EDA Using Power BI

Project Title: Retail Sales Performance Analysis

Problem Statement

A nationwide retail company operates multiple stores across four regions (North, South, East, West). The business sells electronics and office supplies to different customer segments.

Senior management has noticed that overall revenue is growing, but profit margins are inconsistent across regions and products. Some regions report high sales but low profits, while others perform steadily.

The leadership team wants a single Power BI dashboard that:

• Cleans and validates raw sales data

• Identifies profitable and non-profitable products

• Highlights regional performance gaps

• Supports data-driven decisions for promotions and inventory planning

You are assigned as a Data Analyst to explore the data, build a robust data model, apply DAX calculations, and present actionable insights.

Questions:

• Identify missing values and duplicates in the Sales dataset. What cleaning steps are required?

• Perform univariate analysis on Sales and Profit. What distribution patterns do you observe?

• Which product categories contribute the highest revenue and profit?

• How does sales performance vary across regions?

• Create a star schema using Sales, Customer, and Product tables. Why is this model effective?

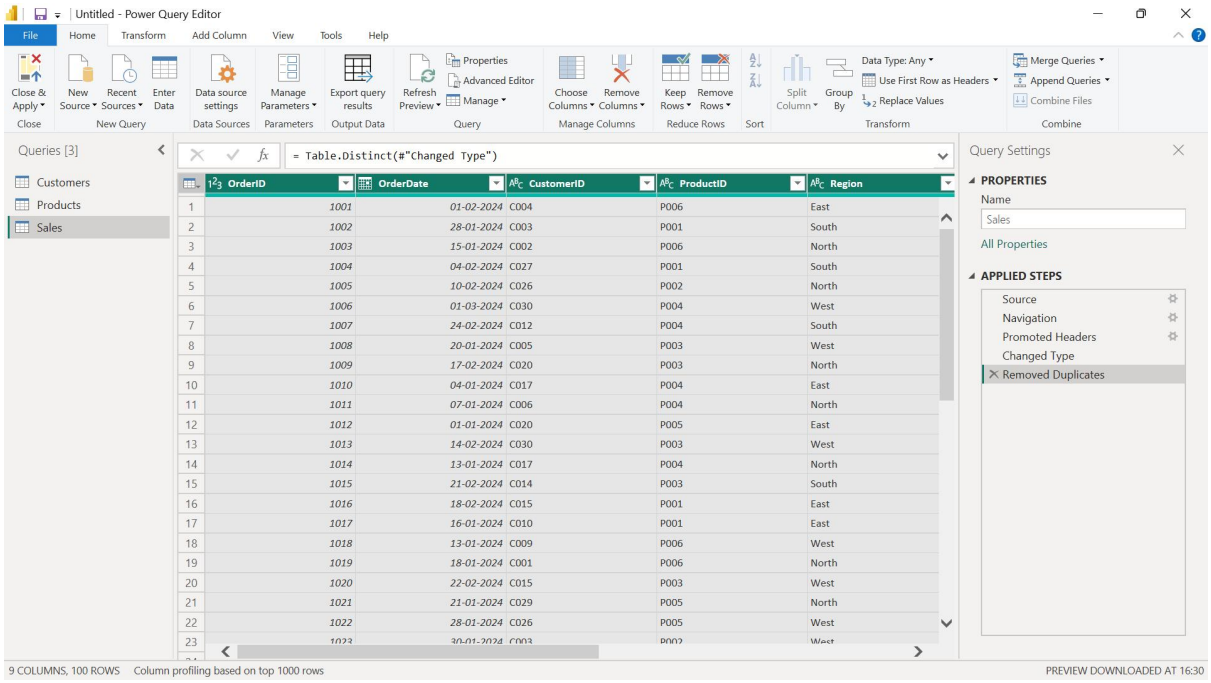
• Write a DAX measure to calculate Total Sales and Total Profit.

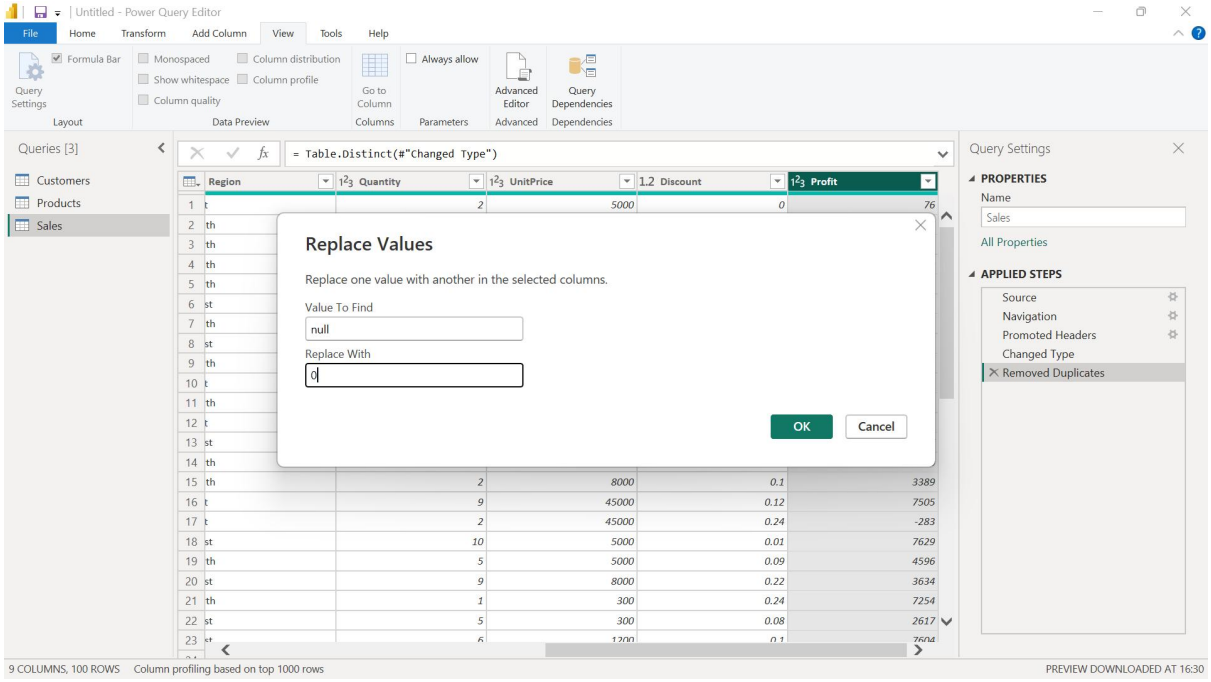
• Calculate Profit Margin (%) using DAX and identify low-margin products.

