

Customer Behaviour and Performance Analysis Dashboard

Introduction

This Power BI dashboard analyzes customer purchasing behavior and overall sales performance using the *Global Superstore* dataset. The goal is to help decision-makers identify key revenue drivers, understand customer segments, track sales growth trends, and measure profitability over time. By integrating multiple datasets (Customers, Products, Sales, and Date), the dashboard provides a unified view of business performance and customer insights. This dashboard focuses on analyze customer purchasing behaviour, spending patterns, and engagement trends to identify key customer segments, top-performing regions, and potential growth opportunities.

Data Source Link: [Global Super Store Dataset](#)

Objective

- To analyze total sales, orders, customers, and profit margin over time.
- To evaluate sales trends by category, segment, and region.
- To identify the most profitable customer segments and product categories.
- To monitor business performance and average order value (AOV).
- To support strategic decisions for marketing, product management, and customer retention.

Business Intelligence Questions

- Who are our most valuable customers?
- What are the main regions contributing to revenue?
- How is customer behaviour changing over time?
- What is the ratio of new vs returning customers?
- Which demographics (age, gender, region) perform best?
- How loyal are our customers (retention rate)?
- What is the trend of revenue per customer per month?
- Which customer segments are at risk of churn?

Methodology

Data Preparation

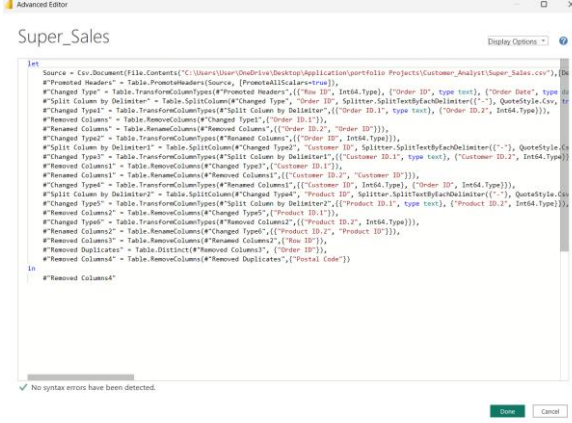
The **ETL process** (Extract, Transform, Load) is a critical step in preparing the dataset for analysis and visualization in Power BI. This stage ensures that the data is clean, accurate, and properly structured for creating business insights. The following steps outline the ETL workflow used for this project.

In this stage, the raw dataset from the Global Superstore was imported into Power BI Desktop for cleaning and transformation.

- Import dataset into **Power BI Desktop** using Get Data → CSV.

The Power Query Editor was used to perform data preparation tasks using M language of power BI such as:

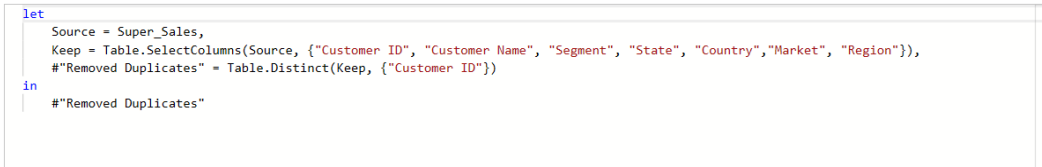
- Removing duplicates and null values.
- Changing column data types (e.g., dates, decimals, text).
- Splitting complex columns (e.g., “Order ID” into Region Code, Year, and Numeric ID).
- Renaming columns for clarity.



```
let
Source = Csv.Document(File.Contents("C:\Users\User\OneDrive\Desktop\Application\portfolio Projects\Customer_Analyst\Super_Sales.csv"),[Delimiter=";",Encoding=65001,QuoteStyle=QuoteStyle.Csv,Header=1,MyRowNumber=1]),
#"Promoted Headers" = Table.PromoteHeaders(Source, [PromoteAllScalars=true]),
#"Changed Type1" = Table.TransformColumnTypes(#"Promoted Headers",{{"Year ID", Int64.Type}, {"Order ID", type text}, {"Order Date", type date}},
#"Split Column by Delimiter" = Table.SplitColumn(#"Changed Type1", "Order ID", Splitter.SplitTextByEachDelimiter({"-"}, QuoteStyle.Csv, true),
#"Changed Type2" = Table.TransformColumnTypes(#"Split Column by Delimiter",{{"Order ID.1", type text}, {"Order ID.2", Int64.Type}}),
#"Removed Columns" = Table.RemoveColumns(#"Changed Type2",{"Order ID.1"}),
#"Renamed Columns" = Table.RenameColumns(#"Removed Columns",{{"Order ID.2", "Order ID"}}),
#"Changed Type3" = Table.TransformColumnTypes(#"Renamed Columns",{{"Order ID", Int64.Type}}),
#"Split Column by Delimiter" = Table.SplitColumn(#"Changed Type3", "Customer ID", Splitter.SplitTextByEachDelimiter({"-"}, QuoteStyle.Csv, true),
#"Changed Type4" = Table.TransformColumnTypes(#"Split Column by Delimiter",{{"Customer ID.1", type text}, {"Customer ID.2", Int64.Type}}),
#"Removed Columns1" = Table.RemoveColumns(#"Changed Type4",{"Customer ID.1"}),
#"Renamed Columns1" = Table.RenameColumns(#"Changed Type4",{"Customer ID.2", "Customer ID"}),
#"Changed Type5" = Table.TransformColumnTypes(#"Renamed Columns1",{{"Customer ID", Int64.Type}}),
#"Split Column by Delimiter2" = Table.SplitColumn(#"Changed Type5", "Product ID", Splitter.SplitTextByEachDelimiter({"-"}, QuoteStyle.Csv, true),
#"Changed Type6" = Table.TransformColumnTypes(#"Split Column by Delimiter2",{{"Product ID.1", type text}, {"Product ID.2", Int64.Type}}),
#"Removed Columns2" = Table.RemoveColumns(#"Changed Type6",{"Product ID.1"}),
#"Renamed Columns2" = Table.RenameColumns(#"Changed Type6",{"Product ID.2", "Product ID"}),
#"Removed Columns3" = Table.RemoveColumns(#"Renamed Columns2",{"Year ID"}),
#"Removed Duplicates" = Table.Distinct(#"Removed Columns3", {"Order ID"}),
#"Removed Columns4" = Table.RemoveColumns(#"Removed Duplicates",{"Postal Code"})
in
#"Removed Columns4"
```

