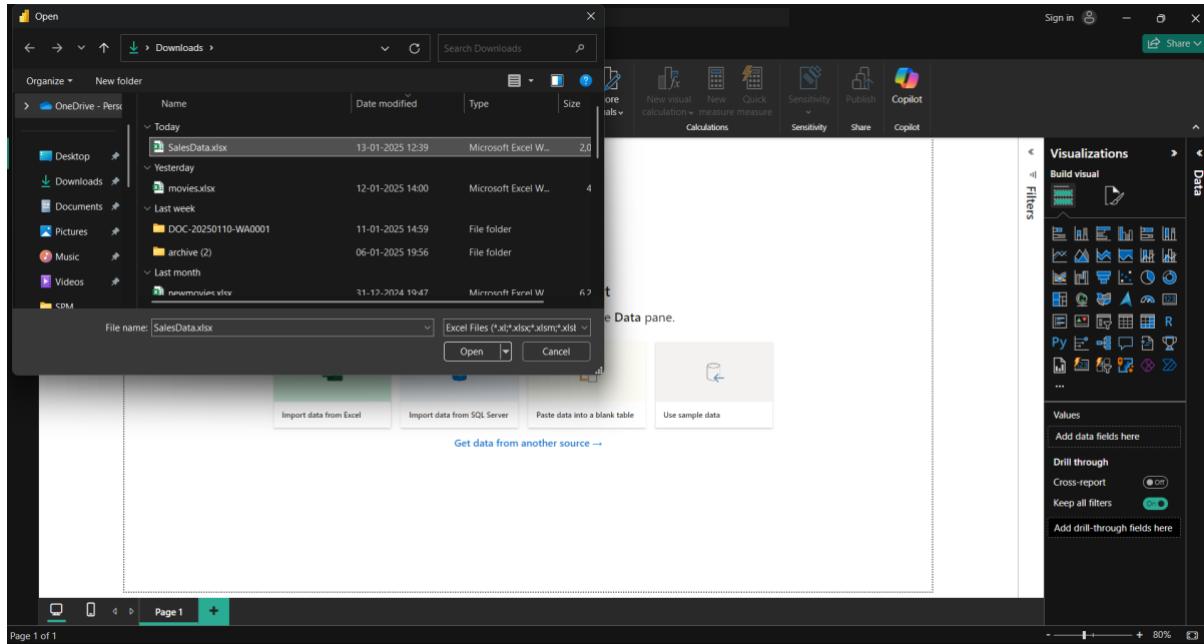


## EXPERIMENT 07

Consider Sales Data set.

Launch the power BI Desktop. Load the data set sales to the power BI Desktop. If our data contains any null values, we can transform the data else load it to the canvas.



### 1. Create Tables with Specific Calculations

- Manufacturing, sum of sales, columns.

Go to the Report view. Select the Table visualization. Drag Manufacturer from the Fields pane to the Rows area. Drag Sales to the Values area, and ensure the aggregation is set to Sum

Manufacturer	Sales
Adventure Works	18,291.00
Adventure Works	19,380.00
Adventure Works	19,496.10
Adventure Works	19,557.00
Adventure Works	21,116.48
Adventure Works	22,140.00
Adventure Works	24,612.60
Adventure Works	26,494.20
Adventure Works	26,794.64
Adventure Works	28,627.23
Adventure Works	29,994.00
Adventure Works	33,674.20
Adventure Works	35,642.87
Adventure Works	38,592.28
Wide World Importers	2,463.44
Wide World Importers	2,551.42
Wide World Importers	2,574.88
Wide World Importers	2,595.41
Wide World Importers	2,606.41
Wide World Importers	2,617.41
Wide World Importers	2,620.86
Wide World Importers	2,628.40
Wide World Importers	2,639.40
Wide World Importers	2,666.84
Wide World Importers	2,735.81
Wide World Importers	2,758.80

- ii. Product Category, sum of profits etc

Create another Table visualization. Drag Product Category to the Rows area. Drag Profit to the Values area, ensuring it is set to Sum.

