Prepared by Mohammad Umer

Power BI Tutorial

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- Project 1 Overview: Sales Data Analysis

ElectroHub is a company is having a store in some area and in that store the customers visit offline and they may buy products that may belong to any one of these categories below:

- Electronics
- Footwear
- Clothing
- Home Appliances
- Accessories
- Kitchenware
- Bags
- Personal Care

There are few Questions that we should be able to answer based on the report that we will create

1. Top/Bottom 5 product by Sales/Profit/Quantity Sold.

2. How do sales trends vary over time (daily, monthly, quarterly, annually)?

3. Show relationship between sales & profit.

4. Average discount offered in each discount category.

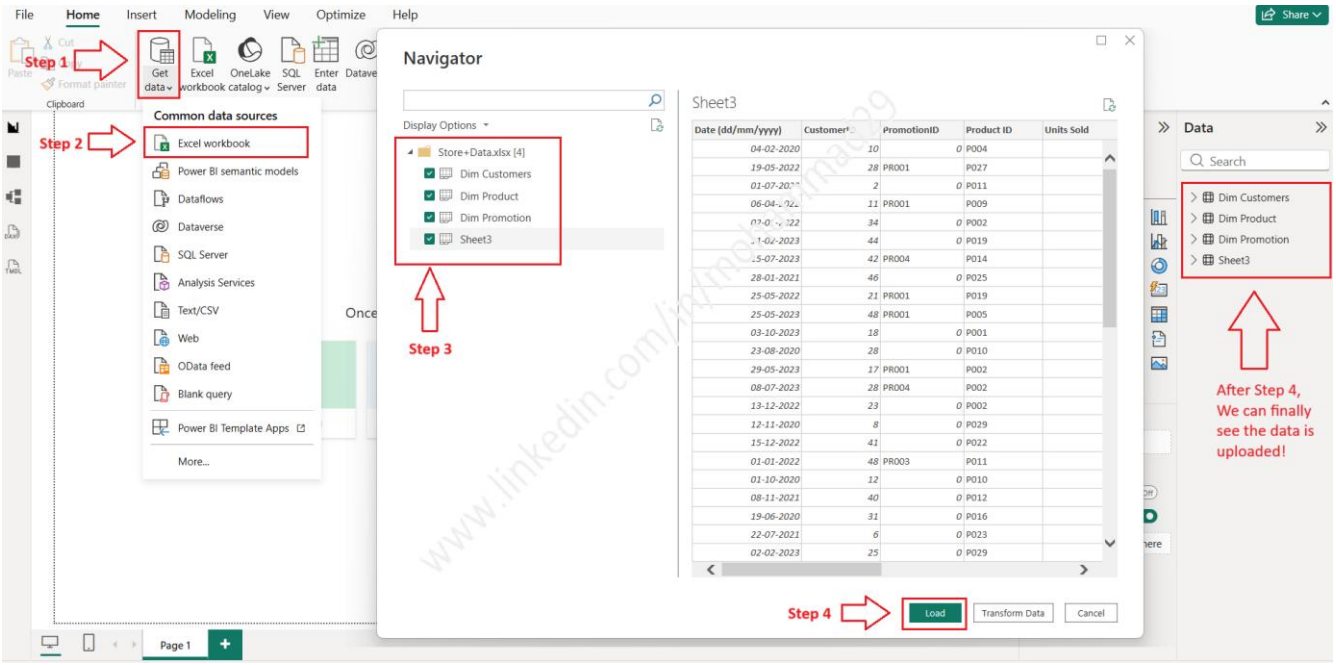
5. Show sales by different cities.

6. Total number of orders.

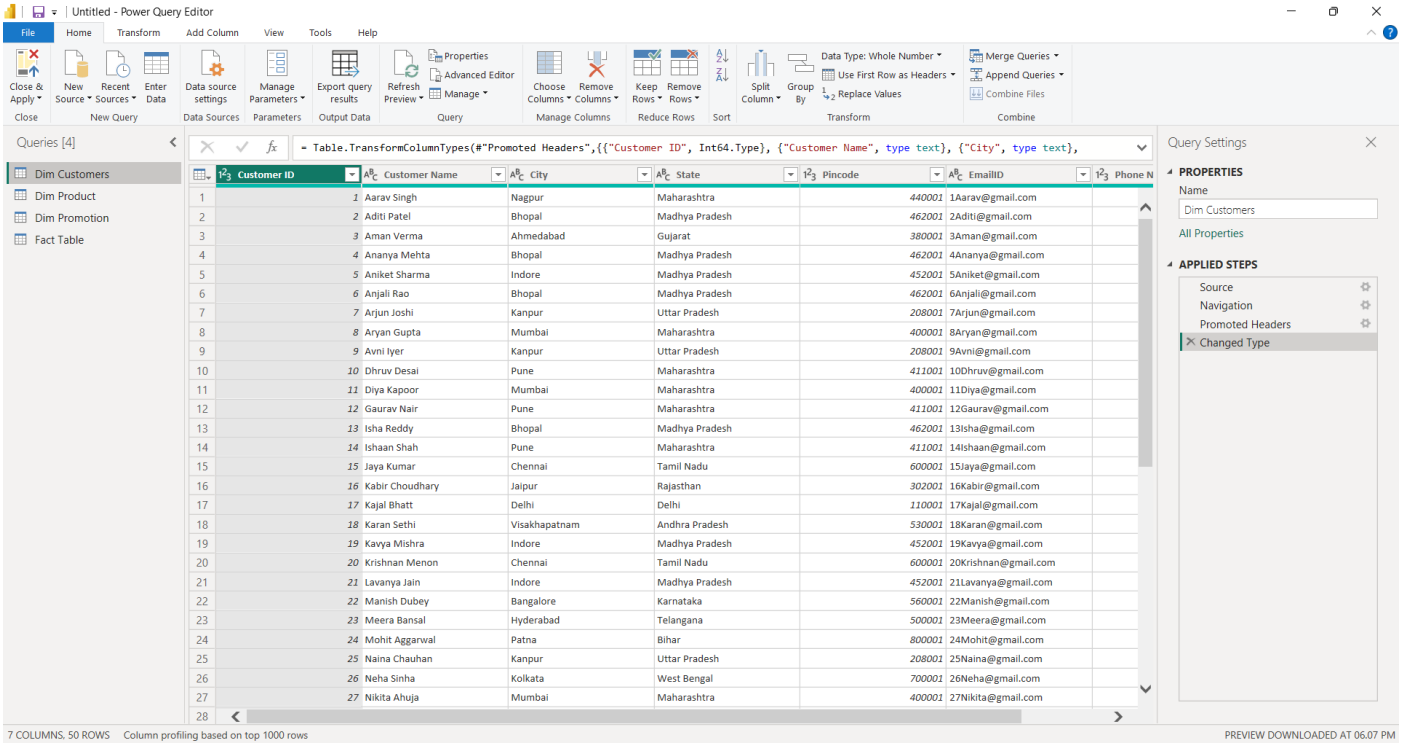
7. Compare sales/profit/quantity sold between any two periods selected by the user.

8. Show Sales/Profit/Discount/Net Sales/All remaining fields for each order that could be filtered using visual filters. (Product/Date/Customer ID/Promotion Categories)

- Step 1: Bringing the Data to Power BI Desktop



In Power Query Editor it looks like this,

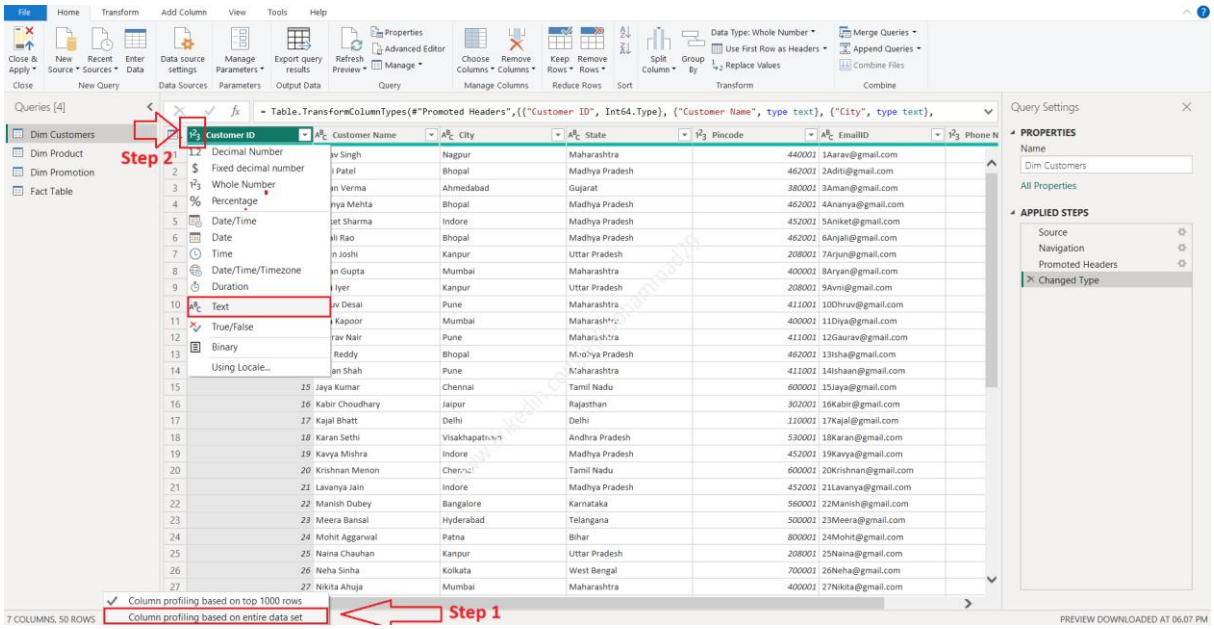


- Step 2: Data Transformation (Part 1)

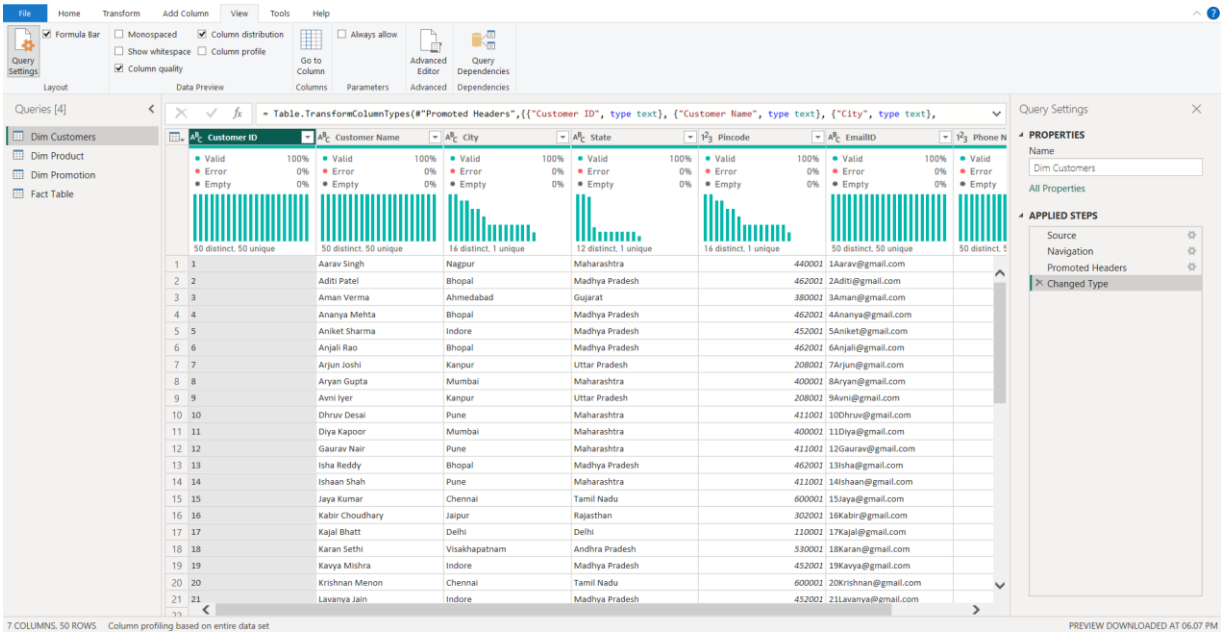
1. Dimension Customer table

- ✓ Always put column profiling based on entire dataset, else by default it will show you the column profiling for top 1000 rows only in this particular dimension.

- ✓ For customer ID column, we will not be performing any mathematical operation on this column and we are planning to make it our primary key, So it is not required to keep it a number data type. So it is expected to keep its data type as text, as per our requirement.



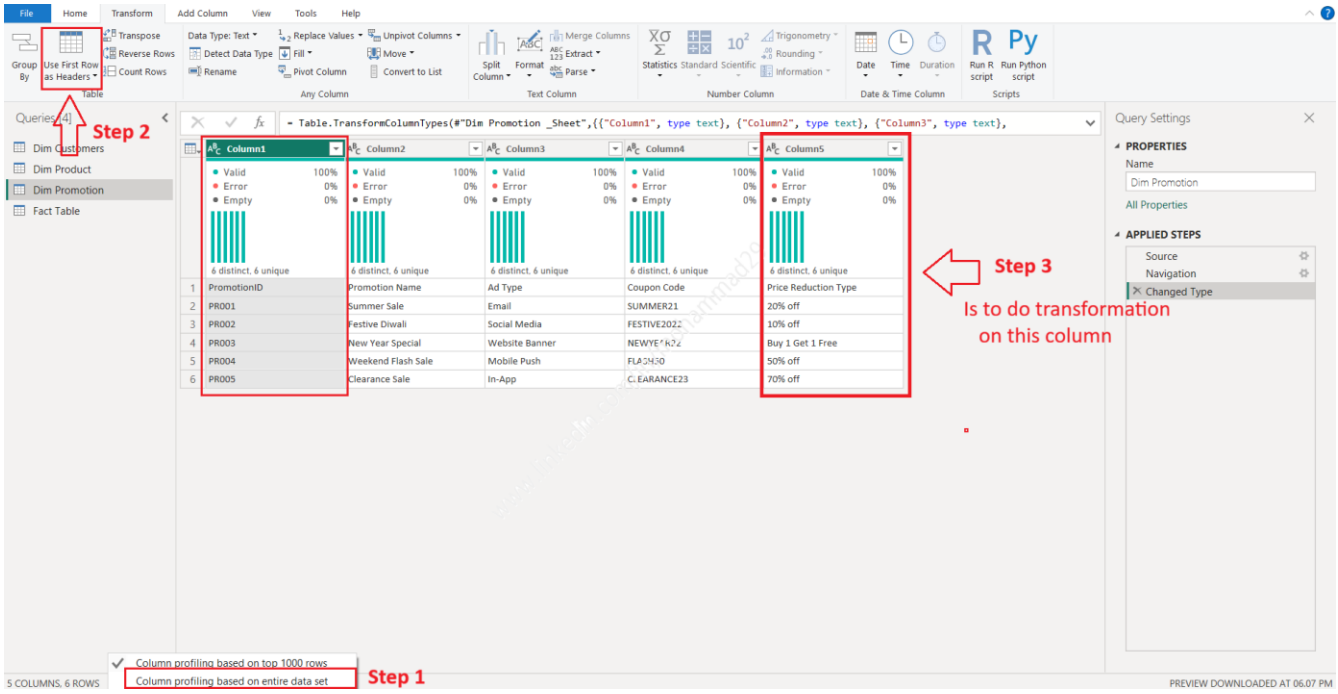
After,



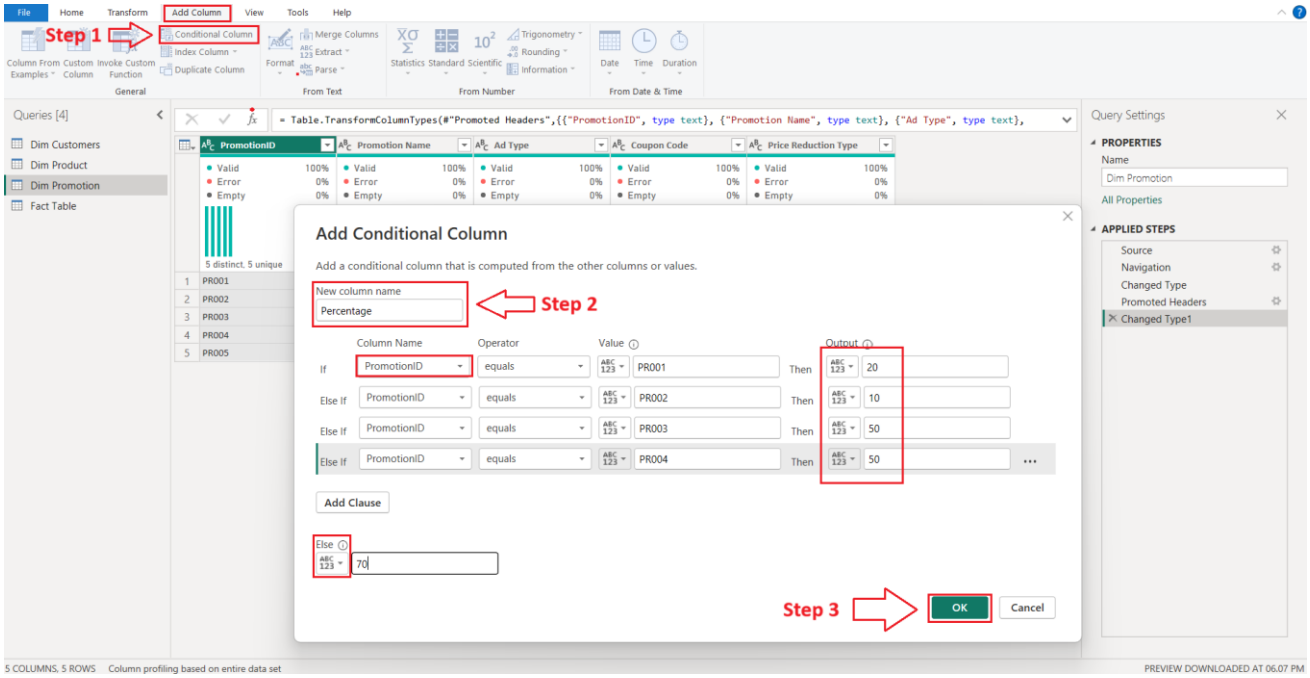
2. Dimension Promotion table

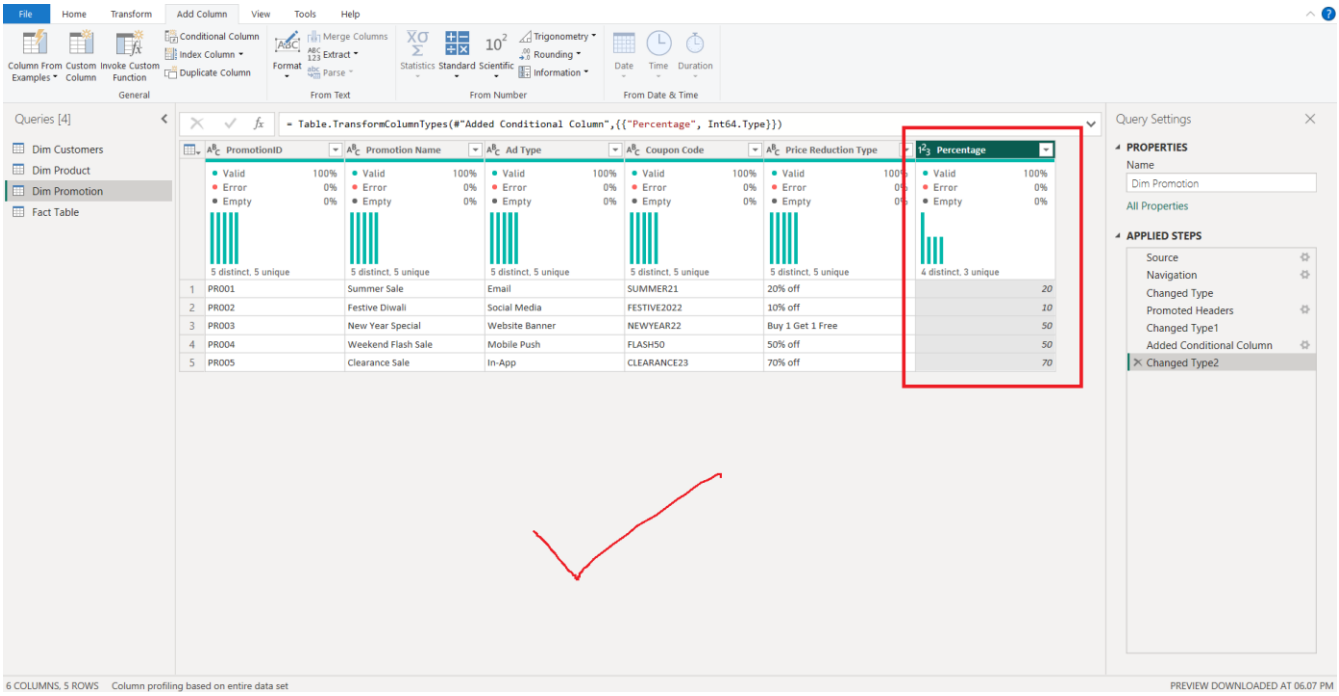
- ✓ Always put column profiling based on entire dataset, else by default it will show you the column profiling for top 1000 rows only in this particular dimension.

- ✓ The names of the columns are present in first row and not in the headers, So we will have to move this first row to headers.



- ✓ Perform Data Transformation on 'Price Reduction Type' column, create a new column from 'Price Reduction Type' column that should consist of numerical percentages value only.

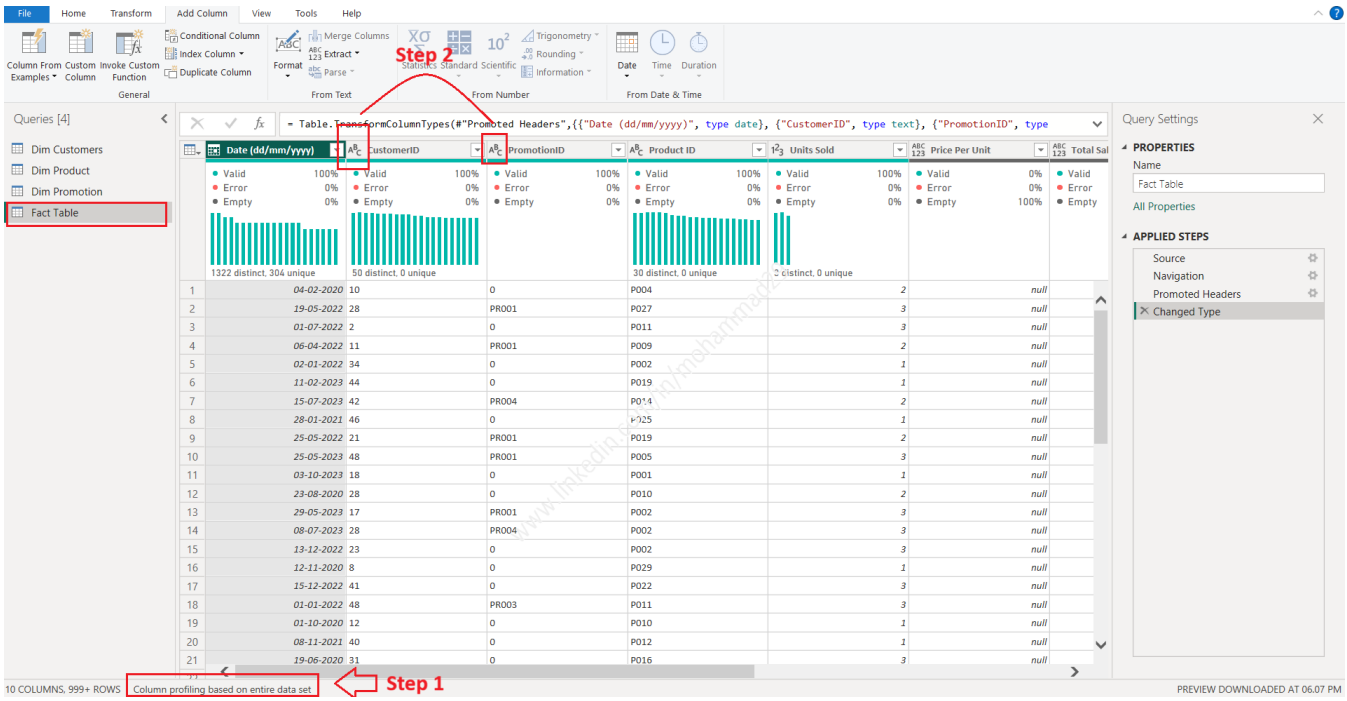




3. Dimension Promotion table

- ✓ Always put column profiling based on entire dataset, else by default it will show you the column profiling for top 1000 rows only in this particular dimension.

