Power BI Assignment 2 – DAX & Data Visualization

E-Commerce Sales Analysis

This assignment helps me explore e-commerce sales data analysis using Power BI.

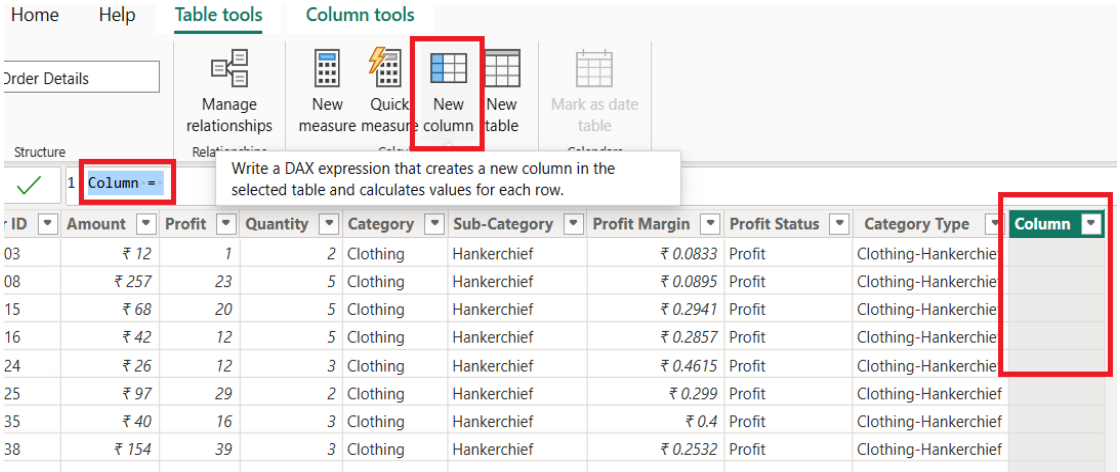
In this exercise, I used DAX (Data Analysis Expressions) to analyse and transform e-commerce sales data, generating key metrics and insights. Then creating compelling visualizations and perform detailed analysis to gain valuable insights into sales trends, profitability, and performance metrics within the e-commerce domain.

Calculated Columns:

1.Create a Calculated Column for 'Category Type':

- To combine the 'Category' and 'Sub-Category' columns into a single 'Category Type' column, in Order Details table, a new calculated column created as follows,

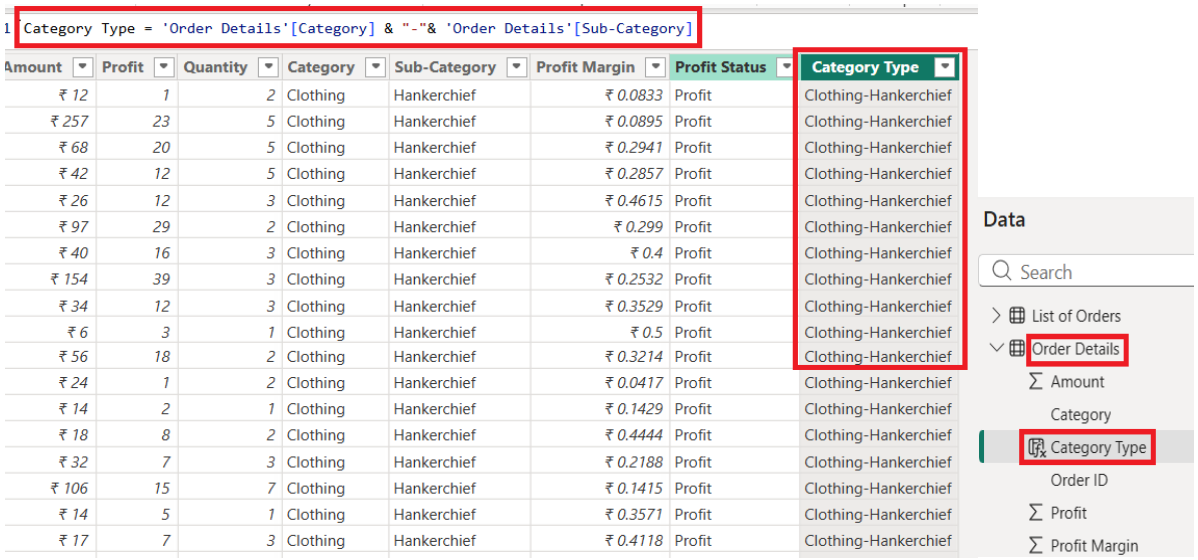
  Home → in calculations group → select "New Column"



ID	Amount	Profit	Quantity	Category	Sub-Category	Profit Margin	Profit Status	Category Type	Column
03	₹ 12	1	2	Clothing	Hankerchief	₹ 0.0833	Profit	Clothing-Hankerchie	
08	₹ 257	23	5	Clothing	Hankerchief	₹ 0.0895	Profit	Clothing-Hankerchie	
15	₹ 68	20	5	Clothing	Hankerchief	₹ 0.2941	Profit	Clothing-Hankerchie	
16	₹ 42	12	5	Clothing	Hankerchief	₹ 0.2857	Profit	Clothing-Hankerchie	
24	₹ 26	12	3	Clothing	Hankerchief	₹ 0.4615	Profit	Clothing-Hankerchie	
25	₹ 97	29	2	Clothing	Hankerchief	₹ 0.299	Profit	Clothing-Hankerchief	
35	₹ 40	16	3	Clothing	Hankerchief	₹ 0.4	Profit	Clothing-Hankerchief	
38	₹ 154	39	3	Clothing	Hankerchief	₹ 0.2532	Profit	Clothing-Hankerchief	

- By using the following DAX Formula, created the "Category Type" Calculated column and the result shown as follows,

  Category Type = 'Order Details'[Category] & "-"& 'Order Details'[Sub-Category]