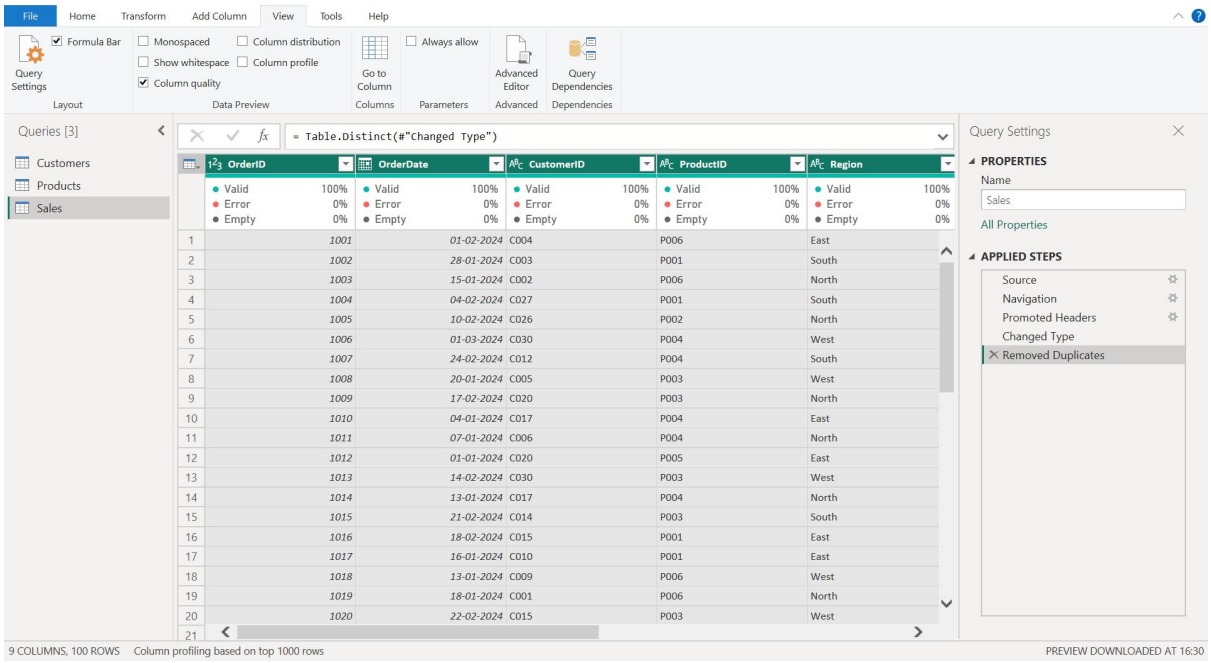
• Design a dashboard to show regional and category-wise performance.

• Which products should be discontinued or promoted based on analysis?

Identify missing or Duplicate Sales data.