Product Sub Category	Profit	Region
Camcorders	55,692.57	North America
Projectors & Screens	52,309.39	North America
Camcorders	48,449.26	North America
Projectors & Screens	44,958.99	Asia
Projectors & Screens	44,274.39	North America
Projectors & Screens	42,711.61	North America
Projectors & Screens	40,896.70	Asia
Projectors & Screens	40,589.18	Asia
Televisions	40,473.37	North America
Camcorders	37,458.20	Asia
Projectors & Screens	36,365.15	North America
Home Theater System	35,401.74	North America
Camcorders	34,624.23	North America
Desktops	34,155.75	Asia
Projectors & Screens	33,769.42	Asia
Camcorders	33,113.29	North America
Laptops	32,605.32	North America
Camcorders	32,309.91	Asia
Televisions	31,794.33	North America
Camcorders	31,508.69	North America
Televisions	31,485.12	North America
Projectors & Screens	29,708.07	Europe
Projectors & Screens	29,426.49	Asia
Digital SLR Cameras	29,387.28	Asia

- iii. Find Answers for the following:

- a. Which Manufacturer has the highest Sales?

Use the "Sales by Manufacturer" table. Sort the table by the Sales column in descending order. The manufacturer at the top of the list has the highest sales.

Manufacturer	Sales
Fabrikam, Inc.	78,312.00
Fabrikam, Inc.	70,413.00
Proseware, Inc.	68,850.00
Proseware, Inc.	62,475.00
Contoso, Ltd	61,161.75
Proseware, Inc.	58,976.40
Contoso, Ltd	57,834.00

- b. Which Product Category has the lowest Profit value?

Use the "Profit by Product Category" table. Sort the table by the Profit column in ascending order. The product category at the top has the lowest profit.

Product Sub Category	Profit	Region
Projectors & Screens	-838.43	Europe
Camcorders	-390.75	North America
Projectors & Screens	-378.03	Asia
Laptops	-363.36	Europe
Laptops	-355.90	Europe
Televisions	-291.19	North America

- c. Which Channel has the highest Cost of Sales?

Create a Table visualization. Drag Channel to the Rows area. Drag Cost of Sales to the Values area, ensuring it is summed. Sort by Cost of Sales in descending order to find the channel with the highest cost.

Channel	Cost of Sales
Online	42,991.14
Online	34,069.07
Reseller	31,763.39
Store	30,620.84

- d. Which Manufacturer has the highest Profit?

Create a Table with Manufacturer in the Rows area. Drag Profit to the Values area and ensure it is summed. Sort by Profit in descending order to find the top manufacturer.

Manufacturer	Profit
Fabrikam, Inc.	55,692.57
Proseware, Inc.	52,309.39
Fabrikam, Inc.	48,449.26
Contoso, Ltd	44,958.99
Contoso, Ltd	44,274.39

- e. Which Promotion Name has the highest Sales?

Create a Table visualization. Drag Promotion Name to the Rows area. Drag Sales to the Values area. Sort the table by Sales in descending order to find the top promotion.

Promotion Name	Sales
North America Holiday Promotion	78,312.00
North America Spring Promotion	70,413.00
No Discount	68,850.00
North America Holiday Promotion	62,475.00
North America Spring Promotion	61,161.75
Asian Summer Promotion	58,976.40
North America Holiday Promotion	57,834.00

- f. Which Product Sub Category has the highest Profit?

Create a Table visualization. Drag Product Sub Category to the Rows area. Drag Profit to the Values area. Sort by Profit in descending order.

Product Sub Category	Profit
Camcorders	55,692.57
Projectors & Screens	52,309.39
Camcorders	48,449.26
Projectors & Screens	44,958.99
Projectors & Screens	44,274.39

- i. Perform cross filtering between tables

Ensure relationships between tables are set correctly in the Model view. Use filters to enable cross-filtering across different tables.