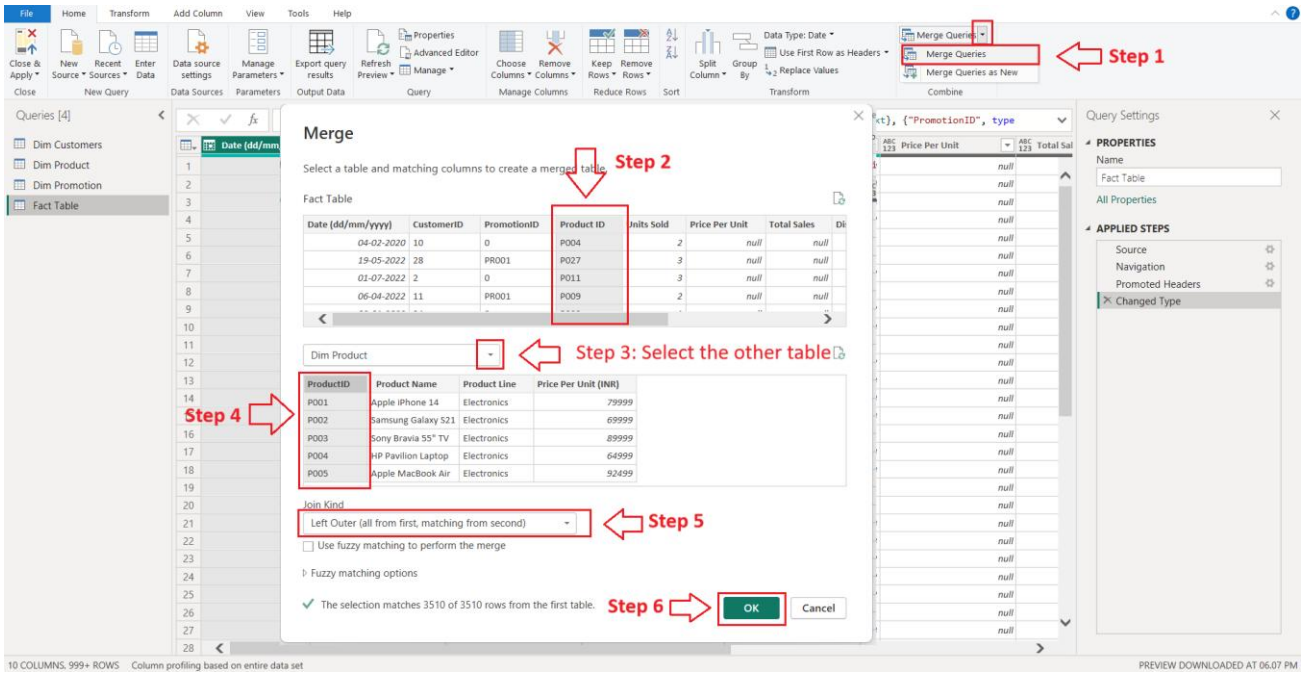
- ✓ For customer ID column & Promotion ID to 'text' datatype.

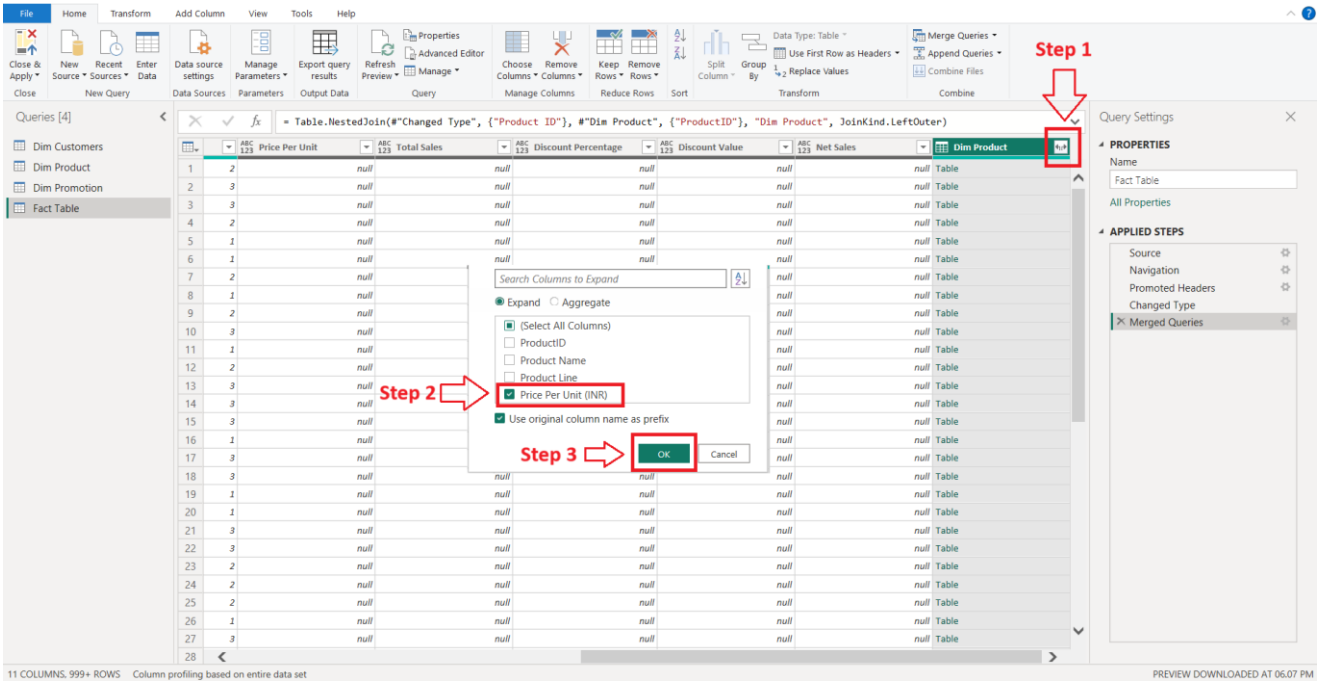


- Data Transformation (Part 2)

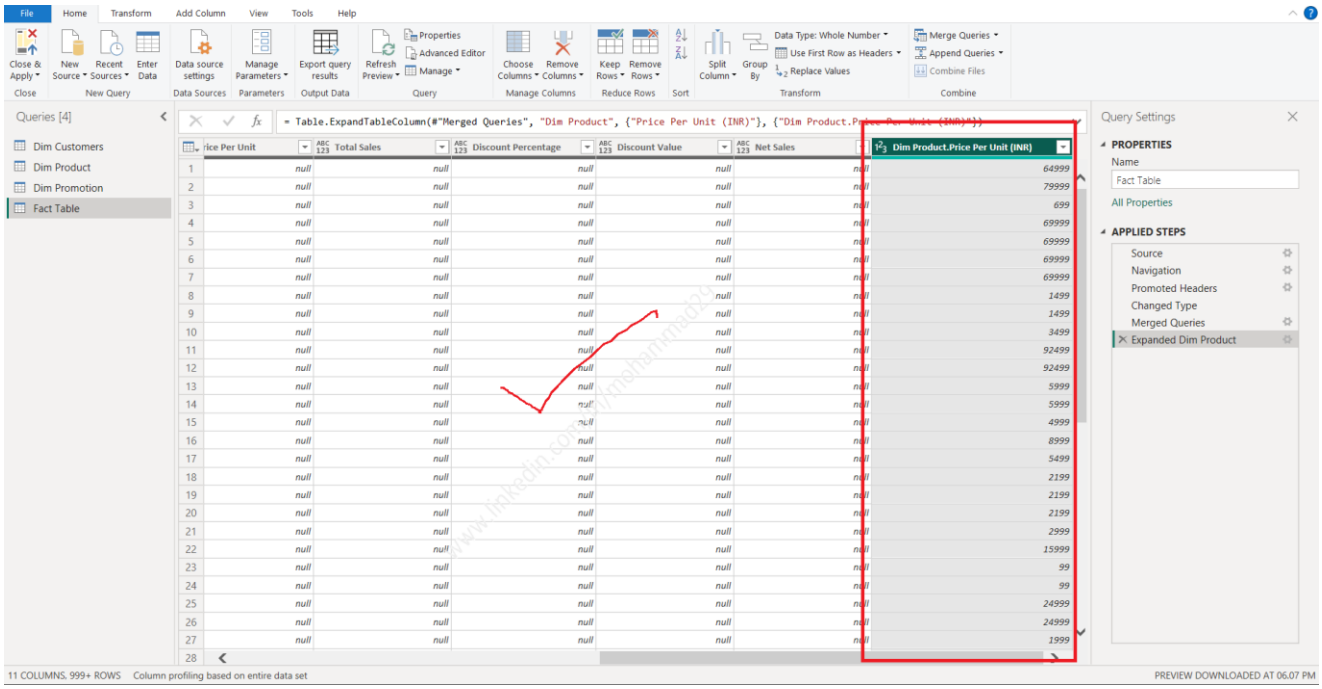
1. Merge Operation

We will perform Merge operation between 'Dimension Product table' and 'Fact Table' to fill 'price per unit' column in the fact Table.

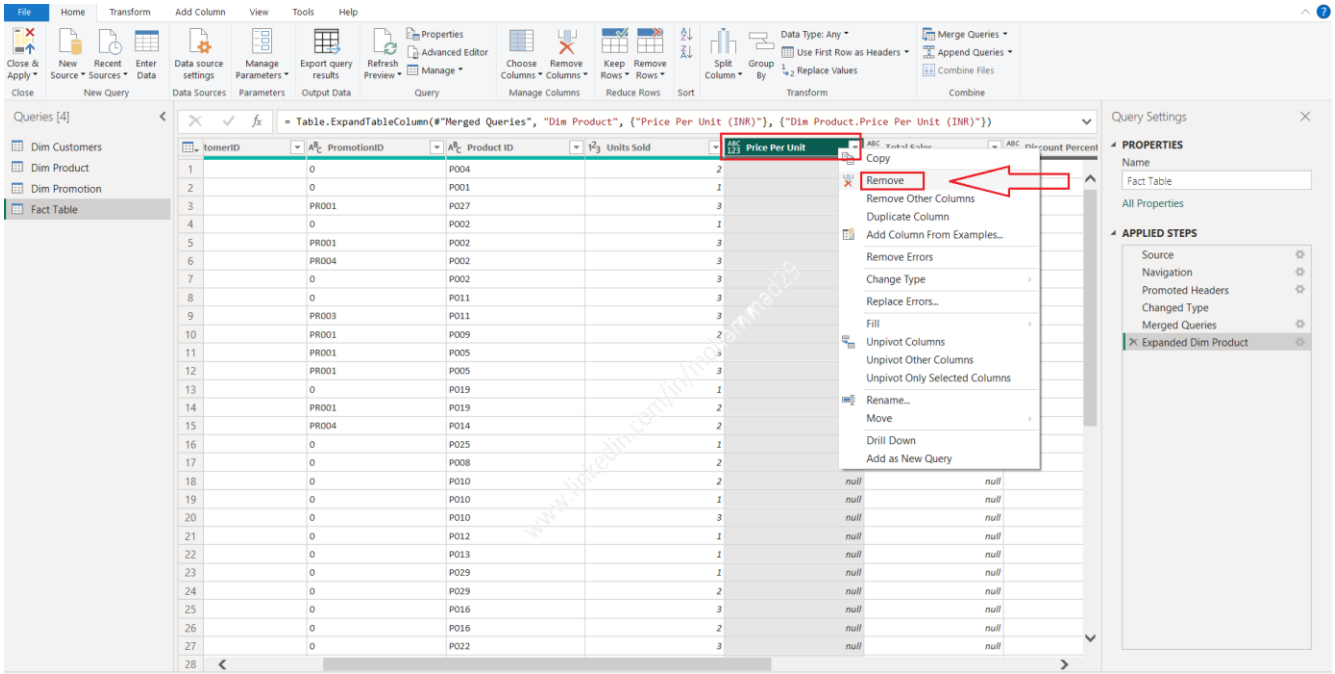




Finally we have price per unit available in **fact table** which was null brought from **product table**.



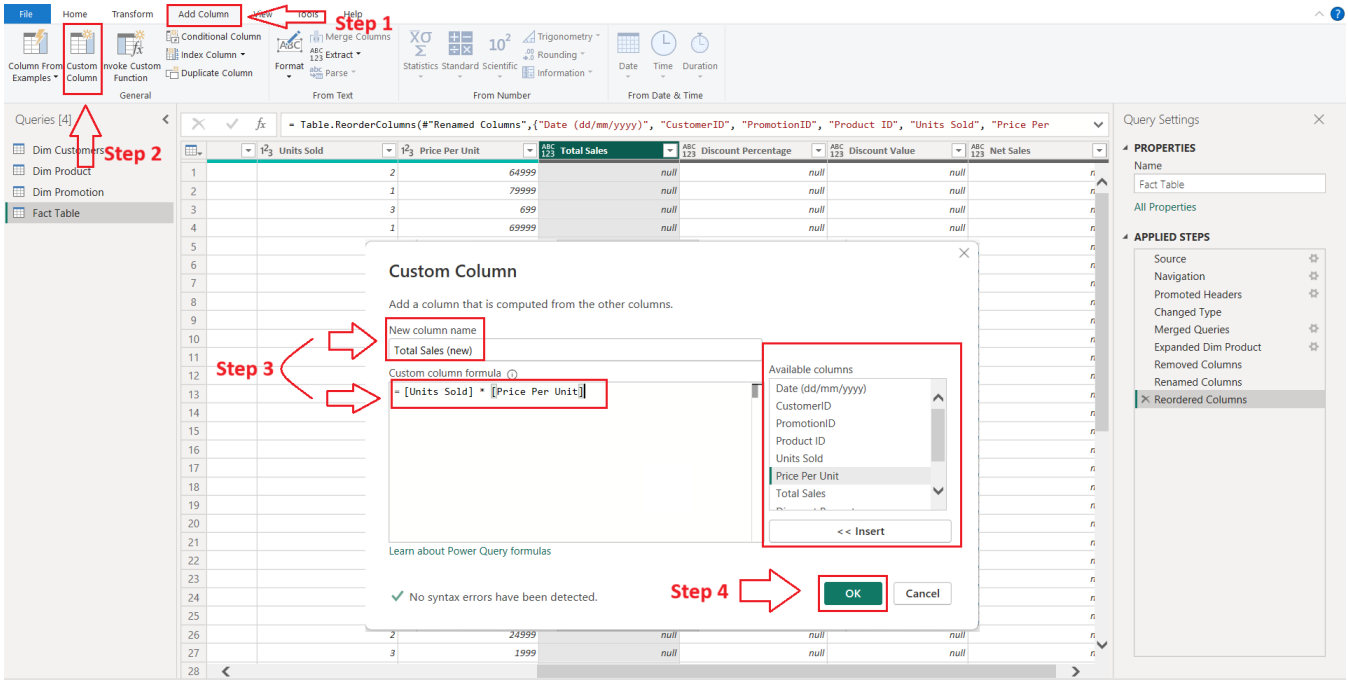
Now we no longer needed that NULL 'Price Per Unit' column in the 'Fact Table', because we have already populated this column from **product table**. So we will simply right click on this column and we will simply remove it.



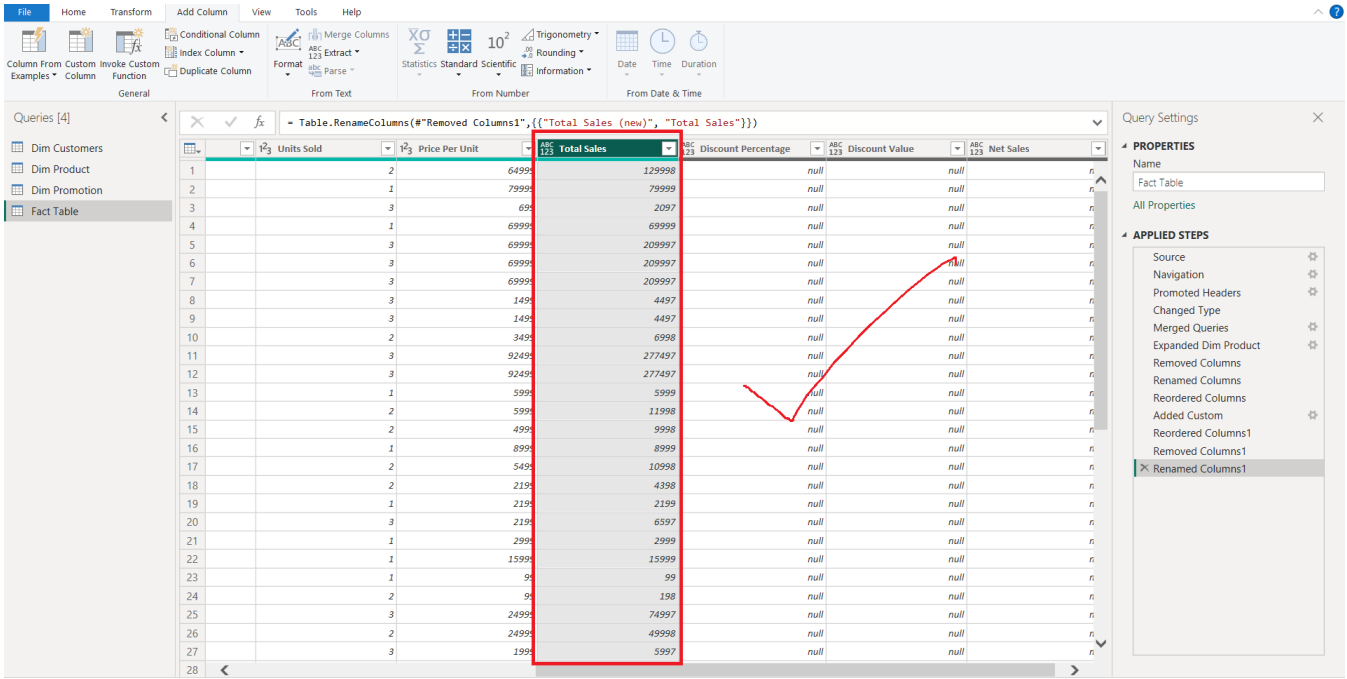
Also change the Added column to 'Price per Unit'.

2. Multiply Two Columns

We can multiply two columns i.e 'Units Sold' & 'Price Per Unit', to get 'Total Sales' column.

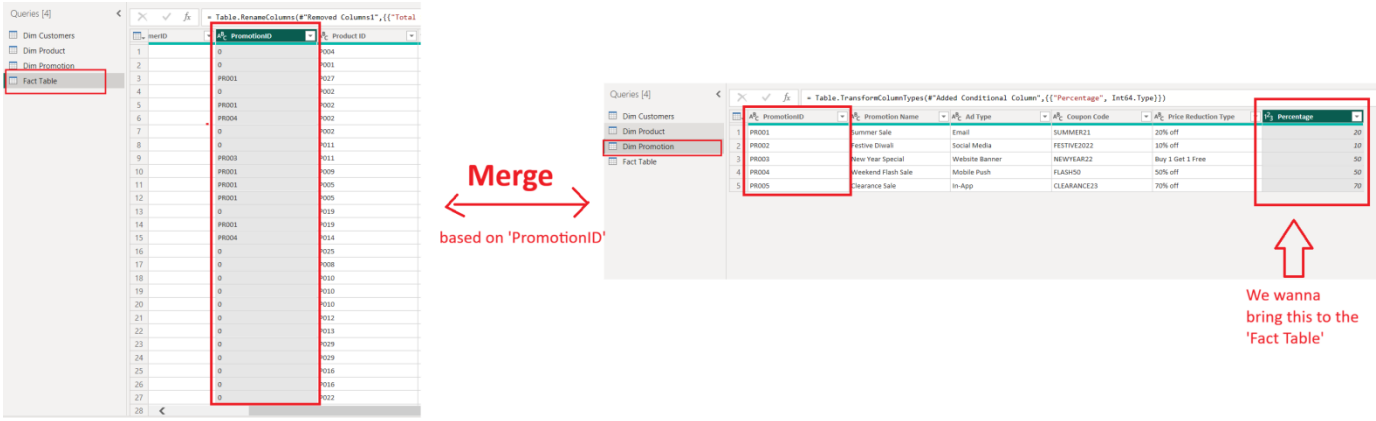


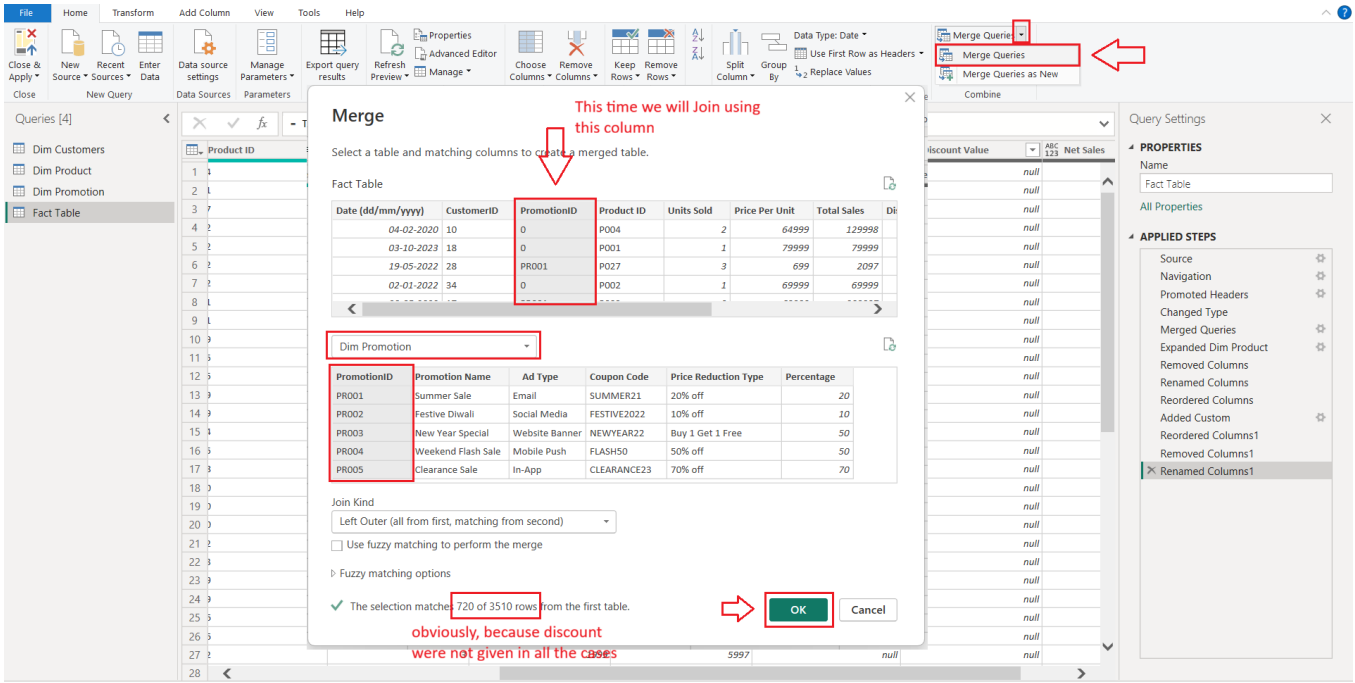
Now again Delete the Empty 'Total Sales' column, and then rename the Newly created 'Total Sales (new)' column to 'Total Sales'.