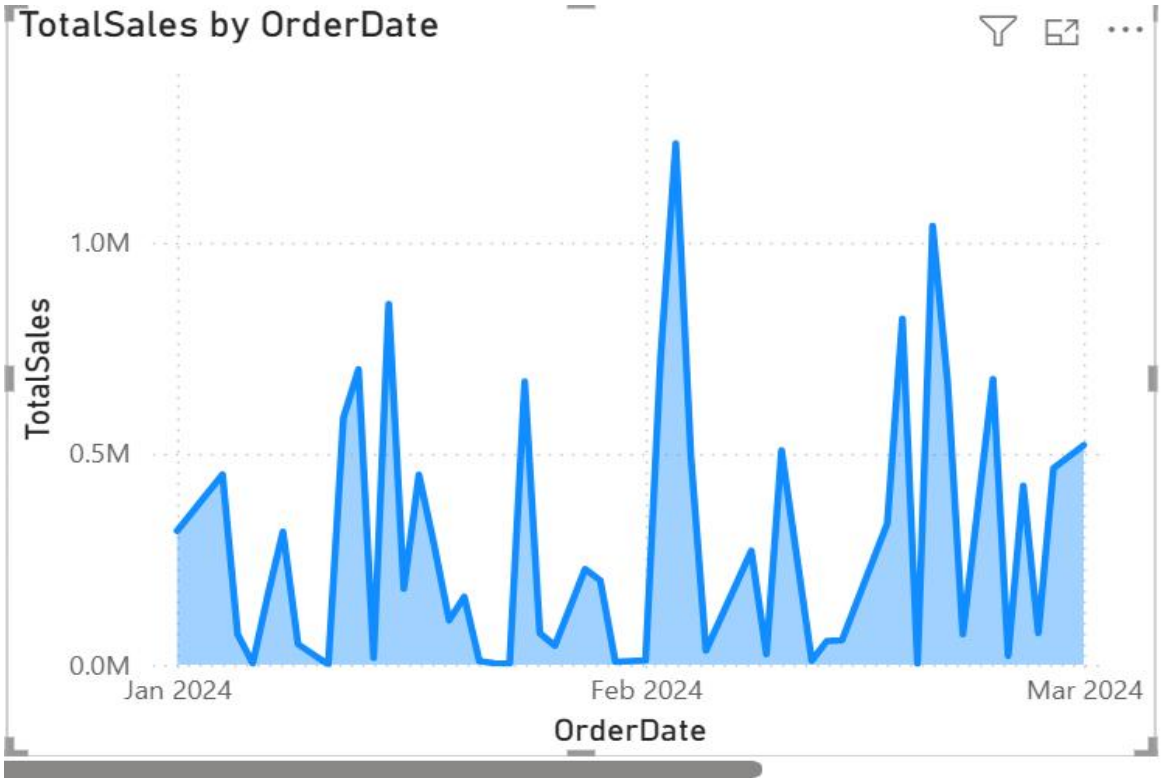


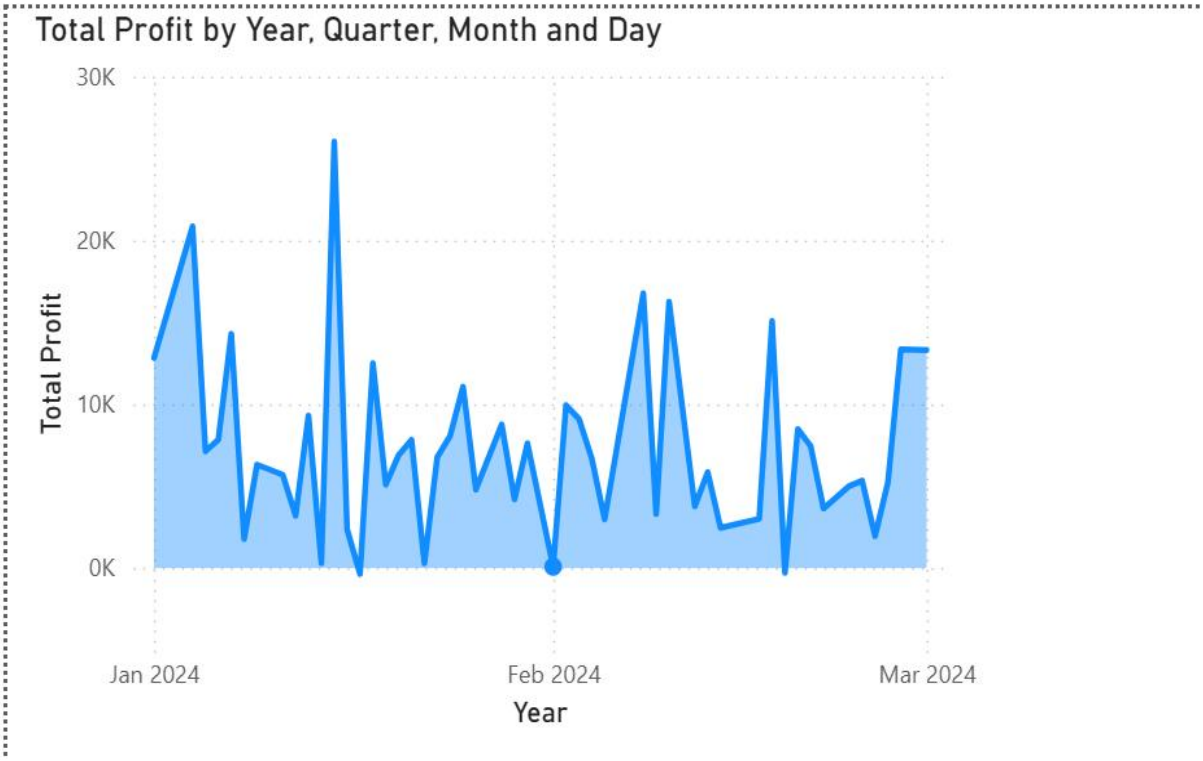




- There will be no error, missing or inconsistent marketing data

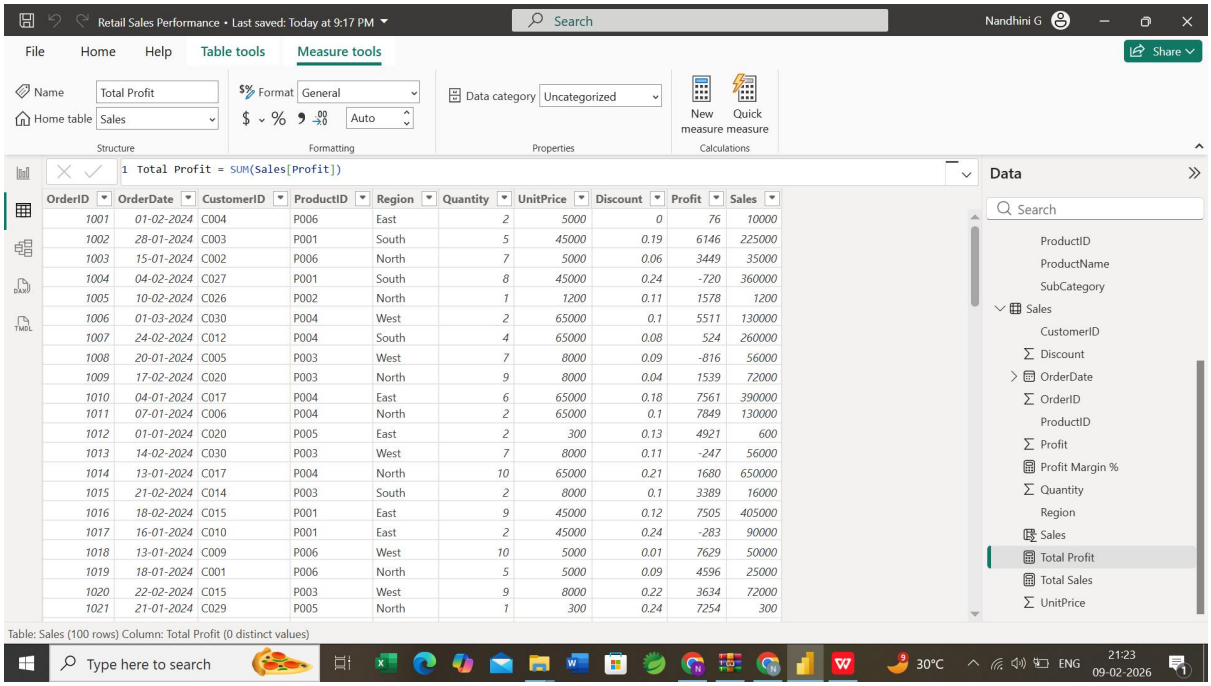
Univariate Analysis on Sales and Profit





- Profit is not stable.
- Some days profit is very high, some days very low.
- There are sudden spikes and drops in profit.

product categories contribute the highest revenue and profit