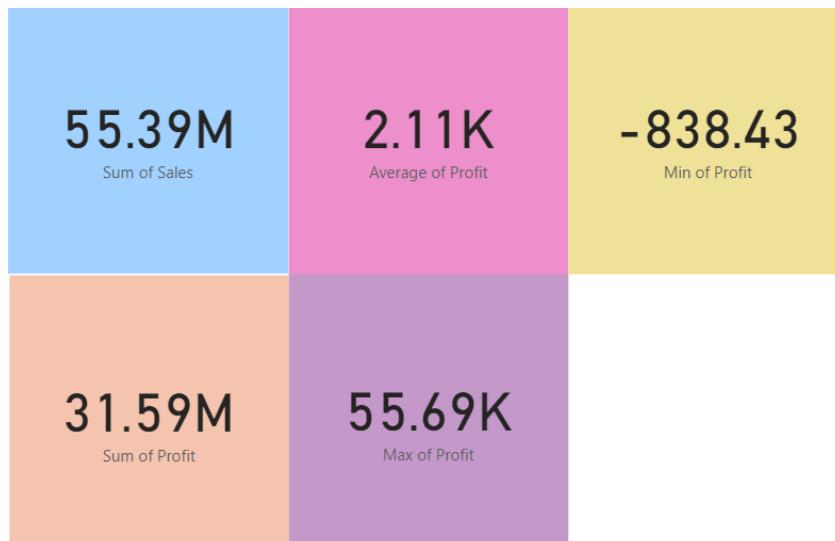
Channel	Cost of Sales	Manufacturer	Profit	Promo Name	Sales
Online	14,942.79	Fabrikam, Inc.	55,692.57	Asian Summer Promotion	47,252.70
		Proseware, Inc.	52,309.39		
		Fabrikam, Inc.	48,449.26		
		Contoso, Ltd	44,958.99		
		Contoso, Ltd	44,274.39		
		Contoso, Ltd	42,711.61		
		Proseware, Inc.	40,896.70		
		Proseware, Inc.	40,589.18		
		Adventure Works	40,473.37		
		Fabrikam, Inc.	37,458.20		
		Contoso, Ltd	36,365.15		
		Contoso, Ltd	35,401.74		
		Fabrikam, Inc.	34,624.23		
		Wide World Importers	34,155.75		
		Proseware, Inc.	33,769.42		
		Fabrikam, Inc.	33,113.29		
		Fabrikam, Inc.	32,605.32		
		Fabrikam, Inc.	32,309.91		
		Adventure Works	31,794.33		
		Fabrikam, Inc.	31,508.69		
		Adventure Works	31,485.12		
		Proseware, Inc.	29,708.07		
		Proseware, Inc.	29,426.49		

- ii. Create matrix visualization for product category Region, sum of sales

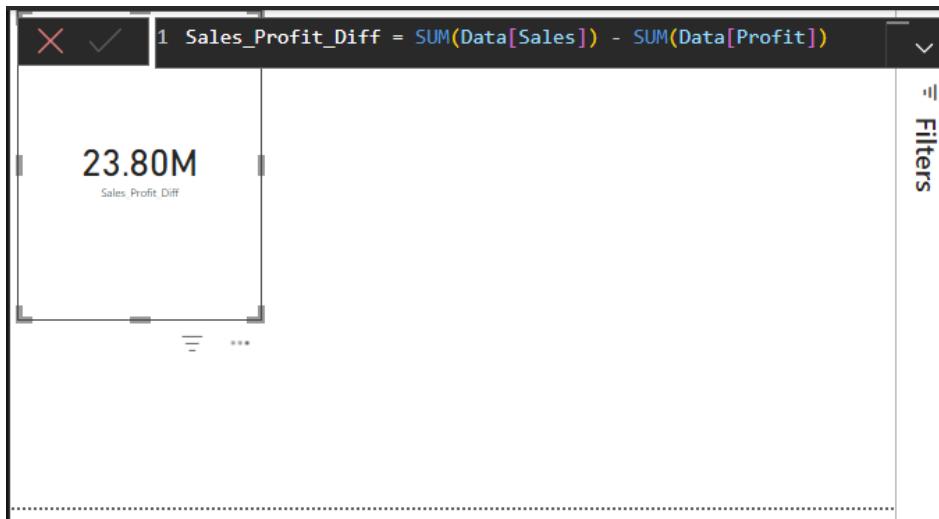
Select the Matrix visualization. Drag Product Category to the Rows area. Drag Region to the Columns area. Drag Sales to the Values area, ensuring it is summed. The matrix will display sales summarized by product category and region.

