Enterprise-Grade Power BI Report Design

STEP 1: Define the Business Use Case

Objective

The objective of this project is to analyze the company's sales data to understand overall sales performance, identify trends over time, compare product and regional performance, and support data-driven business decisions through interactive Power BI dashboards.

The dashboard focuses on evaluating **sales revenue, quantity sold, product performance, customer contribution, and regional trends** using historical order data.

Key Business Questions

1. **How are sales trending monthly and yearly?**
   This question is answered by analyzing sales data across different months, quarters, and years to identify growth patterns, seasonal variations, and long-term trends in business performance.

2. **Which categories or product lines drive profit and revenue?**
   By comparing sales across different product lines and categories, the dashboard highlights the major contributors to revenue and identifies product categories that generate the highest business value.

3. **Which regions are underperforming?**
   Regional analysis using country, state, city, and territory data helps identify geographical areas with strong performance as well as regions that require strategic attention.

4. **How does actual sales performance compare across different deal sizes and time periods?**
   This analysis helps understand how different deal sizes contribute to total sales and how performance varies across different time periods.

Additional Business Questions

5. **Which individual products are top performers and which products are underperforming?**
   Product-level analysis helps the organization identify high-performing products as well as products with low sales or demand, supporting inventory and pricing decisions.

6. **How does the quantity sold relate to total sales revenue?**
   By comparing quantity ordered with total sales value, the dashboard helps evaluate customer demand and pricing effectiveness.

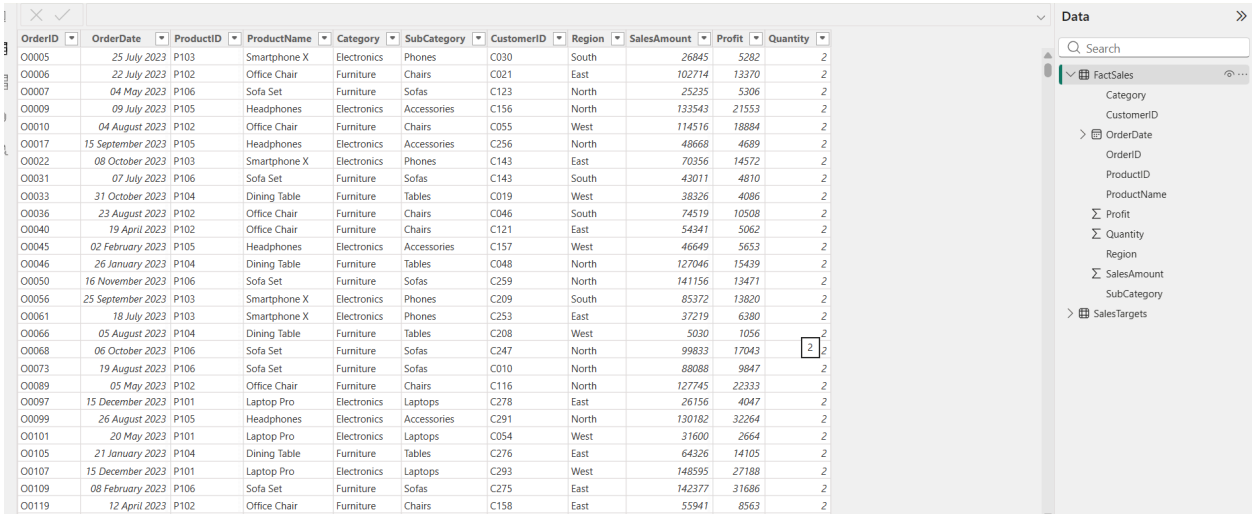
7. **Are there seasonal or quarterly patterns in sales performance?**
   Analyzing sales by month and quarter helps detect seasonal peaks and slow periods in the business cycle.

8. **Which customers contribute the most to overall sales revenue?**
   Customer-level analysis identifies key customers who generate significant revenue, enabling better customer relationship management and retention strategies.

9. **How does sales performance vary across different territories and countries?**
   This analysis provides insights into regional market strength and helps compare performance across multiple geographic levels.

10. **Which areas of the business require management focus or corrective action?**
    By highlighting underperforming products, regions, or deal sizes, the dashboard supports informed decision-making and strategic planning.

