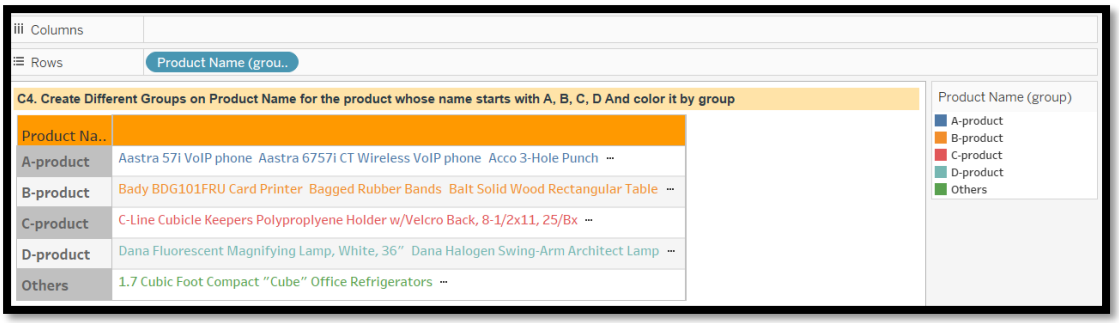


Inference: In this graph we have to create group on region on sales so for creating the group I'd make 6 groups like all the regions which belong to the North side are

all on the 1 group and the same thing with South, East, west and others then plot with sales.

4. **Create Different Groups on Product Name for the product whose name starts with A, B, C, D And colour it by group**

Solution:

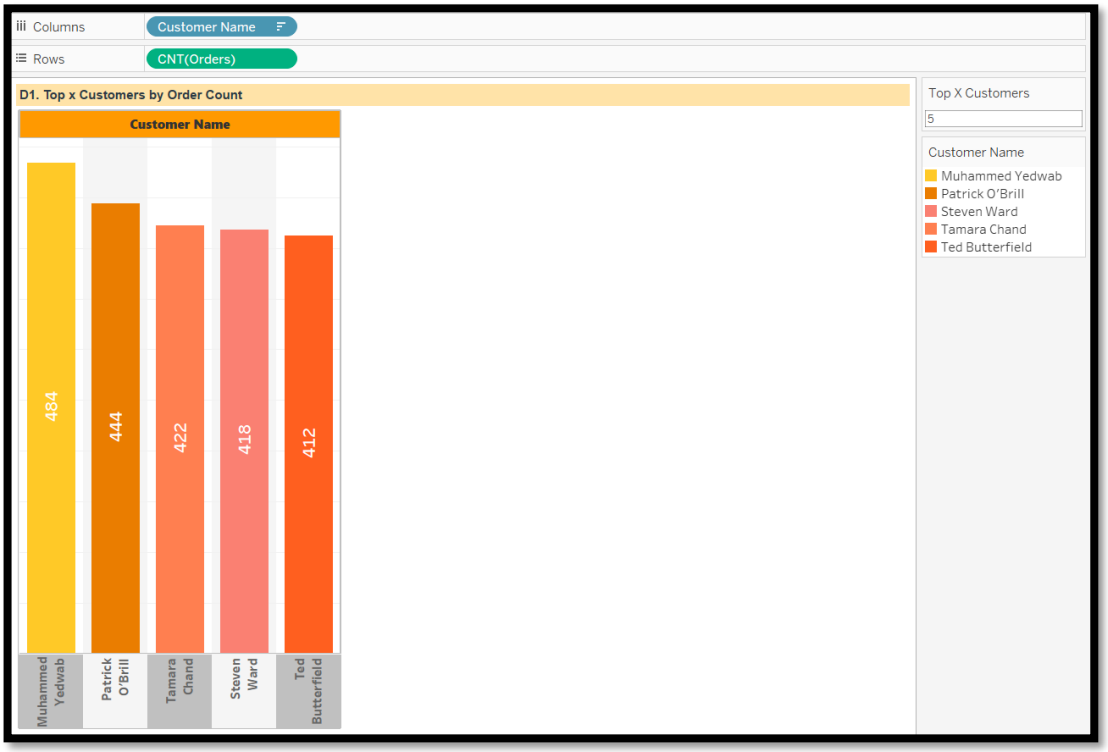


Inference: In this graph we have to create the Create Different Groups on Product Name for the product whose name starts with A, B, C, D and color it by group So I did the same thing for this also I'd make the group of product whose name starts with A, B, C, D and plot it with sales.

❖ D) Parameter

1. **Top x Customers by Order Count**

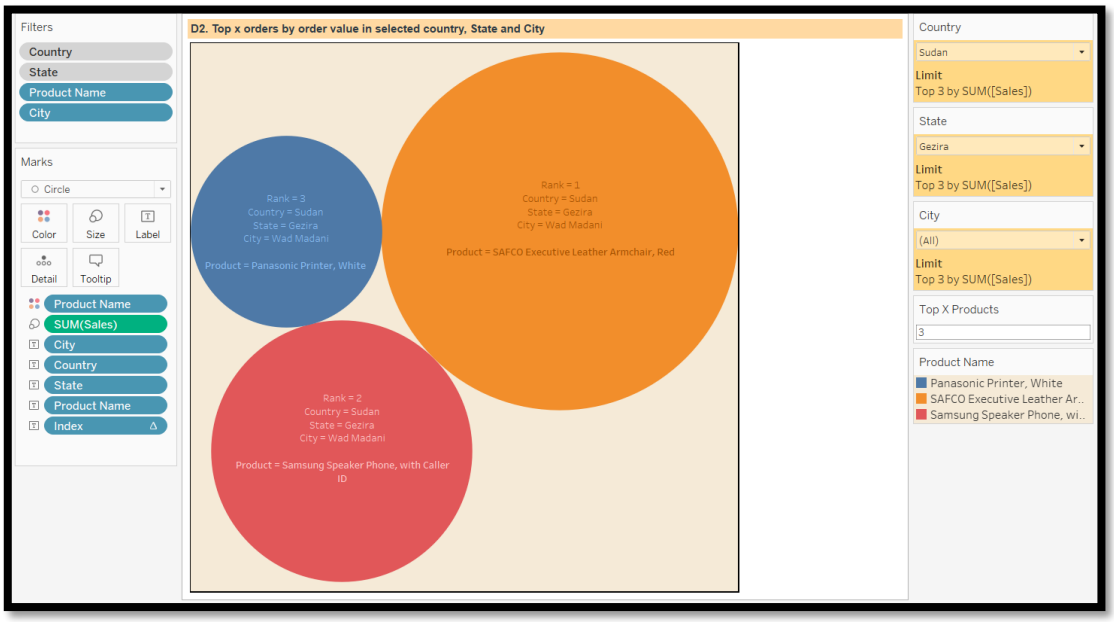
Solution:



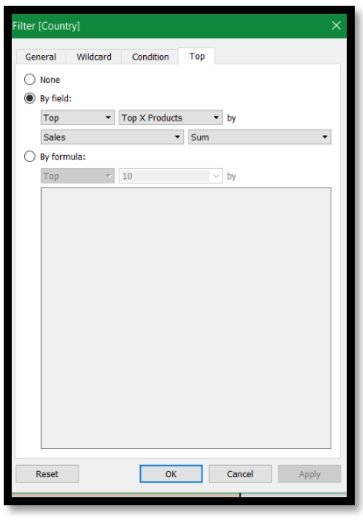
Inference: This Graph shows us the Top X customers by order count so for that I'd make a parameter and then make the set for the customer and on the condition, I'd add the that parameter to the customer set and then put the set on the filter and plot the graph with order count.

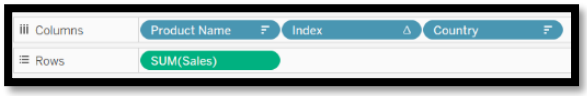
2. **Top x orders by order value in selected country, State and City**

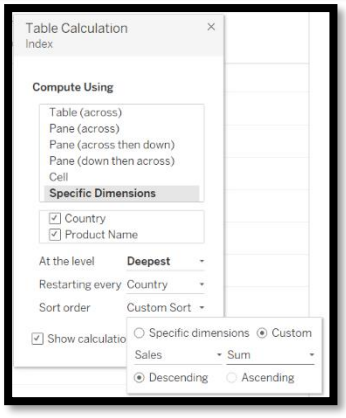
Solution:



Inference: This Graph shows us the Top X orders by order value in selected country, State and City so for that I'd do the same thing firstly I'd make a parameter and then made a calculated field with INDEX () function and edited its table calculation as we need top x orders (products) by sale for selected country, state and city. We need to apply "ADD TO CONTEXT" logic too. I have placed Index in between Product name and Country. Product name and country both are filtered with "Top X products".

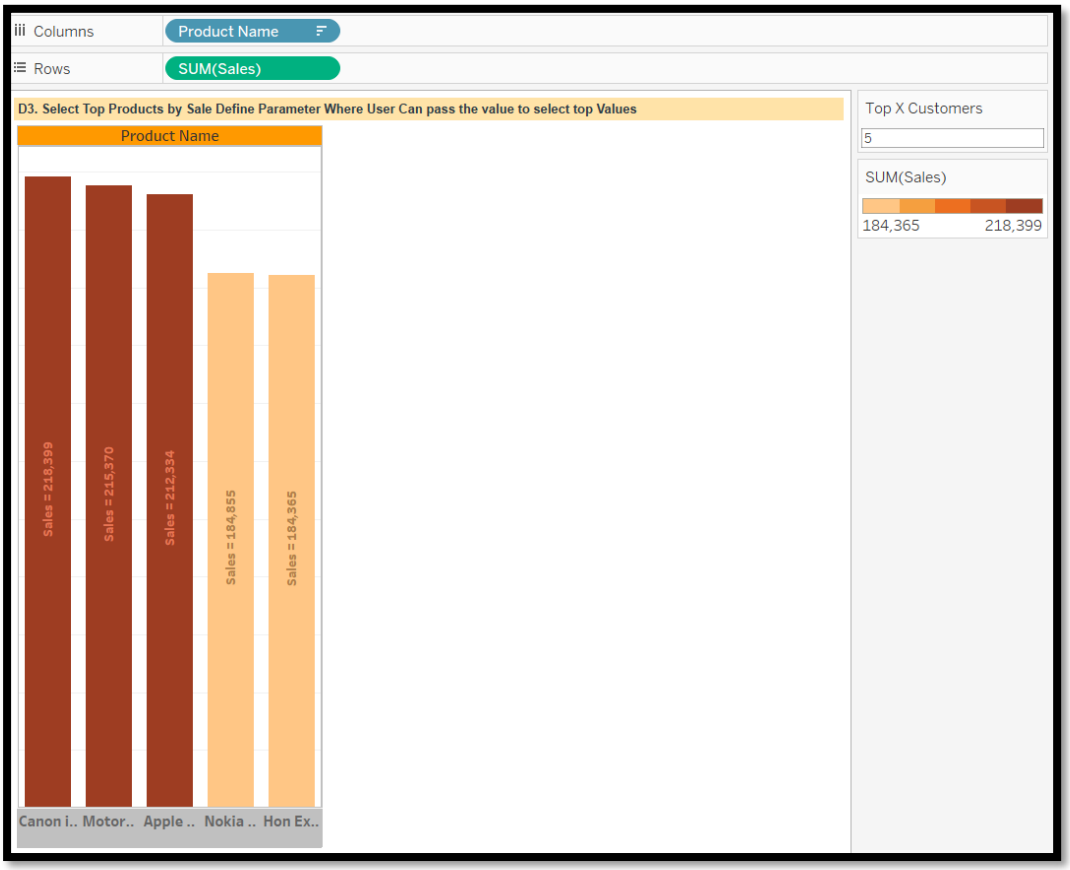






3. **Select Top Products by Sale Define Parameter Where User Can pass the value to select top Values**

Solution:

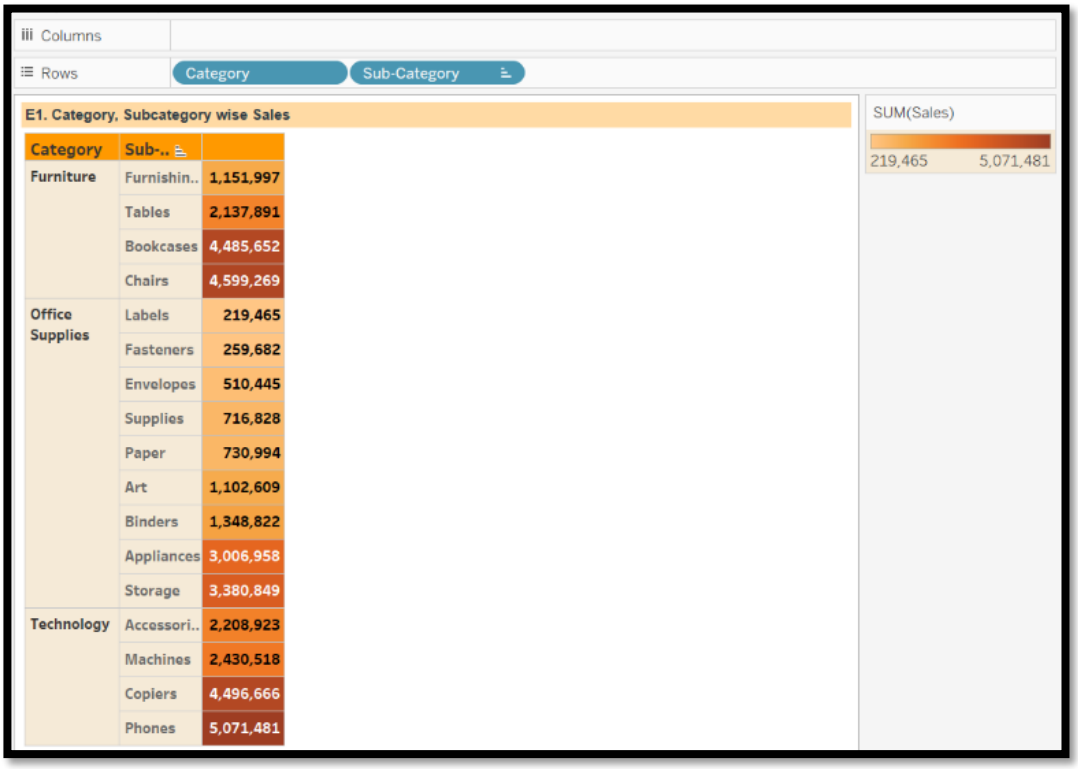


Inference: This Graph shows us the Top Products by Sale Define Parameter Where User Can pass the value to select top Values so for that I'd do the same thing firstly I'd make a parameter and then make the "Top X customer" and on the Top condition. Then plot the graph with sales.

❖ E) Matrix Report:

1. **Category, Subcategory wise Sales**

Solution:



Category	Sub-..	
Furniture	Furnishin..	1,151,997
	Tables	2,137,891
	Bookcases	4,485,652
	Chairs	4,599,269
Office Supplies	Labels	219,465
	Fasteners	259,682
	Envelopes	510,445
	Supplies	716,828
	Paper	730,994
	Art	1,102,609
	Binders	1,348,822
	Appliances	3,006,958
	Storage	3,380,849
Technology	Accessori..	2,208,923
	Machines	2,430,518
	Copiers	4,496,666
	Phones	5,071,481

Inference: In this matrix report I'd make the report for the Category, Subcategory wise sales.

2. **Country, Segment wise Profit**

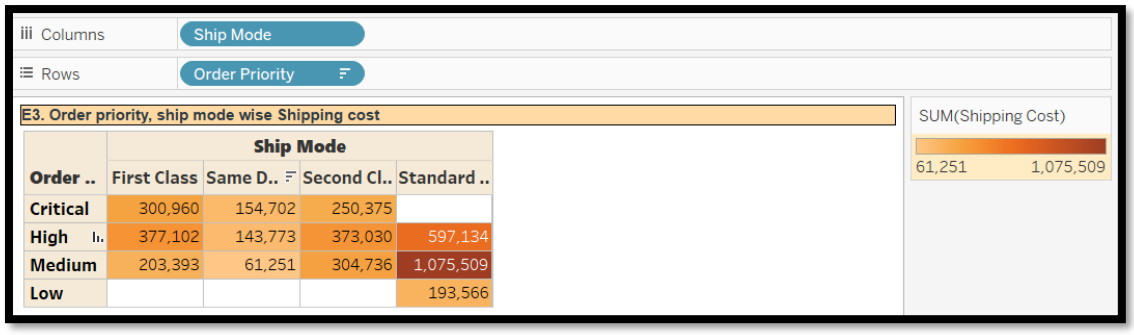
Solution:

Count..	Segment	
Albania	Consumer	505.4
	Corporate	540.0
	Home Offi..	22.1

Inference: In this matrix report I'd make the report for the Country, Segment wise profit. I added a filter on Country so that we can know segment wise profit for that particular country.

3. **Order priority, ship mode wise Shipping cost**

Solution:

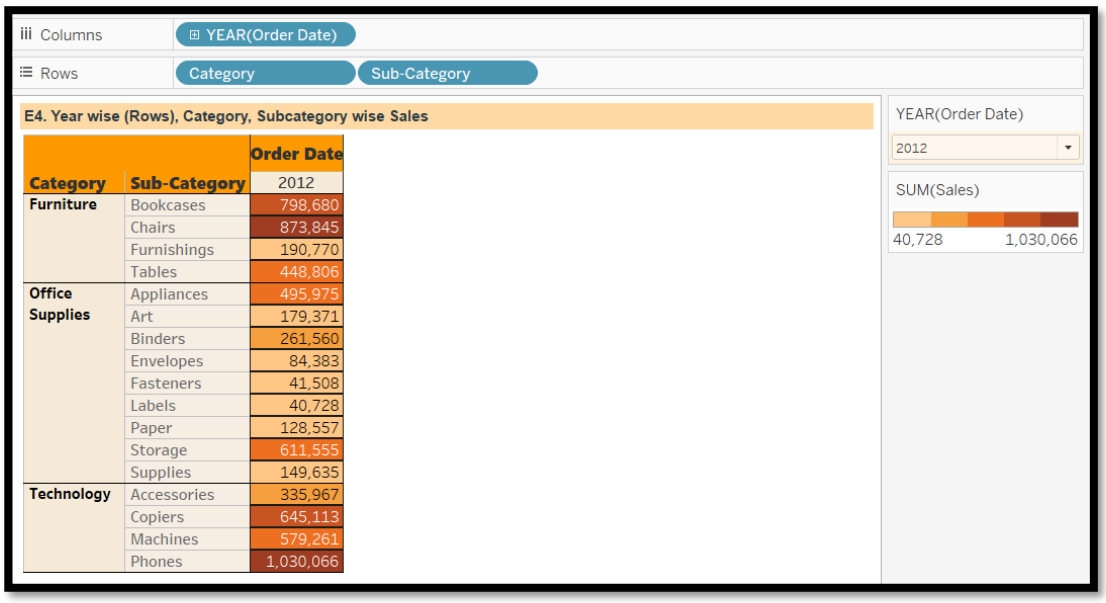


Order ..	Ship Mode			
	First Class	Same D..	Second Cl..	Standard ..
Critical	300,960	154,702	250,375	
High	377,102	143,773	373,030	597,134
Medium	203,393	61,251	304,736	1,075,509
Low				193,566

Inference: In this matrix report I'd make the report for the order priority, ship mode wise shipping cost. We can see that shipping cost for "Medium priority Standard mode" is highest.