Product Category	Asia	Europe	North America	Total
Audio	154	161	417	732
Cameras and camcorders	731	691	2168	3590
Cell phones	516	549	1544	2609
Computers	1114	1120	3125	5359
Music, Movies and Audio Books	163	174	495	832
TV and Video	372	386	1120	1878
<b>Total</b>	<b>3050</b>	<b>3081</b>	<b>8869</b>	<b>15000</b>

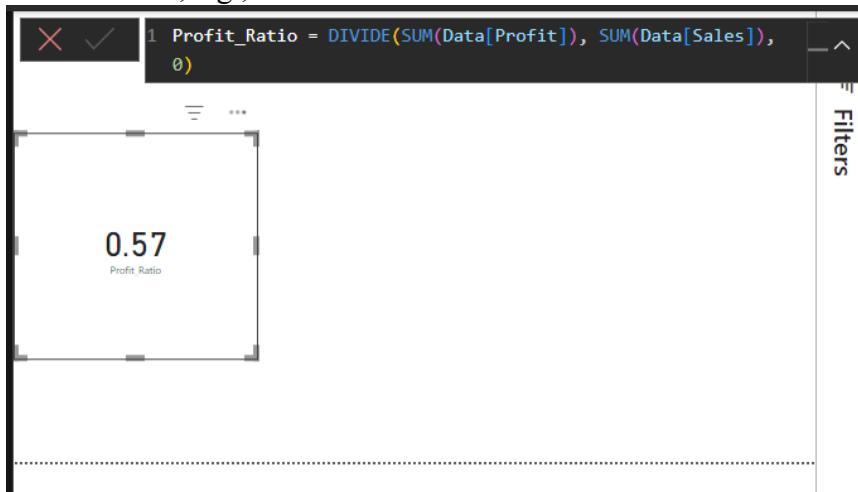
- iii. Create a card visualization for total sales, Total Profits, Avg Profits, Highest Profits, Lower Profits etc. and apply formatting
- Create a Card visualization. Drag Sales to the Values area, and set the aggregation to Sum.
  - Create another Card and drag Profit to the Values area, set to Sum.
  - Create a calculated measure:  
 $\text{Avg_Profit} = \text{AVERAGE('Dataset'[Profit])}$   
 Use this measure in a Card visualization.
  - Create a calculated measure:  
 $\text{Max_Profit} = \text{MAX('Dataset'[Profit])}$   
 Use in a Card visualization.
  - Create a calculated measure:  
 $\text{Min_Profit} = \text{MIN('Dataset'[Profit])}$   
 Use in a Card visualization.



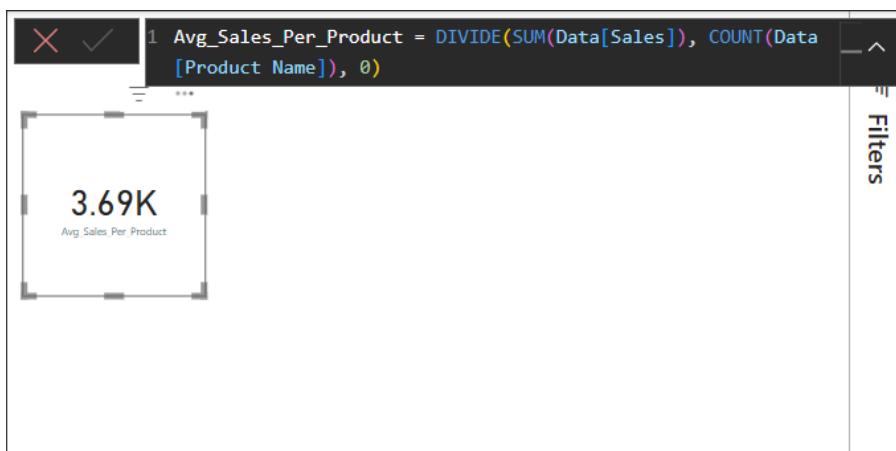
2. Apply appropriate visualization. Create calculations for Visualization
- Calculate the difference between sum of Sales and Sum of Profits.



