

## Data Analysis on Supermarket Sales Data:

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### 2. Abstract

The Supermarket Sales dataset provides transactional data collected from retail operations, capturing details such as product lines, sales amount, quantity, payment methods, customer demographics, and purchase dates. It enables analysis of consumer purchasing behavior, sales trends, and revenue distribution across categories. This dataset is valuable for generating business insights, identifying profitable segments, and developing data-driven strategies for improving sales performance and customer satisfaction.

### 3. Objectives

1. clear and clean data
2. Apply mathematical formulas for understanding the data better
3. use pivot charts to streamline data
4. make an interactive dashboard to better understand the data and interpret it

### 4. Scope of the Project

Explain what the project includes and any boundaries:

- Focused on data cleaning, analysis, and visualization only.
- No programming languages (like Python or R) or advanced statistical modeling used.
- All work is contained within a single Excel file.
- Analysis is limited to the provided dataset.

### 5. Tools & Technologies Used

Tool/Technology	Purpose
Microsoft Excel	Data manipulation, analysis, and dashboard creation
PivotTables Charts & Graphs	Summarizing data for analysis Data visualization

## 6. Data Cleaning & Preparation

- All duplicate values were searched and removed
- The data was sorted in ascending order
- Formulas were applied to understand the data better

## 7. Dashboard Design Strategy

- Use **consistent colors** (e.g., product lines with fixed colors).
- Highlight KPIs with **cards** and bold numbers.
- Keep it **interactive** (filters, slicers for date, branch, product line).
- Avoid clutter – maximum **6–7 visuals per dashboard**.

## 8. Questions & Solutions

- **Question 1:** what kind of data must be extracted?
  - **Analysis:** the first obstacle to overcome was to understand the excel sheet and decide which data was to be extracted to display in the dashboard
  - **Solution:** After multiple analysis and research, it was decided to take the data based on smoking habit and gender.
- **Question 2:** what kind of functions must be applied to understand the data better?
  - **Analysis:** to understand any dataset we must apply certain functions to improve the understanding of the dataset and therefore take mindful decisions
  - **Solution:** certain parameters such as maximum, minimum and average was taken .
- **Question 3:** streamlining of data
  - **Analysis:** After further cleaning and analysis of data, for presenting the data the data ha to be streamlined for better understand of the data by removing useless parameters such as “name”
  - **Solution:** Pivot tables were used to interpret the data into much more streamlined and meaningful data for our purpose of analysis. Therefore, pivot tables have made the understanding of the whole dataset much easier

- **Question 4:** how can the data be explained in layman terms
  - **Analysis:** pivot tables can be understood by us but for explaining it to other people we must make the data much more simpler in common man terms with visuals and interactions with the sheets.
  - **Solution:** an interactive dashboard was decided to be made with slicers, pivot charts and colourful themes
  
- **Question 5:** what kind of charts must be used?
  - **Analysis:** now that the dashboard was decided to be made, the next obstacle was the dashboard content
  - **Solution:** the recommend charts option could be used to get the required chart which made the work much easier, therefore the dashboard came out much better than expected therefore the data can be explained in a much easier way.