STEP 2: Data Sources & Excel Integration



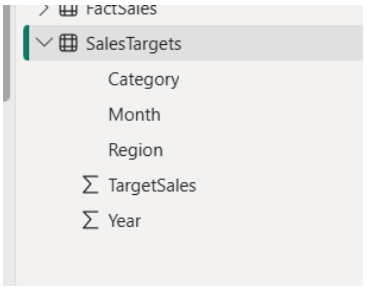
OrderID	OrderDate	ProductID	ProductName	Category	SubCategory	CustomerID	Region	SalesAmount	Profit	Quantity
O0005	25 July 2023	P103	Smartphone X	Electronics	Phones	C030	South	26845	5282	2
O0006	22 July 2023	P102	Office Chair	Furniture	Chairs	C021	East	102714	13370	2
O0007	04 May 2023	P106	Sofa Set	Furniture	Sofas	C123	North	25235	5306	2
O0009	09 July 2023	P105	Headphones	Electronics	Accessories	C156	North	133543	21553	2
O0010	04 August 2023	P102	Office Chair	Furniture	Chairs	C055	West	114516	18884	2
O0017	15 September 2023	P105	Headphones	Electronics	Accessories	C256	North	48668	4689	2
O0022	08 October 2023	P103	Smartphone X	Electronics	Phones	C143	East	70356	14572	2
O0031	07 July 2023	P106	Sofa Set	Furniture	Sofas	C143	South	43011	4810	2
O0033	31 October 2023	P104	Dining Table	Furniture	Tables	C019	West	38326	4086	2
O0036	23 August 2023	P102	Office Chair	Furniture	Chairs	C046	South	74519	10508	2
O0040	19 April 2023	P102	Office Chair	Furniture	Chairs	C121	East	54341	5062	2
O0045	02 February 2023	P105	Headphones	Electronics	Accessories	C157	West	46649	5653	2
O0046	26 January 2023	P104	Dining Table	Furniture	Tables	C048	North	127046	15439	2
O0050	16 November 2023	P106	Sofa Set	Furniture	Sofas	C259	North	141156	13471	2
O0056	25 September 2023	P103	Smartphone X	Electronics	Phones	C209	South	85372	13820	2
O0061	18 July 2023	P103	Smartphone X	Electronics	Phones	C253	East	37219	6380	2
O0066	05 August 2023	P104	Dining Table	Furniture	Tables	C208	West	5030	1056	2
O0068	06 October 2023	P106	Sofa Set	Furniture	Sofas	C247	North	99833	17043	2
O0073	19 August 2023	P106	Sofa Set	Furniture	Sofas	C010	North	88088	9847	2
O0089	05 May 2023	P102	Office Chair	Furniture	Chairs	C116	North	127745	22333	2
O0097	15 December 2023	P101	Laptop Pro	Electronics	Laptops	C278	East	26156	4047	2
O0099	26 August 2023	P105	Headphones	Electronics	Accessories	C291	North	130182	32264	2
O0101	20 May 2023	P101	Laptop Pro	Electronics	Laptops	C054	West	31600	2664	2
O0105	21 January 2023	P104	Dining Table	Furniture	Tables	C276	East	64326	14105	2
O0107	15 December 2023	P101	Laptop Pro	Electronics	Laptops	C293	West	148595	27188	2
O0109	08 February 2023	P106	Sofa Set	Furniture	Sofas	C275	East	142377	31686	2
O0119	12 April 2023	P102	Office Chair	Furniture	Chairs	C158	East	55941	8563	2

Data

Search

- FactSales
  - Category
  - CustomerID
  - OrderDate
  - OrderID
  - ProductID
  - ProductName
  - Profit
  - Quantity
  - Region
  - SalesAmount
  - SubCategory
- SalesTargets

Year	Month	Category	Region	TargetSales
2023	Jan	Electronics	North	161208
2023	Jan	Electronics	South	112768
2023	Jan	Electronics	East	188418
2023	Jan	Electronics	West	174473
2023	Jan	Furniture	North	145534
2023	Jan	Furniture	South	125764
2023	Jan	Furniture	East	171150
2023	Jan	Furniture	West	114706
2023	Feb	Electronics	North	198830
2023	Feb	Electronics	South	154146
2023	Feb	Electronics	East	99287
2023	Feb	Electronics	West	152162
2023	Feb	Furniture	North	142425
2023	Feb	Furniture	South	169330
2023	Feb	Furniture	East	87633
2023	Feb	Furniture	West	80937
2023	Mar	Electronics	North	123785
2023	Mar	Electronics	South	163846
2023	Mar	Electronics	East	91598
2023	Mar	Electronics	West	84962
2023	Mar	Furniture	North	121567
2023	Mar	Furniture	South	129222
2023	Mar	Furniture	East	193078
2023	Mar	Furniture	West	114485