- ii. Calculate Profit Ratio. (Hint: Sum of Profit/Sum of Sales). Also demonstrate using in built function, e.g., DIVIDE



- iii. Calculate the average sales per product for each of manufacturers. (Hint: Sum of sales/Count of Product Name)

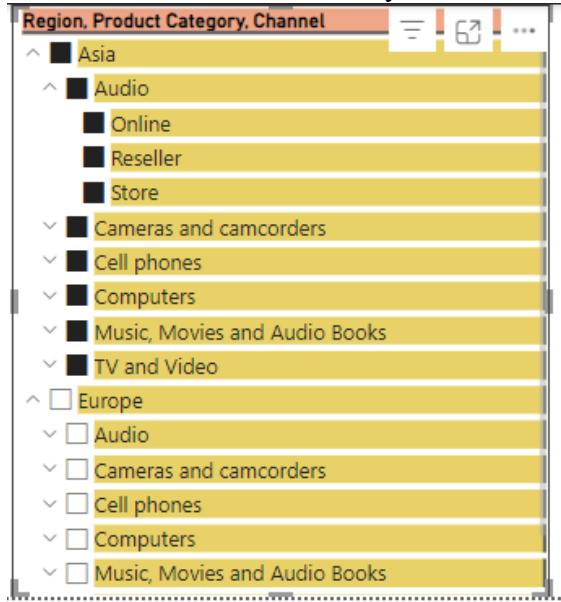


- iv. Calculate the Total for category region using in-built function

The screenshot shows the Power BI interface. On the left, there is a table visualization with one visible row containing the value '15.00K' under the column 'Count of Sales'. To the right of the table is a 'Quick measure' dialog box. The dialog has a title 'Quick measure' and a subtitle 'Select a calculation to create a measure.' It contains a dropdown menu set to 'Total for category (filters not applied)'. Below this is a description: 'Calculate the total across all values in a category ignoring any filters applied in your report.' A link 'Learn more' is provided. The dialog is divided into two sections: 'Base value' and 'Category'. Under 'Base value', there is a box labeled 'Count of Sales'. Under 'Category', there is a box labeled 'Region'.

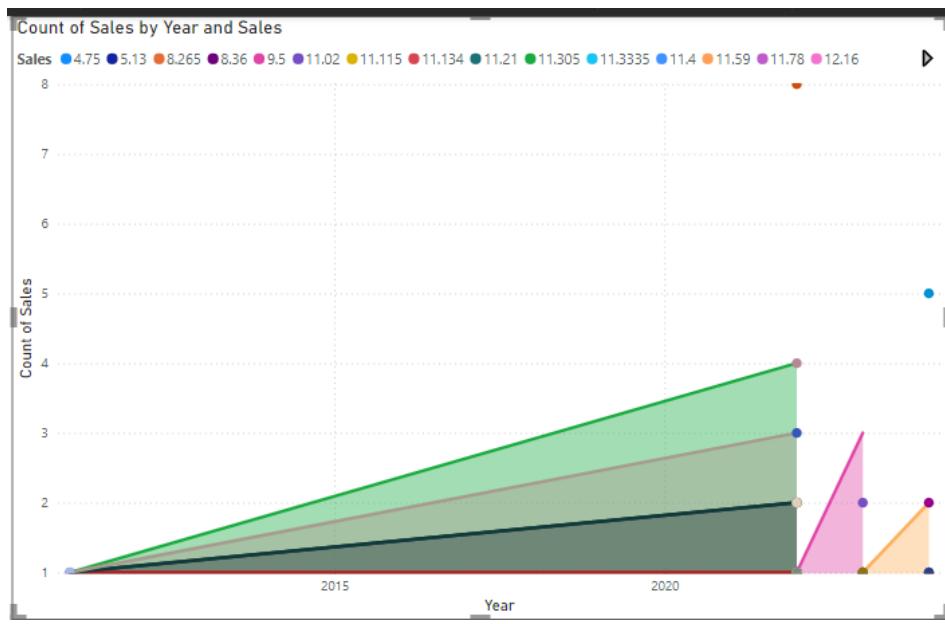
### 3. Apply Filters and Slicers

Add Slicers for Region, Product Category, and Channel. Set interactions between slicers and visualizations to enable dynamic filtering.