OrderID	OrderDate	CustomerID	ProductID	Region	Quantity	UnitPrice	Discount	Profit	Sales
1001	01-02-2024	C004	P006	East	2	5000	0	76	10000
1002	28-01-2024	C003	P001	South	5	45000	0.19	6146	225000
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1012	01-01-2024	C020	P005	East	2	300	0.13	4921	600
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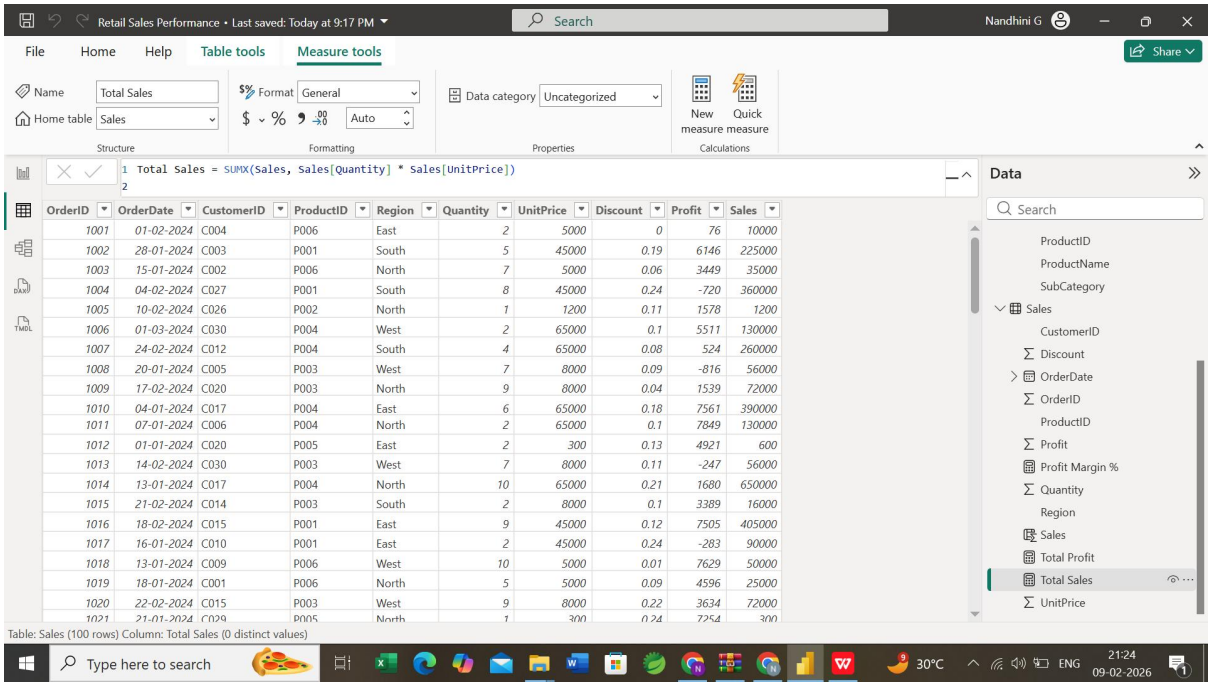
1021	21-01-2024	C029	P005	North	1	300	0.24	7254	300