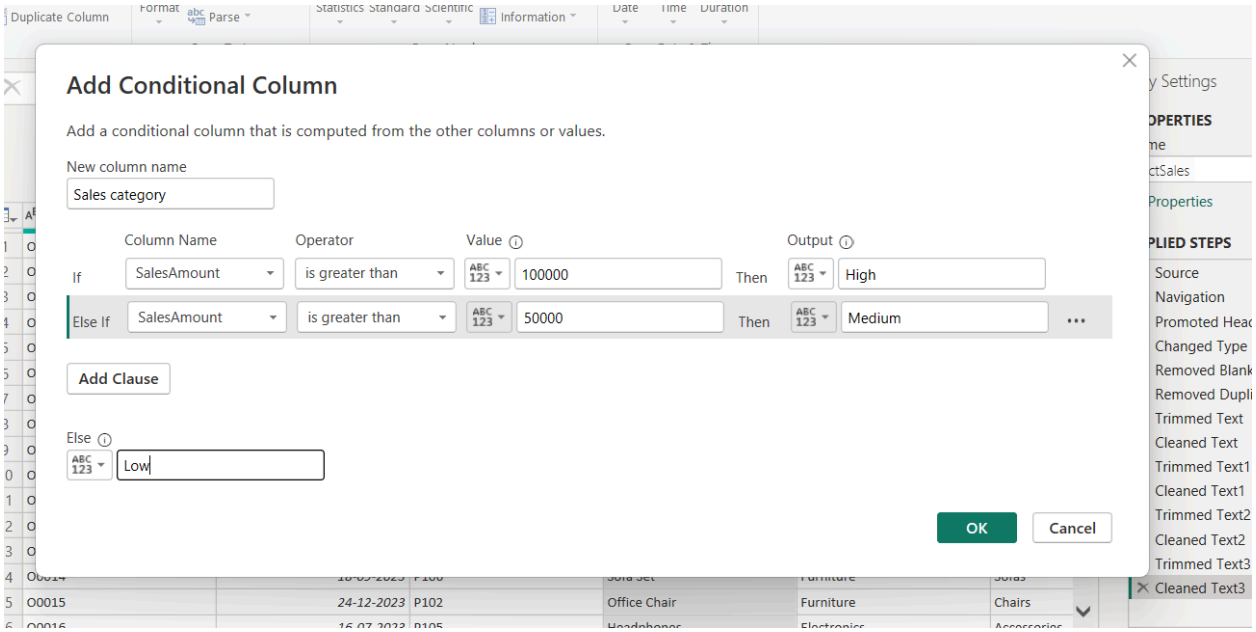
The sales and target tables are successfully loaded into PowerBI Desktop.

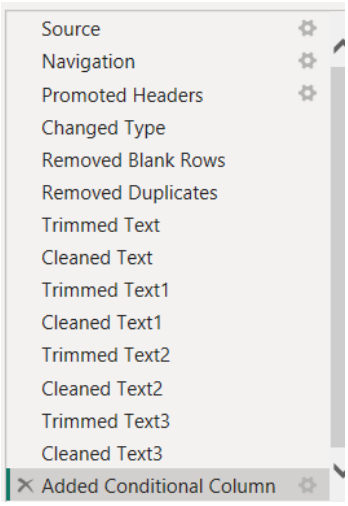
STEP 3: Power Query Editor (Data Transformation)

The below actions are performed for sales data

```
= Table.TransformColumnTypes(#"Promoted Headers",{{"OrderID", type text}, {"OrderDate", type date}, {"ProductID",
    type text}, {"ProductName", type text}, {"Category", type text}, {"SubCategory", type text}, {"CustomerID",
    type text}, {"Region", type text}, {"SalesAmount", Decimal.Type}, {"Profit", Decimal.Type}, {"Quantity",
    Number.Type}})
```

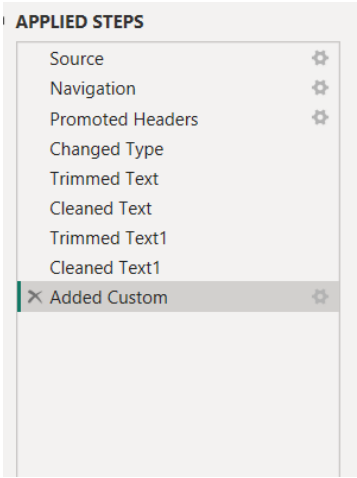
OrderDate	ProductID	ProductName	Category	SubCategory
15-12-2023	P101	Laptop Pro	Electronics	Laptops
28-08-2023	P106	Sofa Set	Furniture	Sofas
13-06-2023	P104	Dining Table	Furniture	Tables
01-08-2023	P101	Laptop Pro	Electronics	Laptops
25-07-2023	P103	Smartphone X	Electronics	Phones
22-07-2023	P102	Office Chair	Furniture	Chairs
04-05-2023	P106	Sofa Set	Furniture	Sofas
11-01-2023	P102	Office Chair	Furniture	Chairs
09-07-2023	P105	Headphones	Electronics	Accessories
04-08-2023	P102	Office Chair	Furniture	Chairs
12-07-2023	P106	Sofa Set	Furniture	Sofas
05-10-2023	P106	Sofa Set	Furniture	Sofas
01-09-2023	P101	Laptop Pro	Electronics	Laptops