Data preparation of Super_Sales using M language

Customers



```
let
Source = Super_Sales,
Keep = Table.SelectColumns(Source, {"Customer ID", "Customer Name", "Segment", "State", "Country", "Market", "Region"}),
#"Removed Duplicates" = Table.Distinct(Keep, {"Customer ID"})
in
#"Removed Duplicates"
```

Data preparation of Customers using M language

Products

Display Options ... ?

```
let
    Source = Super_Sales,
    Keep = Table.SelectColumns(Source, {"Product ID", "Product Name", "Category", "Sub-Category", "Sales"}),
    #"Renamed Columns" = Table.RenameColumns(Keep,{{"Sales", "Prices"}}),
    #"Removed Duplicates" = Table.Distinct(#"Renamed Columns", {"Product ID"})
in
    #"Removed Duplicates"
```

Data preparation of Products using M language

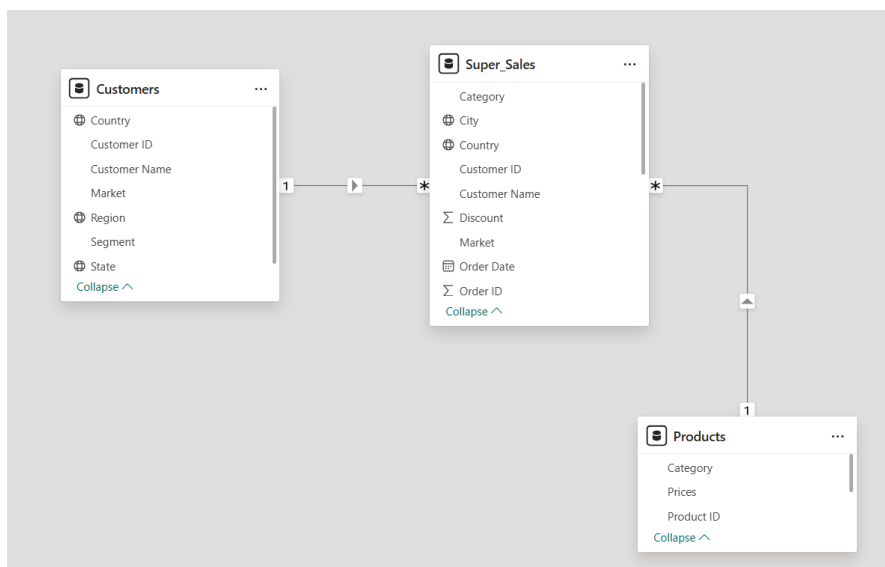
Once data cleaning and transformations were completed:

- The changes were applied by selecting “Close & Apply” in Power Query Editor.
- The cleaned dataset was loaded into the Power BI Data Model, ready for data modeling, DAX calculations, and dashboard visualization.

The clean and standardized dataset was then loaded into the Power BI data model for further analysis.

Data Modeling and Measures

After data cleaning, a **Star Schema** data model was created to ensure efficient relationships and accurate aggregations in the following figure.



Data Model Schema for Customer Analytics Dashboard

The model included:

- Fact Table: *Super_Sales* – containing transactional data such as Sales, Quantity, Discount, and Profit.
- Dimension Tables: *Customers*, *Products*, and *Date*, which hold descriptive attributes

Relationships were established as one-to-many from each dimension table to the fact table using keys like Customer ID, Product ID, and Order Date.