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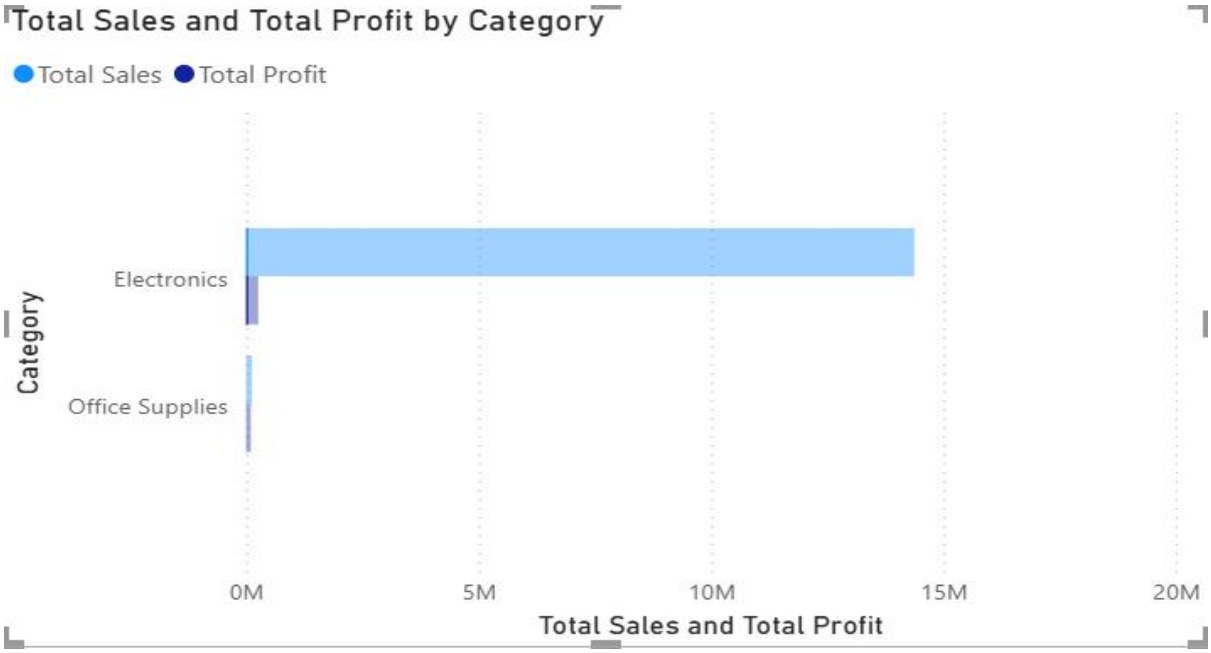
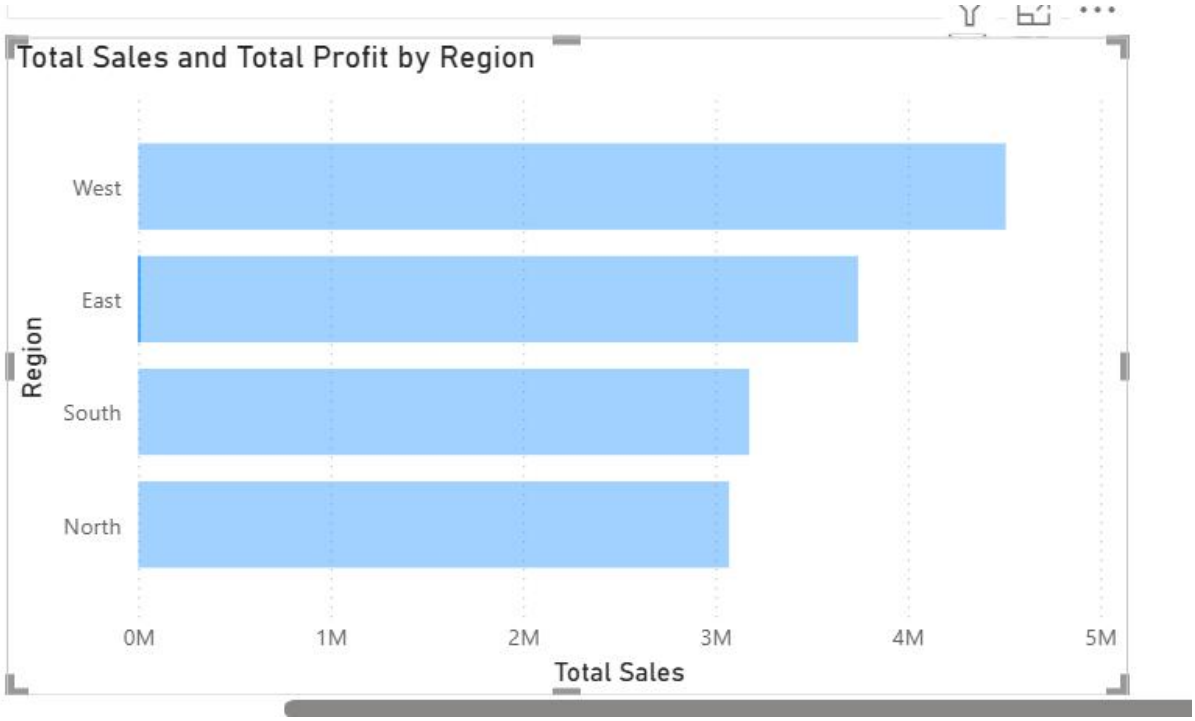


Electronics category contributes the highest revenue and profit in the dataset. Office Supplies category has significantly lower sales and profit, indicating weak performance compared to Electronics.