The below actions are performed on target data

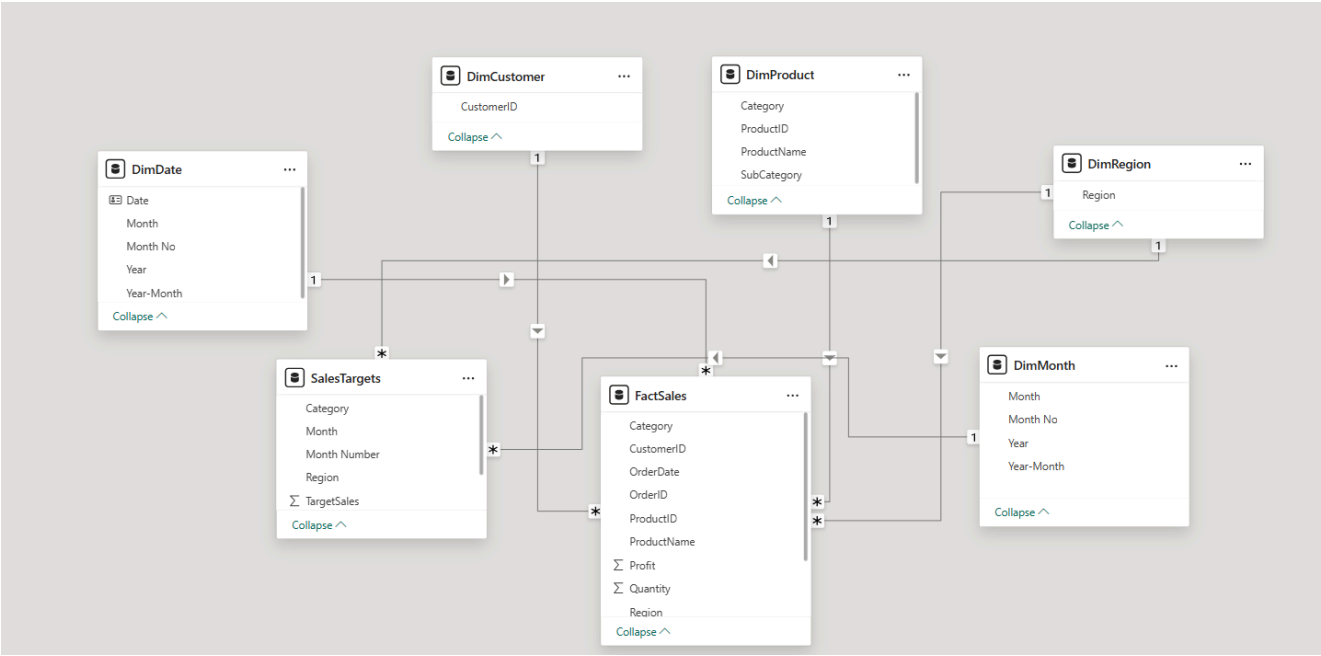
```
= Table.TransformColumnTypes(#"Promoted Headers",{{"Year", Number.Type}, {"Month", type text}, {"Category", type
    text}, {"Region", type text}, {"TargetSales", Decimal.Type}})
```



After completing this step:

- Data is clean and standardized
- Business rules are applied before DAX
- Model performance is improved
- Dataset is ready for relationships and measures

STEP 4: Data Model Design



- Relationships (6)
  - FactSales[CustomerID] <— DimCustomer[CustomerID]
  - FactSales[OrderDate] <— DimDate[Date]
  - FactSales[ProductID] <— DimProduct[ProductID]
  - FactSales[Region] <— DimRegion[Region]
  - SalesTargets[Region] <— DimRegion[Region]
  - SalesTargets[Year-Month] <— DimMonth[Year-Month]
- Roles (0)
- Tables (7)
  - DimCustomer
  - DimDate
  - DimMonth
  - DimProduct
  - DimRegion
  - FactSales
  - SalesTargets