4. **Year wise, Category, Subcategory wise Sales**

Solution:

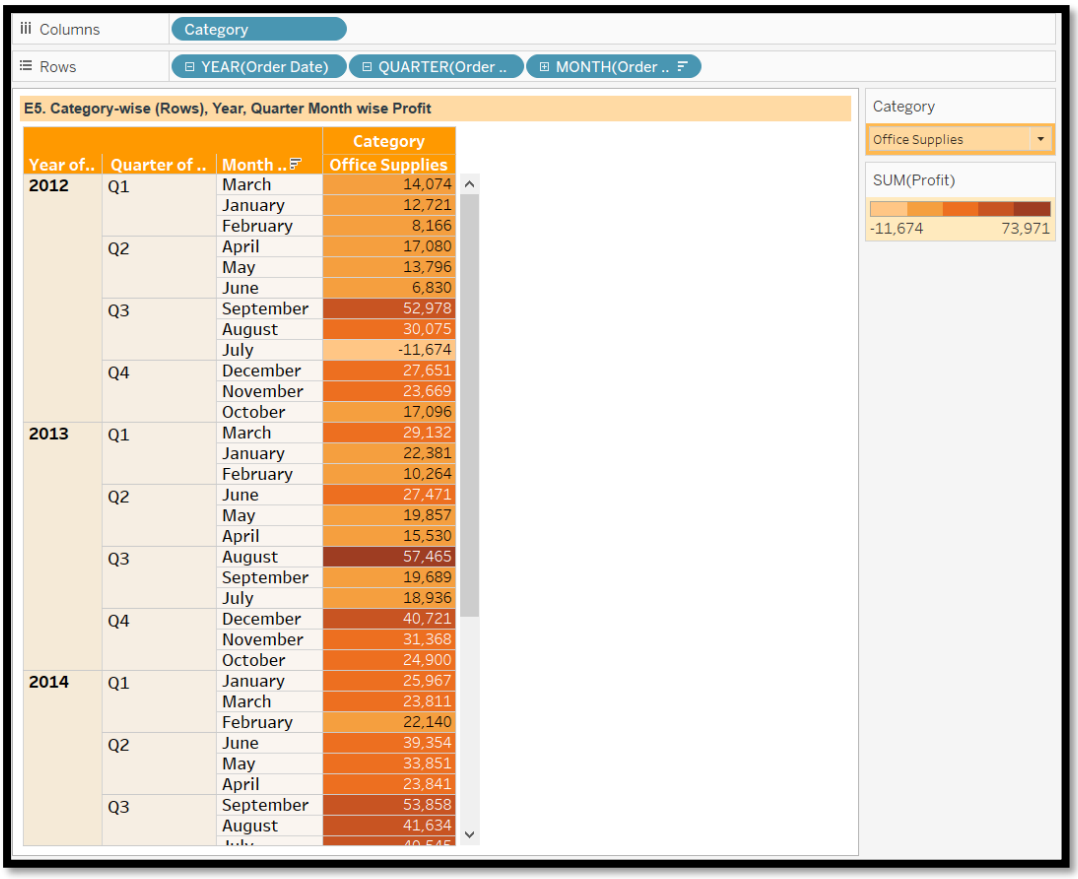


Category	Sub-Category	Order Date
		2012
Furniture	Bookcases	798,680
	Chairs	873,845
	Furnishings	190,770
	Tables	448,806
Office Supplies	Appliances	495,975
	Art	179,371
	Binders	261,560
	Envelopes	84,383
	Fasteners	41,508
	Labels	40,728
	Paper	128,557
	Storage	611,555
	Supplies	149,635
Technology	Accessories	335,967
	Copiers	645,113
	Machines	579,261
	Phones	1,030,066

Inference: In this matrix report I'd make the report for the year wise, Category, Sub-category wise sales and in this I'd put year in filter.

5. **Category-wise, Year, Quarter Month wise Profit**

Solution:



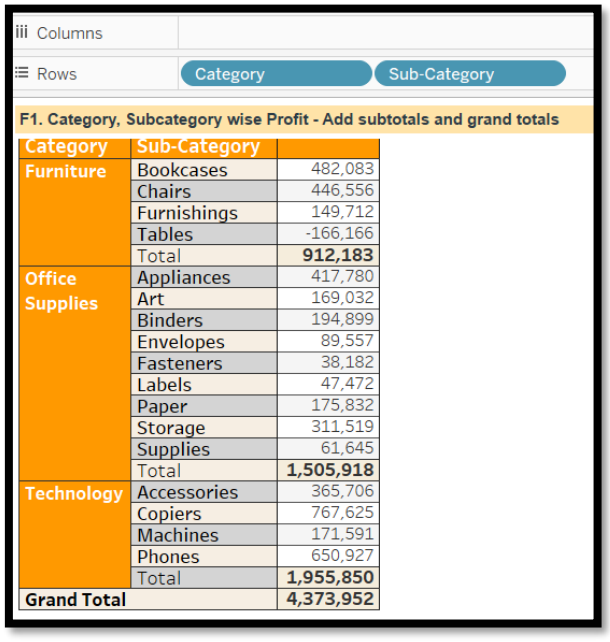
Year of..	Quarter of ..	Month ..	Category Office Supplies
2012	Q1	March	14,074
		January	12,721
		February	8,166
	Q2	April	17,080
		May	13,796
		June	6,830
	Q3	September	52,978
		August	30,075
		July	-11,674
	Q4	December	27,651
		November	23,669
		October	17,096
2013	Q1	March	29,132
		January	22,381
		February	10,264
	Q2	June	27,471
		May	19,857
		April	15,530
	Q3	August	57,465
		September	19,689
		July	18,936
	Q4	December	40,721
		November	31,368
		October	24,900
2014	Q1	January	25,967
		March	23,811
		February	22,140
	Q2	June	39,354
		May	33,851
		April	23,841
	Q3	September	53,858
		August	41,634

Inference: In this matrix report I'd make the report for the Category-wise, Year, Quarter Month Wise Profit and in this I'd put Category in filter.