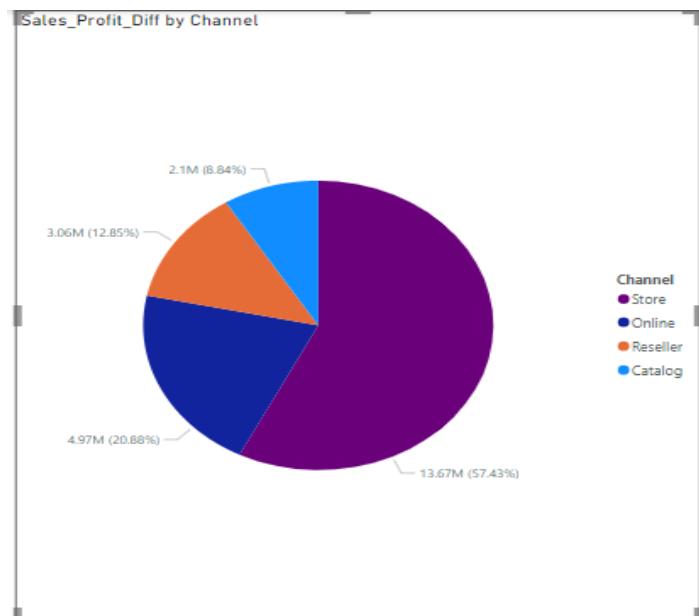


### 4. Build Graphs. Draw Trend Analysis Graph. Show trends and forecasting

Sales by Year and Quarter: Use an Area Chart. Drag Order Date to the Axis area, set to hierarchy (Year, Quarter). Drag Sales to the Values area.



Profit by Product Category: Use a Column Chart. Drag Product Category to the Axis area. Drag Profit to the Values area.



5. Create Interactive Dashboard
  - i. Create an Interactive Report
    - a. Create a heading Sales Report
    - b. Create the following Card visualizations: Total Sales, Total Profit, Average Sales, Number of Products, Create a Area graph displaying Sales by Year and Quarter, Create a Column graph displaying Profit by Product Category

