

PROJECT 1: SALES DATA ANALYSIS & DASHBOARD USING POWER BI

TEAM 4:

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Project Report: Sales Data Analysis and Dashboard

1. Introduction:

In today's data-driven business environment, understanding historical sales patterns helps companies make informed decisions, identify profitable segments, and optimize operations. This project focuses on analysing the Super Store's sales data using Microsoft Excel and Power BI. The primary objective is to create an insightful and interactive dashboard that helps visualize key business metrics like revenue, profit, and order volume across various segments, regions, and time periods.

2. Objectives:

- Collect, clean, and preprocess sales data.
 - Identify key performance indicators (KPIs) to measure business health.
 - Analyse regional, categorical, and temporal trends in sales and profit.
 - Create a user-friendly interactive dashboard using Power BI.
 - Deliver recommendations to improve business decision-making.
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3. Tools and Technologies Used:

- **Microsoft Excel:** Initial data analysis using PivotTables and slicers.
 - **Power BI:** Advanced visualizations, dashboard development.
 - **Power Query Editor:** Data transformation and cleaning.
 - **Data Source:** SuperStore Sales Dataset (1000+ records, 23 fields).
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4. Dataset Description:

The dataset contains transactional information from a retail store, including:

- **Temporal Data:** Order Date, Ship Date
- **Geography:** Country, State, Region, City
- **Customer Info:** Customer ID, Name, Segment
- **Product Info:** Category, Sub-Category, Product Name, Quantity
- **Financial Metrics:** Sales, Profit, Returns, Discount
- **Logistics:** Ship Mode, Payment Mode, Delivery Time

The original data contained over 1000 records across 23 columns.

5. Data Cleaning & Preprocessing (in Power Query Editor):

Steps Taken:

1. **Import:** Used Get Data > Text/CSV to load the dataset.
 2. **Removed Unused Columns:** Row ID, Postal Code—not required for analysis.
 3. **Renamed Columns:** Ensured consistency (e.g., Order Date → OrderDate).
 4. **Data Type Formatting:**
 - Dates: OrderDate, ShipDate converted to Date
 - Sales, Profit: Converted to Decimal Number
 - Quantity: Converted to Whole Number
 5. **Handled Missing/Invalid Entries:** Removed rows with nulls in key columns like Sales and OrderDate.
 6. **Removed Duplicates:** Applied Remove Duplicates across all fields.
 7. **Text Cleaning:** Used Trim and Clean functions to remove unwanted characters and spaces.
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6. Key Performance Indicators (KPIs):

KPI	Value
Total Sales	\$1.57 Million
Total Orders	22,000
Total Profit	\$175,000
Average Ship Days	4 Days

Other KPIs visualized:

- a. Sales & Profit by **Region, Category, Segment**
 - b. Monthly **Year-over-Year** (YoY) comparison of sales and profit
 - c. Shipping Mode performance
 - d. Payment Mode distribution
 - e. Top Product Sub-Categories
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7. Exploratory Analysis and Findings:

Region-wise Sales:

- a. **West** leads with **33%** of total sales, followed by **East (29%)**, **Central (22%)**, and **South (16%)**.

Segment Analysis:

- b. **Consumer Segment** accounts for **48%** of total sales, followed by **Corporate (33%)** and **Home Office (19%)**.

Payment Modes:

- c. **Cash on Delivery (COD)** is the most preferred method (**43%**), followed by **Online Payments (35%)** and **Card Payments (22%)**.

Shipping Modes:

- d. **Standard Class** is the most used method (\$0.33M in sales), followed by **Second Class (\$0.11M)**.

Category Insights:

- e. **Office Supplies** is the top-performing category (\$0.64M), followed by **Technology (\$0.47M)** and **Furniture (\$0.45M)**.

Sub-Category Insights:

- f. Top sub-categories: **Phones (\$0.20M)**, **Chairs (\$0.18M)**, **Binders (\$0.17M)**, **Storage (\$0.15M)**.
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8. Time-Based Trends (YoY):

Using line charts for 2019 and 2020, the dashboard revealed:

- a. **2020 outperformed 2019** in both sales and profit.
 - b. Noticeable sales spikes in **November and December**, likely due to seasonal shopping and promotions.
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9. Geographic Analysis:

- a. Power BI Map visual shows high sales and profit concentrations in **urban and coastal states**.
 - b. States in the **West and East regions** generated the highest revenue.
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10. Recommendations:

- Boost Promotions in Q4** (Nov–Dec) to capitalize on seasonal demand.
- Target South Region** for growth through regional promotions and discounts.
- Promote Digital Payments** (Online/Card) by offering cashback/incentives.
- Invest More in High-Demand Products** like Phones, Chairs, and Office Supplies.
- Optimize Shipping Strategy** based on regional delivery performance.