STEP 5: DAX – Measures & Calculations

1. Total Sales

Calculates the total revenue from all sales transactions.

```
Total Sales =
SUM ( FactSales[SalesAmount] )
```

2. Total Profit

Calculates the total profit earned from all sales.

```
Total Profit =
SUM ( FactSales[Profit] )
```

3. Total Quantity

Calculates the total number of units sold.

```
Total Quantity =
SUM ( FactSales[Quantity] )
```

4. Sales Year-to-Date (YTD)

Calculates cumulative sales from the start of the year to the selected date.

```
Sales YTD =
TOTALYTD (
   [Total Sales],
   DimDate[Date]
)
```

5. Sales Last Year (LY)

Calculates sales for the same period in the previous year.

```
Sales LY =
```

```
CALCULATE (
    [Total Sales],
    SAMEPERIODLASTYEAR ( DimDate[Date] )
)
```

6. Year-over-Year Growth Percentage

Calculates the percentage growth or decline compared to last year.

```
YoY Growth % =
DIVIDE (
    [Total Sales] - [Sales LY],
    [Sales LY]
)
```

7. Target Sales

Calculates the total sales target value.

```
Target Sales =
SUM ( SalesTargets[TargetSales] )
```

8. Sales vs Target

Calculates the variance between actual sales and target sales.

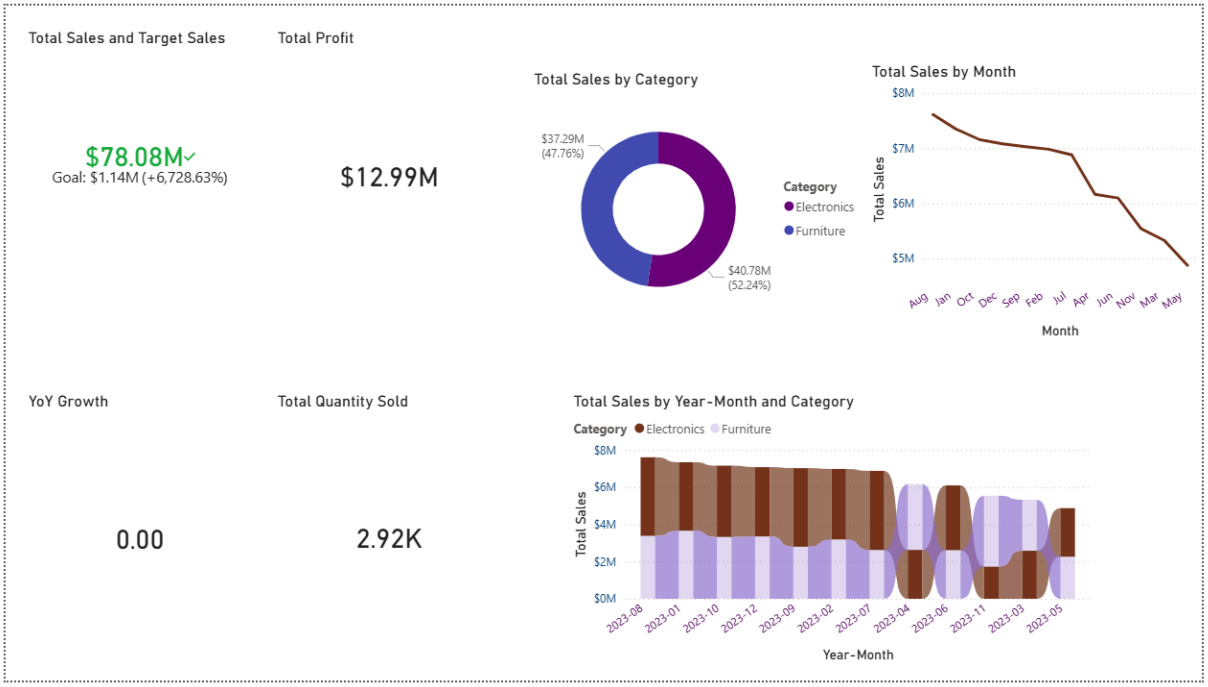
```
Sales vs Target =
[Total Sales] - [Target Sales]
```