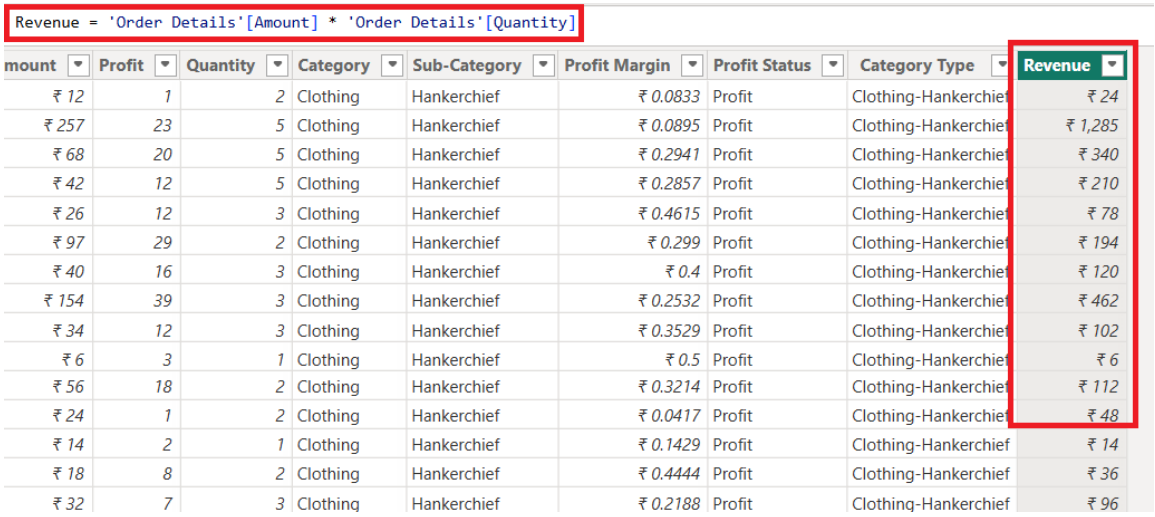
```
Category Type = 'Order Details'[Category] & "-"& 'Order Details'[Sub-Category]
```

Amount	Profit	Quantity	Category	Sub-Category	Profit Margin	Profit Status	Category Type
₹ 12	1	2	Clothing	Hankerchief	₹ 0.0833	Profit	Clothing-Hankerchief
₹ 257	23	5	Clothing	Hankerchief	₹ 0.0895	Profit	Clothing-Hankerchief
₹ 68	20	5	Clothing	Hankerchief	₹ 0.2941	Profit	Clothing-Hankerchief
₹ 42	12	5	Clothing	Hankerchief	₹ 0.2857	Profit	Clothing-Hankerchief
₹ 26	12	3	Clothing	Hankerchief	₹ 0.4615	Profit	Clothing-Hankerchief
₹ 97	29	2	Clothing	Hankerchief	₹ 0.299	Profit	Clothing-Hankerchief
₹ 40	16	3	Clothing	Hankerchief	₹ 0.4	Profit	Clothing-Hankerchief
₹ 154	39	3	Clothing	Hankerchief	₹ 0.2532	Profit	Clothing-Hankerchief
₹ 34	12	3	Clothing	Hankerchief	₹ 0.3529	Profit	Clothing-Hankerchief
₹ 6	3	1	Clothing	Hankerchief	₹ 0.5	Profit	Clothing-Hankerchief
₹ 56	18	2	Clothing	Hankerchief	₹ 0.3214	Profit	Clothing-Hankerchief
₹ 24	1	2	Clothing	Hankerchief	₹ 0.0417	Profit	Clothing-Hankerchief
₹ 14	2	1	Clothing	Hankerchief	₹ 0.1429	Profit	Clothing-Hankerchief
₹ 18	8	2	Clothing	Hankerchief	₹ 0.4444	Profit	Clothing-Hankerchief
₹ 32	7	3	Clothing	Hankerchief	₹ 0.2188	Profit	Clothing-Hankerchief
₹ 106	15	7	Clothing	Hankerchief	₹ 0.1415	Profit	Clothing-Hankerchief
₹ 14	5	1	Clothing	Hankerchief	₹ 0.3571	Profit	Clothing-Hankerchief
₹ 17	7	3	Clothing	Hankerchief	₹ 0.4118	Profit	Clothing-Hankerchief

2.Calculate Revenue per Order in Order Details Table:

- To compute the Revenue (Amount * Quantity) per order in Order Details table, a new calculated column created by using a DAX Formula and the result shown as follows,

  Revenue = 'Order Details'[Amount] * 'Order Details'[Quantity]



```
Revenue = 'Order Details'[Amount] * 'Order Details'[Quantity]
```

mount	Profit	Quantity	Category	Sub-Category	Profit Margin	Profit Status	Category Type	Revenue
₹ 12	1	2	Clothing	Hankerchief	₹ 0.0833	Profit	Clothing-Hankerchief	₹ 24
₹ 257	23	5	Clothing	Hankerchief	₹ 0.0895	Profit	Clothing-Hankerchief	₹ 1,285
₹ 68	20	5	Clothing	Hankerchief	₹ 0.2941	Profit	Clothing-Hankerchief	₹ 340
₹ 42	12	5	Clothing	Hankerchief	₹ 0.2857	Profit	Clothing-Hankerchief	₹ 210
₹ 26	12	3	Clothing	Hankerchief	₹ 0.4615	Profit	Clothing-Hankerchief	₹ 78
₹ 97	29	2	Clothing	Hankerchief	₹ 0.299	Profit	Clothing-Hankerchief	₹ 194
₹ 40	16	3	Clothing	Hankerchief	₹ 0.4	Profit	Clothing-Hankerchief	₹ 120
₹ 154	39	3	Clothing	Hankerchief	₹ 0.2532	Profit	Clothing-Hankerchief	₹ 462
₹ 34	12	3	Clothing	Hankerchief	₹ 0.3529	Profit	Clothing-Hankerchief	₹ 102
₹ 6	3	1	Clothing	Hankerchief	₹ 0.5	Profit	Clothing-Hankerchief	₹ 6
₹ 56	18	2	Clothing	Hankerchief	₹ 0.3214	Profit	Clothing-Hankerchief	₹ 112
₹ 24	1	2	Clothing	Hankerchief	₹ 0.0417	Profit	Clothing-Hankerchief	₹ 48
₹ 14	2	1	Clothing	Hankerchief	₹ 0.1429	Profit	Clothing-Hankerchief	₹ 14
₹ 18	8	2	Clothing	Hankerchief	₹ 0.4444	Profit	Clothing-Hankerchief	₹ 36
₹ 32	7	3	Clothing	Hankerchief	₹ 0.2188	Profit	Clothing-Hankerchief	₹ 96

3.Create a Calculated Column to Categorize Sales:

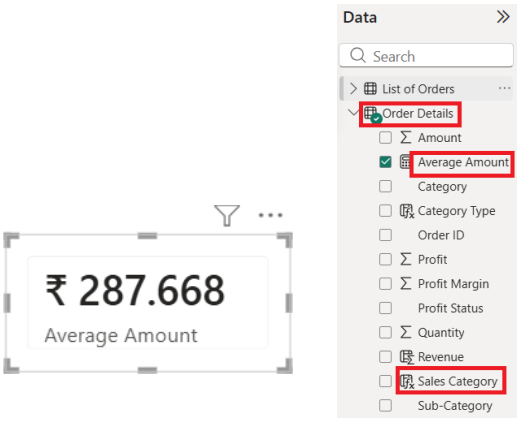
- To categorizes each order as 'Above Average' or 'Below Average' based on the Amount value, a new Calculated Column created named “Sales Category” in Order Details table by using the following Formula

  Sales Category = if ('Order Details'[Amount]>= AVERAGE ('Order Details'[Amount]),"Above Average" , "Below Average")

```
1 Sales Category = if('Order Details'[Amount]>= AVERAGE('Order Details'[Amount]),"Above Average" , "Below Average")
```

Amount	Profit	Quantity	Category	Sub-Category	Profit Margin	Profit Status	Category Type	Revenue	Sales Category
₹ 45	12	7	Clothing	Hankerchief	₹ 0.2667	Profit	Clothing-Hankerchief	₹ 315	Below Average
₹ 210	50	4	Clothing	Hankerchief	₹ 0.2381	Profit	Clothing-Hankerchief	₹ 840	Below Average
₹ 154	54	3	Clothing	Hankerchief	₹ 0.3506	Profit	Clothing-Hankerchief	₹ 462	Below Average
₹ 53	24	1	Clothing	Hankerchief	₹ 0.4528	Profit	Clothing-Hankerchief	₹ 53	Below Average
₹ 26	10	4	Clothing	Hankerchief	₹ 0.3846	Profit	Clothing-Hankerchief	₹ 104	Below Average
₹ 29	8	5	Clothing	Hankerchief	₹ 0.2759	Profit	Clothing-Hankerchief	₹ 145	Below Average
₹ 126	52	4	Clothing	Hankerchief	₹ 0.4127	Profit	Clothing-Hankerchief	₹ 504	Below Average
₹ 259	47	5	Clothing	Hankerchief	₹ 0.1815	Profit	Clothing-Hankerchief	₹ 1,295	Below Average
₹ 75	28	9	Clothing	Hankerchief	₹ 0.3733	Profit	Clothing-Hankerchief	₹ 675	Below Average
₹ 28	14	4	Clothing	Hankerchief	₹ 0.5	Profit	Clothing-Hankerchief	₹ 112	Below Average
₹ 345	38	7	Clothing	Hankerchief	₹ 0.1101	Profit	Clothing-Hankerchief	₹ 2,415	Above Average
₹ 41	11	6	Clothing	Hankerchief	₹ 0.2683	Profit	Clothing-Hankerchief	₹ 246	Below Average
₹ 64	27	5	Clothing	Hankerchief	₹ 0.4219	Profit	Clothing-Hankerchief	₹ 320	Below Average
₹ 36	4	9	Clothing	Hankerchief	₹ 0.1111	Profit	Clothing-Hankerchief	₹ 324	Below Average
₹ 70	26	5	Clothing	Hankerchief	₹ 0.3714	Profit	Clothing-Hankerchief	₹ 350	Below Average
₹ 81	19	7	Clothing	Hankerchief	₹ 0.2346	Profit	Clothing-Hankerchief	₹ 567	Below Average
₹ 255	74	5	Clothing	Hankerchief	₹ 0.2902	Profit	Clothing-Hankerchief	₹ 1,275	Below Average
₹ 18	6	3	Clothing	Hankerchief	₹ 0.3333	Profit	Clothing-Hankerchief	₹ 54	Below Average
₹ 16	8	2	Clothing	Hankerchief	₹ 0.5	Profit	Clothing-Hankerchief	₹ 32	Below Average

- Average amount calculated is 287.668, so the value below the Average amount shown as “Below Average” and the value above the Average amount shown as “Above Average”.

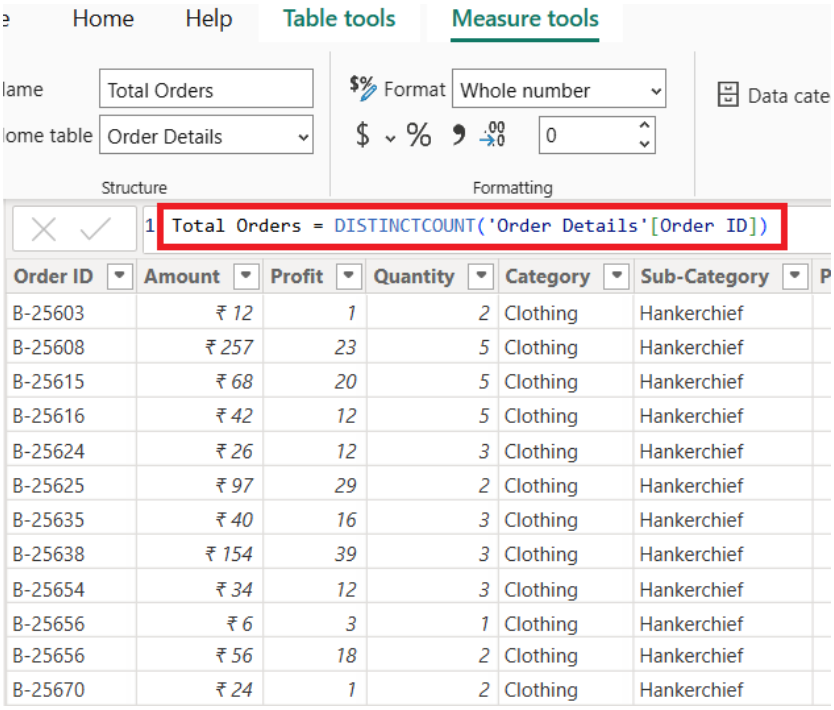


Calculated Measures:

1.Calculate Order Count:

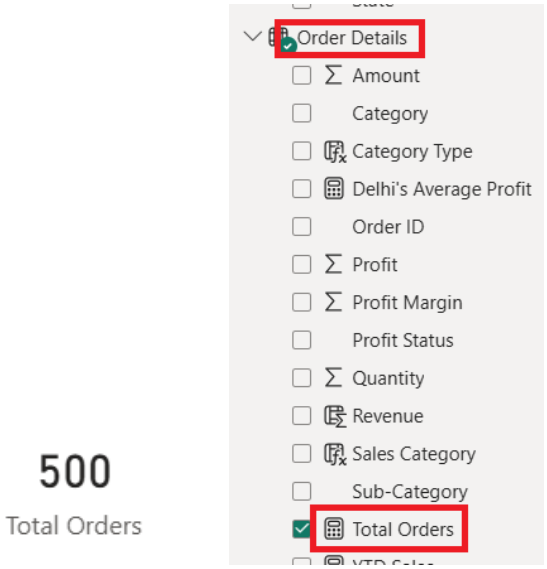
- To count the total number of orders in the Order Details table a new Measure created, by clicking “New Measure” in “Home” tab.
- By using the following DAX Formula new Measure created.

```
Total Orders = DISTINCTCOUNT ('Order Details'[Order ID])
```



Order ID	Amount	Profit	Quantity	Category	Sub-Category	P
B-25603	₹ 12	1	2	Clothing	Hankerchief	
B-25608	₹ 257	23	5	Clothing	Hankerchief	
B-25615	₹ 68	20	5	Clothing	Hankerchief	
B-25616	₹ 42	12	5	Clothing	Hankerchief	
B-25624	₹ 26	12	3	Clothing	Hankerchief	
B-25625	₹ 97	29	2	Clothing	Hankerchief	
B-25635	₹ 40	16	3	Clothing	Hankerchief	
B-25638	₹ 154	39	3	Clothing	Hankerchief	
B-25654	₹ 34	12	3	Clothing	Hankerchief	
B-25656	₹ 6	3	1	Clothing	Hankerchief	
B-25656	₹ 56	18	2	Clothing	Hankerchief	
B-25670	₹ 24	1	2	Clothing	Hankerchief	

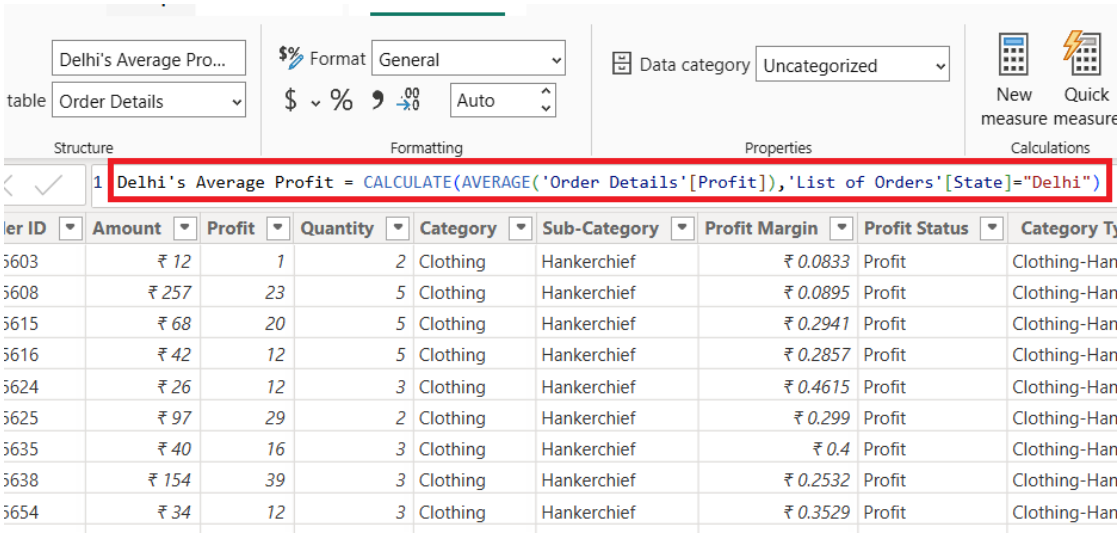
- After creating the measure, the result shown as follows,



2.Calculate Average Profit in Delhi:

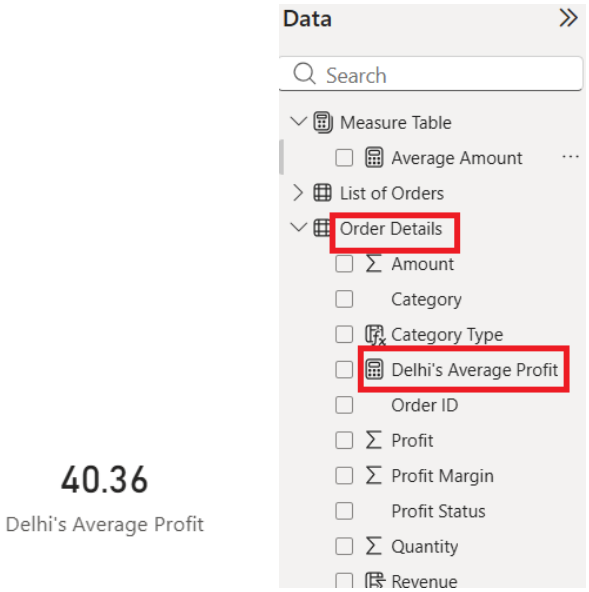
- To calculate the average profit for orders placed in Delhi, a new Measure created in Order Details table, by using the following DAX Formula

  Delhi's Average Profit = CALCULATE (AVERAGE ('Order Details'[Profit]),'List of Orders'[State]="Delhi")



er ID	Amount	Profit	Quantity	Category	Sub-Category	Profit Margin	Profit Status	Category Ty
5603	₹ 12	1	2	Clothing	Hankerchief	₹ 0.0833	Profit	Clothing-Han
5608	₹ 257	23	5	Clothing	Hankerchief	₹ 0.0895	Profit	Clothing-Han
5615	₹ 68	20	5	Clothing	Hankerchief	₹ 0.2941	Profit	Clothing-Han
5616	₹ 42	12	5	Clothing	Hankerchief	₹ 0.2857	Profit	Clothing-Han
5624	₹ 26	12	3	Clothing	Hankerchief	₹ 0.4615	Profit	Clothing-Han
5625	₹ 97	29	2	Clothing	Hankerchief	₹ 0.299	Profit	Clothing-Han
5635	₹ 40	16	3	Clothing	Hankerchief	₹ 0.4	Profit	Clothing-Han
5638	₹ 154	39	3	Clothing	Hankerchief	₹ 0.2532	Profit	Clothing-Han
5654	₹ 34	12	3	Clothing	Hankerchief	₹ 0.3529	Profit	Clothing-Han