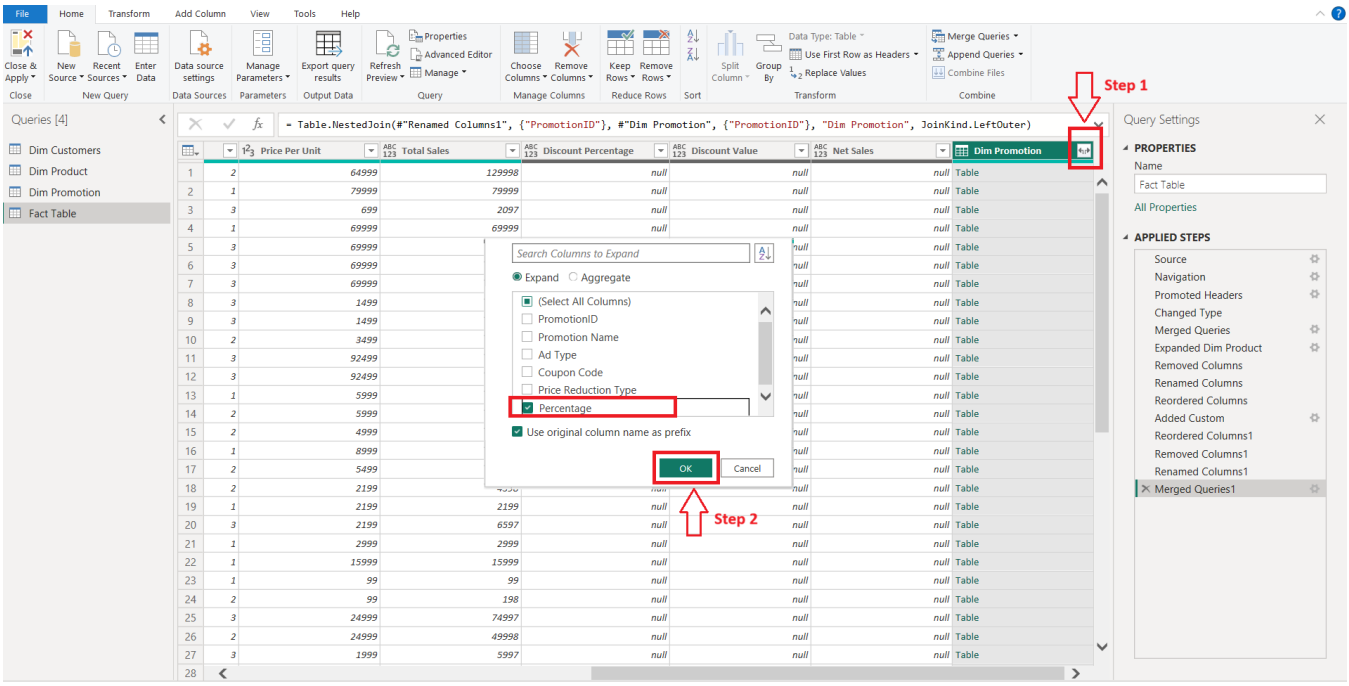


3. Merge Operation

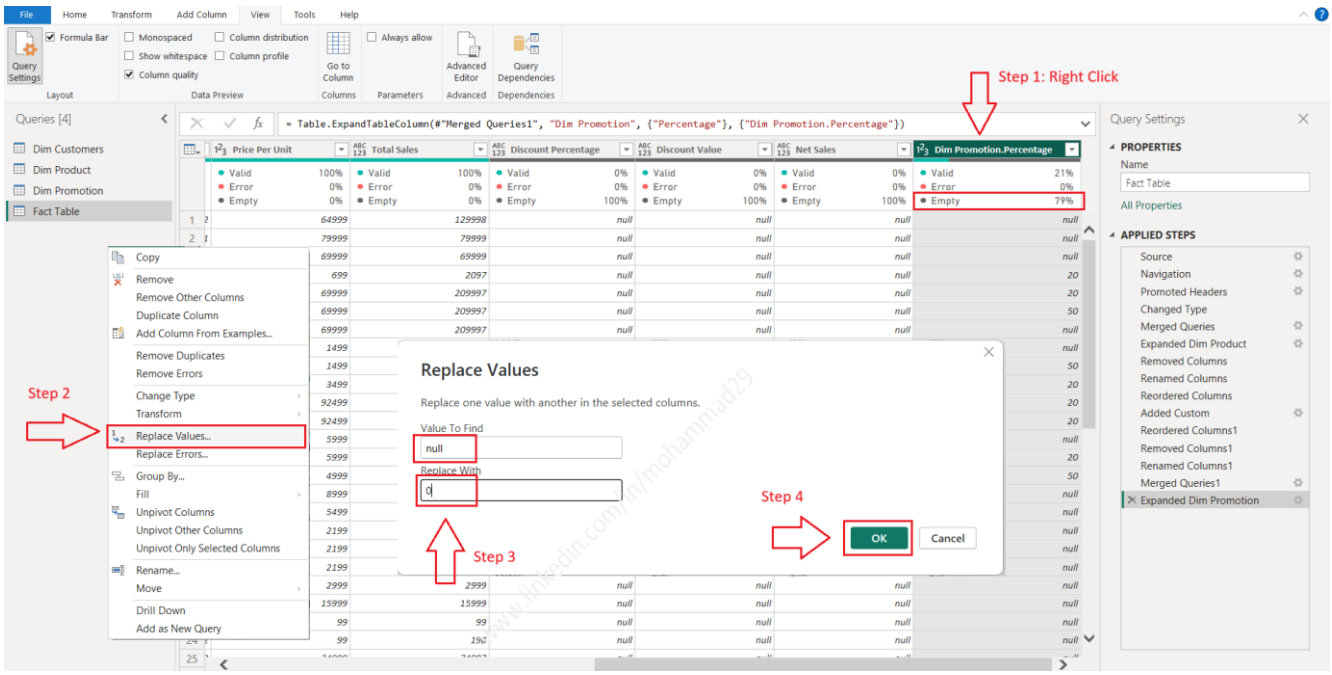
We will perform Merge operation between ‘Dimension Promotion table’ and ‘Fact Table’ to fill ‘Discount Percentage’ column in the fact Table.



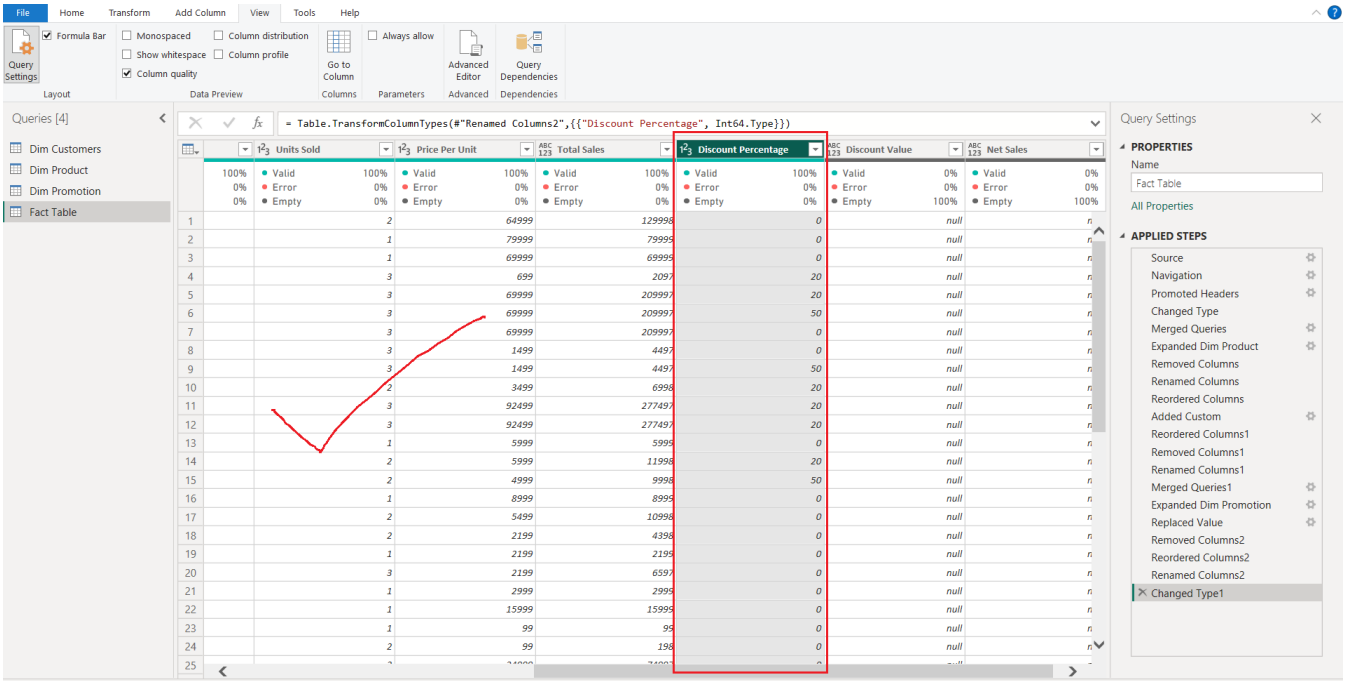




We can see there is a lot of NULL values (79%), that is obvious as everyone will not get the DISCOUNT. But we will change them it 0.



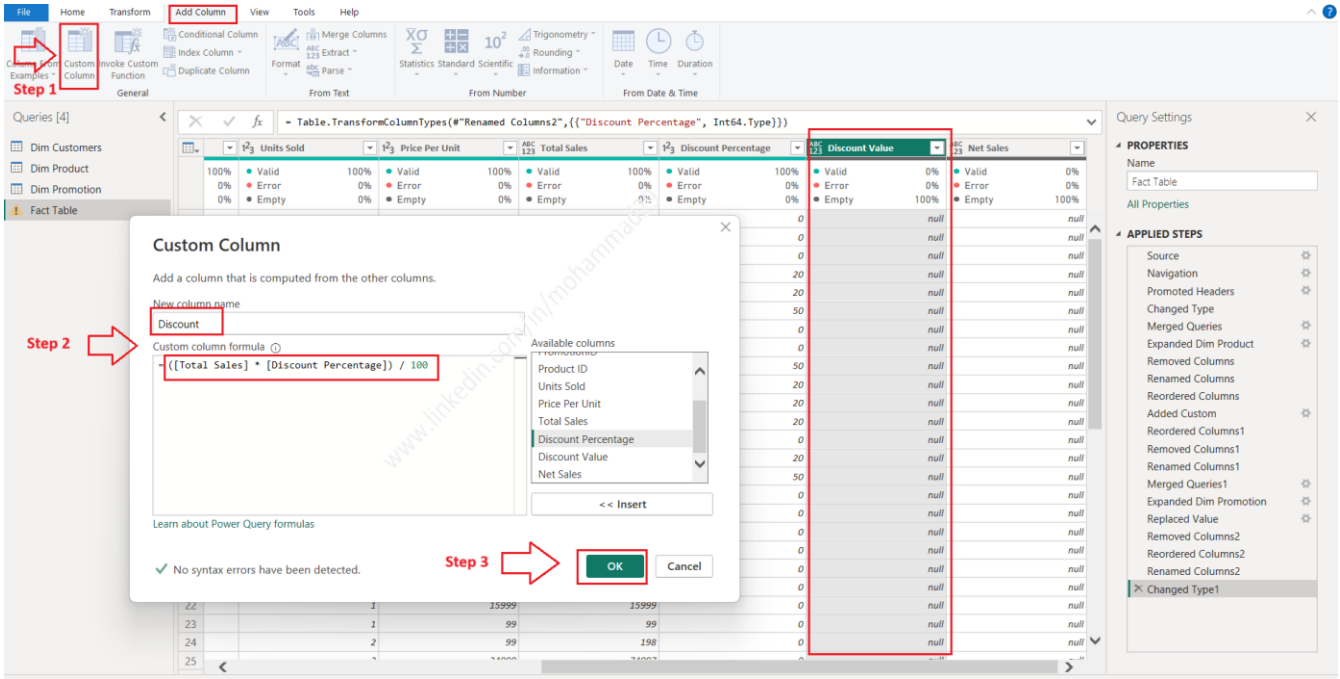
Now Delete ‘Discount Percentage’ column, and remane ‘Dim Promotion.Percentage’ column to ‘Discount Percentage’.



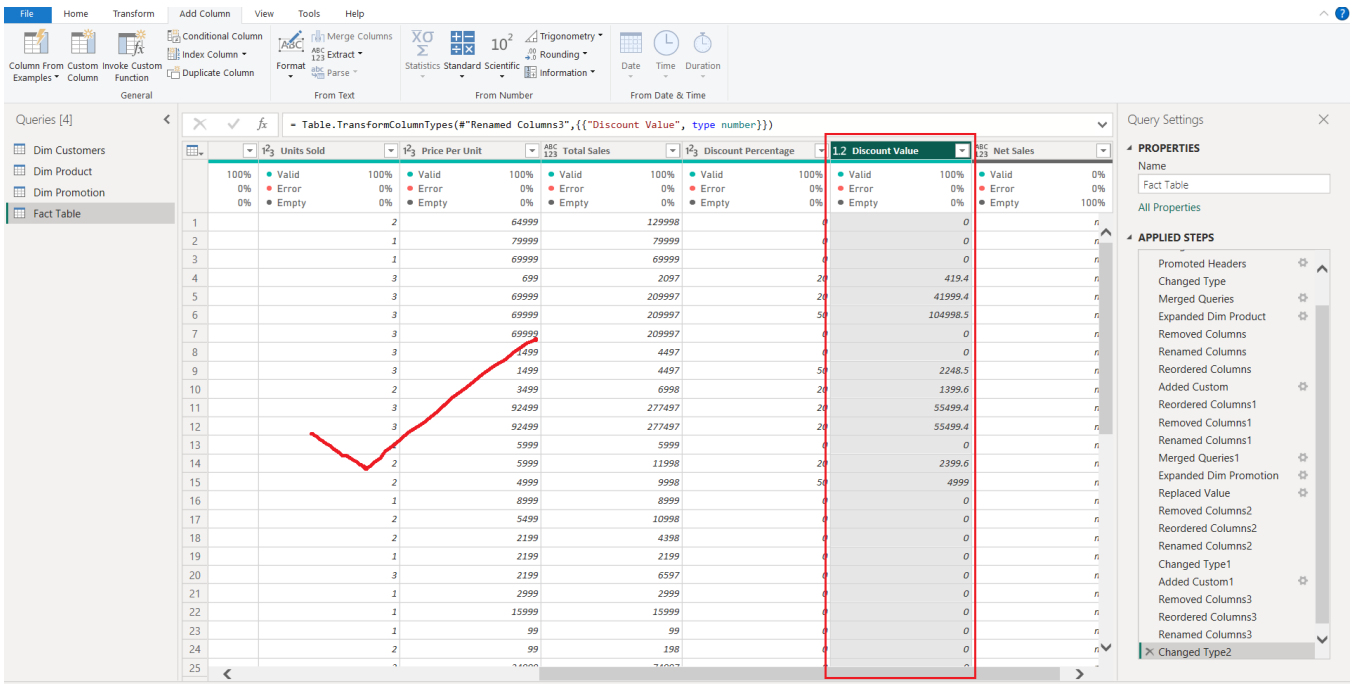
NOTE: Similarly we can transform ‘Dsicount value’ and ‘Net Sales’ columns too.

4. Myltiple Two Columns & Then Divide

We can multiply two columns i.e 'Total Sales' & 'Discount Percentage', to get 'Discount Value' column.

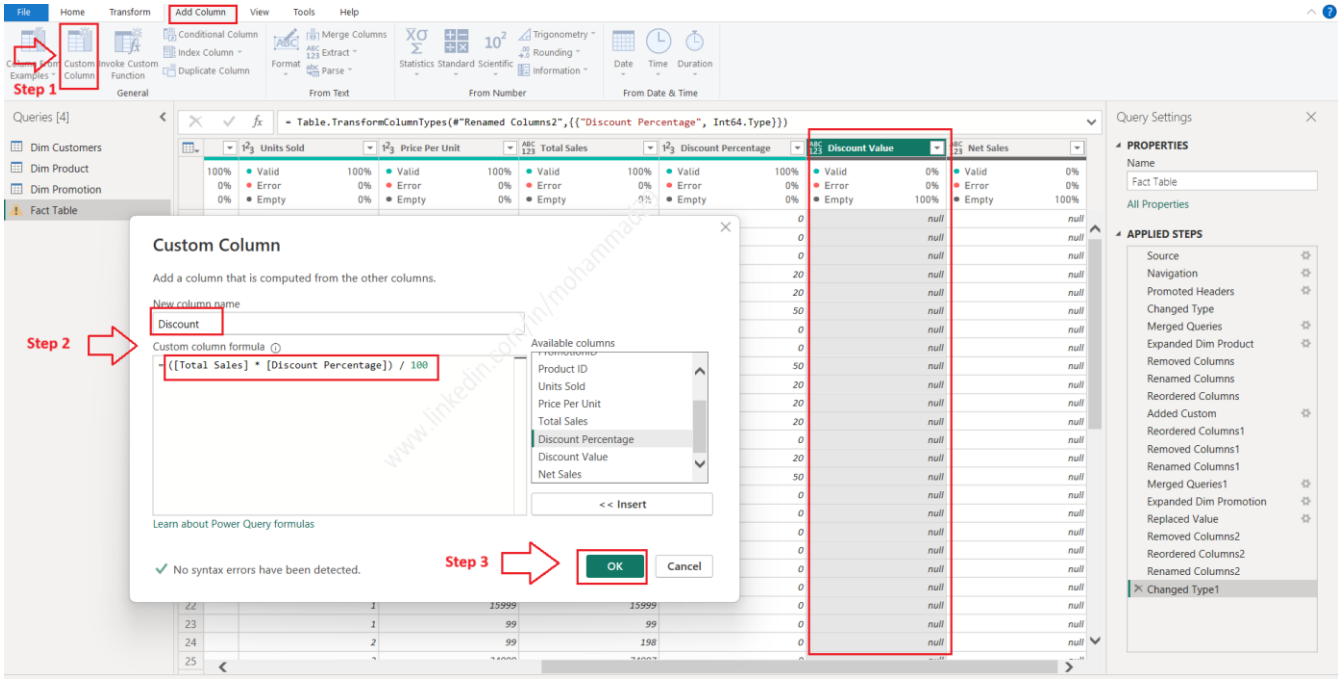


Now again Delete the Empty 'Discount Value' column, and then rename the Newly created 'Discount' column to 'Discount Value' and corrected its datatype.

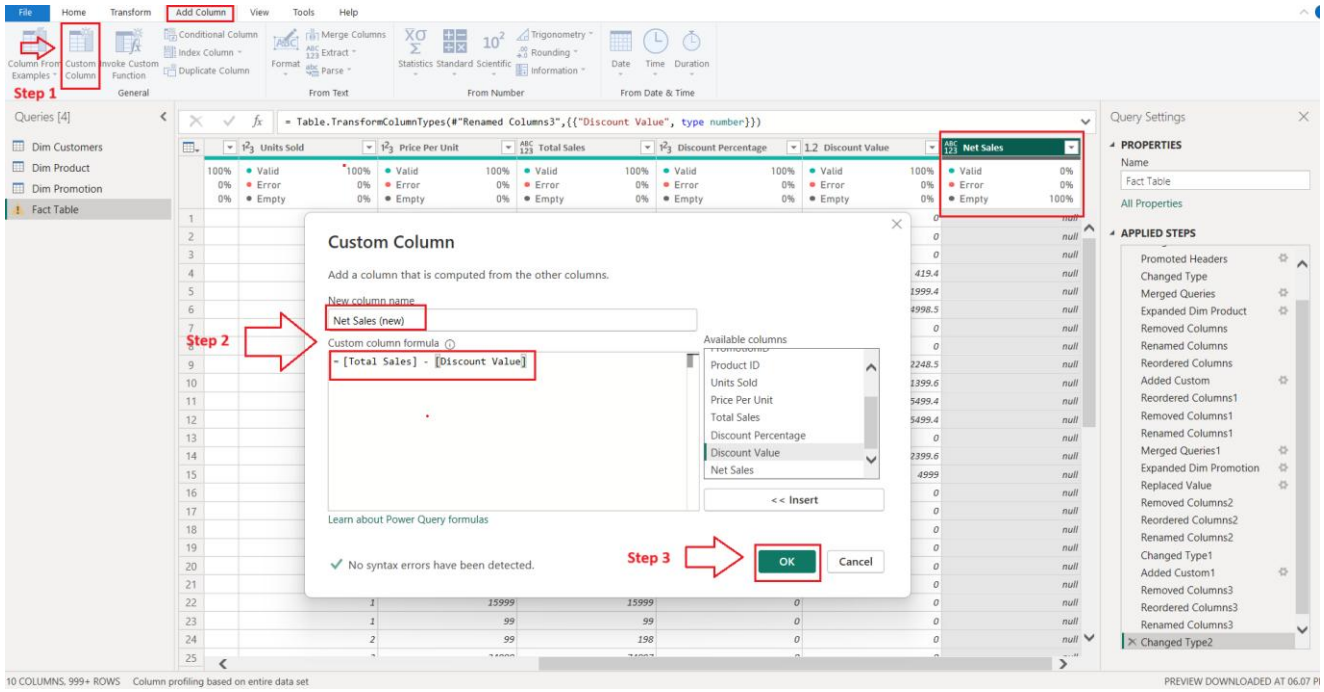


5. Myltiple Two Columns

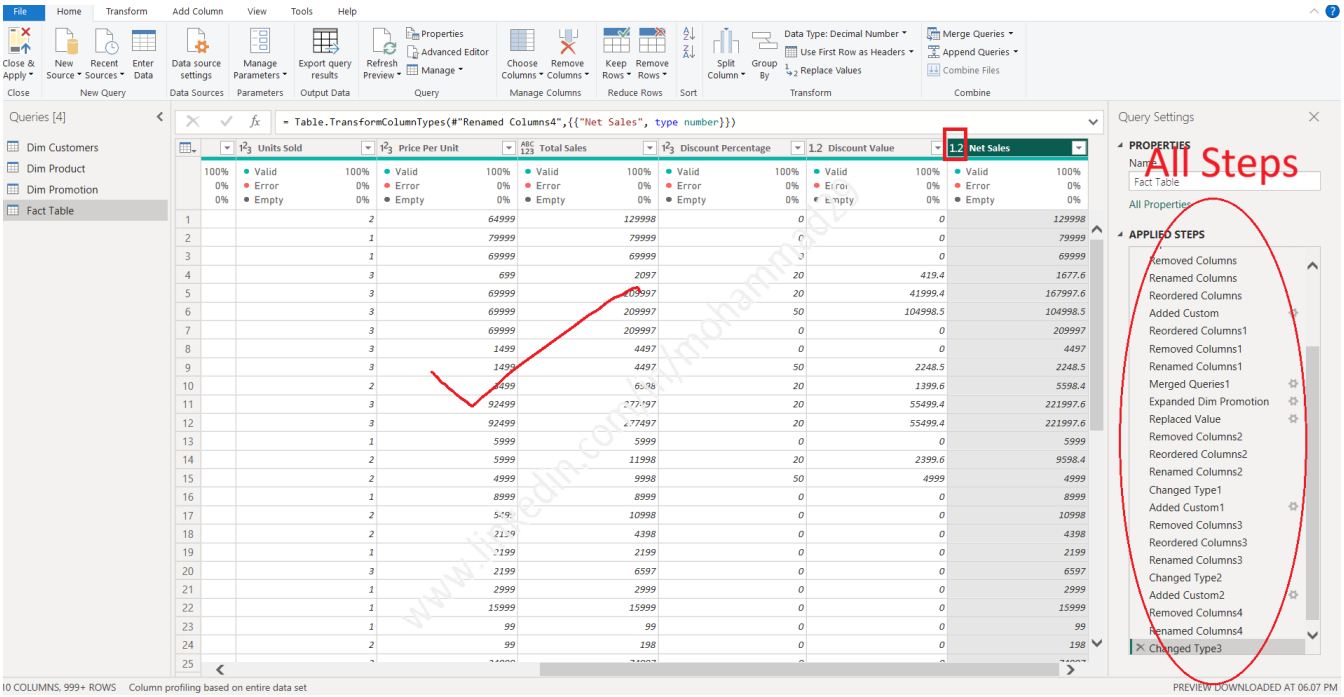
We can multiply two columns i.e 'Total Sales' & 'Discount Value', to get 'Net Sales' column.



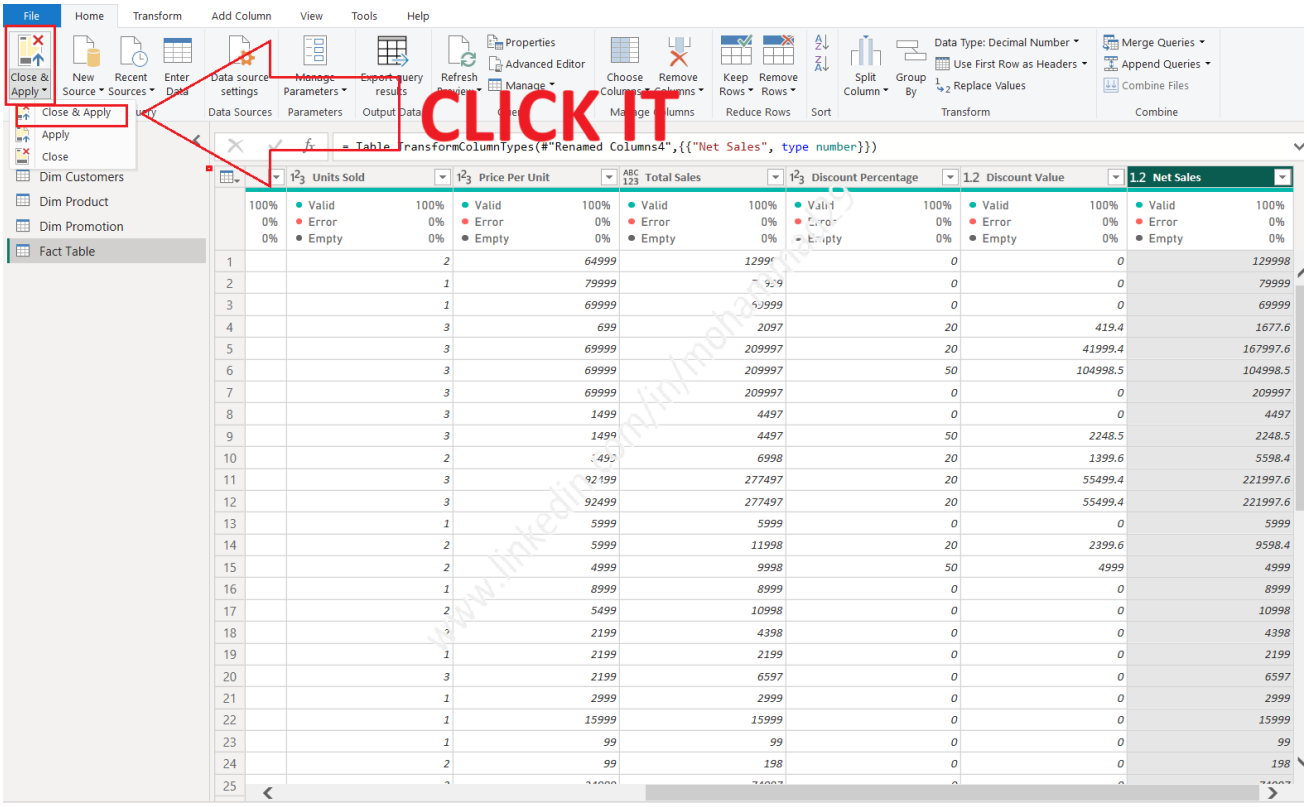
Now again Delete the Empty 'Net Sales' column, and then rename the Newly created 'Net Sales (new)' column to 'Net Sales' and corrected its datatype.