**Manufacturer**

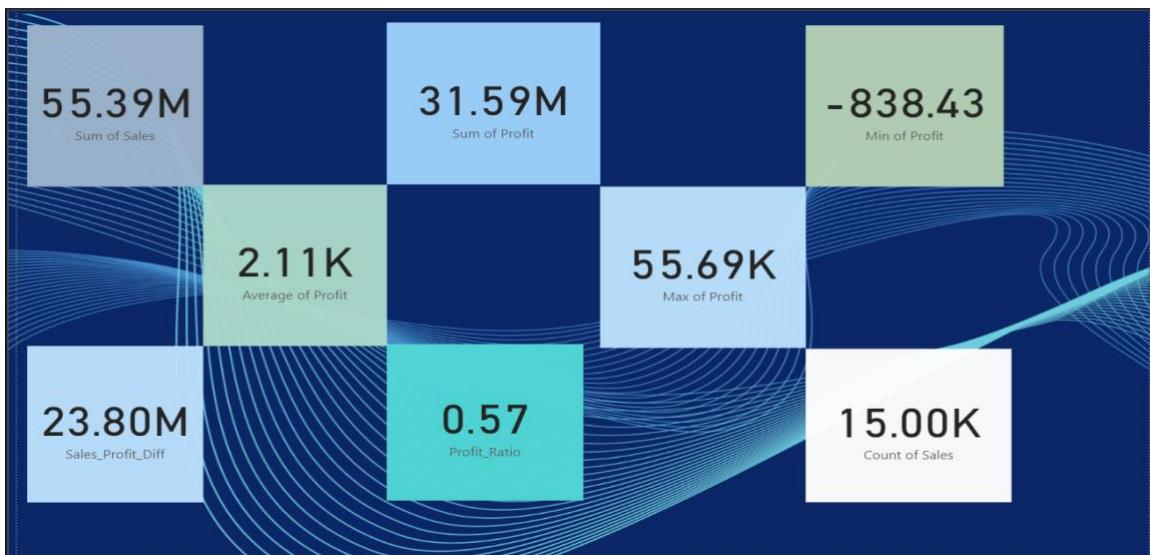
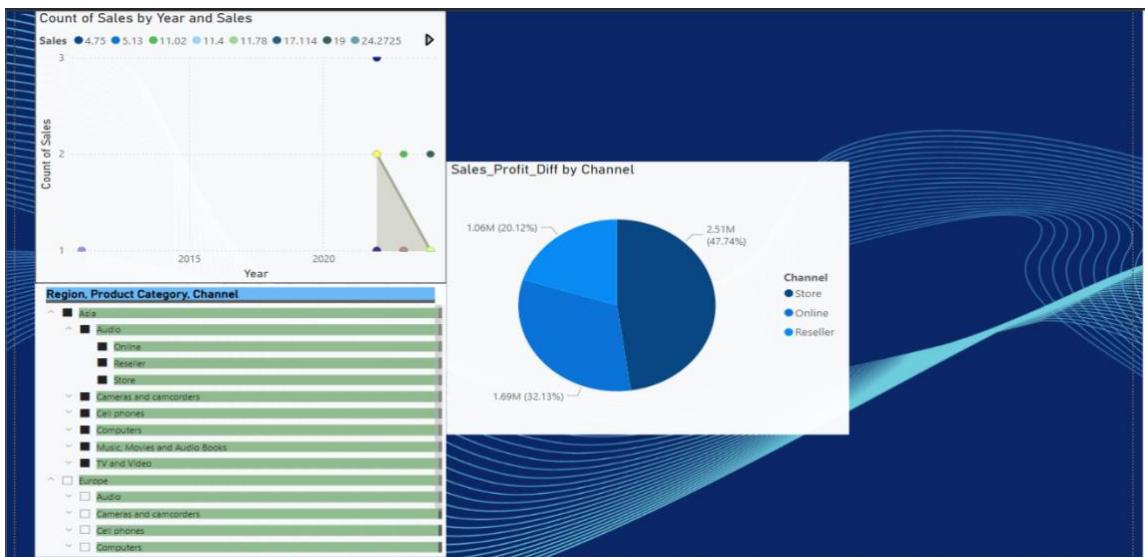
Manufacturer	Sales
A. Datum Corporation	438.60
A. Datum Corporation	473.60
A. Datum Corporation	490.20
A. Datum Corporation	496.65
A. Datum Corporation	503.10
A. Datum Corporation	516.00
A. Datum Corporation	532.80
A. Datum Corporation	562.40
A. Datum Corporation	627.00
A. Datum Corporation	635.25
A. Datum Corporation	643.50
A. Datum Corporation	645.00
A. Datum Corporation	660.00
A. Datum Corporation	722.40
A. Datum Corporation	735.30
A. Datum Corporation	740.00
A. Datum Corporation	761.10
A. Datum Corporation	774.00
A. Datum Corporation	799.20
A. Datum Corporation	825.00
A. Datum Corporation	828.80

**Product Sub Category**

Product Sub Category	Profit	Region
Bluetooth Headphones	-39.34	Asia
Bluetooth Headphones	4.46	Asia
Bluetooth Headphones	30.06	Asia
Bluetooth Headphones	31.66	Asia
Bluetooth Headphones	42.83	Asia
Bluetooth Headphones	86.25	Asia
Bluetooth Headphones	88.83	Asia
Bluetooth Headphones	106.37	Asia
Bluetooth Headphones	106.74	Asia
Bluetooth Headphones	113.47	Asia
Bluetooth Headphones	116.82	Asia
Bluetooth Headphones	131.26	Asia
Bluetooth Headphones	132.29	Asia
Bluetooth Headphones	143.19	Asia
Bluetooth Headphones	150.80	Asia
Bluetooth Headphones	176.04	Asia
Bluetooth Headphones	206.55	Asia
Bluetooth Headphones	210.34	Asia
Bluetooth Headphones	211.54	Asia
Bluetooth Headphones	221.14	Asia