Sales performance vary across regions



- **West = Best performing region**
- **North = Poor performing region**
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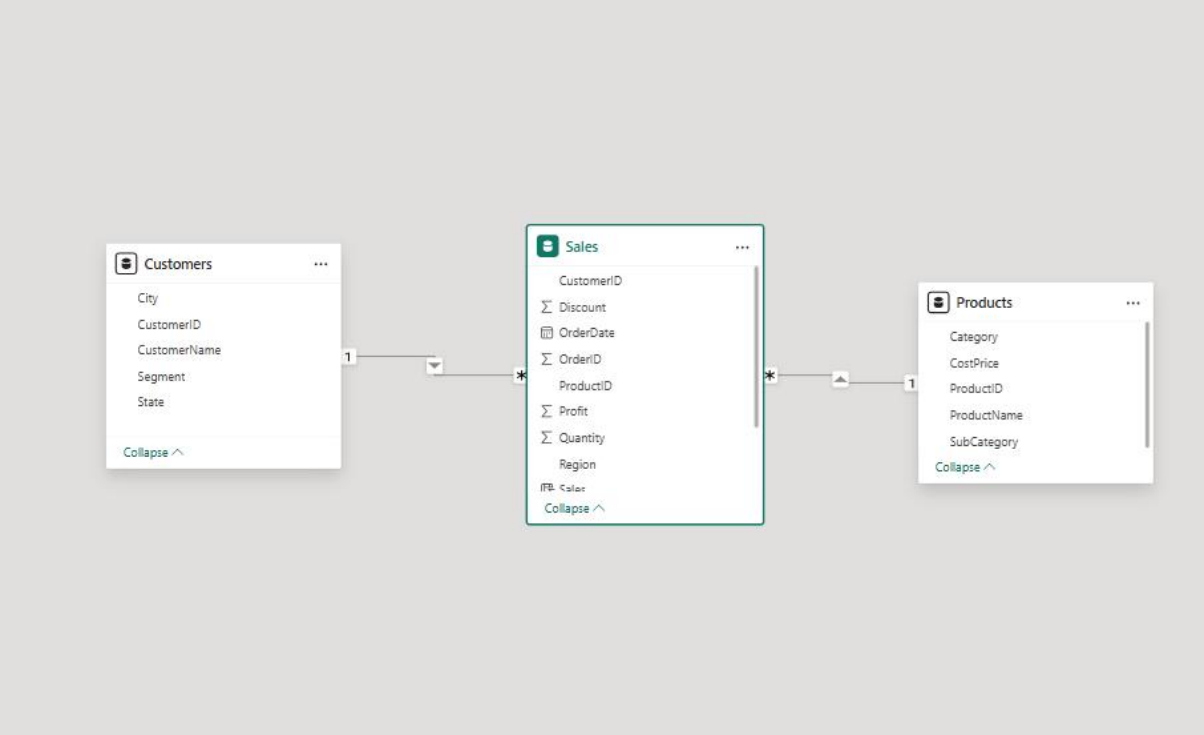
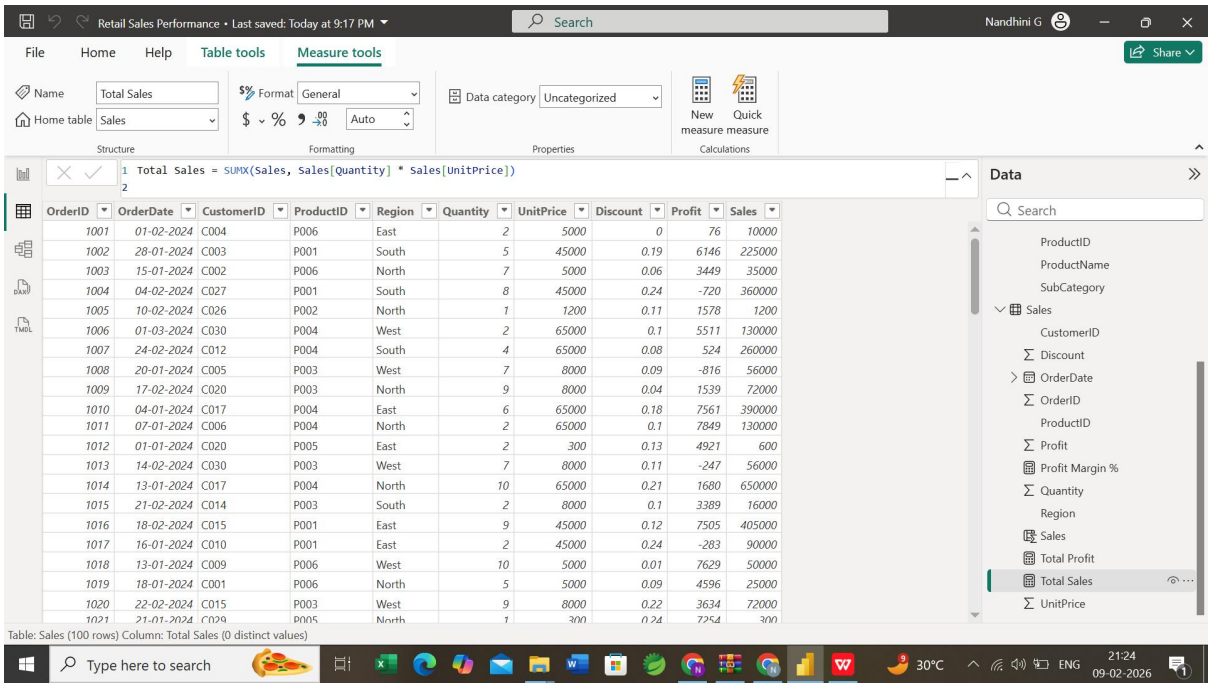
Star Schema using Sales, Customer, and Product Tables



- **Faster data analysis**
- **Easy to understand structure**
- **Reduces data duplication**
- **Improves Power BI performance**
- **Best for reporting and dashboards**

DAX measure to calculate Total Sales and Total Profit.