Now change the datatype to decimal.



→ Save And close and go back it report view.

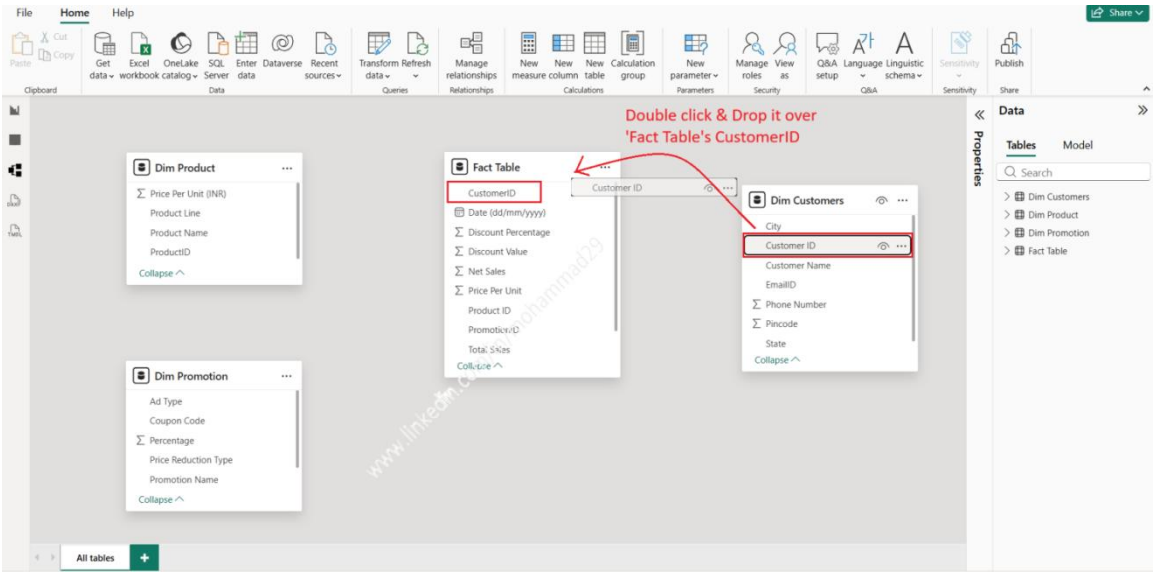


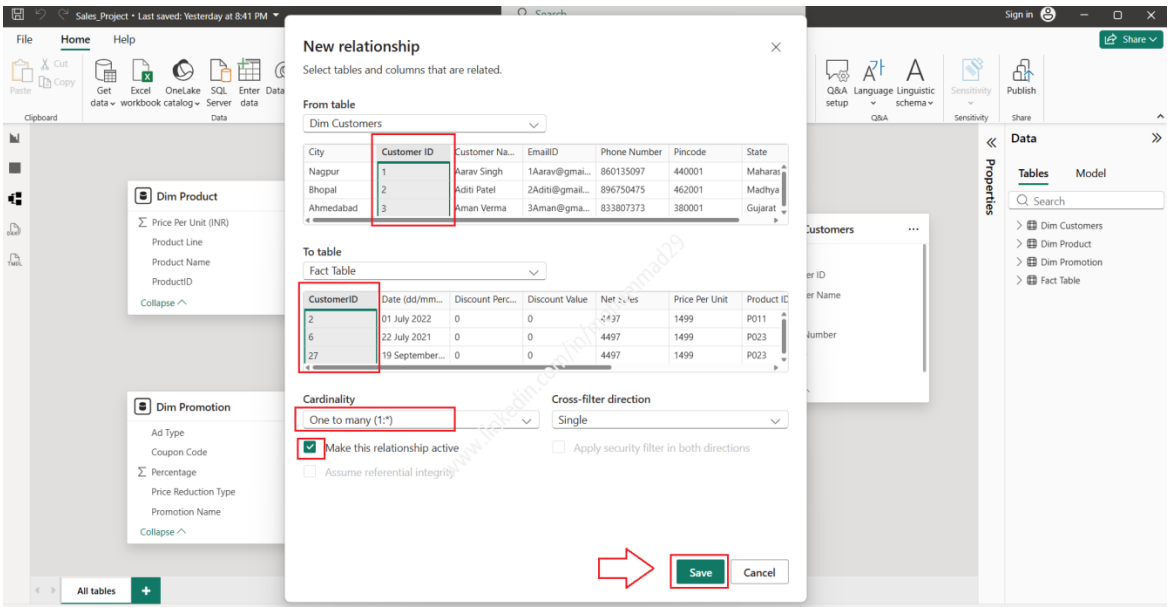
- Step 3: Data Model Overview

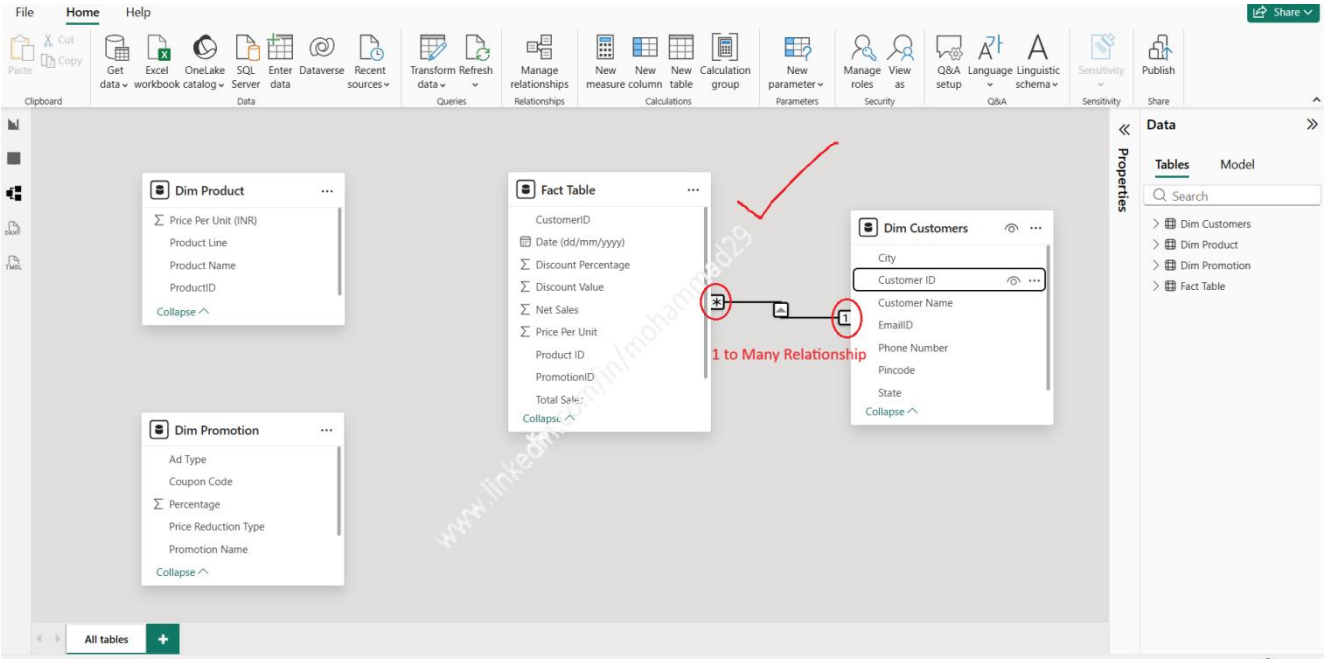
After preparing the data, the next step is **Data Modeling**, where we organize the data in a meaningful way for analysis. In this stage, we:

- Create relationships between different tables.
- Define primary and foreign keys.
- Apply normalization or star schema design.
- **Create calculated columns and measures using DAX**.
- Optimize the model for better performance and faster query execution.

A well-designed data model helps Power BI generate accurate visuals, improve performance, and make reports easier to maintain and understand.

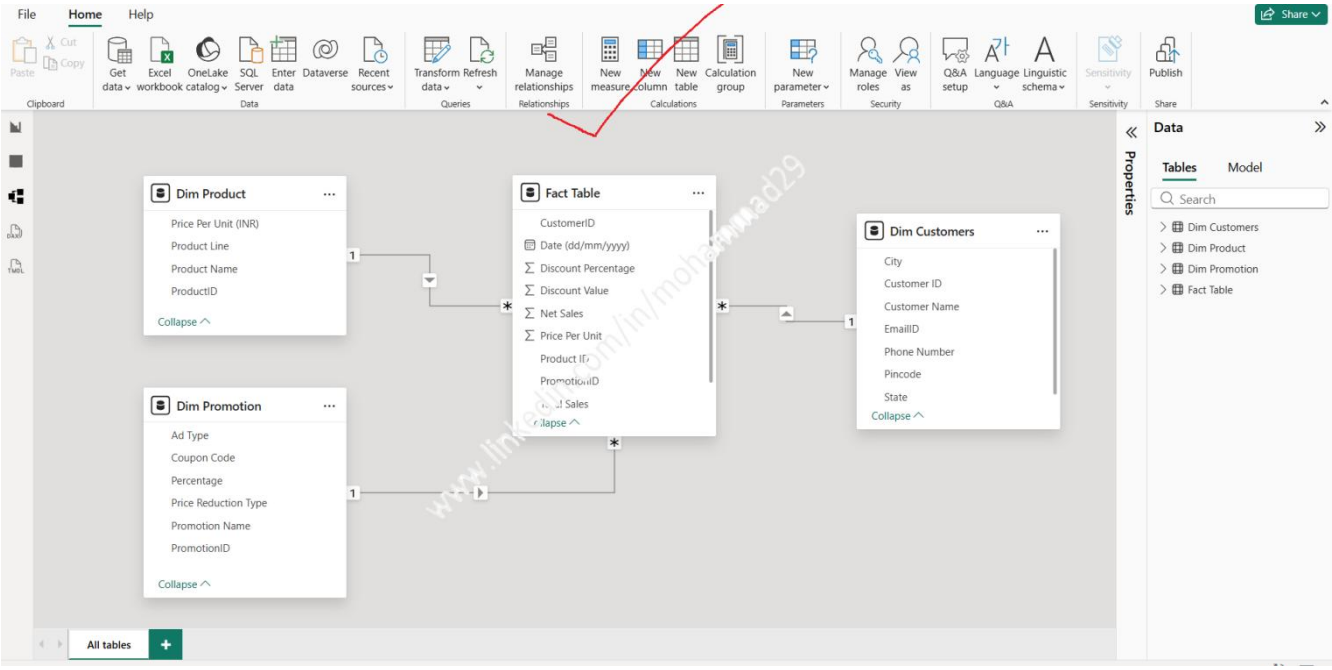






Similarly we can form other relationships i.e

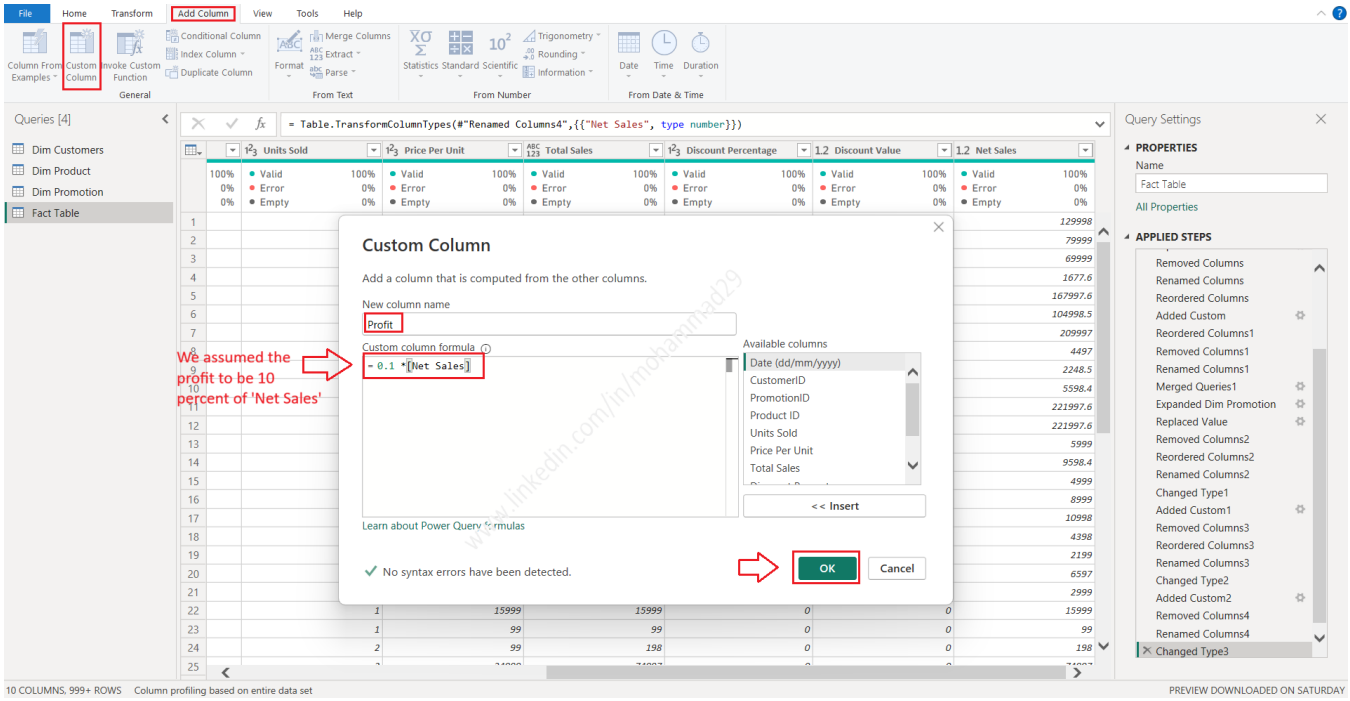
- Dim Promation & Fact Table → using Promotion ID
- Dim Product & fact Table → using Product ID



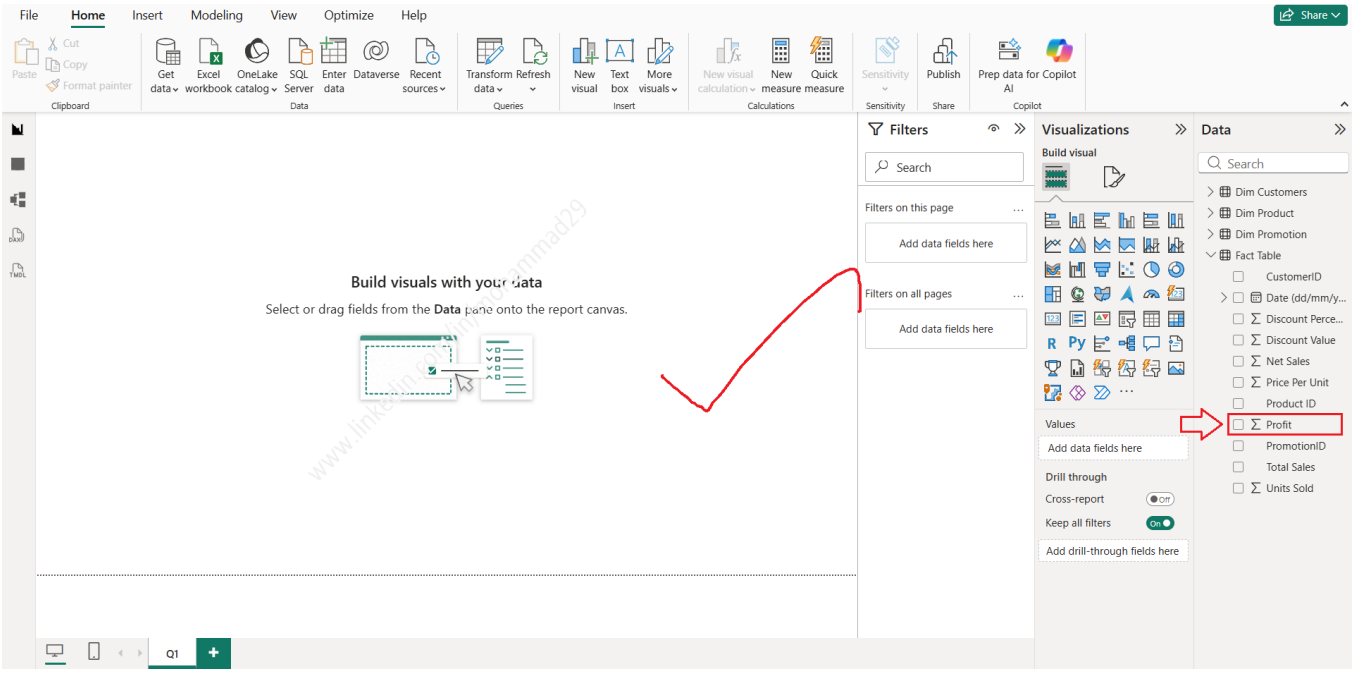
- Questions

Q1. Top/Bottom 5 product by Sales/Profit/Quantity Sold.

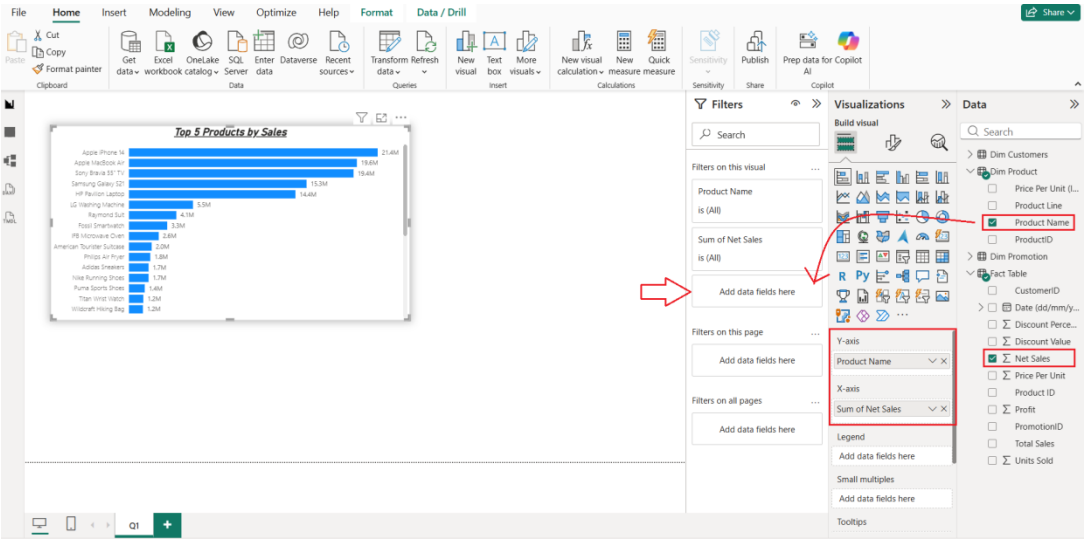
Step 1: First simply create a new column i.e 'Profit' in the 'Fact Table'

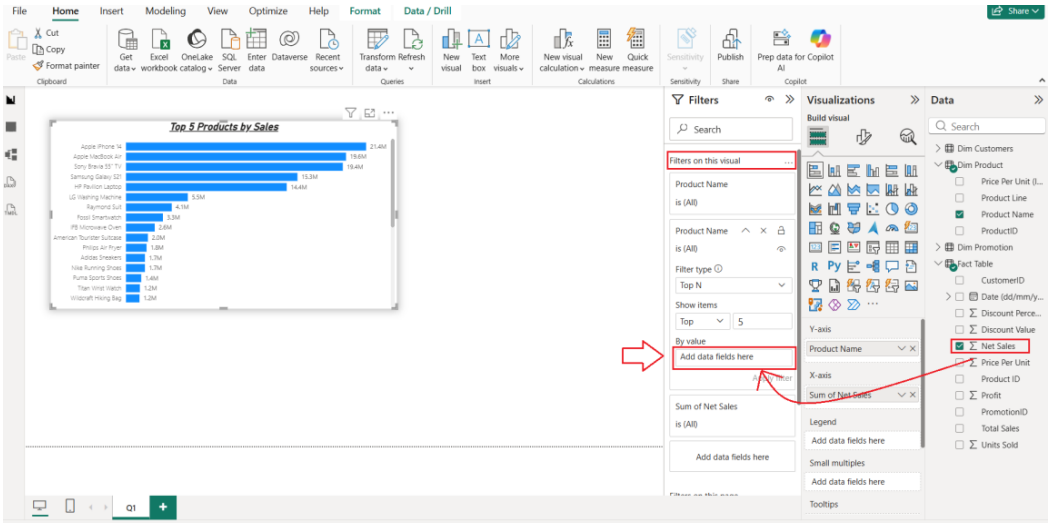


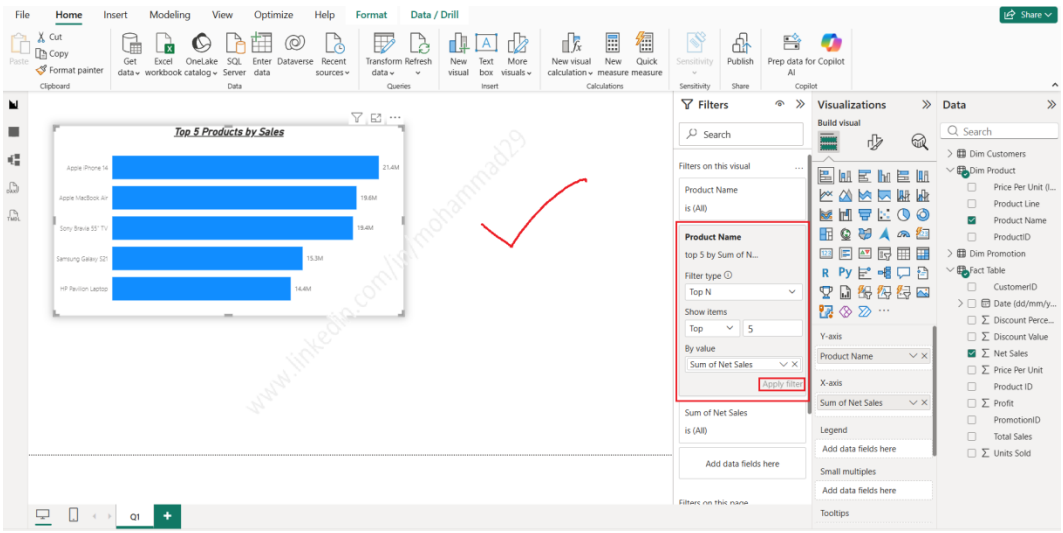
Now simply 'Save & Apply' and going back to the **'Report View'**.