❖ F) Draw Tabular Reports

1. Category, Subcategory wise Profit - Add subtotals and grand totals

Solution:

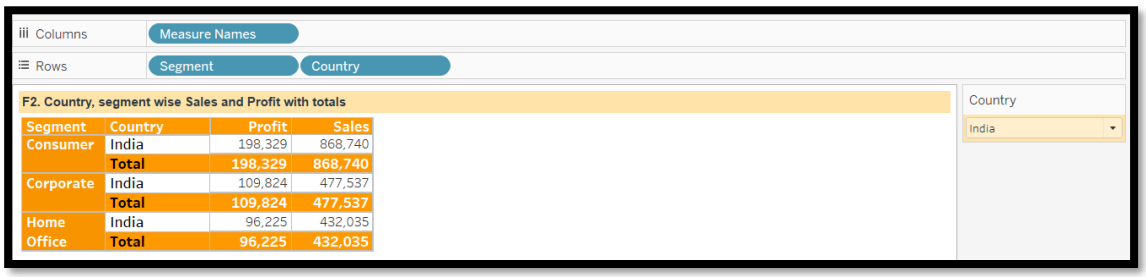


Category	Sub-Category	
Furniture	Bookcases	482,083
	Chairs	446,556
	Furnishings	149,712
	Tables	-166,166
	Total	**912,183**
Office Supplies	Appliances	417,780
	Art	169,032
	Binders	194,899
	Envelopes	89,557
	Fasteners	38,182
	Labels	47,472
	Paper	175,832
	Storage	311,519
	Supplies	61,645
	Total	**1,505,918**
Technology	Accessories	365,706
	Copiers	767,625
	Machines	171,591
	Phones	650,927
	Total	**1,955,850**
Grand Total		**4,373,952**

Inference: In this matrix report I'd make the report for the Category, Subcategory wise Profit and I Added the subtotals and grand totals from Analytics panel in tableau.

2. **Country, segment wise Sales and Profit with totals**

Solution:

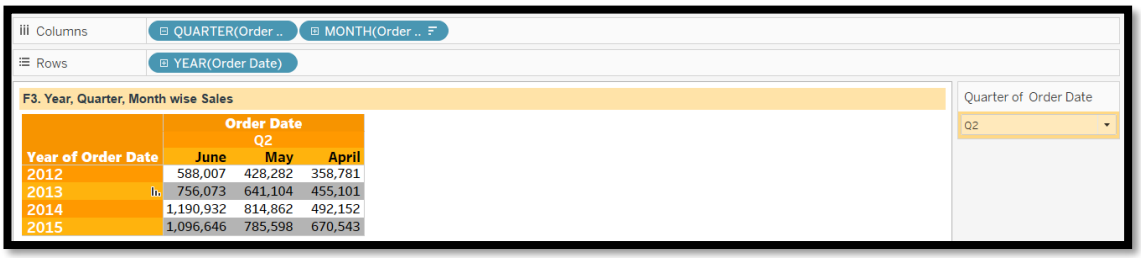


Segment	Country	Profit	Sales
Consumer	India	198,329	868,740
	Total	198,329	868,740
Corporate	India	109,824	477,537
	Total	109,824	477,537
Home Office	India	96,225	432,035
	Total	96,225	432,035

Inference: In this matrix report I'd make the report for the Country, segment wise Sales and Profit with totals and I Added the subtotals and grand totals from Analytics panel in tableau.

3. **Year, Quarter, Month wise Sales**

Solution:



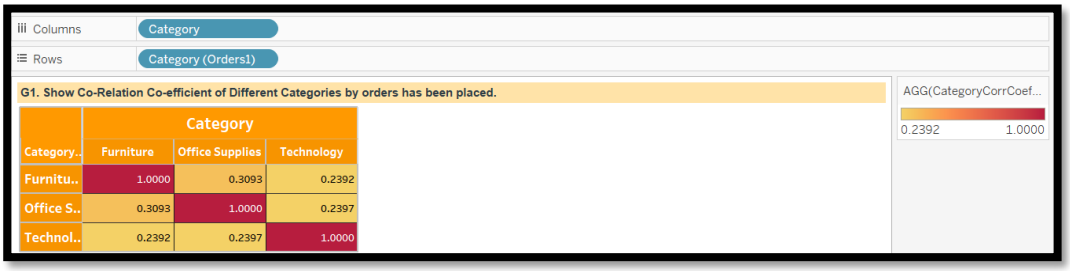
	Order Date Q2		
Year of Order Date	June	May	April
2012	588,007	428,282	358,781
2013	756,073	641,104	455,101
2014	1,190,932	814,862	492,152
2015	1,096,646	785,598	670,543

Inference: In this matrix report I'd make the report for the Year, Quarter, Month wise Sales and I'd put the "Quarter" in filter.

❖ G) Calculated Field

1. **Show Co-Relation Co-efficient of Different Categories by orders has been placed.**

Solution:



Category..	Category		
	Furniture	Office Supplies	Technology
Furnitu..	1.0000	0.3093	0.2392
Office S..	0.3093	1.0000	0.2397
Technol..	0.2392	0.2397	1.0000

Inference: In this Co-Relation Co-efficient of Different Categories by orders has been placed. For that I'd make the calculate field for that and write this:

```
CORR({INCLUDE [Order ID]:SUM([Quantity])} , {INCLUDE [Order ID (Orders1)]:SUM([Quantity (Orders1)])})
```

2. **Show Co-Relation chart between Sale of 2013 and Sale of 2014 by Sub-Category for Country 'India'**

Solution:

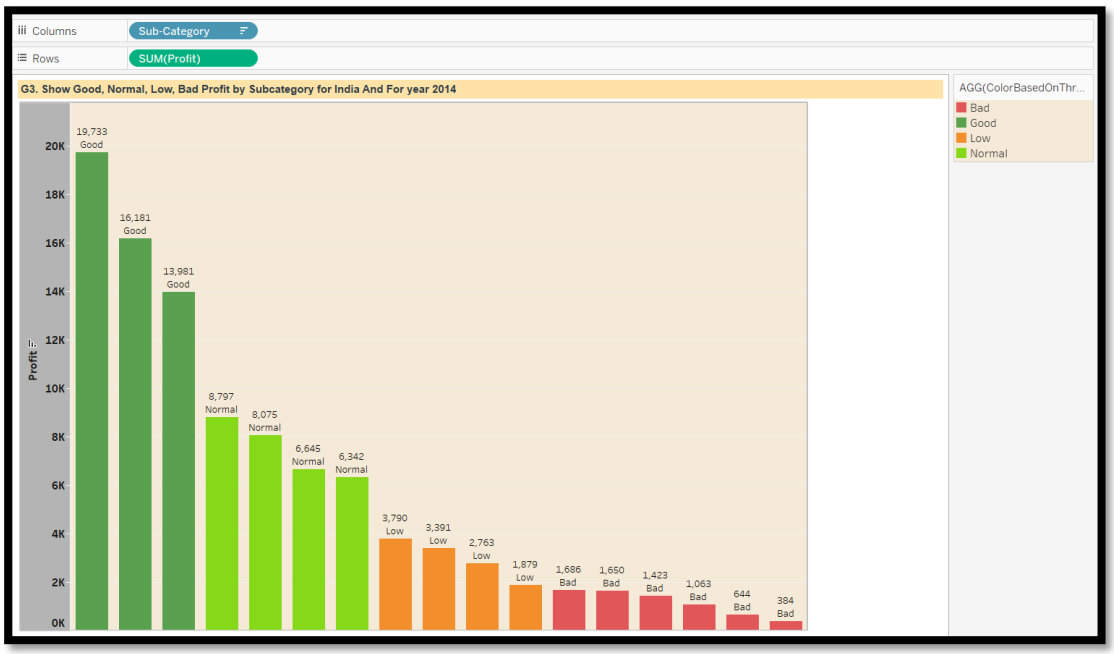
Inference: In this Co-Relation chart between Sale of 2013 and Sale of 2014 by Sub-Category for Country 'India'. And I make it only for India and then make 2 calculated field for year 2013 and 2014 and on that I write:

```
IF YEAR([Order Date]) = 2013 THEN [Sales]
END
IF YEAR([Order Date]) = 2014 THEN [Sales]
END
```

And then put all this in the calculated field of colour and shape.

3. **Show Good, Normal, Low, Bad Profit by Subcategory for India and For year 2014**

Solution:

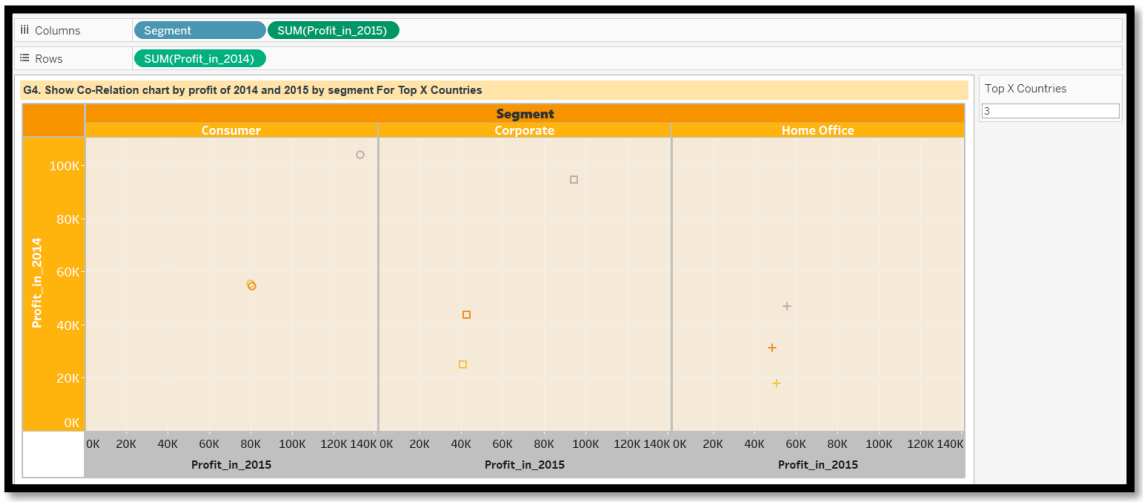


Inference: In this graph we Show Good, Normal, Low, Bad Profit by Subcategory for India and for year 2014. For this I made 1 calculated field one for colour based on profit value**.** The code is:

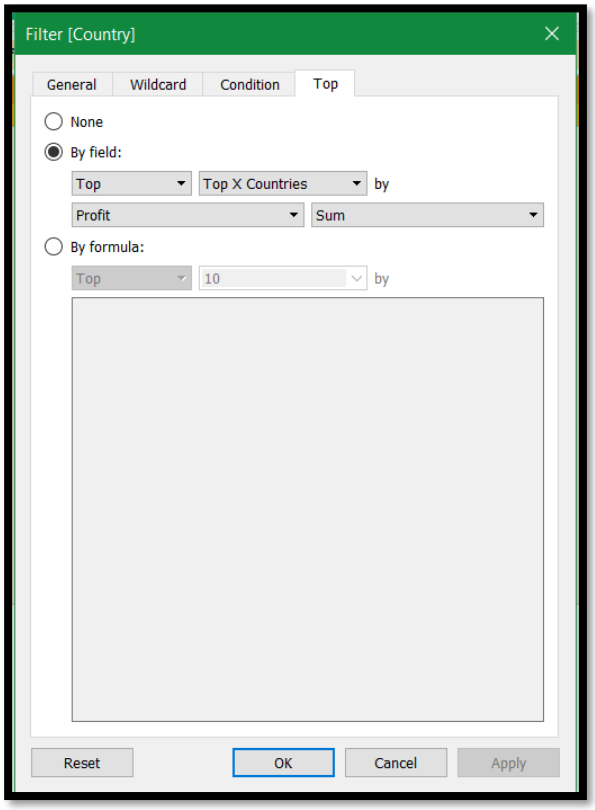
```
IF SUM([Profit]) > 8800 THEN 'Good'
ELSEIF SUM([Profit])<8800 AND SUM([Profit]) > 3800 THEN 'Normal'
ELSEIF SUM([Profit])<3800 AND SUM([Profit]) > 1800 THEN 'Low'
ELSE 'Bad'
END
```