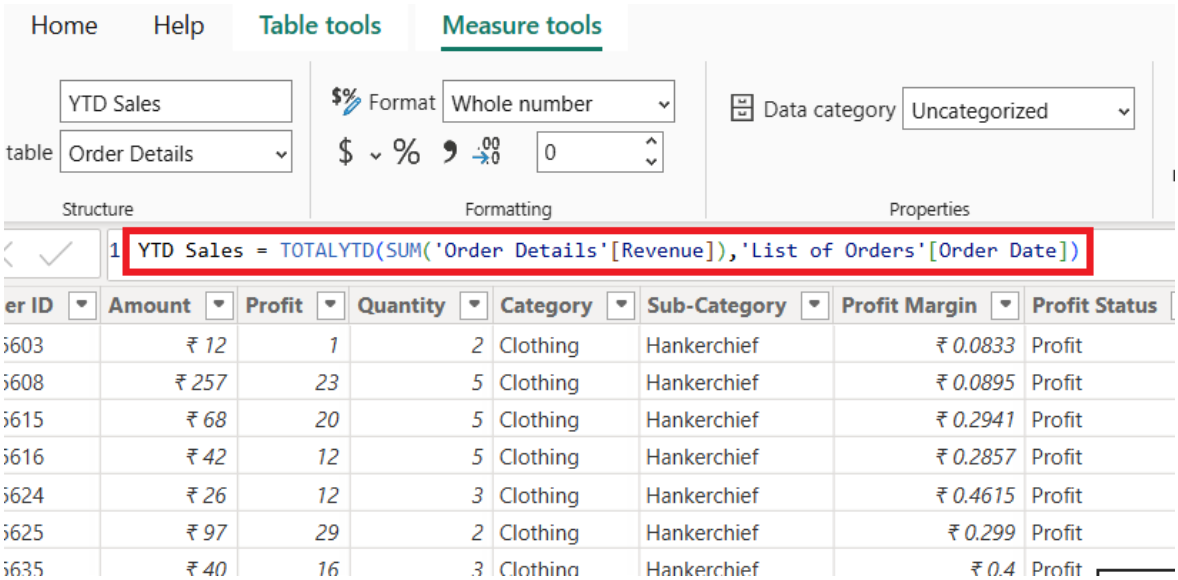
- After creating the measure, the result shown as follows,



3.Calculate Year-to-Date (YTD) Sales:

- To calculate the total sales amount accumulated from the earliest order date up to each order date, a new Measure created in Order Details table, by using the following DAX Formula

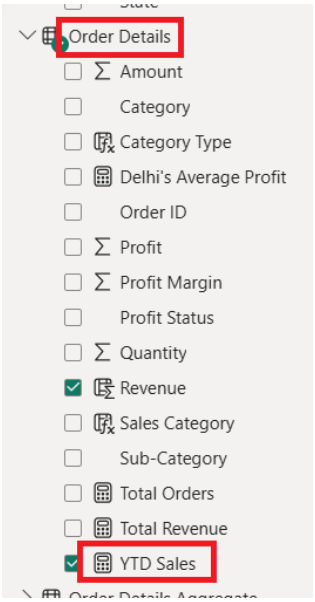
  YTD Sales = TOTALYTD (SUM ('Order Details'[Revenue]),'List of Orders'[Order Date])



er ID	Amount	Profit	Quantity	Category	Sub-Category	Profit Margin	Profit Status
5603	₹ 12	1	2	Clothing	Hankerchief	₹ 0.0833	Profit
5608	₹ 257	23	5	Clothing	Hankerchief	₹ 0.0895	Profit
5615	₹ 68	20	5	Clothing	Hankerchief	₹ 0.2941	Profit
5616	₹ 42	12	5	Clothing	Hankerchief	₹ 0.2857	Profit
5624	₹ 26	12	3	Clothing	Hankerchief	₹ 0.4615	Profit
5625	₹ 97	29	2	Clothing	Hankerchief	₹ 0.299	Profit
5635	₹ 40	16	3	Clothing	Hankerchief	₹ 0.4	Profit

- The YTD Sales results shown as follows,

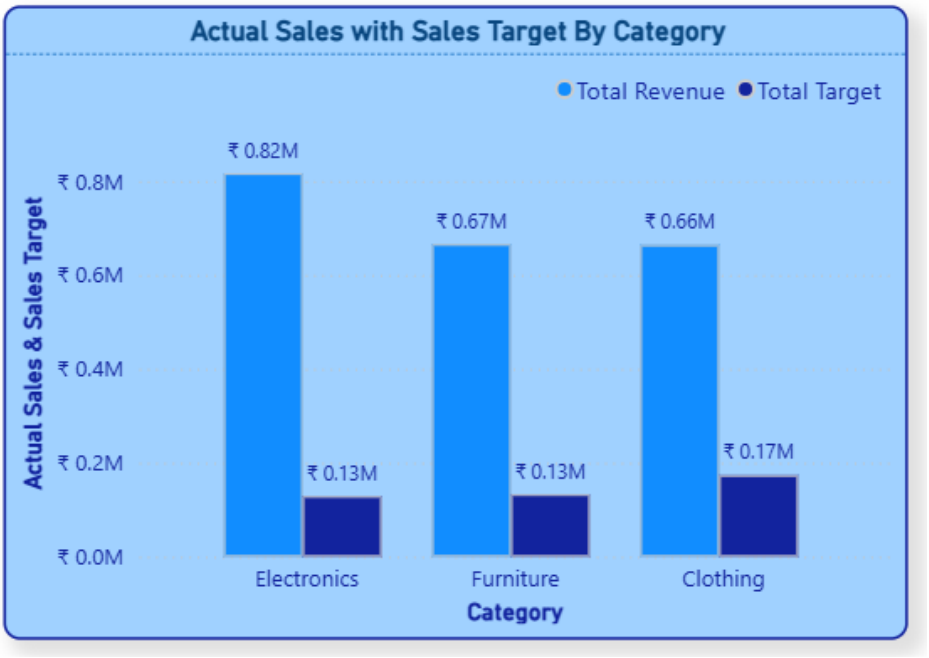
Order Date	Sum of Revenue	YTD Sales
2018		
28 December 2018	₹ 296	1304533
29 December 2018	₹ 4,653	1309186
30 December 2018	₹ 285	1309471
31 December 2018	₹ 800	1310271
01 January 2019	₹ 391	391
02 January 2019	₹ 5,034	5425
03 January 2019	₹ 6,944	12369
04 January 2019	₹ 11,826	24195
05 January 2019	₹ 6,252	30447
06 January 2019	₹ 320	30767
07 January 2019	₹ 708	31475
Total	**₹ 21,46,870**	**836599**