9. Target Achievement Percentage

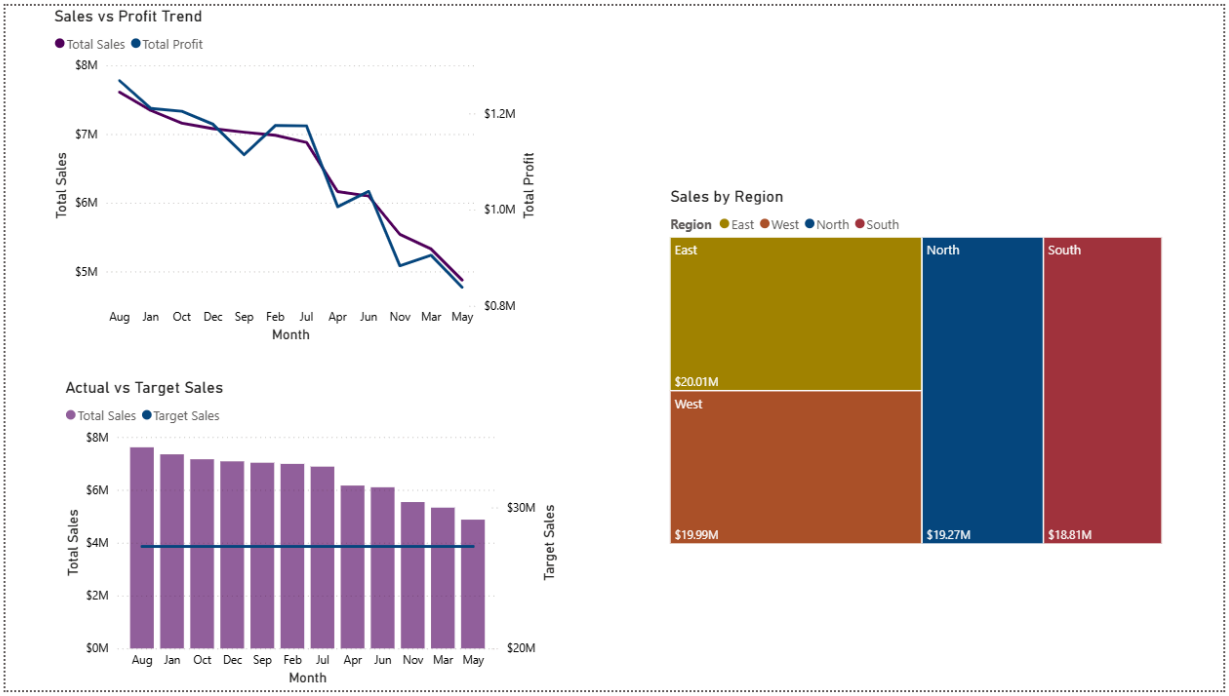
Calculates how much of the target has been achieved.

```
Target Achievement % =
DIVIDE (
    [Total Sales],
    [Target Sales]
)
```