4. **Show Co-Relation chart by profit of 2014 and 2015 by segment For Top X Countries**

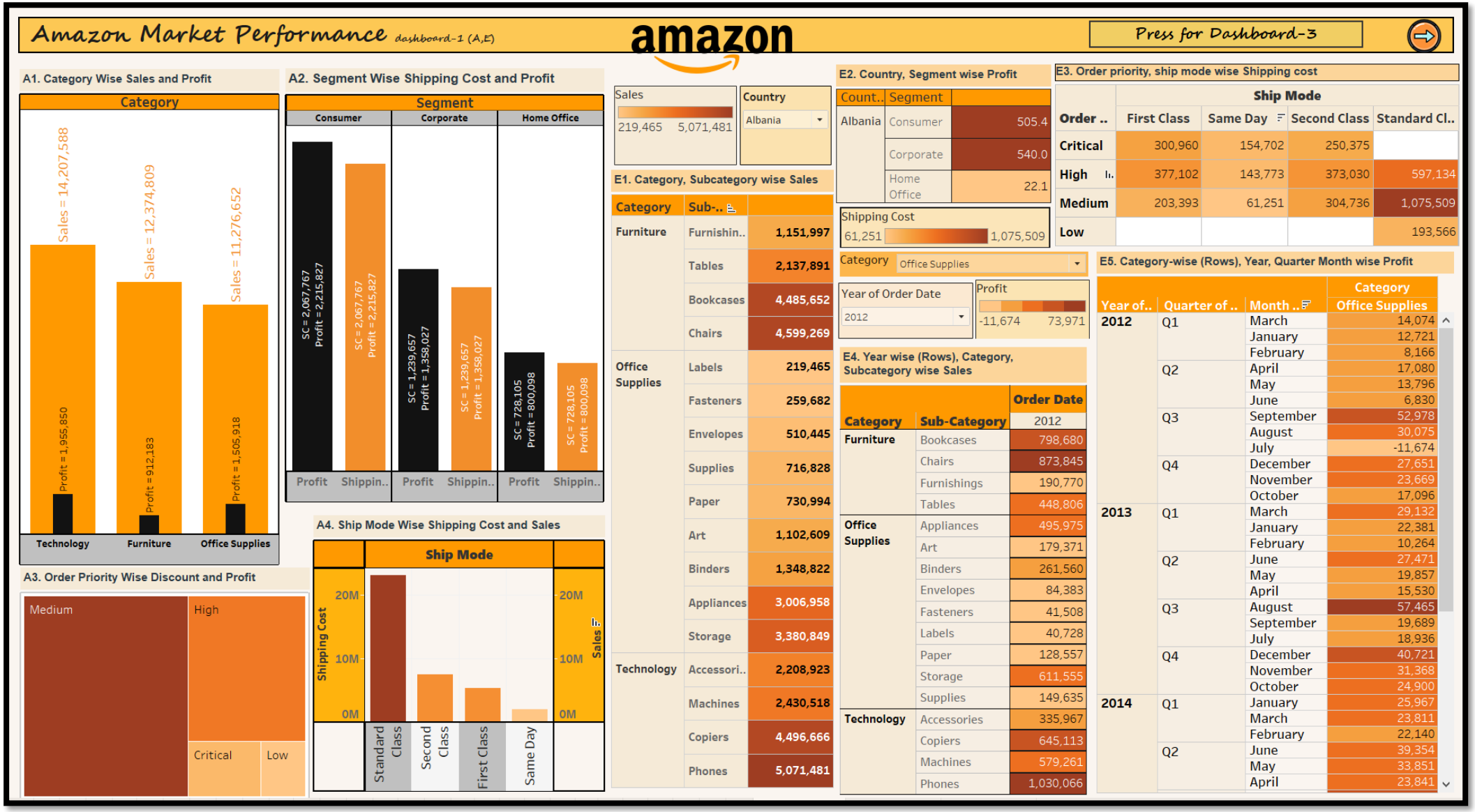
Solution:



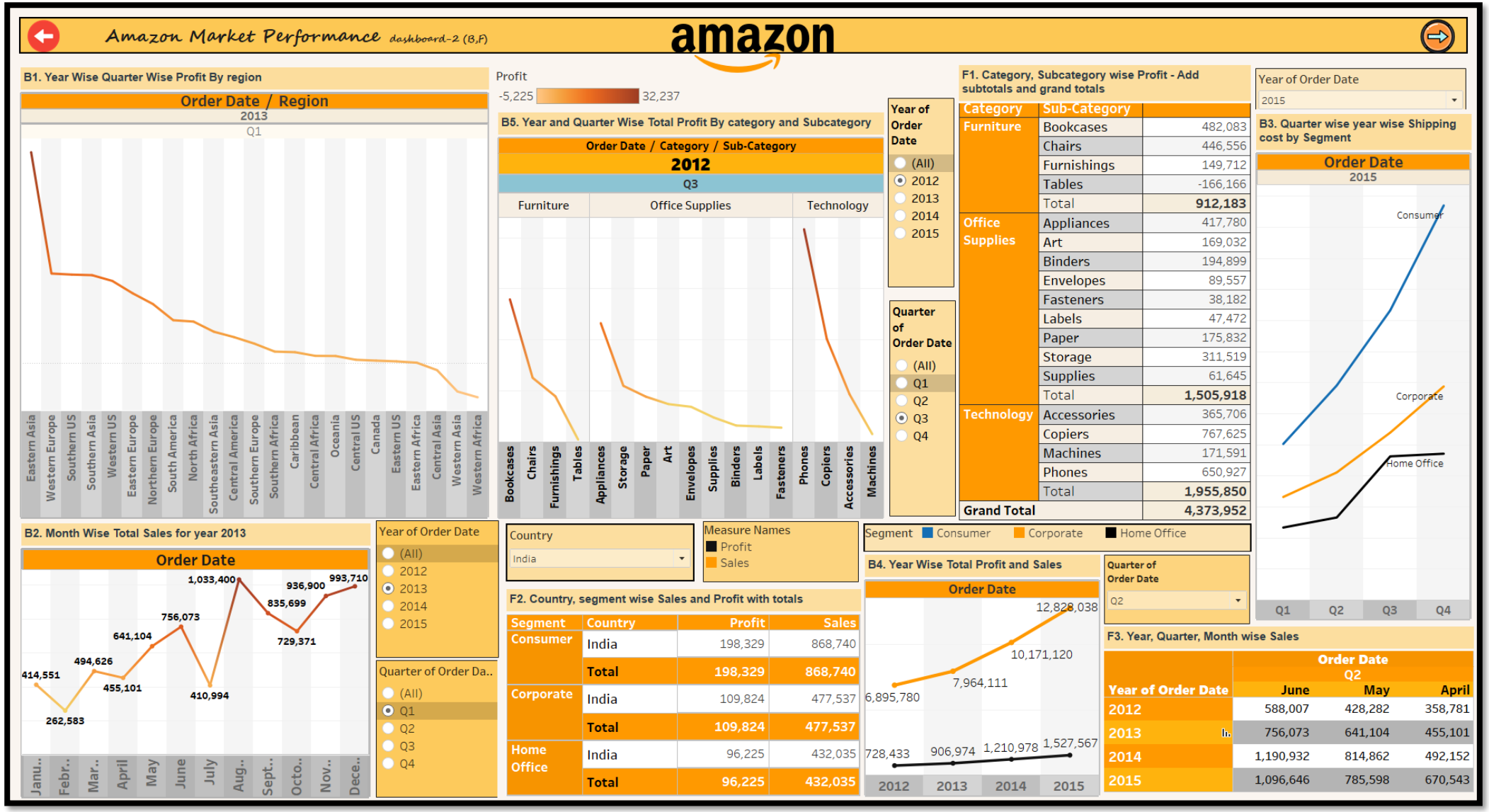
Inference: In this Co-Relation chart by profit of 2014 and 2015 by segment for Top X Countries for that I'd make a parameter for top X countries and then make the plot the graph with profit for the year 2014 and 2015 only with "TOP" filter on country.