Data Visualization:

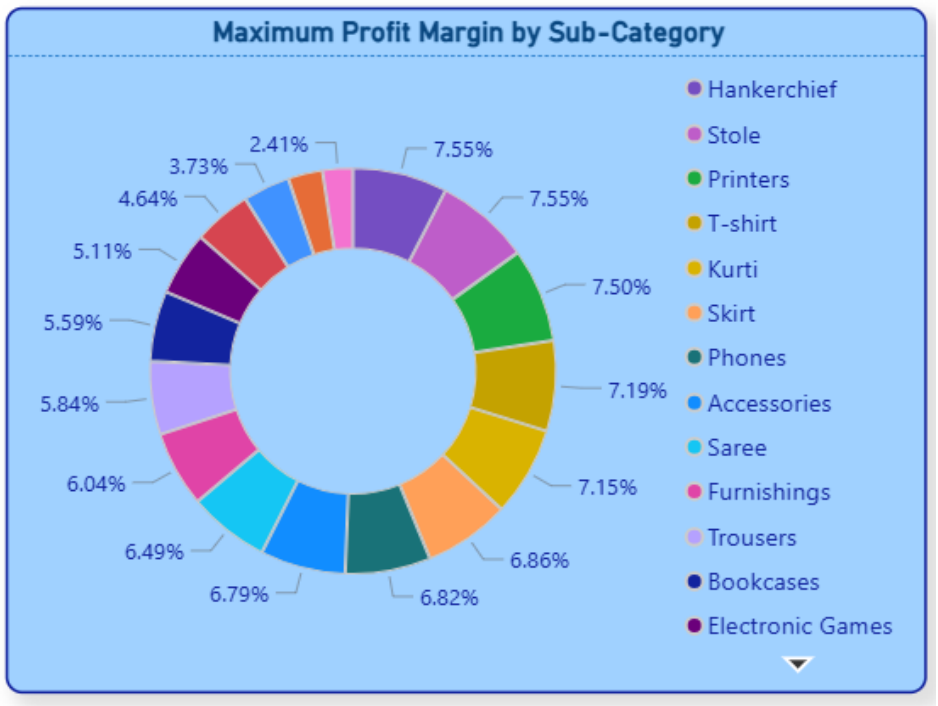
1.Sales Target Achievement by Category:

- A “clustered column chart” created to compare actual sales with sales targets by category.
- With this comparison, we knew that all categories are reached their Target value and “Electronics” category got the highest sales amount.



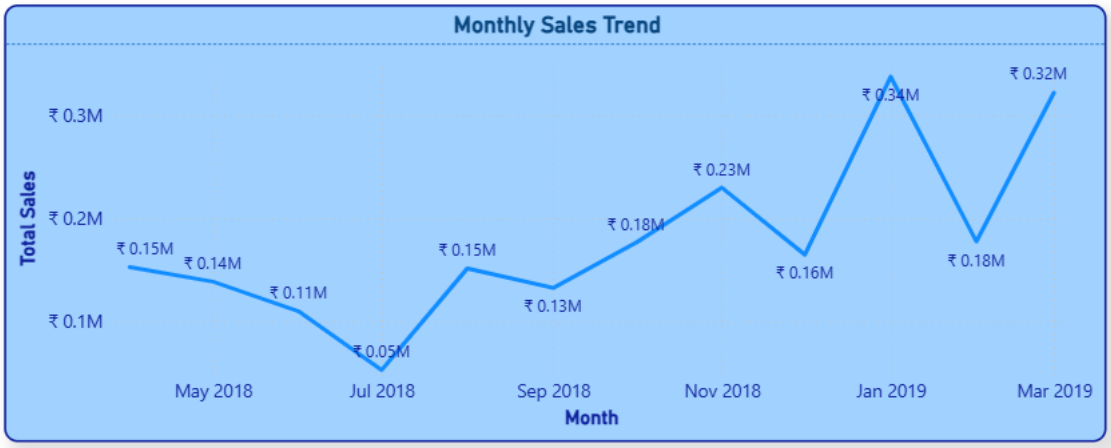
2.Max Profit Margin by Sub-Category:

- By using “Donut Chart”, analyse the maximum profit margin for each sub-category of products. From this chart, identified that Profit margins are fairly balanced across sub-categories.
- Handkerchief, Stole, and Printers have the highest profit margins.



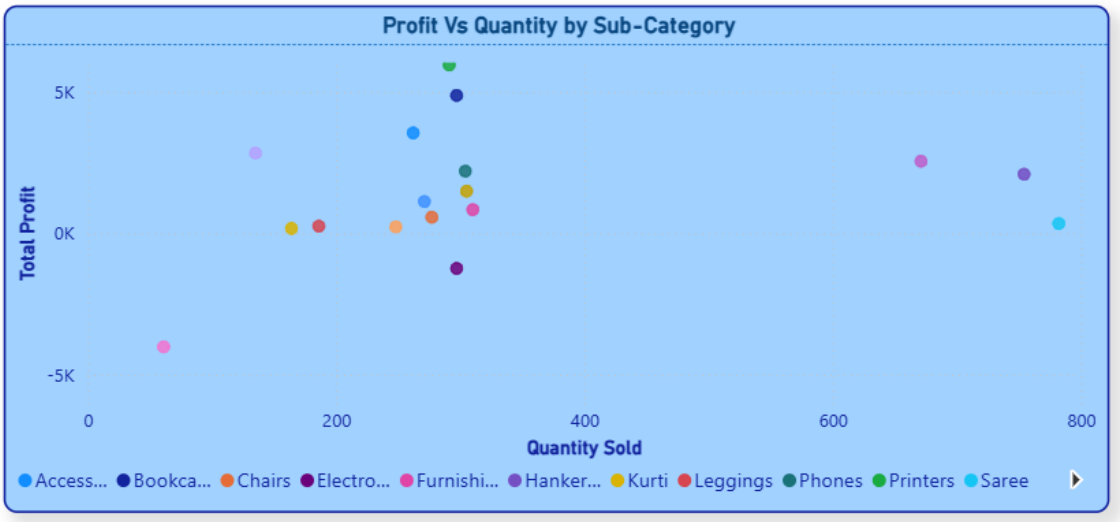
3.Monthly Sales Trend:

- Using a line chart, here shown the trend of monthly sales over time.
- Form this Chart, we knew that, Sales dropped in the middle of 2018, with the lowest point in July.
- After July, sales started increasing steadily and the highest sales were recorded in January 2019.
- Overall, sales show a positive growth trend over time.



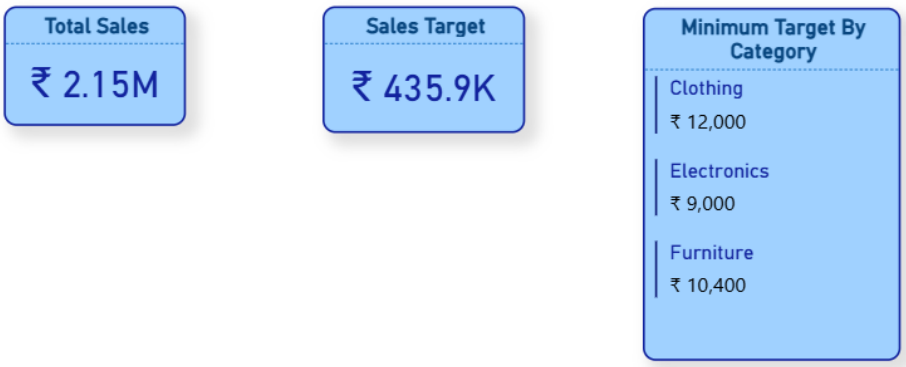
4.Comparison of Profit and Quantity by Sub-Category:

- To compare the relationship between profit and quantity sold for different sub-categories, a scatter chart is plotted.
- Some products earn good profit even with low sales volume (Printers, Quantity sold=291, Total Profit=5964)
- A few sub-categories show losses despite decent quantities.



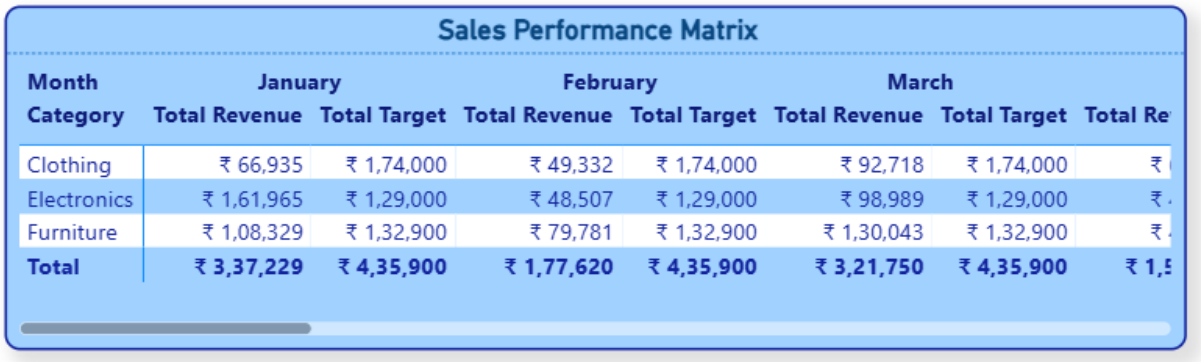
5.Comparison of Total Sales Amount and Target:

- Cards visuals created to display the total sales amount alongside the sales target for quick comparison and analysis. Also, created a multi-row card to display the minimum target for each segment.
- Total sales are 2.15M, and the sales target is 435.9K, so Sales have significantly exceeded the target.
- Among categories, Electronics has the lowest minimum target, followed by Furniture.



6.Sales Performance Matrix:

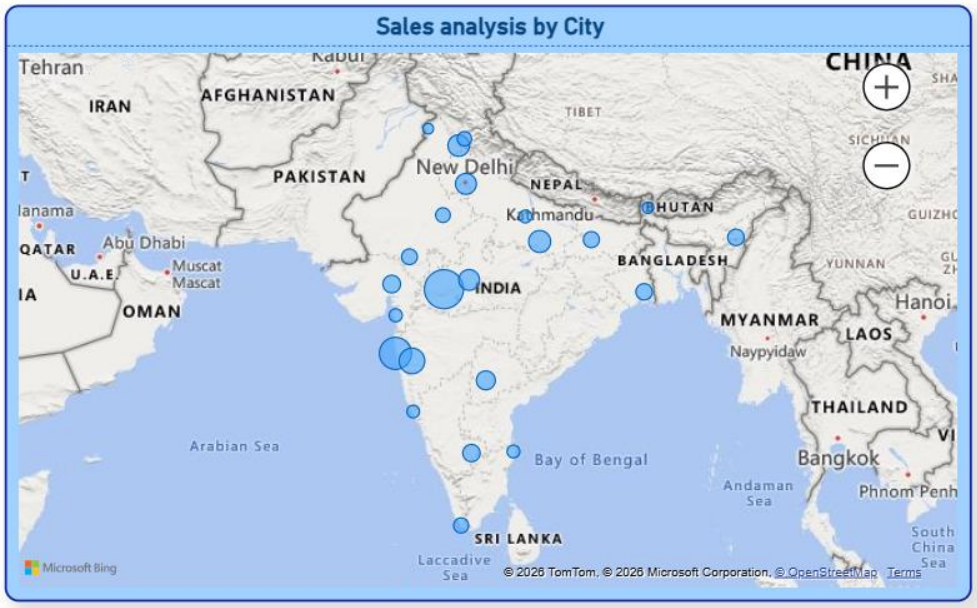
- Here is a matrix view to analyze, how actual sales compare to sales targets across different categories and months.