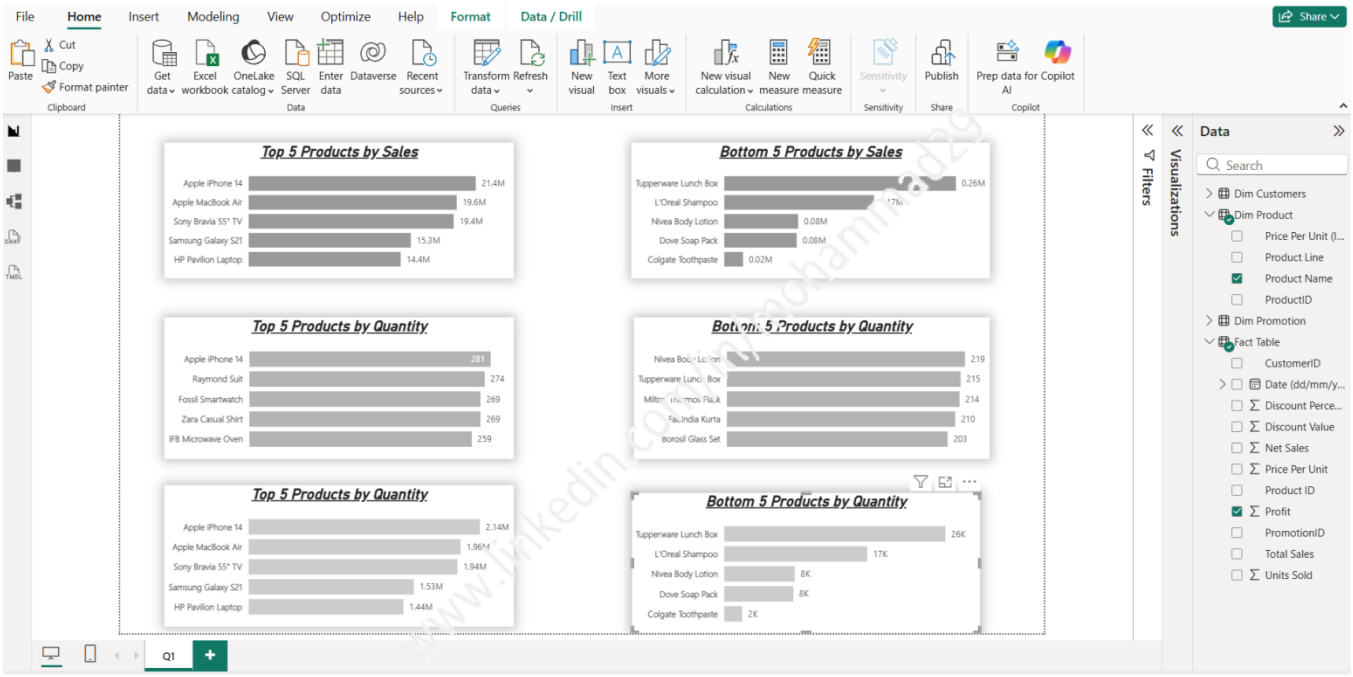
Step 2: Creating Basic Bar Plot



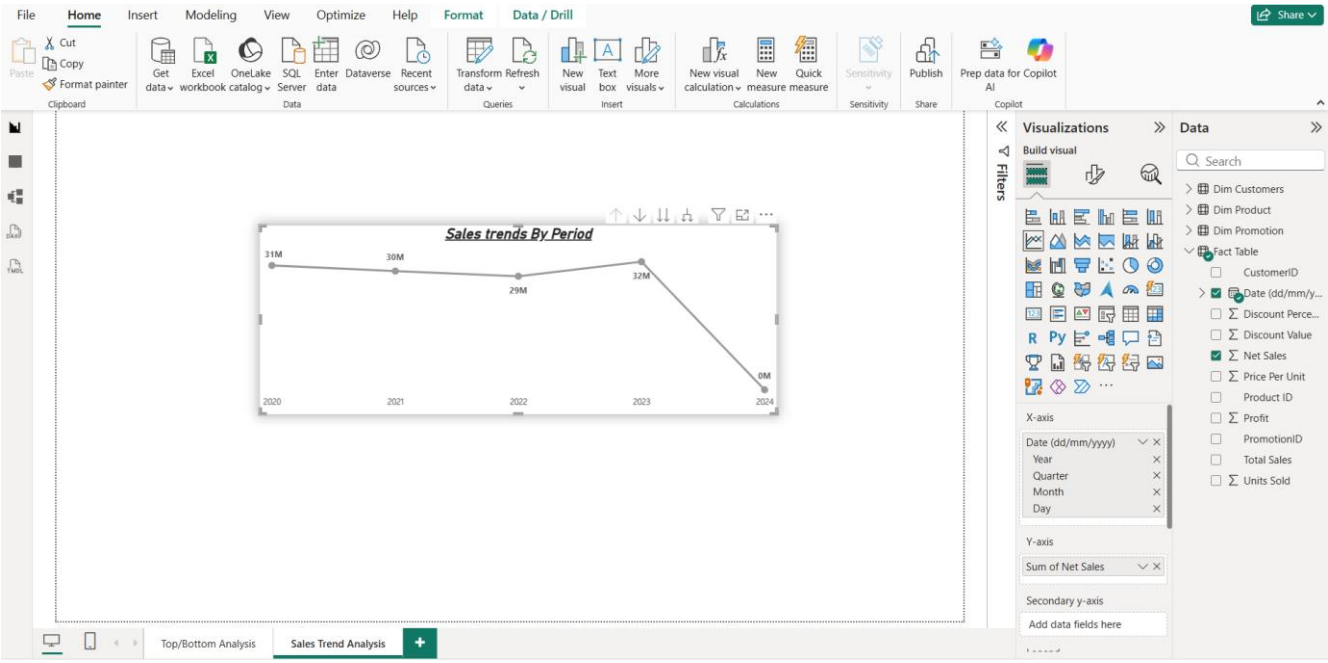




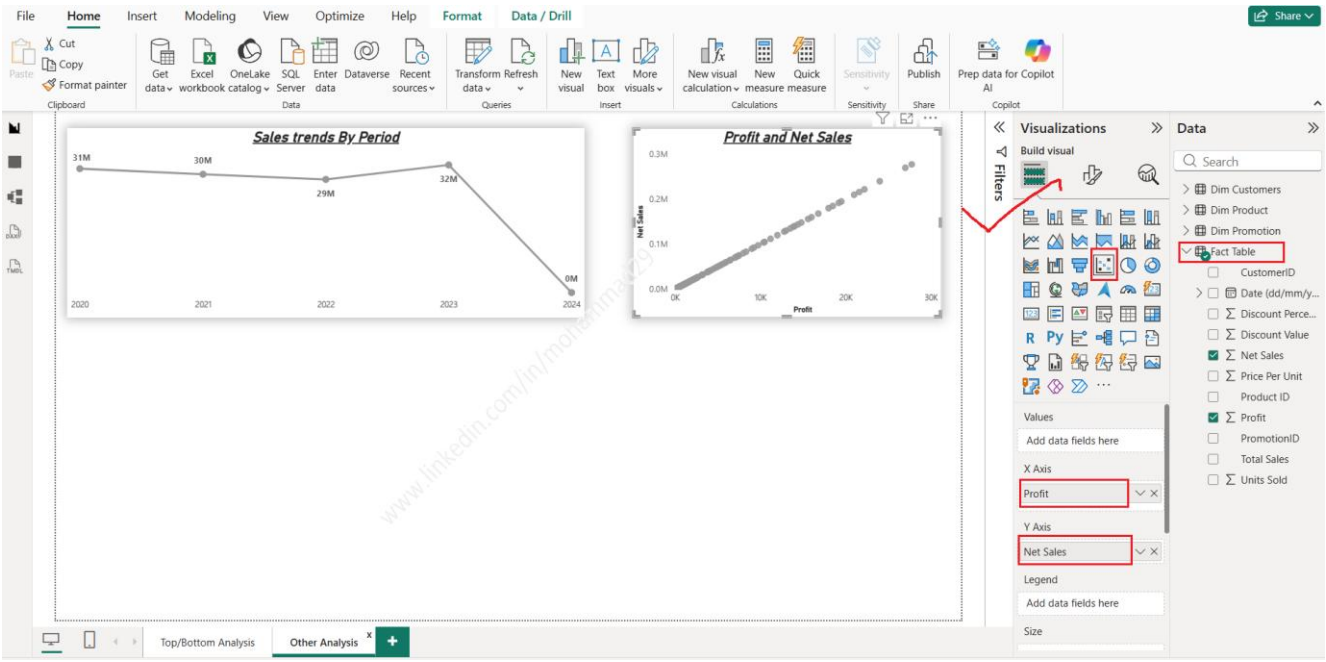
Similarly we can do rest of them



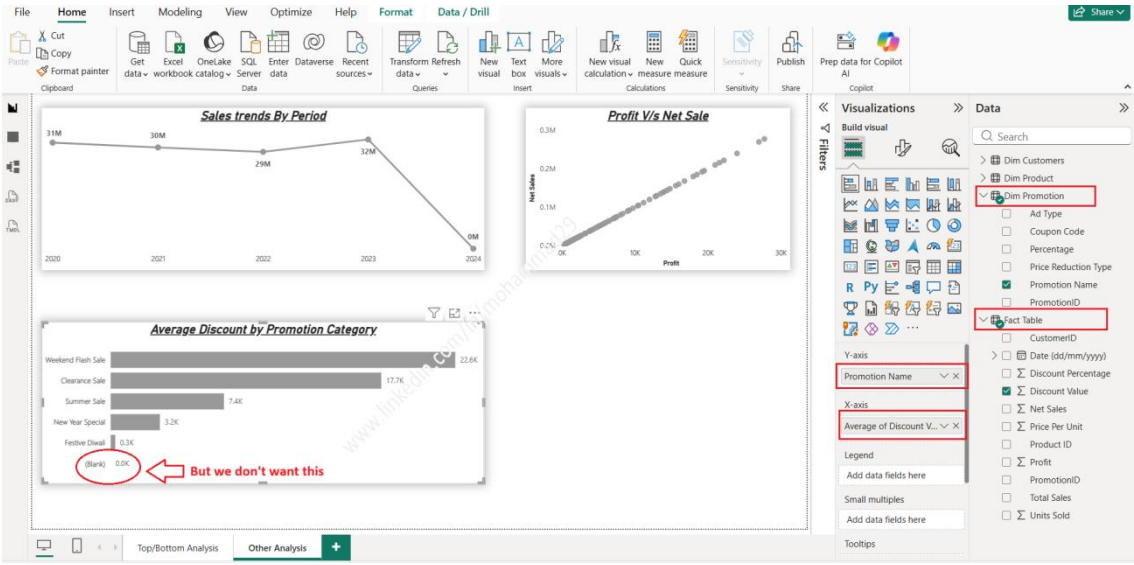
Q2. How do sales trends vary over time (daily, monthly, quarterly, annually)?

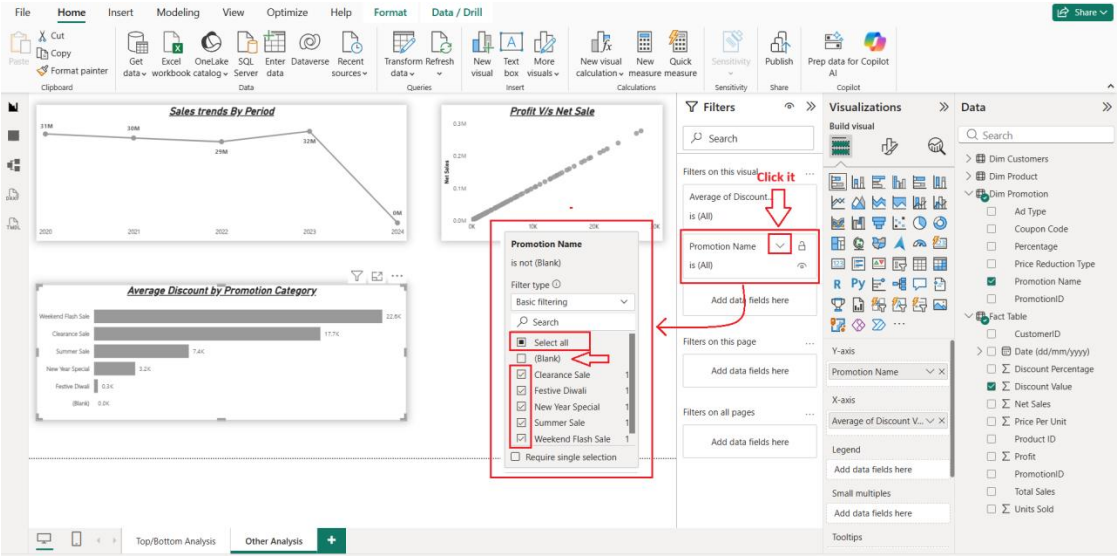


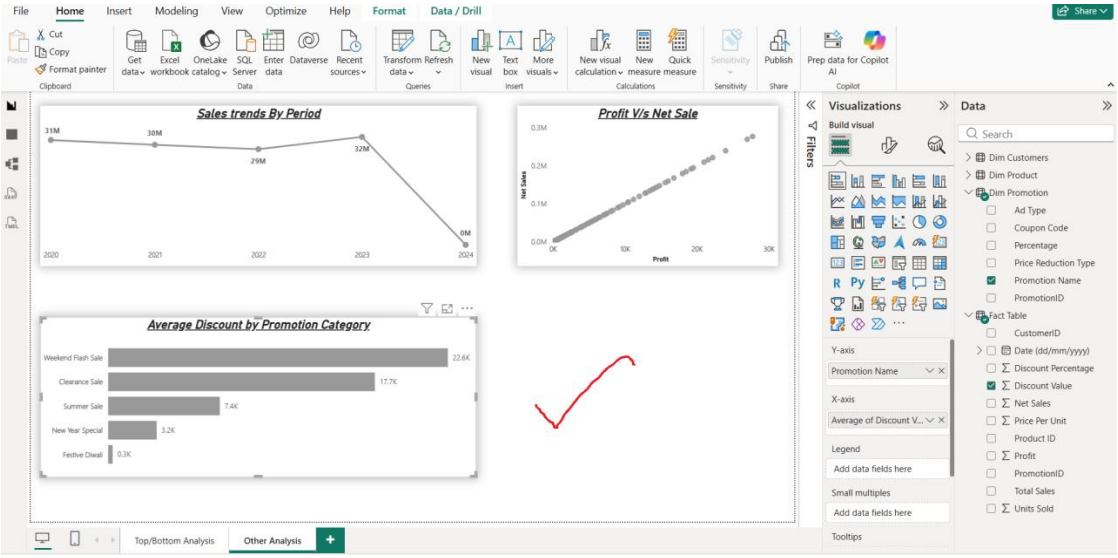
Q3. Show relationship between sales & profit.



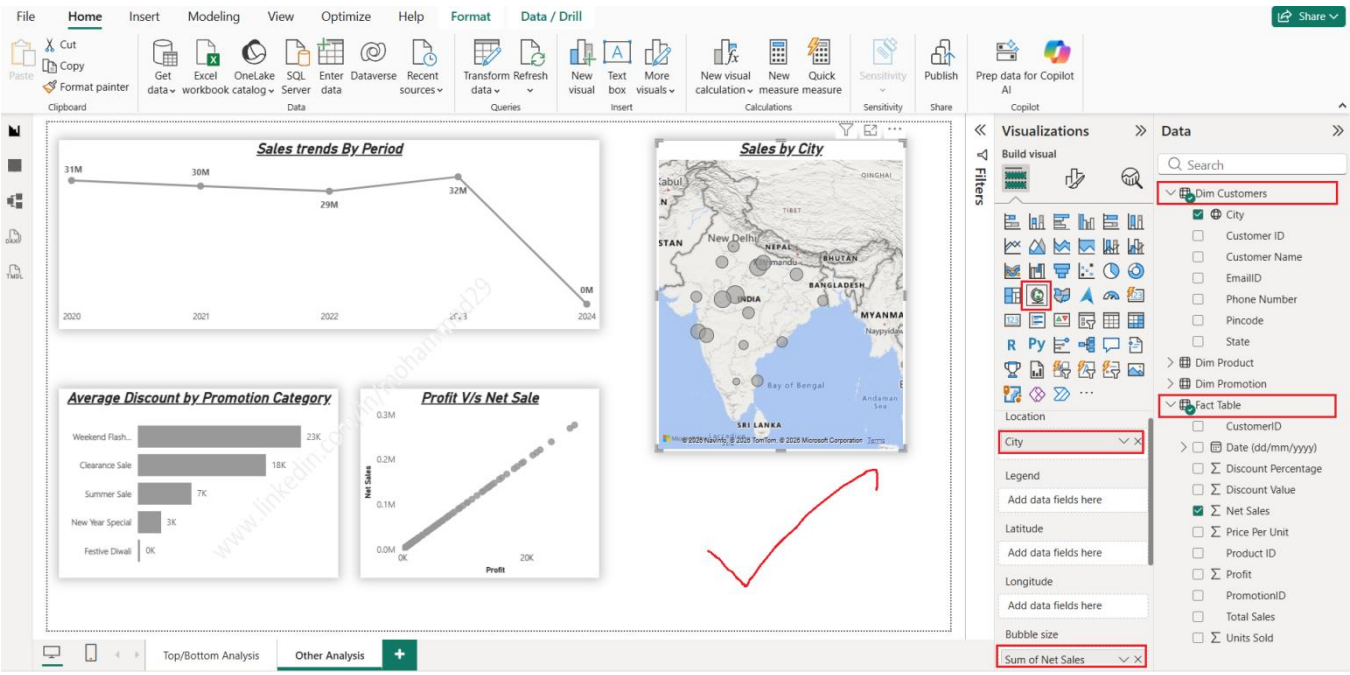
Q4. Average discount offered in each discount category.



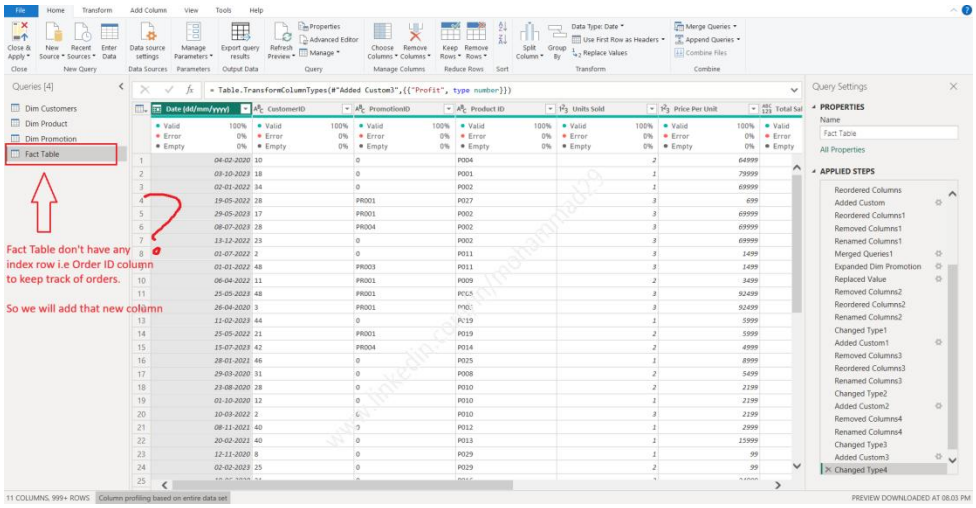


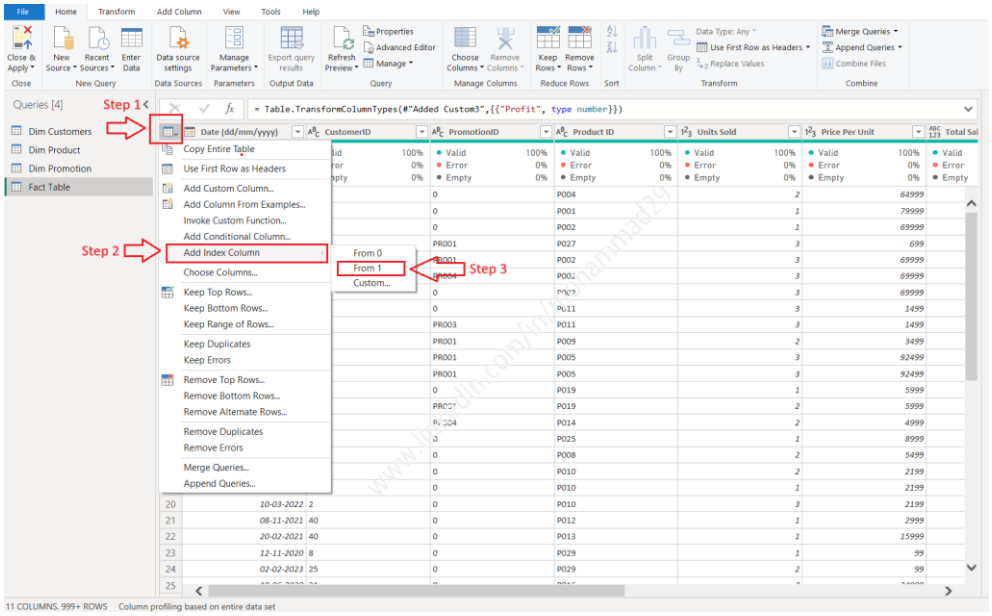


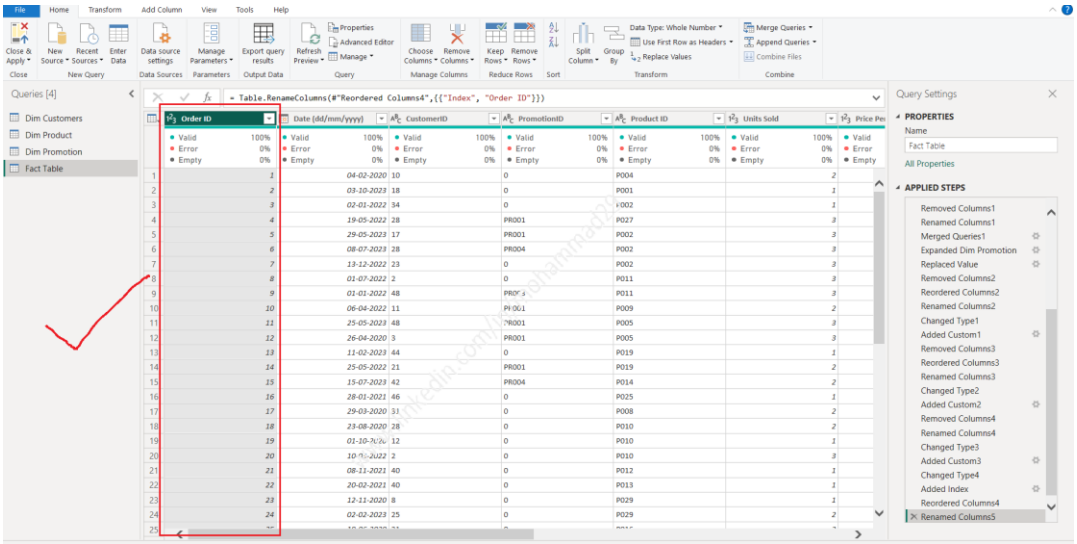
Q5. Show sales by different cities.



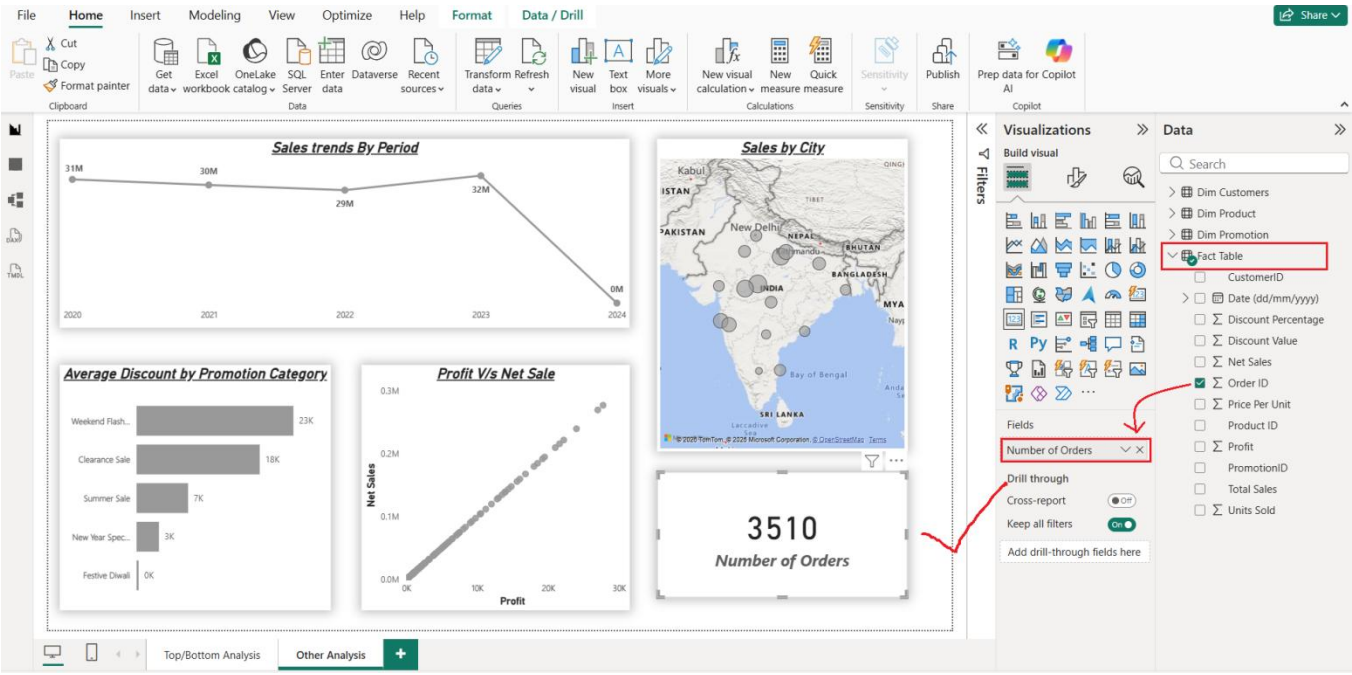
Q6. Total number of orders.