11. Dashboard and Visual Screenshots:

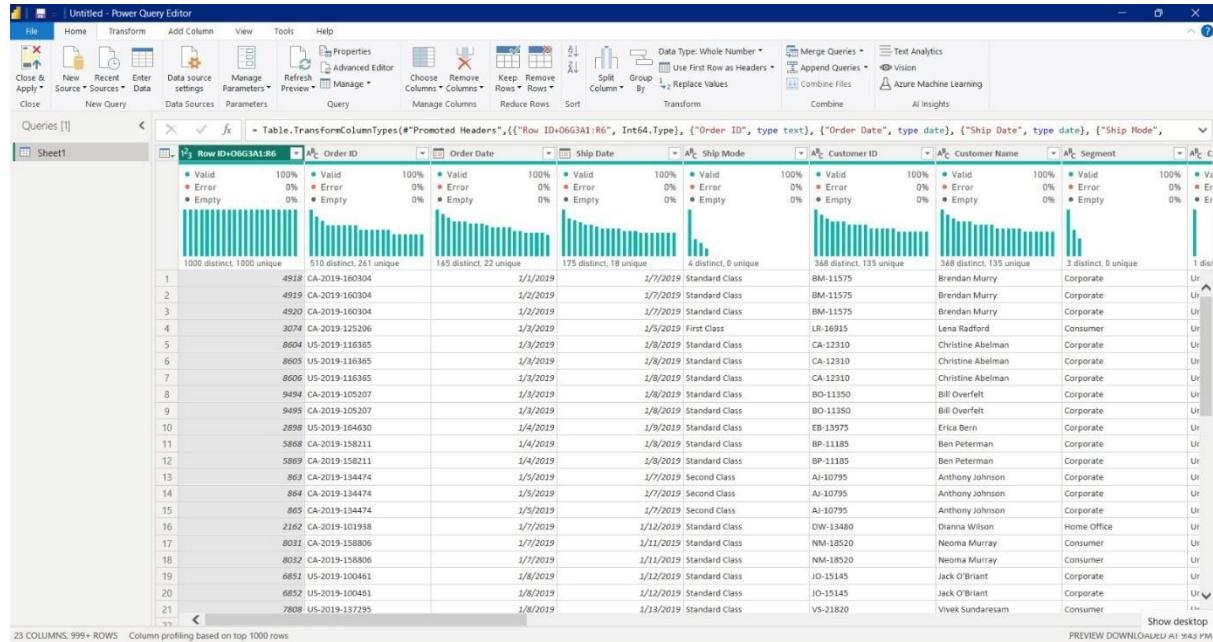
♀ 1. Power BI Dashboard

Interactive visuals showing KPIs, YoY trends, regional breakdown, and map view.



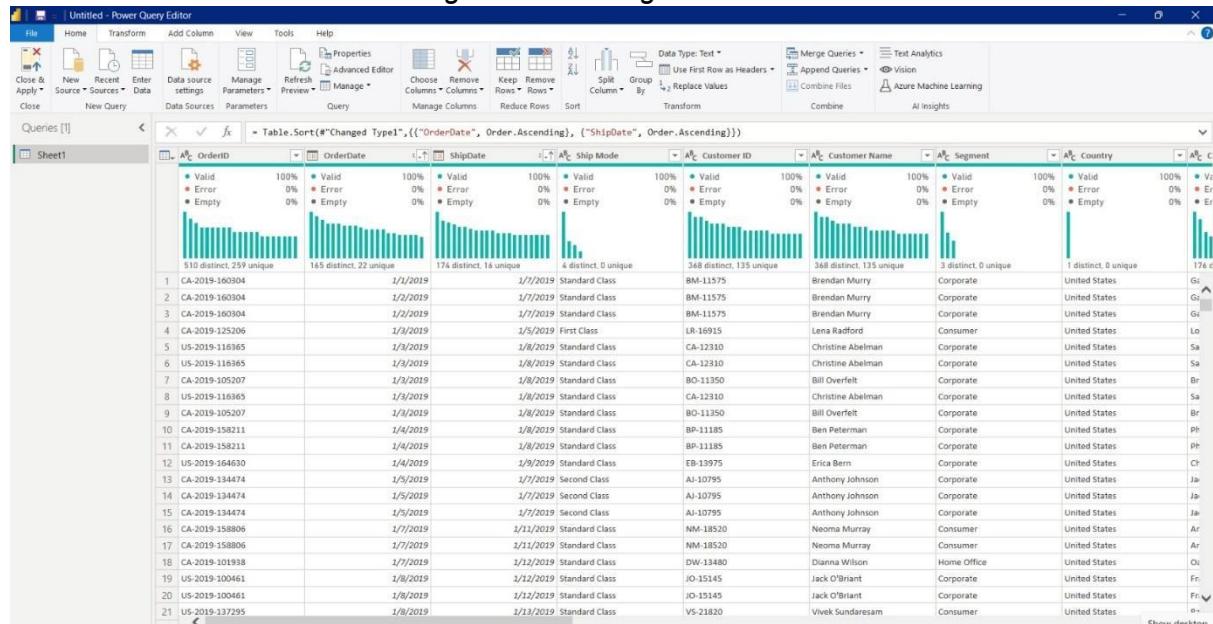
⌚ 2. Dataset Preview

Initial look into the raw dataset before transformation.



⌚ 3. Processed Dataset (Power Query Editor)

Transformed dataset after cleaning and formatting.



♀ 4. Database Schema

Field names used in the model from the original data source.

Sheet1	...
Category	
City	
Country	
Customer ID	
Customer Name	
OrderDate	
OrderID	
Payment Mode	
Product ID	
Product Name	
Profit	
Quantity	
Region	
Returns	
Sales	
Segment	
Ship Mode	
...	
Collapse ^	

12. Conclusion:

This project provided a complete hands-on experience in business data analysis, from data cleaning to dashboarding. Power BI's ability to generate real-time, dynamic insights significantly enhanced the decision-making process. The final dashboard allows users to filter and explore performance metrics interactively, making it a powerful tool for management.