STEP 6: Report Pages & Visual Design



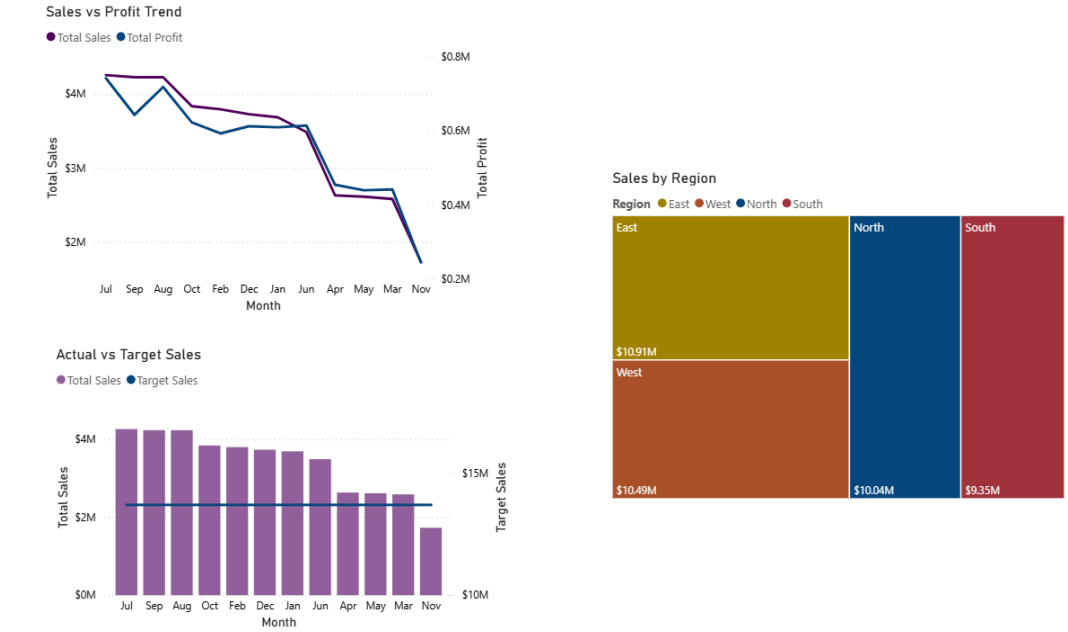
Executive Dashboard



Trend Analysis

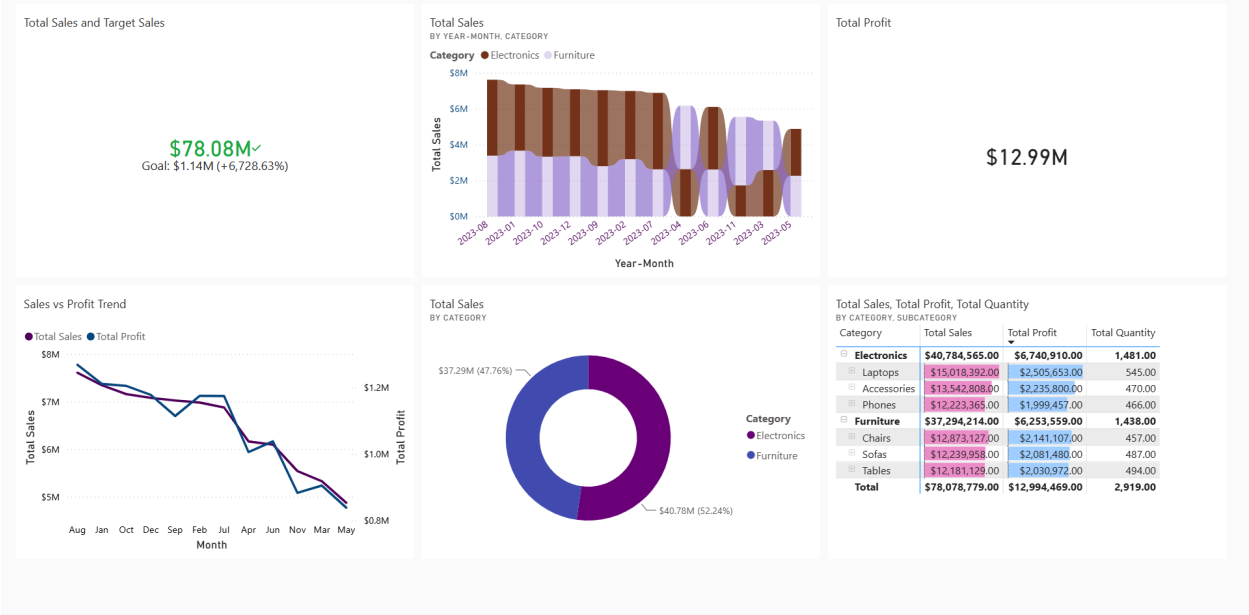
Product Performance

STEP 7: Formatting & Report-Level Filters



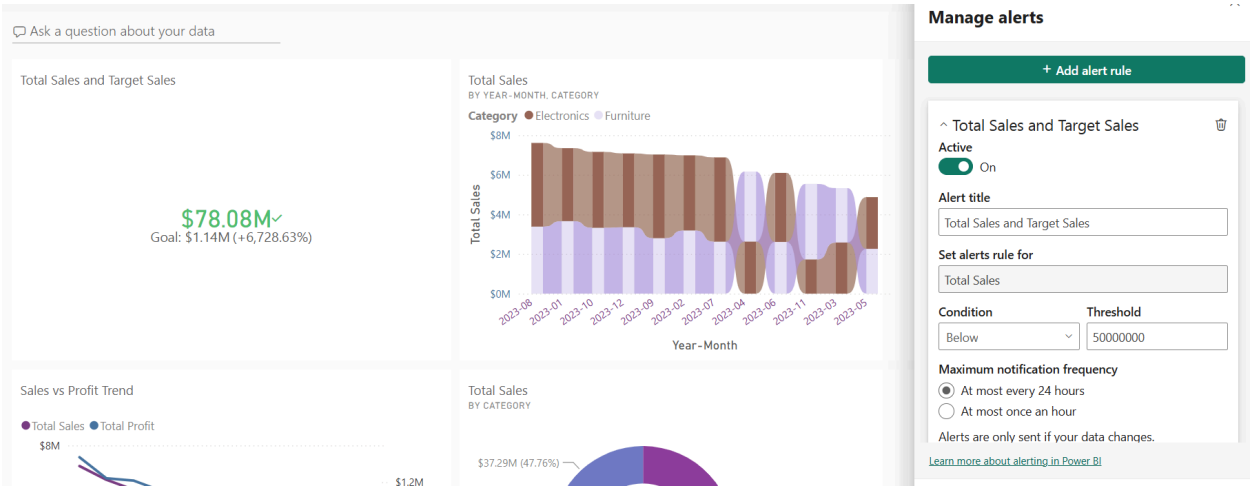
After applying Report level filters

STEP 8: Dashboard Creation & Actions



Dashboard

Q&A Visuals at the bottom

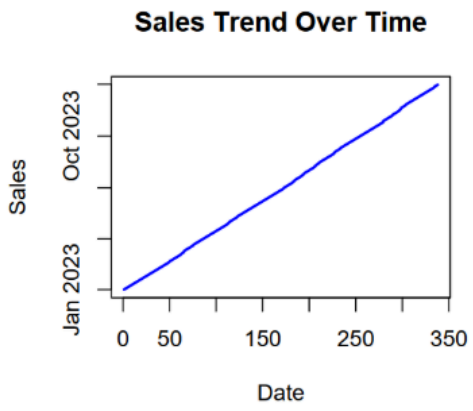


Setting Alerts for KPIs

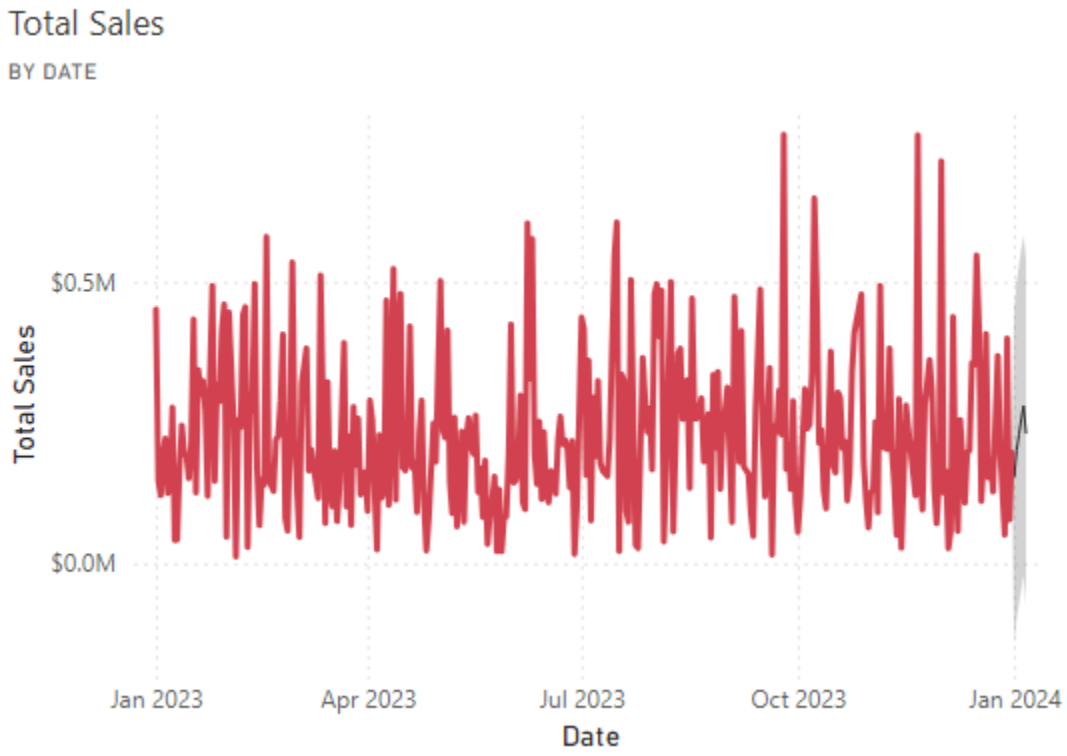
STEP 9: Advanced Visuals

```
# Remove rows with missing values
clean_data <- dataset[complete.cases(dataset), ]

# Convert Date column properly
clean_data$Date <- as.Date(clean_data$Date)

# Plot sales trend
plot(
  clean_data$Date,
  clean_data$Total.Sales,
  type = "l",
  col = "blue",
  lwd = 2,
  xlab = "Date",
  ylab = "Total Sales",
  main = "Sales Trend using R"
)
```

Date and Total Sales



Missing values were handled in the R script before plotting to ensure proper visualization



Advanced analytics were applied using the forecasting feature to predict future sales trends based on historical data.