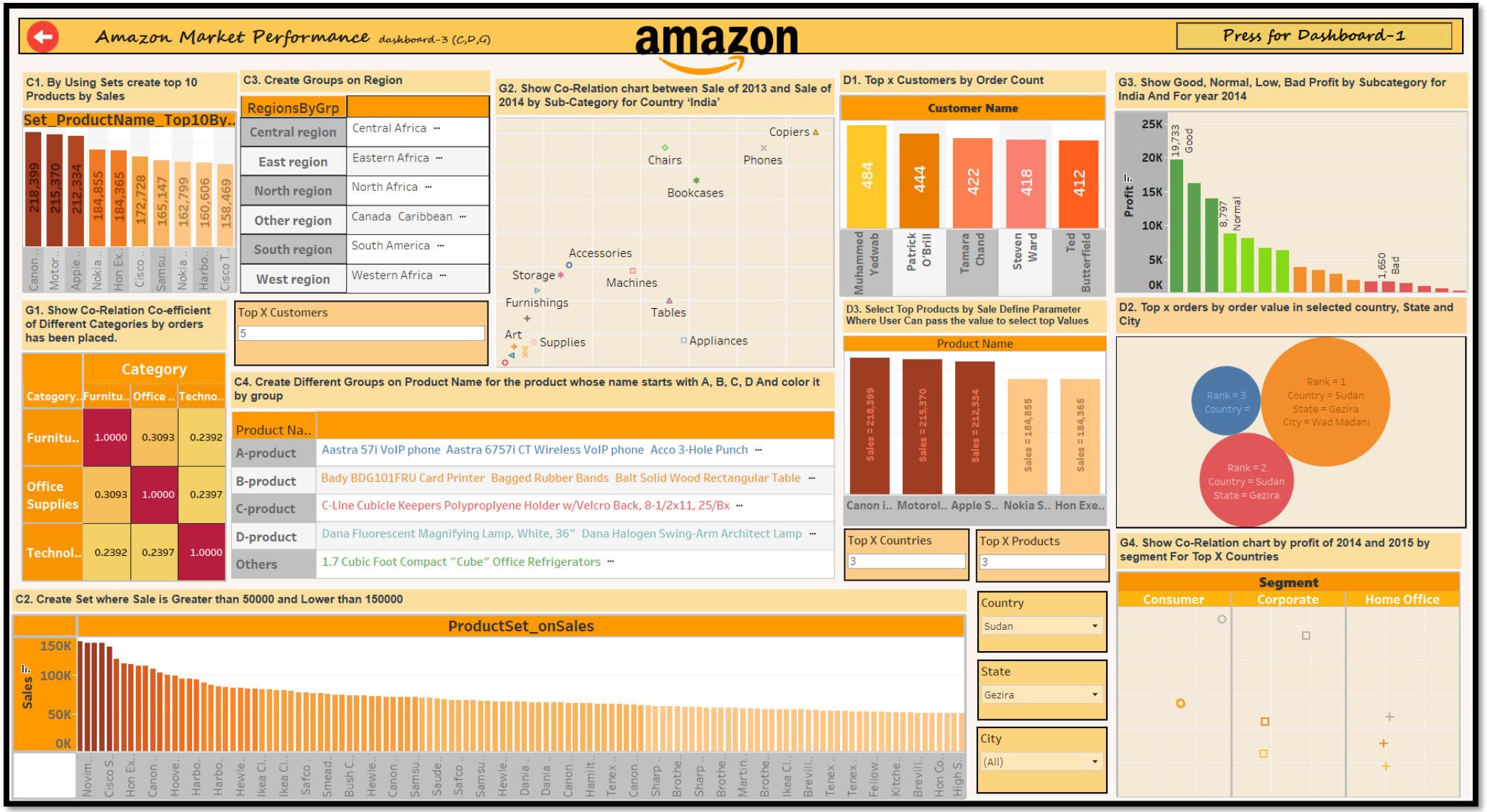
Dashboard-1 Poster



Dashboard-2 Poster



Dashboard-3 Poster



❖ Conclusion:

Tableau is a powerful and fastest growing data visualization tool used in the Business Intelligence Industry. It helps in simplifying raw data in a very easily understandable format. Tableau helps create the data that can be understood by professionals at any level in an organization. It also allows non-technical users to create customized dashboards. Data analysis is very fast with Tableau tool and the visualizations created are in the form of dashboards and worksheets. Following are the main uses and applications of Tableau:

1. Business Intelligence
2. Data Visualization
3. Data Collaboration
4. Data Blending
5. Real-time data analysis
6. Query translation into visualization
7. To import large size of data
8. To create no-code data queries
9. To manage large size metadata