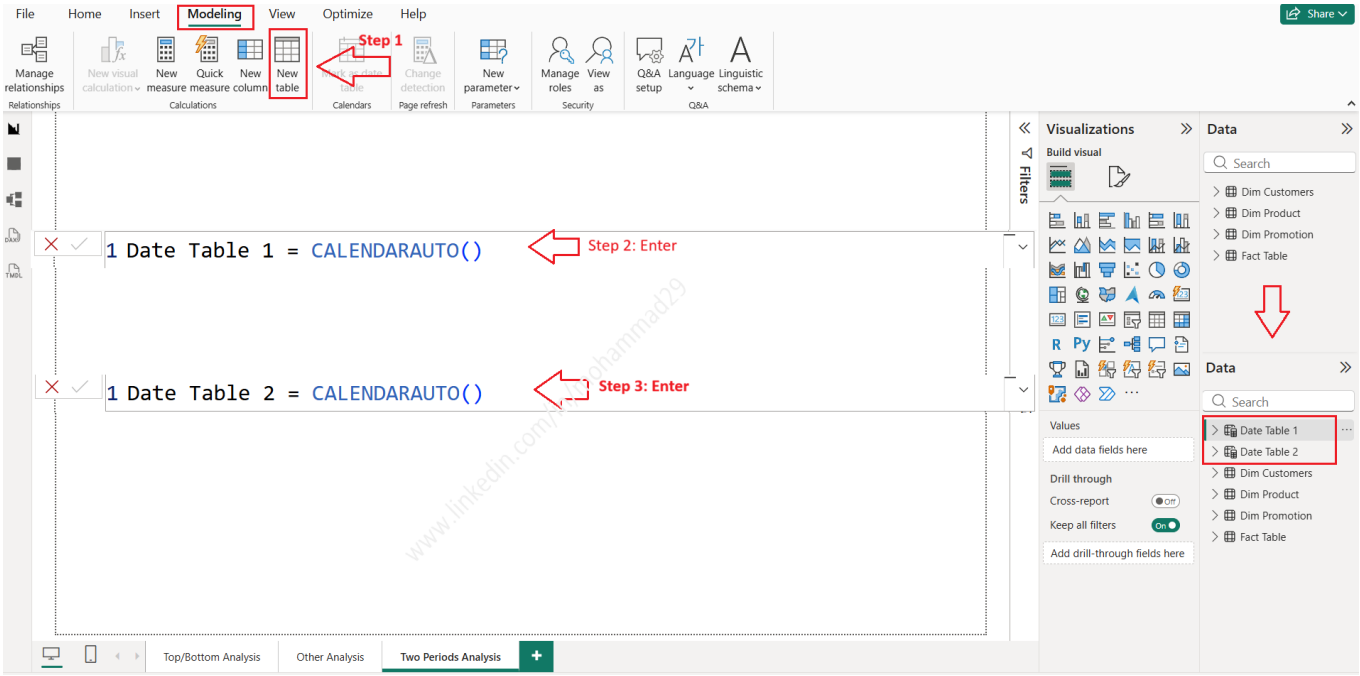


Now simply Drag & Drop.

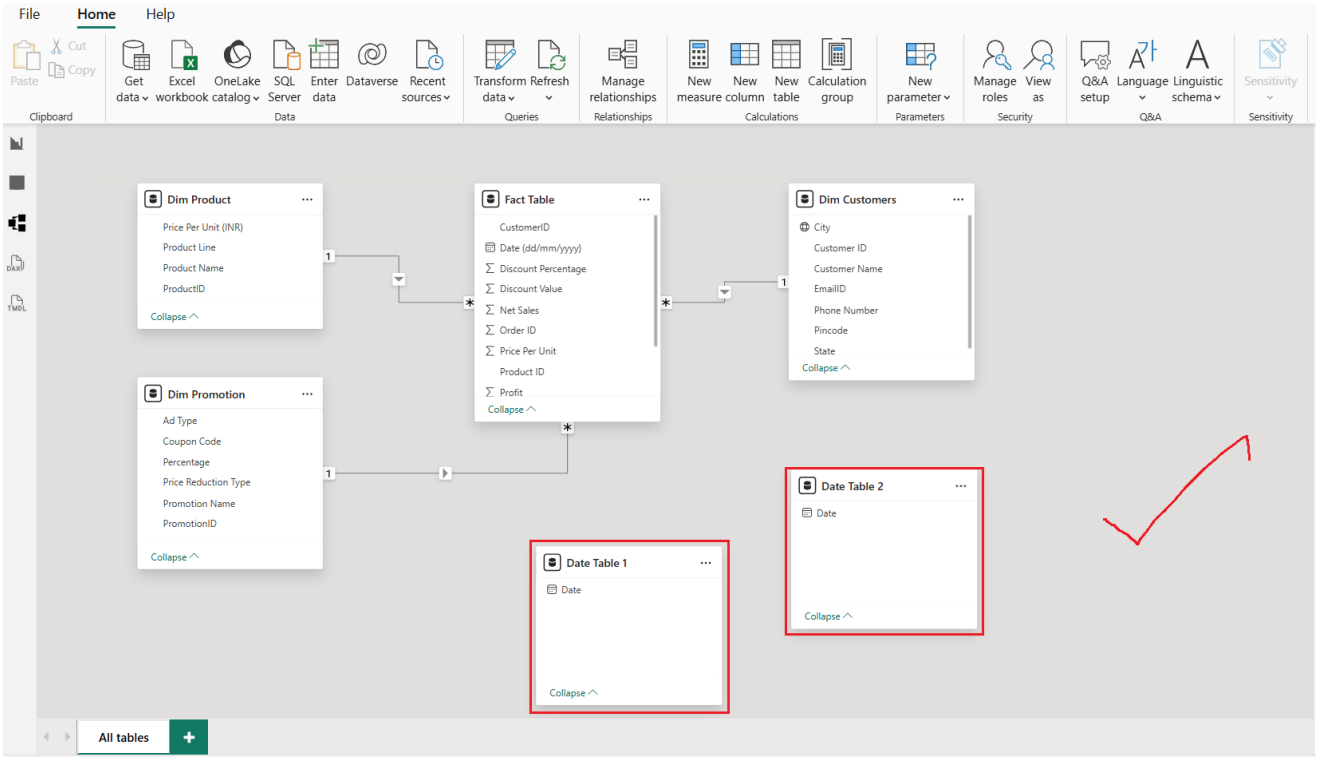


Q7. Compare sales/profit/quantity sold between any two periods selected by the user.

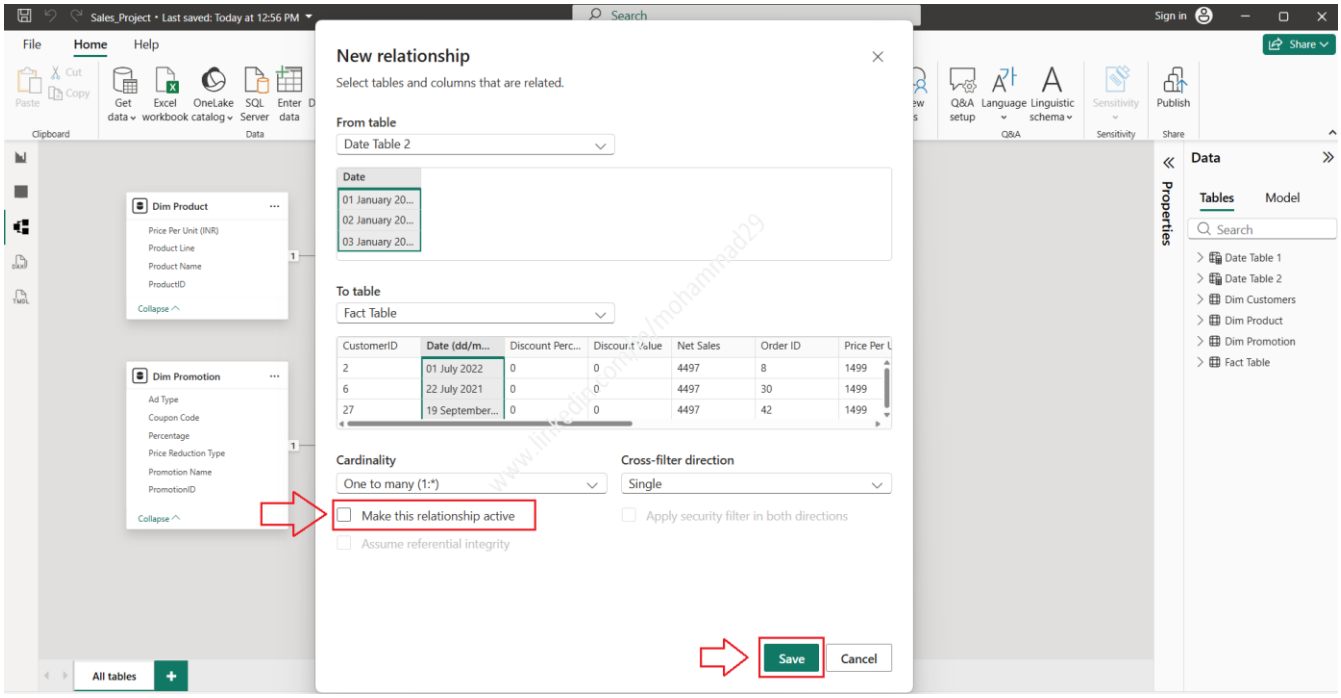
Step 1: For these insights, first of all we will be requiring two more date tables right in the first approach. So we will simply follow these steps:

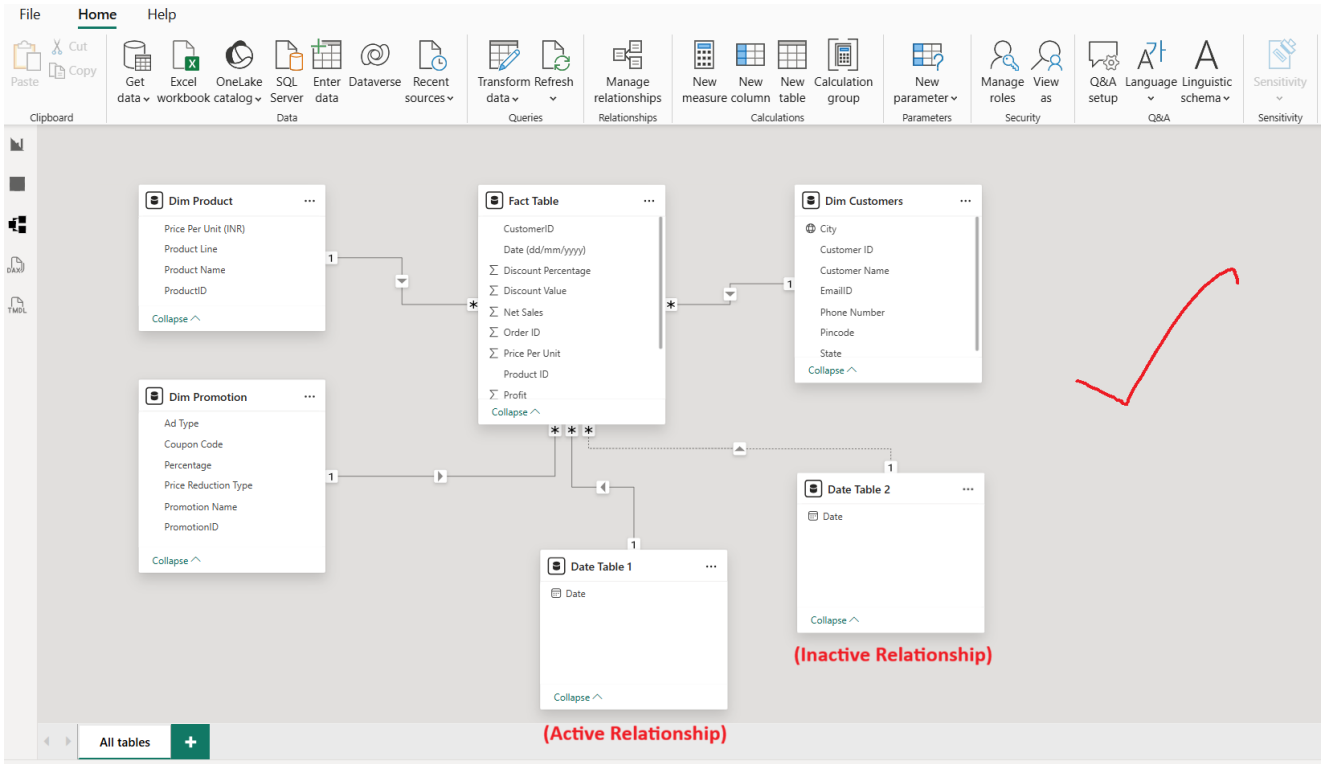


In the 'Model View' we can also see that two tables have been added.

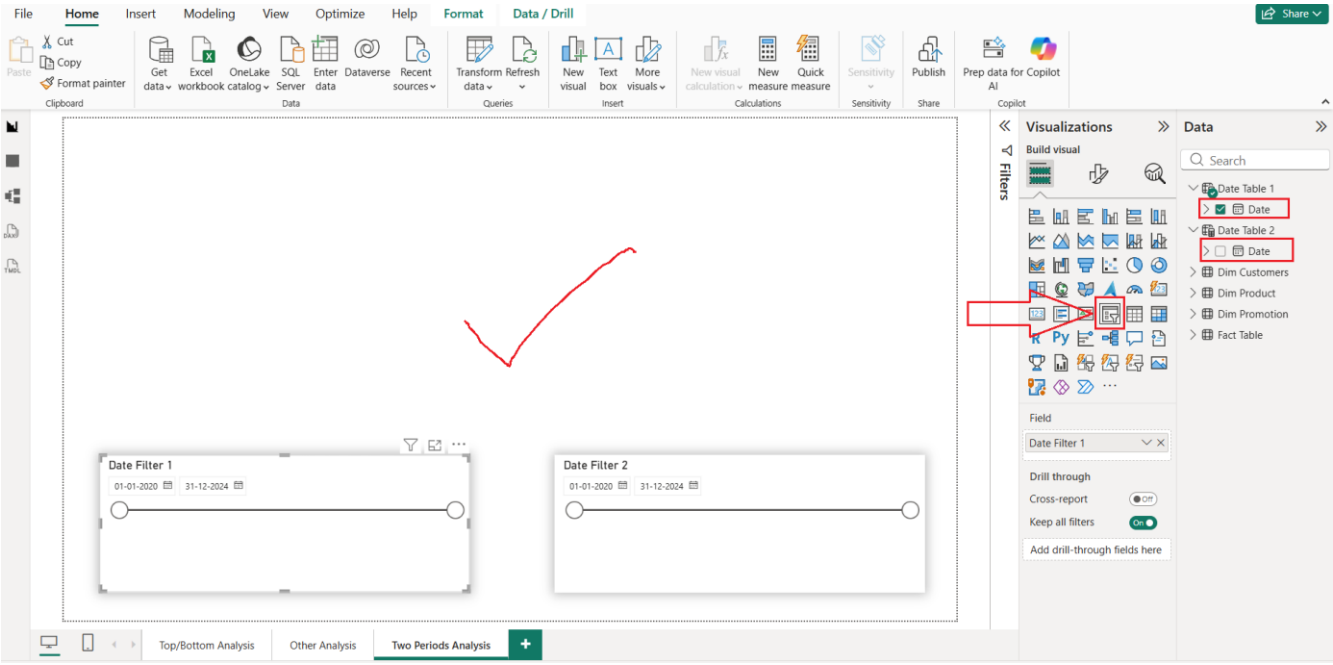


Now simply create a relationship, but not for te ‘Data Table 2’ we don’t want the relationship to be active.

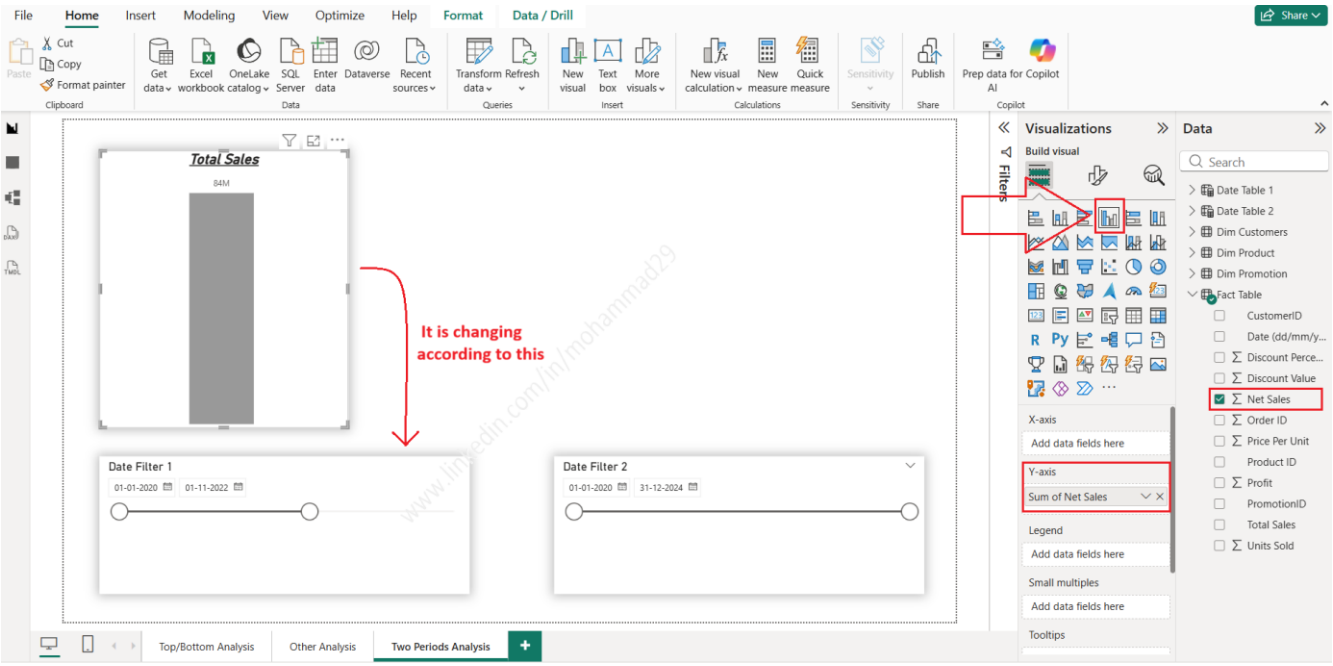




Step 2: Create two slicers for the comparison

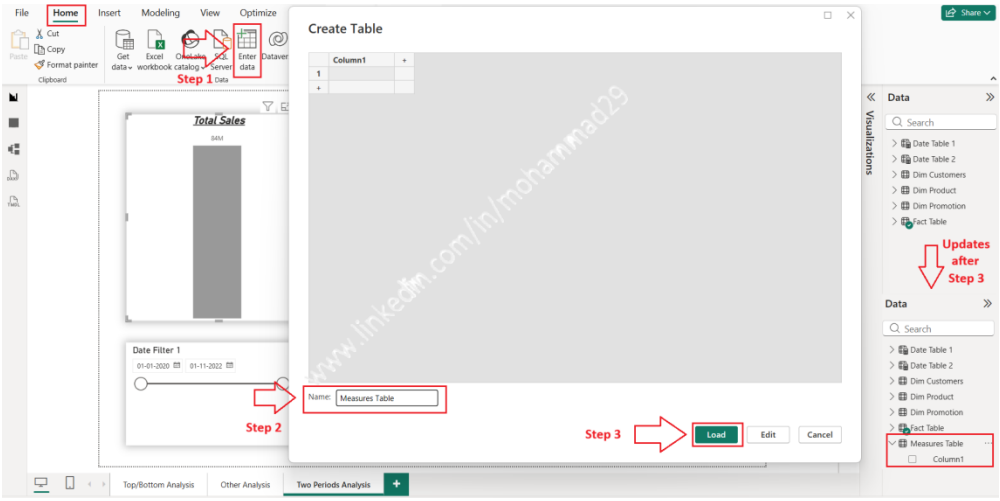


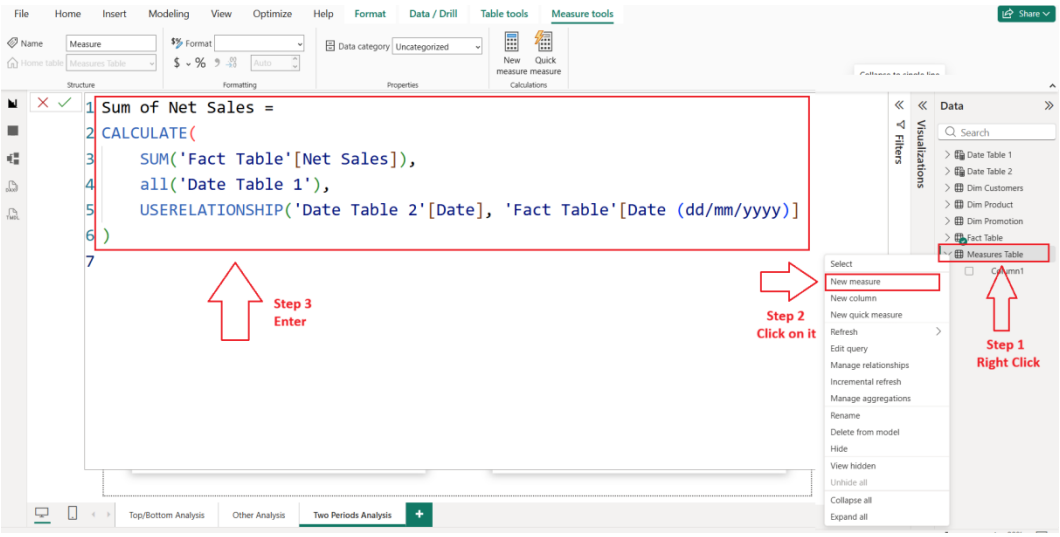
Step 2: Create clustered column chart for sales

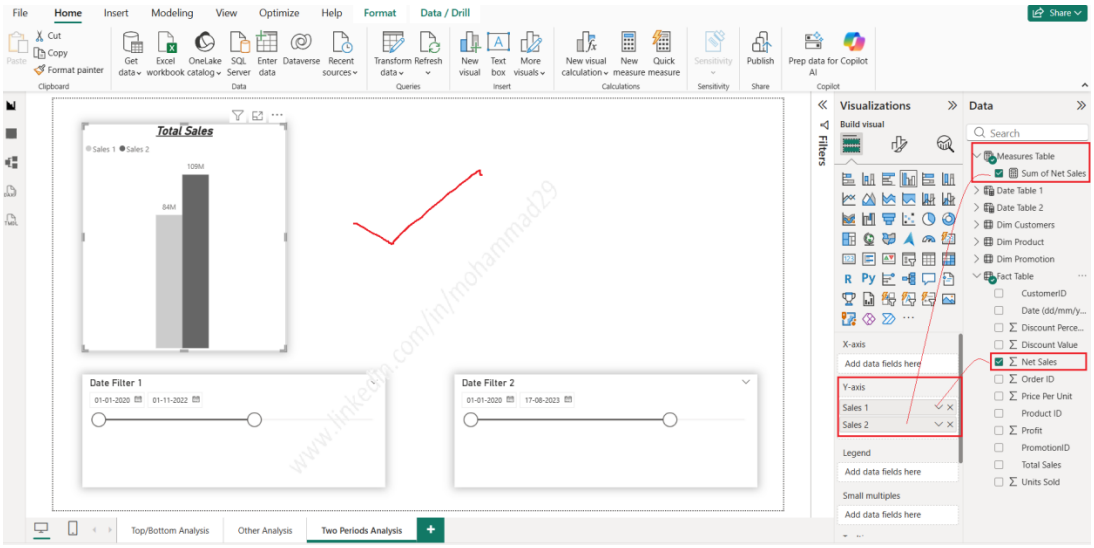


The inactive relationship i.e 'Data Filter 2' will not work on this 'Total Sales' Chart.