DAX Measures were created to calculate business KPIs, including:

Total Sales = SUM(Super_Sales[Sales])

Total Profit = SUM(Super_Sales[Profit])

Total Orders = DISTINCTCOUNT(Super_Sales[Order ID])

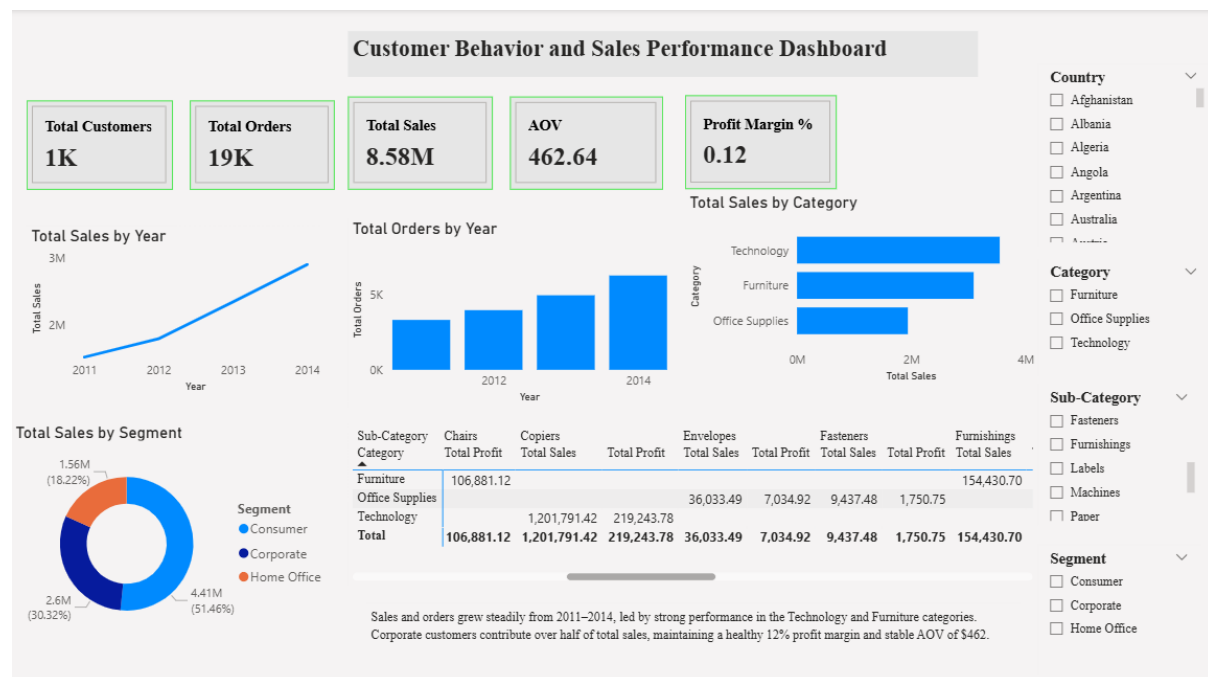
Total Customers = DISTINCTCOUNT(Super_Sales[Customer ID])

Average Order Value AOV = DIVIDE([Total Sales], [Total Orders])

Profit Margin % = DIVIDE([Total Profit], [Total Sales])

Visualization Dashboard

In the final stage, an interactive Power BI dashboard titled “Customer Behavior and Sales Performance Dashboard” was developed to visualize insights from the data.



Customer Behaviour and Sales Performance Dashboard

This dashboard includes:

- KPI Cards summarizing Total Customers, Orders, Sales, AOV, and Profit Margin %.
- Trend Charts showing Sales and Orders by Year.

- Category and Segment Analysis visuals displaying sales distribution by Product Category and Customer Segment.
- Matrix Table detailing profit and sales by Category and Sub-Category.
- Slicers for Country, Category, Sub-Category, and Segment, enabling user interactivity.

A concise Insight Summary was added at the bottom of the dashboard to highlight key findings:

“Sales and orders grew steadily from 2011–2014, led by strong performance in Technology and Furniture categories. Corporate customers contribute over half of total sales, maintaining a 12% profit margin and a stable AOV of \$462.”

The dashboard provides an intuitive interface for business users to explore data, monitor KPIs, and support decision-making.

Power BI Visualization Dashboard : [Customer Behavior and Performance Analyst Dashboard - Power BI](#)

Conclusion

The Customer Behavior and Sales Performance Dashboard provides a clear view of how customer segments, products, and time influence business performance. By combining KPI monitoring, trend visualization, and interactive analysis, the dashboard empowers management to:

- Track business growth effectively
- Identify high-value customers
- Improve profitability
- Make data-driven marketing and sales decisions

This solution demonstrates how Power BI can transform raw data into actionable business intelligence for improved decision-making and strategy planning.