Month	January		February		March		
Category	Total Revenue	Total Target	Total Revenue	Total Target	Total Revenue	Total Target	Total Re
Clothing	₹ 66,935	₹ 1,74,000	₹ 49,332	₹ 1,74,000	₹ 92,718	₹ 1,74,000	₹
Electronics	₹ 1,61,965	₹ 1,29,000	₹ 48,507	₹ 1,29,000	₹ 98,989	₹ 1,29,000	₹
Furniture	₹ 1,08,329	₹ 1,32,900	₹ 79,781	₹ 1,32,900	₹ 1,30,043	₹ 1,32,900	₹
Total	**₹ 3,37,229**	**₹ 4,35,900**	**₹ 1,77,620**	**₹ 4,35,900**	**₹ 3,21,750**	**₹ 4,35,900**	**₹ 1,5**

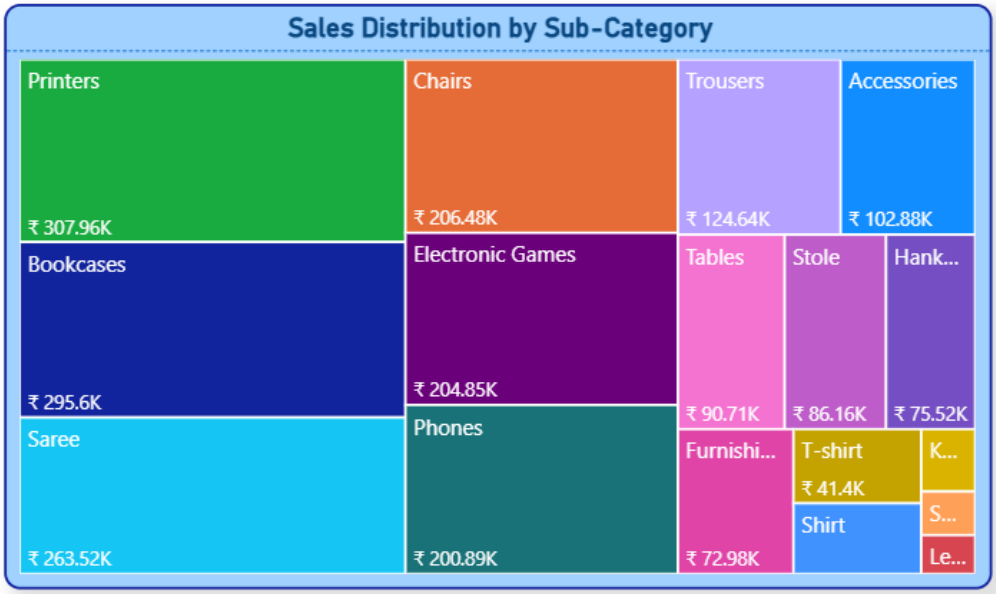
7.Geographic Sales Analysis:

- To identify regional sales patterns, Visualize the total sales on a map by city.
- Sales are spread across multiple cities in India.
- Indore city contributes more to total sales followed by Mumbai.
- Some regions show low growth potential.



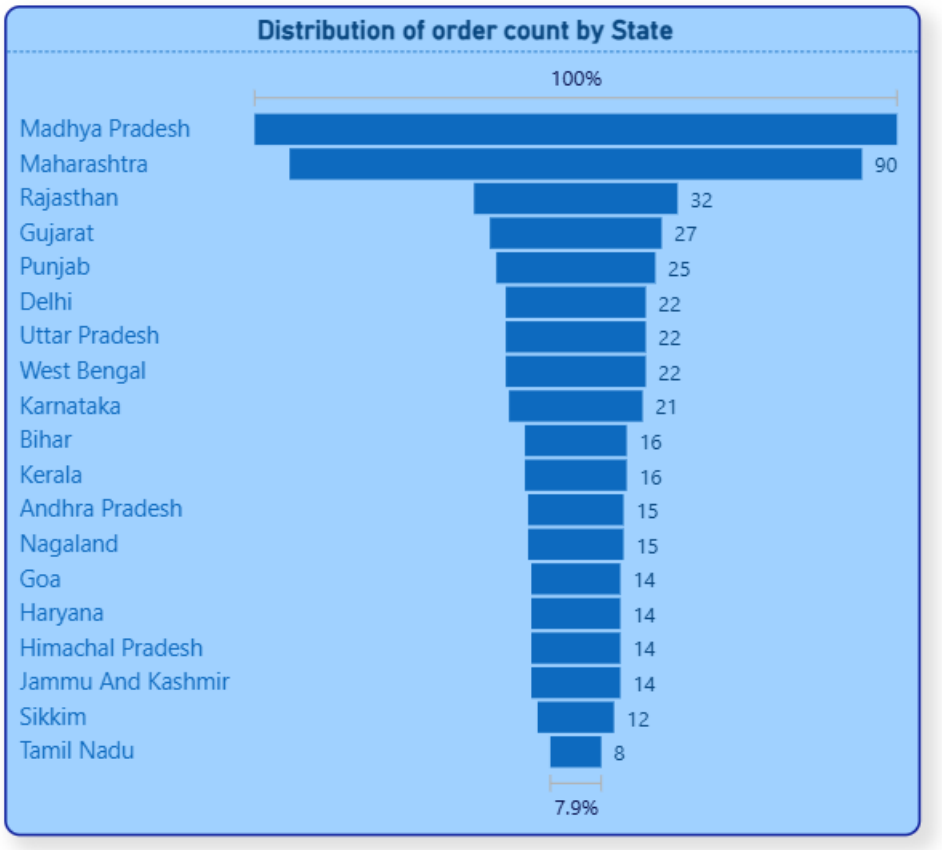
8.Sales Distribution by Sub-Category:

- Represent the sales distribution across different sub-categories using a tree map.
- Printers and Bookcases have the highest sales.
- Sarees, Chairs, and Electronic Games are also strong contributors.



9.Order Count Analysis by State:

- Funnel chart is created to visualize the distribution of order counts across different states.
- Madhya Pradesh and Maharashtra have the highest order counts.
- Orders are moderately distributed across other states.
- Some states contribute very few orders, indicating low market reach.



Conclusion:

In this Assignments ,I had learnt about calculated columns, calculated measures and Visualization part.