**Promotion Name**

Promotion Name	Sales
North America Holiday Promotion	78,312.00
North America Spring Promotion	70,413.00
No Discount	68,850.00
North America Holiday Promotion	62,479.00
North America Spring Promotion	61,161.75
Asian Summer Promotion	58,976.40
North America Holiday Promotion	57,834.00
Asian Holiday Promotion	57,604.50
North America Back-to-School Promotion	56,204.66
European Spring Promotion	54,216.78
No Discount	49,980.00
No Discount	47,400.00
Asian Summer Promotion	47,252.70
No Discount	45,900.00
European Holiday Promotion	45,239.84
No Discount	44,700.00
No Discount	44,000.00
Asian Spring Promotion	43,982.40
Asian Spring Promotion	42,560.00
North America Spring Promotion	42,066.44
North America Spring Promotion	41,080.50
Asian Spring Promotion	40,851.00
Asian Spring Promotion	39,933.00
Asian Summer Promotion	39,656.70
Asian Holiday Promotion	39,390.00
Asian Holiday Promotion	39,064.00
North America Holiday Promotion	38,592.28



Manufacturer	Profit	Product Sub Category	Profit	Channel	Cost of Sales
Fabrikam, Inc.	55,692.57	Projectors & Screens	15,816.31	Online	42,991.14
Proseware, Inc.	52,309.39	Laptops	15,692.85	Online	34,069.07
Fabrikam, Inc.	48,449.26	Projectors & Screens	15,680.96	Reseller	31,763.39
Contoso, Ltd	44,958.99	Laptops	15,675.45	Store	30,620.84
Contoso, Ltd	44,274.39	Desktops	15,566.33	Catalog	29,657.97
Contoso, Ltd	42,711.61	Camcorders	15,551.66	Online	28,230.12
Proseware, Inc.	40,896.70	Laptops	15,525.61	Online	27,383.23
Proseware, Inc.	40,589.18	Televisions	15,491.66	Reseller	26,831.97
Adventure Works	40,473.37	Projectors & Screens	15,462.58	Online	25,529.42
Fabrikam, Inc.	37,458.20	Laptops	15,406.33	Catalog	24,655.99
Contoso, Ltd	36,365.15	Camcorders	15,384.15	Reseller	23,835.08
Contoso, Ltd	35,401.74	Projectors & Screens	15,367.79	Catalog	23,774.52
Fabrikam, Inc.	34,624.23	Projectors & Screens	15,339.47	Catalog	23,493.90
Wide World Importers	34,155.75	Camcorders	15,310.28	Online	23,411.79
Proseware, Inc.	33,769.42	Televisions	15,278.18	Catalog	22,743.36
Fabrikam, Inc.	33,113.29	Camcorders	15,226.11	Catalog	22,619.43
Fabrikam, Inc.	32,605.32	Desktops	15,210.06	Store	22,404.04
Fabrikam, Inc.	32,309.91	Projectors & Screens	15,203.57	Reseller	22,390.53
Adventure Works	31,794.33	Laptops	15,102.09	Catalog	22,260.64
Fabrikam, Inc.	31,508.69	Televisions	15,019.01	Online	22,147.49
Adventure Works	31,485.12	Camcorders	15,004.46	Catalog	21,963.74
Proseware, Inc.	29,708.07	Laptops	15,002.10	Online	21,880.92
Proseware, Inc.	29,426.49	Projectors & Screens	14,981.08	Store	21,879.16
A. Datum Corporation	29,387.28	Camcorders	14,955.80	Online	21,314.72
Proseware, Inc.	28,878.64	Laptops	14,948.50	Online	21,106.74
Contoso, Ltd	28,747.33	Camcorders	14,933.67	Catalog	20,917.06
Wide World Importers	28,665.28	Camcorders	14,913.81	Catalog	20,628.59
Fabrikam, Inc.	28,585.06	Digital SLR Cameras	14,901.77	Reseller	20,076.54
Wide World Importers	28,219.47	Cell phones Accessories	14,825.66	Online	19,900.75
Wide World Importers	28,188.09	Desktops	14,800.25	Online	19,173.33