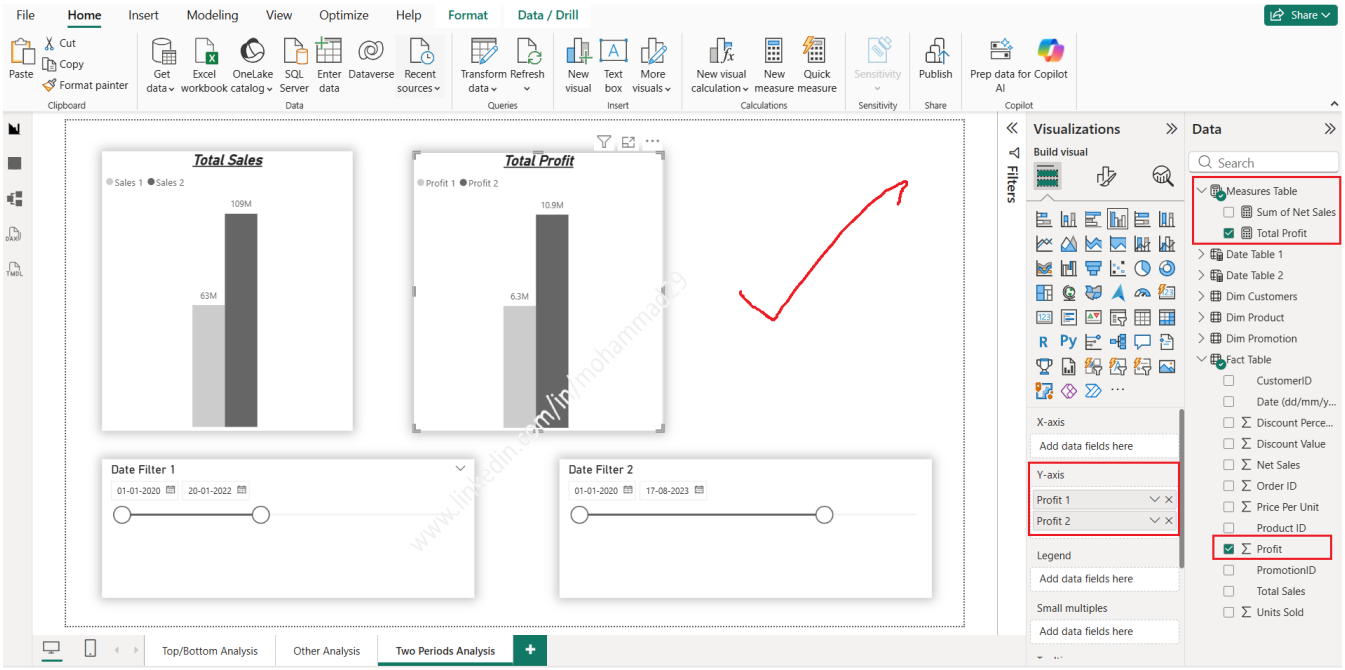
For that we have to use ‘Measures’ i. ebasically we will use DAX.
So first of all we will create a ‘Measures table’.

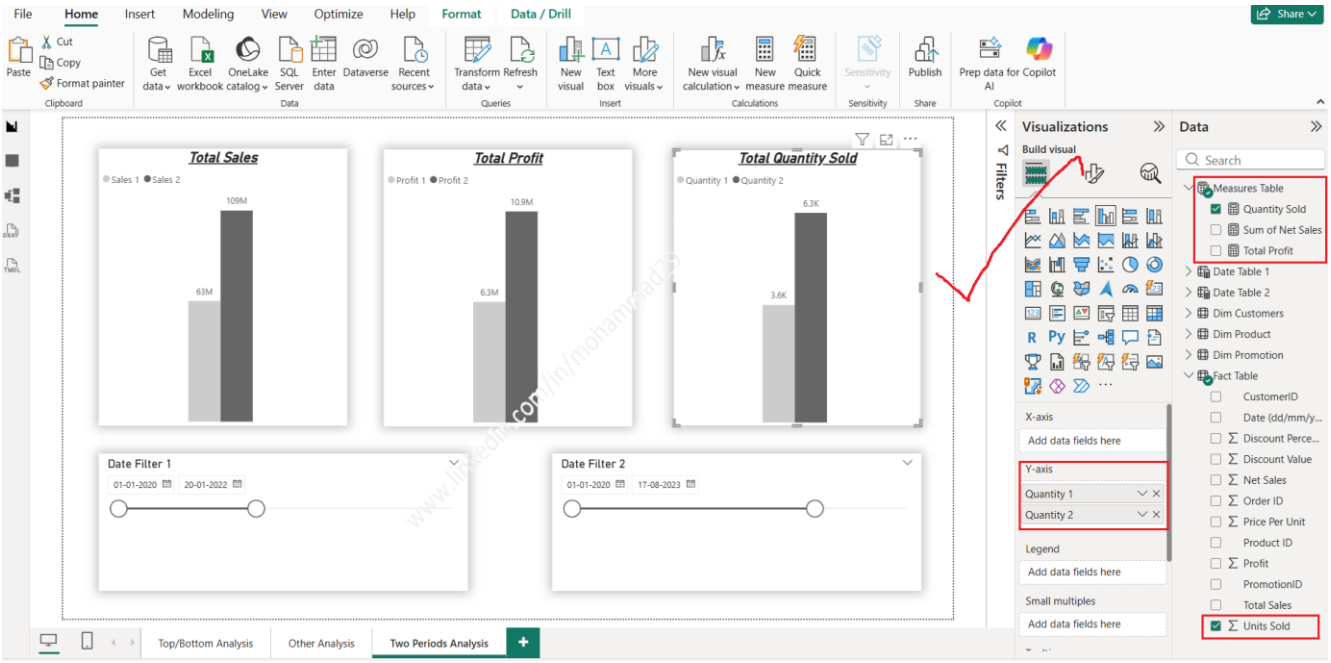




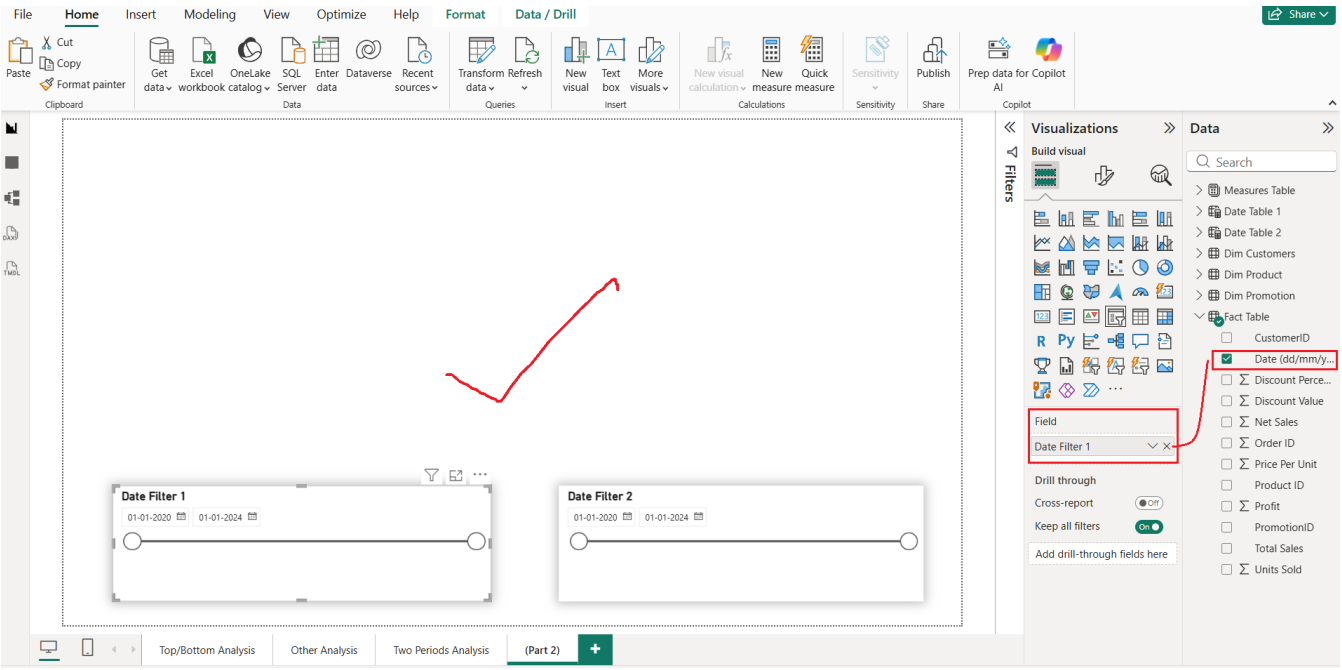


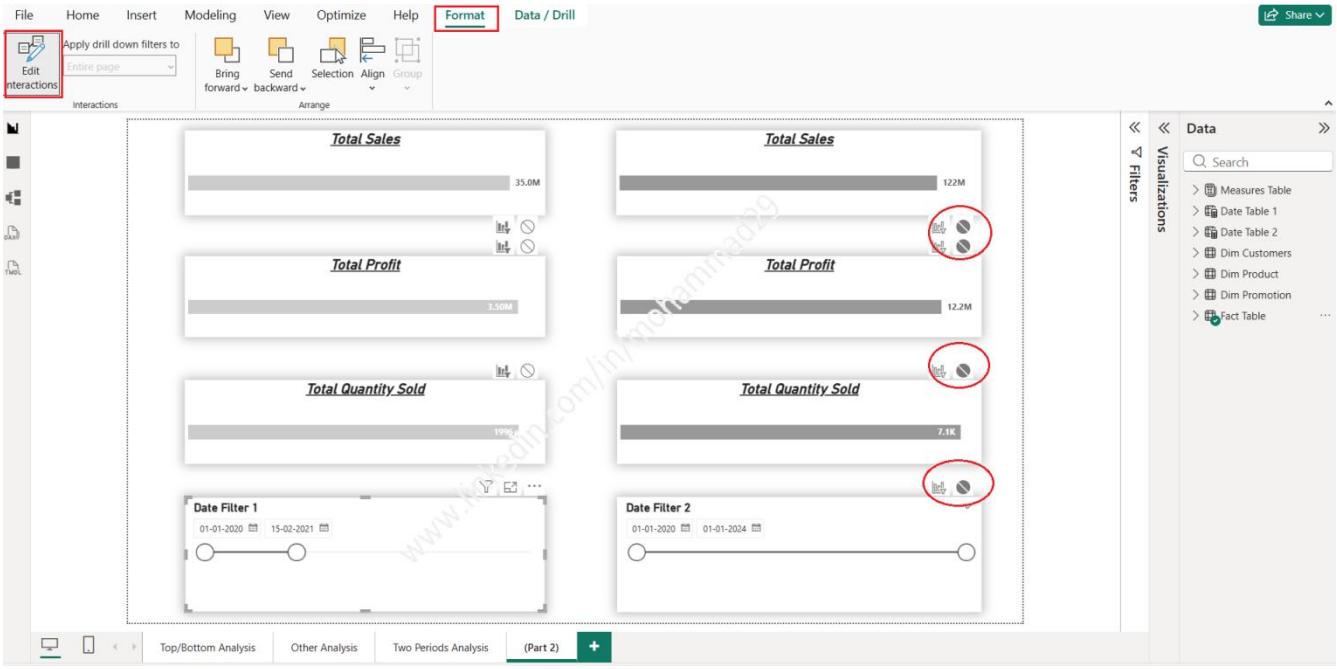
Similarly we will do for Profit & Quantity sold.





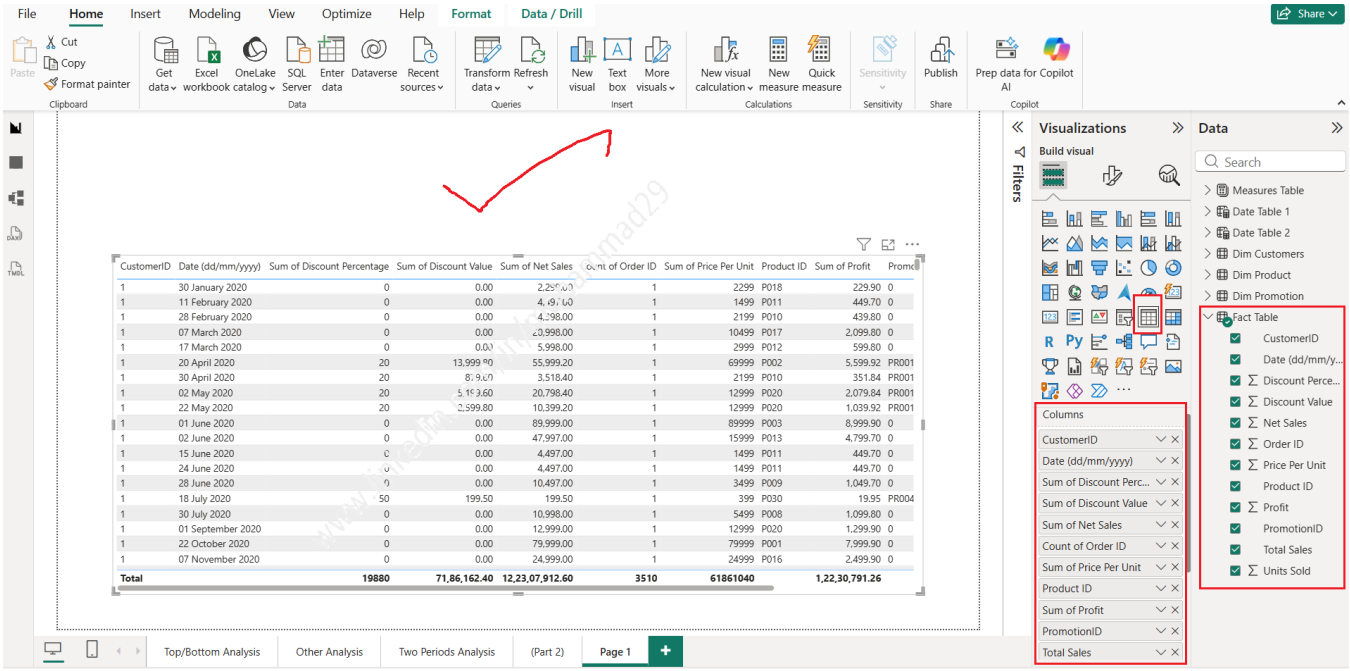
- Other way to solve this same problem



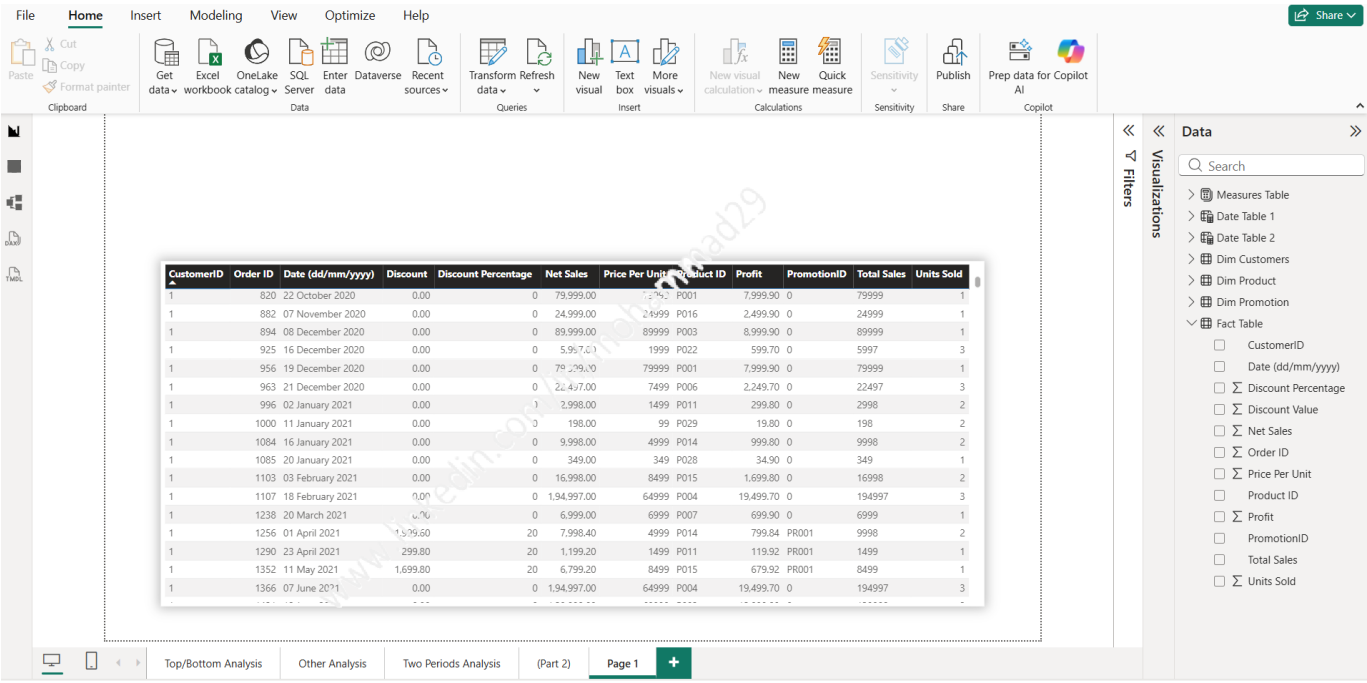


Q8. Show Sales/Profit/Discount/Net Sales/All remaining fields for each order that could be filtered using visual filters. (Product/Date/Customer ID/Promotion Categories)

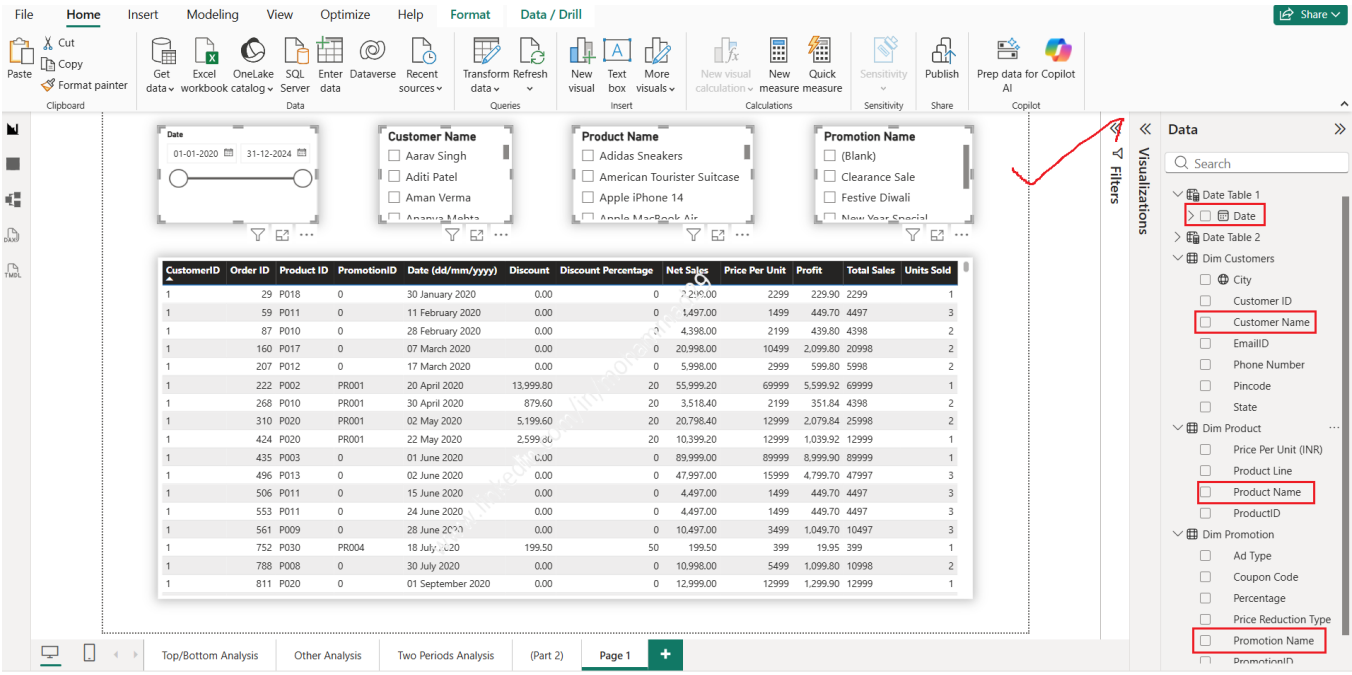
Step 1: Click on the table icon and select all the columns from the 'Fact Table'.



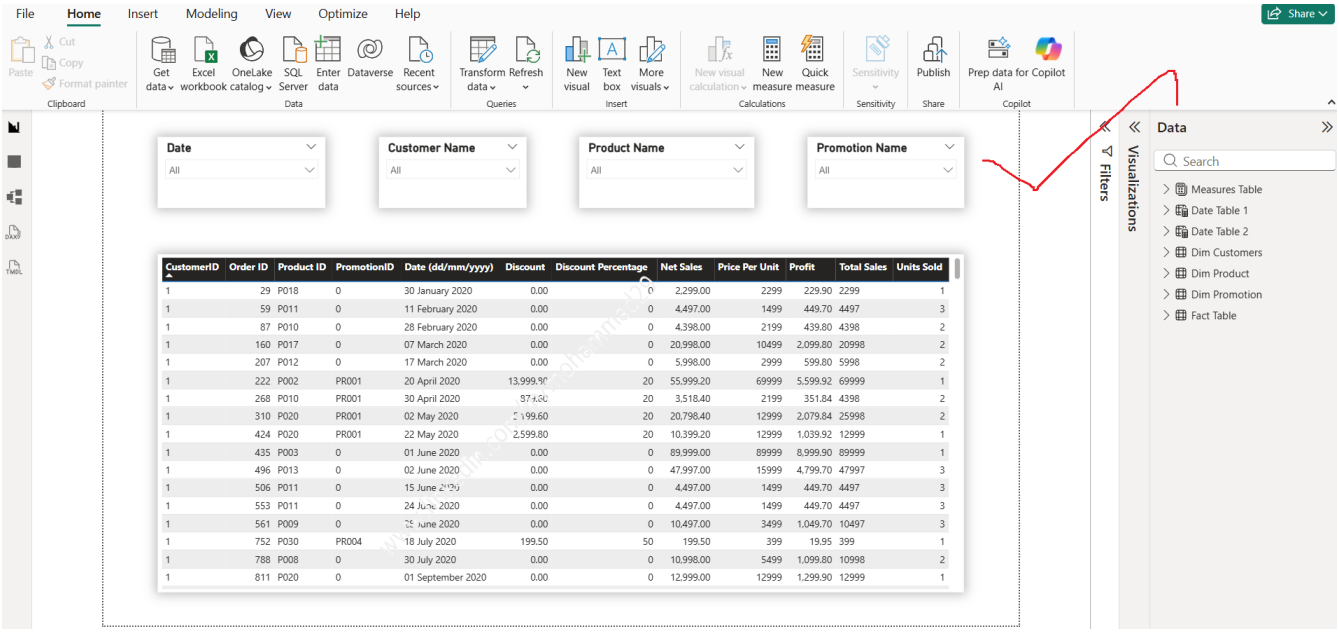
After Basic Editing,



Step 2: Add a Slicer.



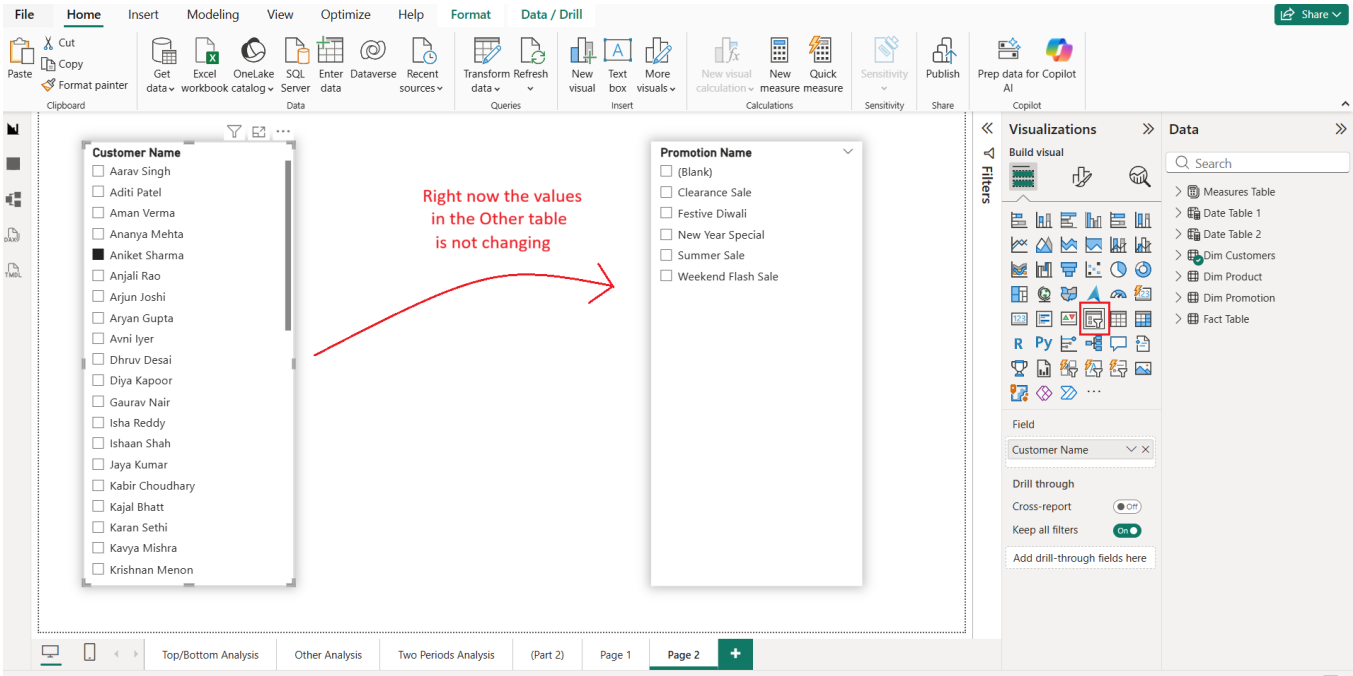
Changing the slicer to 'drop down'.