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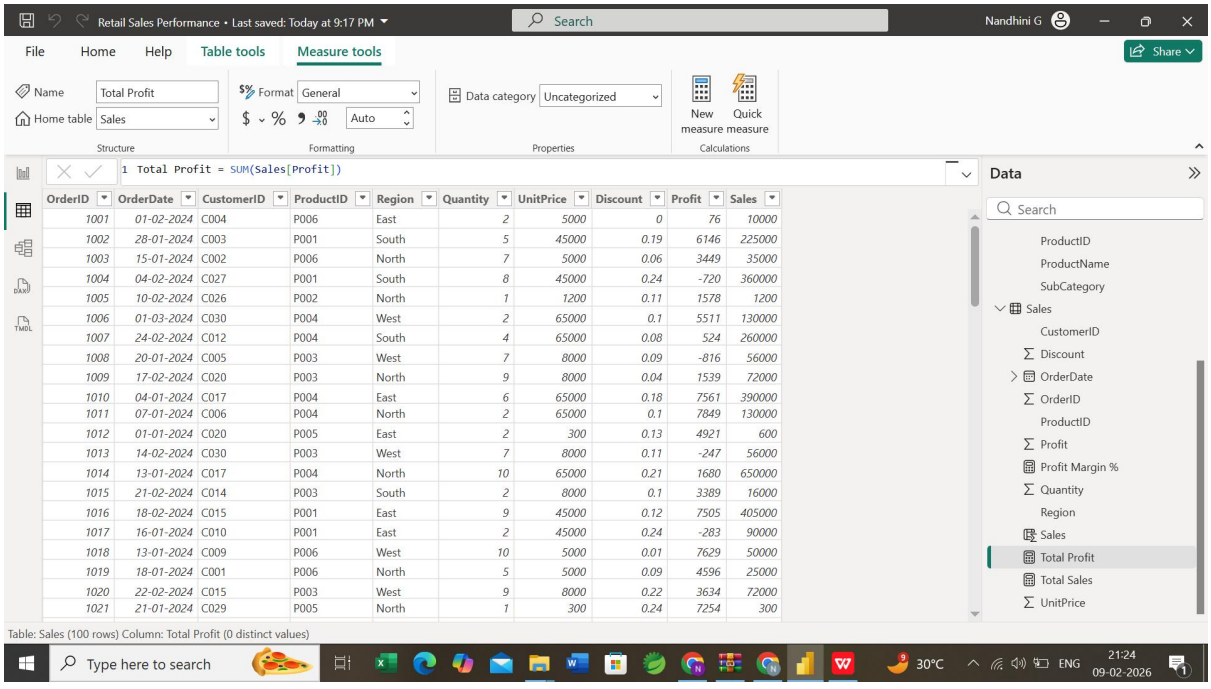

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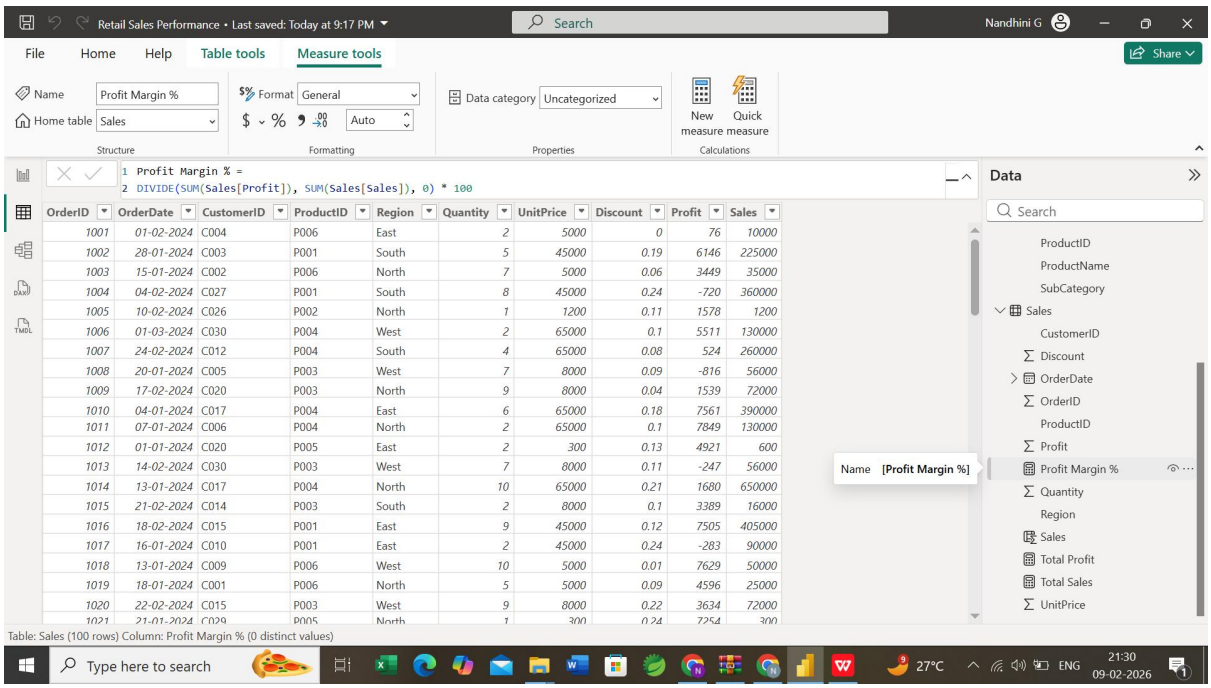
Profit Margin (%) and low-margin products



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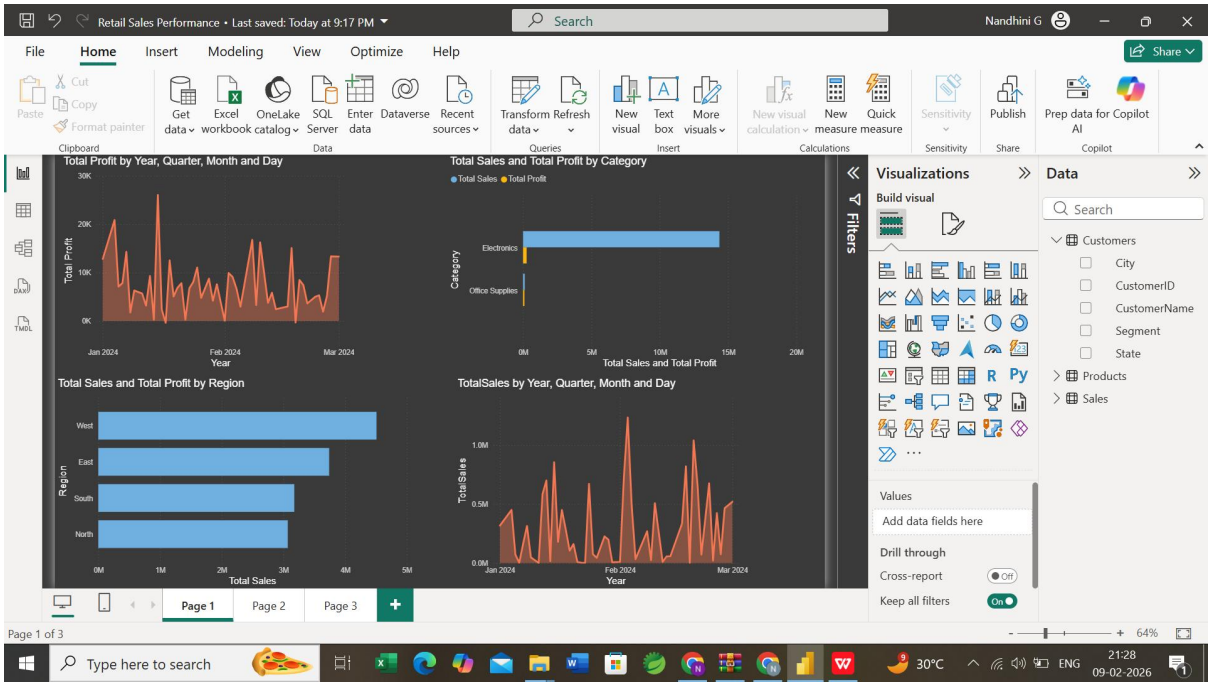
ProductID	Profit Margin %
P001	1.00
P004	1.15
P003	7.28
P006	14.34
P002	39.89
P005	288.39
Total	**2.48**

DashBoard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Total Profit by Year, Quarter, Month and Day
Total Sales and Total Profit by Category
Total Sales and Total Profit by Region
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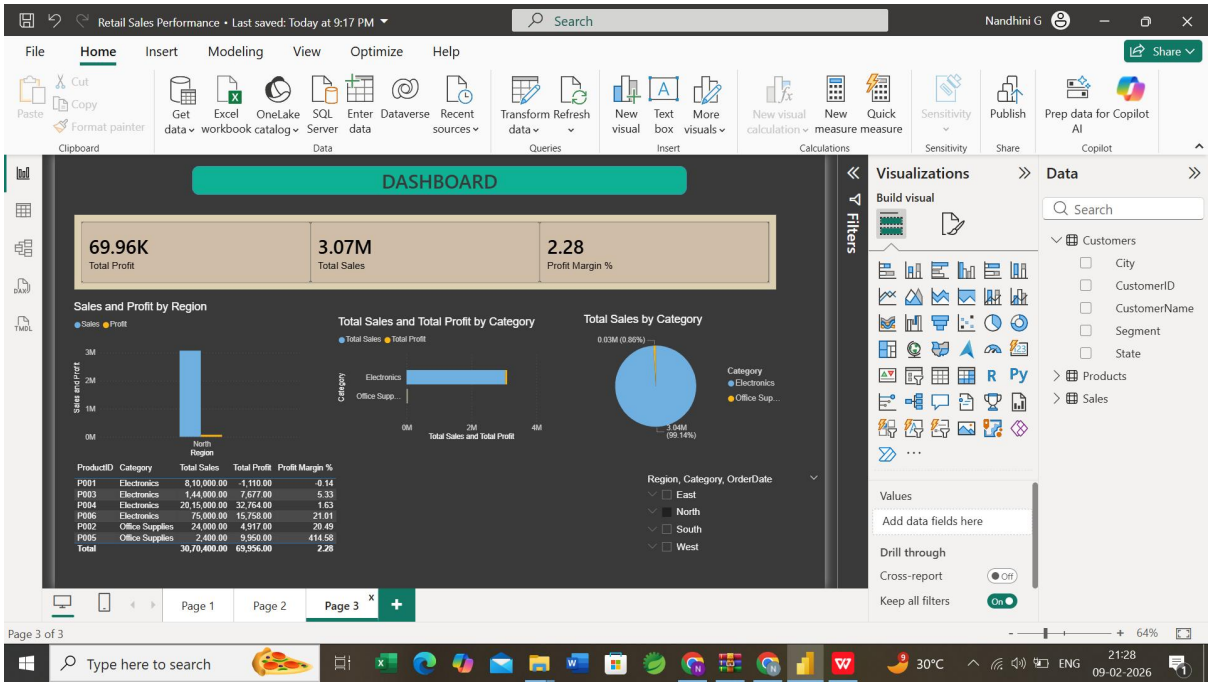
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DASHBOARD
69.96K
Total Profit
3.07M
Total Sales
2.28
Profit Margin %
Sales and Profit by Region
Total Sales and Total Profit by Category
Total Sales by Category
ProductID Category Total Sales Total Profit Profit Margin %
P001 Electronics 8,10,000.00 -1,110.00 -0.14
P003 Electronics 1,44,000.00 7,677.00 5.33
P004 Electronics 20,15,000.00 32,764.00 1.63
P006 Electronics 75,000.00 15,758.00 21.01
P002 Office Supplies 24,000.00 4,917.00 20.49
P005 Office Supplies 2,400.00 9,950.00 414.58
Total 30,70,400.00 69,956.00 2.28
Region, Category, OrderDate
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Discontinued or Promoted based on analysis

📉 Products to Discontinue:

Products P001, P004, and P006 have very low profit margins, indicating that they contribute less to profitability. These products should be discontinued or their pricing and cost structure should be revised.

📈 Products to Promote:

Products P002 and P005 show high profit margins and good sales performance. These products should be promoted through marketing campaigns and increased inventory to maximize business profit.