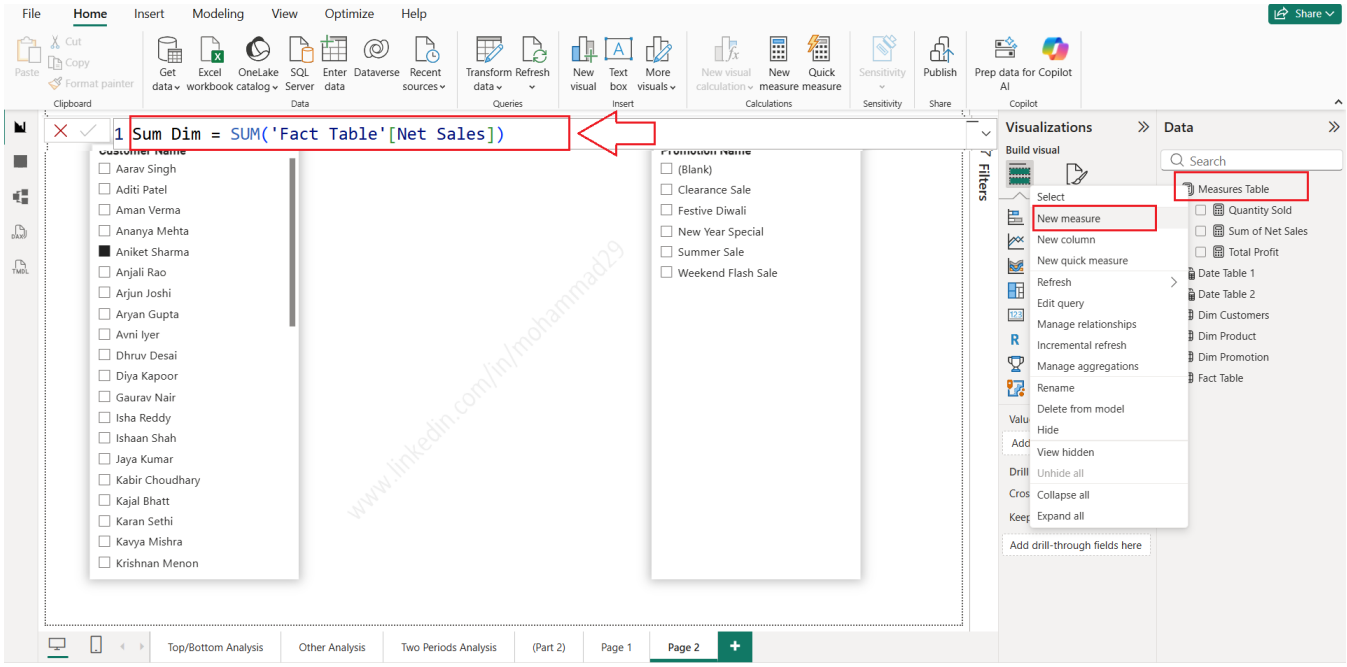


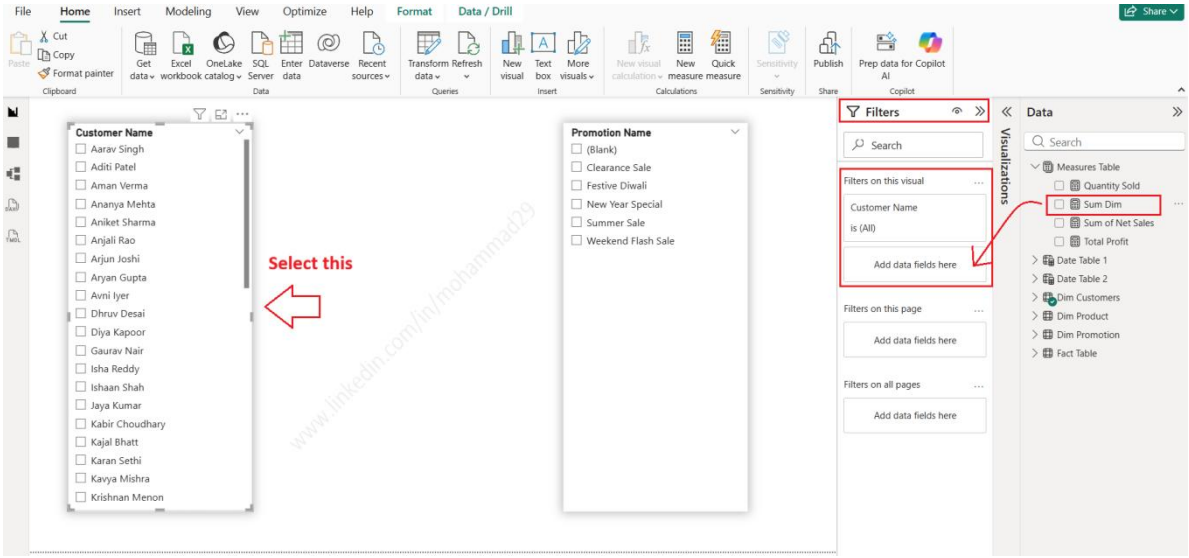
Now we can see that how can we make suitable changes in the report page so that different values, which are represented from different dimension tables in these different slicers i.e 4 slicers that we have here, interact dynamically with each other.

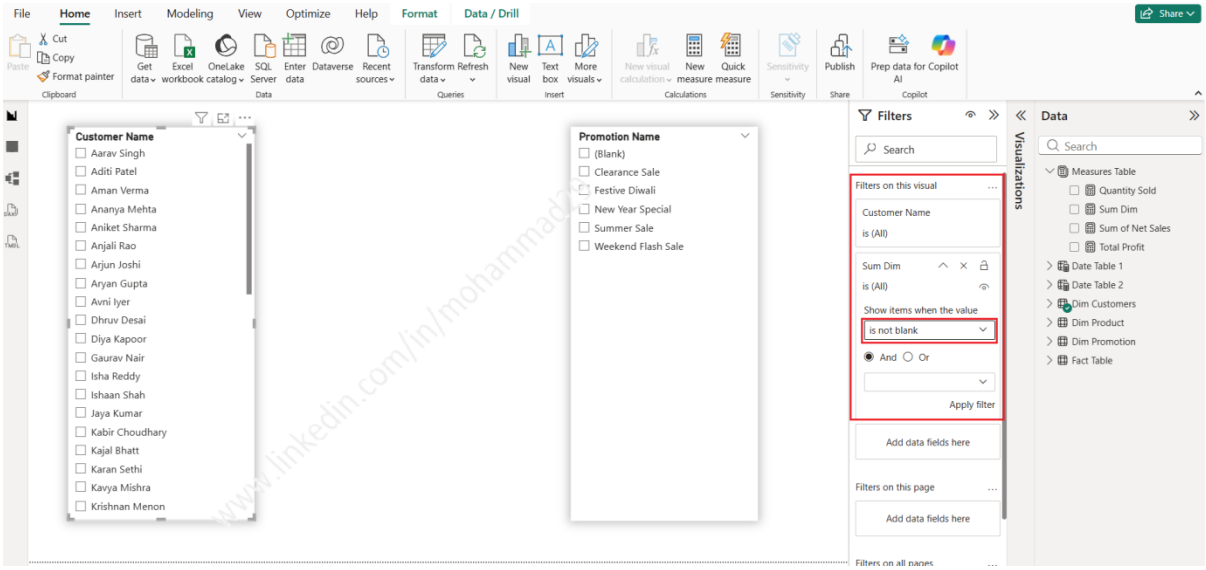
- Dynamic interaction between Dimensiona Tables

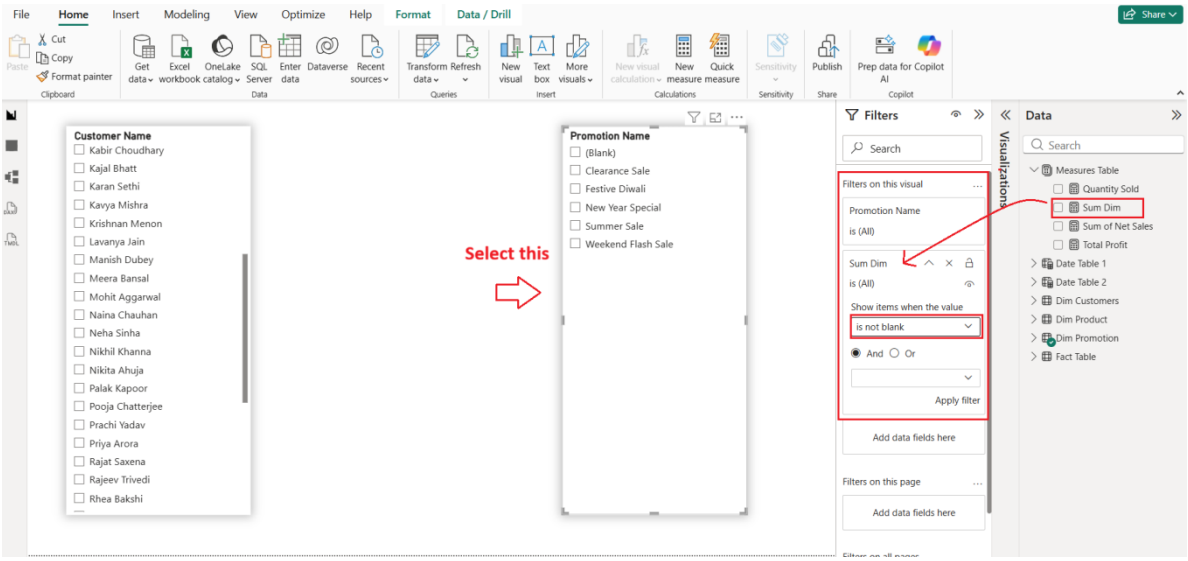
Right now the filters will not propagate from the **'fact table'** towards the **'dimension table'**. They will propagate only and only from dimension table to fact table, because we have created a **unidirectional relationship** that is from the **'dimension table'** to the **'fact table'**.

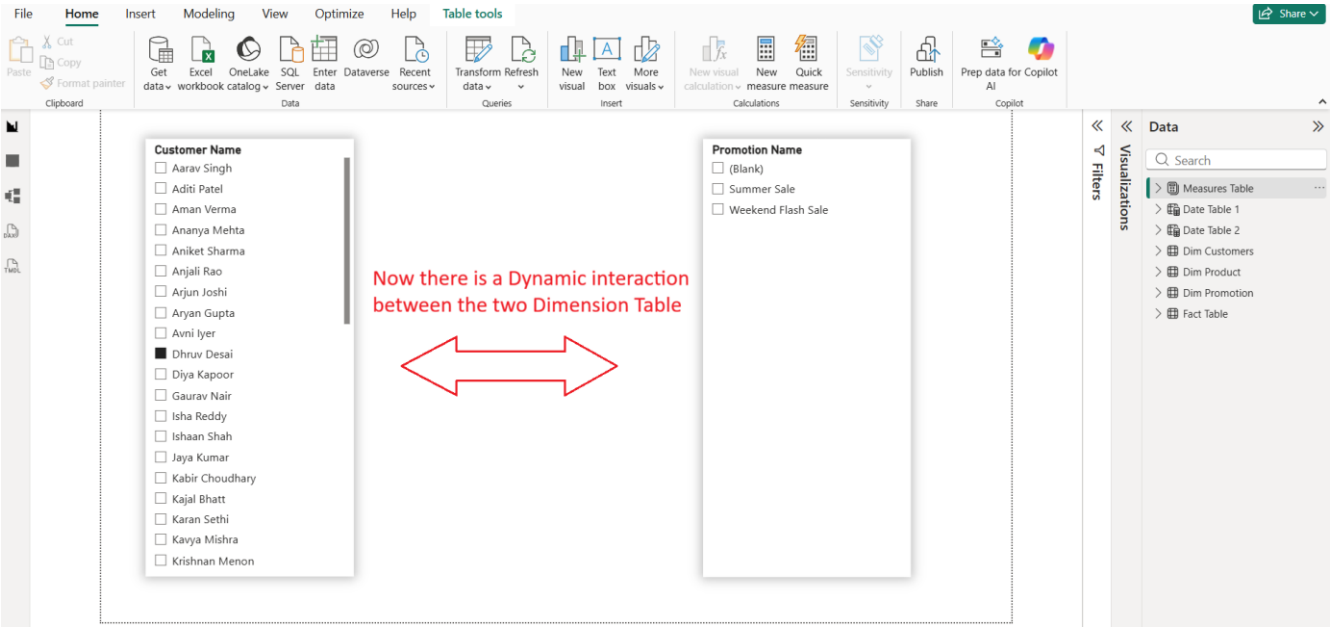


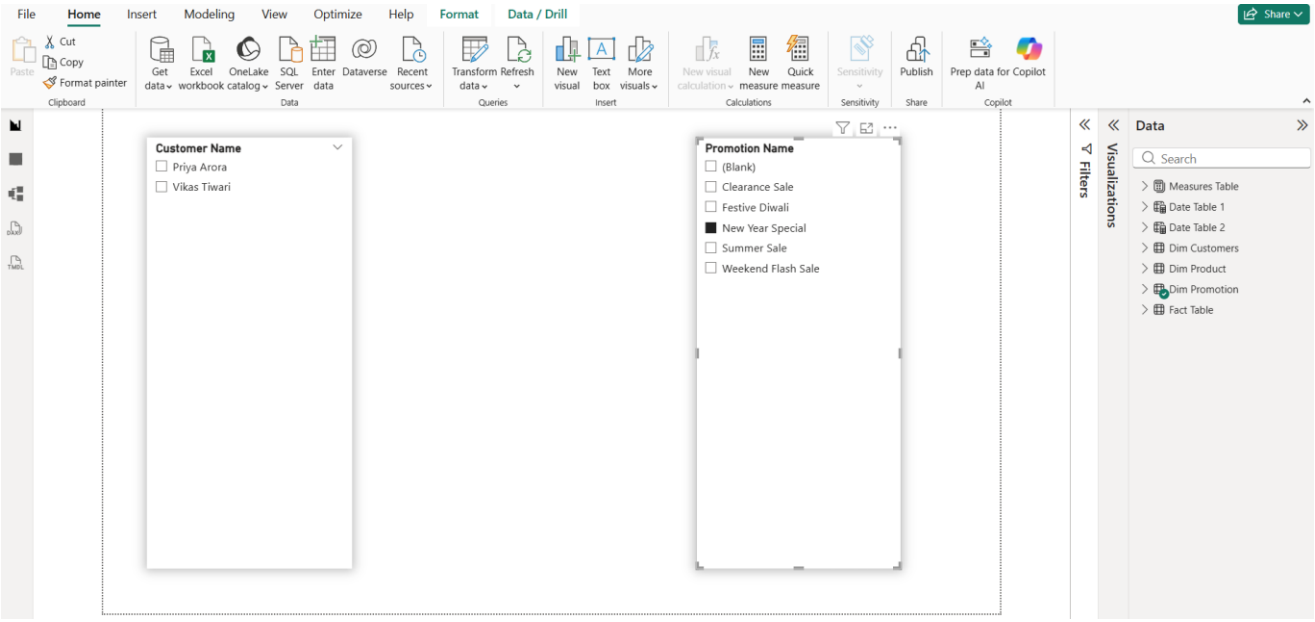



Customer Name
Aarav Singh
Aditi Patel
Aman Verma
Ananya Mehta
Aniket Sharma
Anjali Rao
Arjun Joshi
Aryan Gupta
Avni Iyer
Dhruv Desai
Diya Kapoor
Gaurav Nair
Isha Reddy
Ishaan Shah
Jaya Kumar
Kabir Choudhary
Kajal Bhatt
Karan Sethi
Kavya Mishra
Krishnan Menon
Select this
Promotion Name
(Blank)
Clearance Sale
Festive Diwali
New Year Special
Summer Sale
Weekend Flash Sale
Filters
Filters on this visual
Customer Name
is (All)
Add data fields here
Filters on this page
Filters on all pages
Data
Measures Table
Quantity Sold
Sum Dim
Sum of Net Sales
Total Profit
Date Table 1
Date Table 2
Dim Customers
Dim Product
Dim Promotion
Fact Table

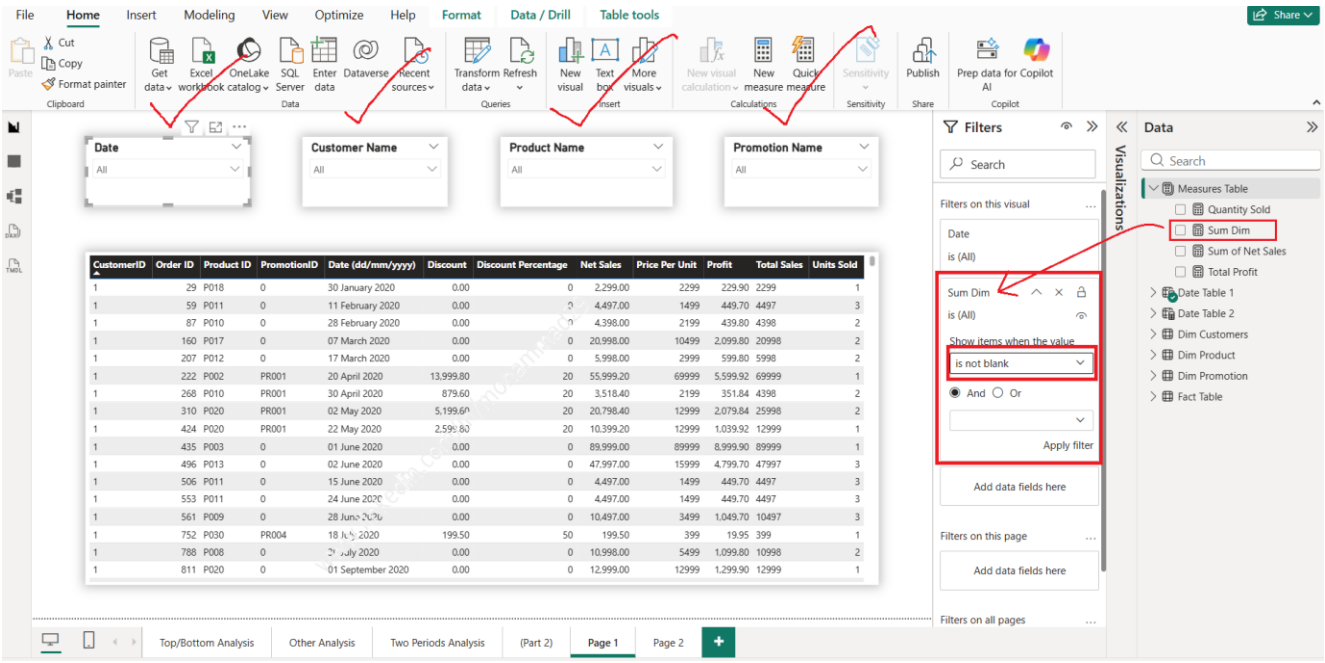
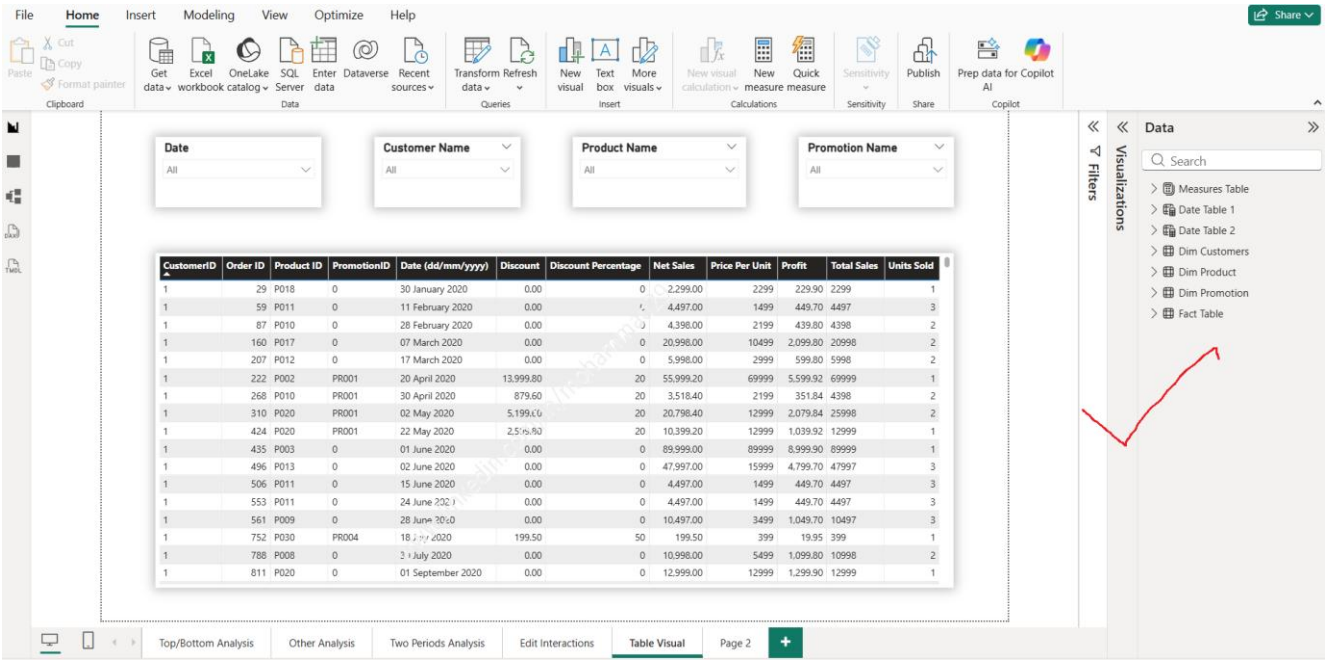

Customer Name
Aarav Singh
Aditi Patel
Aman Verma
Ananya Mehta
Aniket Sharma
Anjali Rao
Arjun Joshi
Aryan Gupta
Avni Iyer
Dhruv Desai
Diya Kapoor
Gaurav Nair
Isha Reddy
Ishaan Shah
Jaya Kumar
Kabir Choudhary
Kajal Bhatt
Karan Sethi
Kavya Mishra
Krishnan Menon
Promotion Name
(Blank)
Clearance Sale
Festive Diwali
New Year Special
Summer Sale
Weekend Flash Sale
Filters
Filters on this visual
Customer Name
is (All)
Sum Dim
is (All)
Show items when the value
is not blank
And
Or
Apply filter
Add data fields here
Filters on this page
Data
Measures Table
Quantity Sold
Sum Dim
Sum of Net Sales
Total Profit
Date Table 1
Date Table 2
Dim Customers
Dim Product
Dim Promotion
Fact Table


Customer Name
Kabir Choudhary
Kajal Bhatt
Karan Sethi
Kavya Mishra
Krishnan Menon
Lavanya Jain
Manish Dubey
Meera Bansal
Mohit Aggarwal
Naina Chauhan
Neha Sinha
Nikhil Khanna
Nikita Ahuja
Palak Kapoor
Pooja Chatterjee
Prachi Yadav
Priya Arora
Rajat Saxena
Rajeev Trivedi
Rhea Bakshi
Select this
Promotion Name
(Blank)
Clearance Sale
Festive Diwali
New Year Special
Summer Sale
Weekend Flash Sale
Filters
Filters on this visual
Promotion Name
is (All)
Sum Dim
is (All)
Show items when the value
is not blank
And
Or
Apply filter
Add data fields here
Filters on this page
Data
Measures Table
Quantity Sold
Sum Dim
Sum of Net Sales
Total Profit
Date Table 1
Date Table 2
Dim Customers
Dim Product
Dim Promotion
Fact Table


File
Home
Insert
Modeling
View
Optimize
Help
Table tools
Share
Customer Name
Aarav Singh
Aditi Patel
Aman Verma
Ananya Mehta
Aniket Sharma
Anjali Rao
Arjun Joshi
Aryan Gupta
Avni Iyer
Dhruv Desai
Diya Kapoor
Gaurav Nair
Isha Reddy
Ishaan Shah
Jaya Kumar
Kabir Choudhary
Kajal Bhatt
Karan Sethi
Kavya Mishra
Krishnan Menon
Now there is a Dynamic interaction between the two Dimension Table
Promotion Name
(Blank)
Summer Sale
Weekend Flash Sale
Data
Search
Measures Table
Date Table 1
Date Table 2
Dim Customers
Dim Product
Dim Promotion
Fact Table
Filters
Visualizations


File
Home
Insert
Modeling
View
Optimize
Help
Format
Data / Drill
Share
Customer Name
Priya Arora
Vikas Tiwari
Promotion Name
(Blank)
Clearance Sale
Festive Diwali
New Year Special
Summer Sale
Weekend Flash Sale
Data
Search
Measures Table
Date Table 1
Date Table 2
Dim Customers
Dim Product
Dim Promotion
Fact Table
Filters
Visualizations

Now lets move to our own Original report



Now all the Slicers will interact dynamically