## 9. Challenges Faced & Solutions

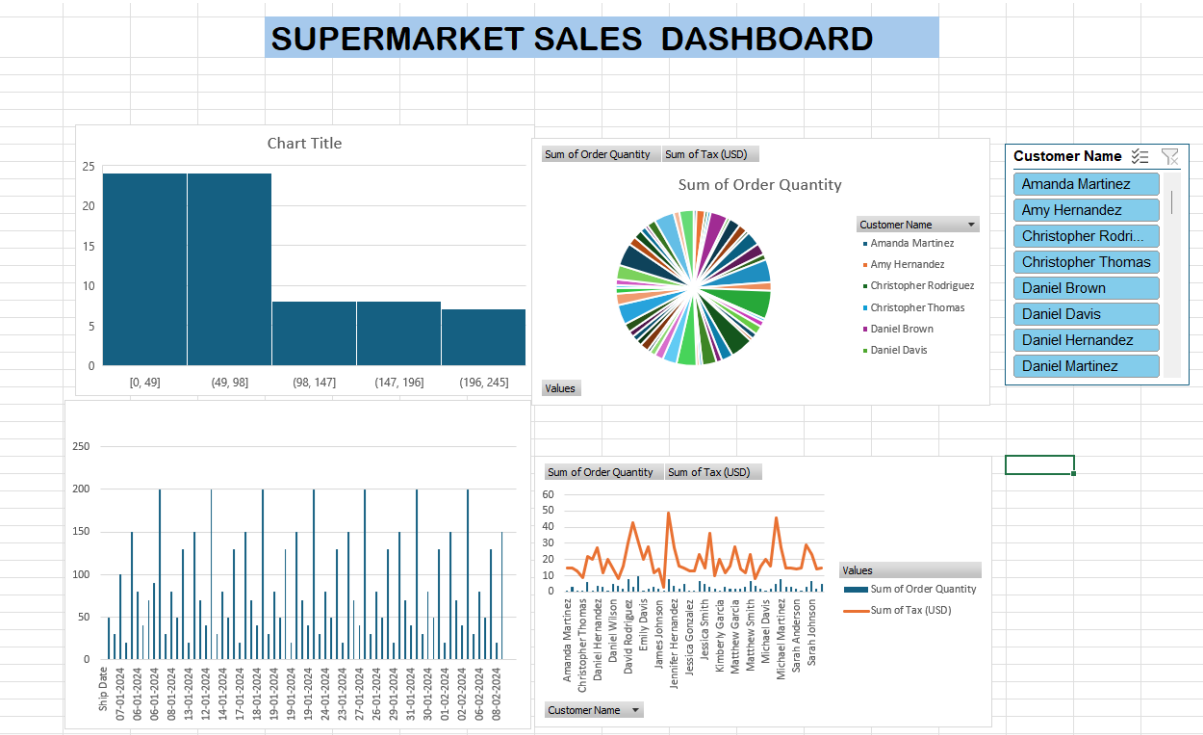
Challenge	Solution
<b>Challenge 1:</b> cleaning data	<b>Solution:</b> search and replace
<b>Challenge 2:</b> chart picking	<b>Solution:</b> the recommend charts option was used which make work much easier
<b>Challenge 3:</b> dashboard interaction	<b>Solution:</b> it was achieved by using slicers and filters.

## 10. Outcome

The analysis shows total revenue, gross income, and average sales per transaction. Branch-wise comparison highlights the best and least performing stores. Product line analysis reveals the top-selling and most profitable categories. Customer

insights show spending patterns by gender, membership type, and preferred payment methods. Sales trends by date and time identify peak shopping periods. Overall, the dataset helps in understanding sales performance, customer behavior, and improving business strategies.

11.Screenshots of Final Output



	A	B	C	D	E	F	G	H
1	Order No	Order Date	Customer Name	Ship Date	Unit Price (Under Quant	Tax (USD)	Total (USD)	
2	1001	01-01-2024	John Smith	03-01-2024	49.99	2	99.98	
3	1002	01-01-2024	Jane Doe	04-01-2024	29.99	1	29.99	
4	1003	02-01-2024	Michael Joh	07-01-2024	99.99	3	299.97	
5	1004	02-01-2024	Emily Brow	03-01-2024	19.99	4	79.96	
6	1005	03-01-2024	David Wilso	08-01-2024	149.99	1	149.99	
7	1006	03-01-2024	Lisa Taylor	06-01-2024	79.99	2	159.98	
8	1007	04-01-2024	Daniel Mar	06-01-2024	39.99	3	119.97	
9	1008	04-01-2024	Sarah Ande	09-01-2024	69.99	2	139.98	
10	1009	05-01-2024	Christophe	06-01-2024	89.99	1	89.99	
11	1010	05-01-2024	Kimberly G	08-01-2024	199.99	1	199.99	
12	1011	06-01-2024	William He	07-01-2024	29.99	5	149.95	
13	1012	06-01-2024	Melissa Lop	08-01-2024	79.99	2	159.98	
14	1013	07-01-2024	Richard Per	09-01-2024	49.99	3	149.97	
15	1014	07-01-2024	Jessica Gon	12-01-2024	129.99	1	129.99	
16	1015	08-01-2024	Matthew W	13-01-2024	19.99	4	79.96	
17	1016	08-01-2024	Amanda M	12-01-2024	149.99	1	149.99	
18	1017	09-01-2024	James John	14-01-2024	69.99	2	139.98	
19	1018	09-01-2024	Laura Brow	12-01-2024	39.99	3	119.97	
20	1019	10-01-2024	Daniel Smit	11-01-2024	199.99	1	199.99	
21	1020	10-01-2024	Jennifer Da	14-01-2024	29.99	5	149.95	
22	1021	11-01-2024	Michael Ga	14-01-2024	79.99	2	159.98	
23	1022	11-01-2024	Amy Herna	15-01-2024	49.99	3	149.97	
24	1023	12-01-2024	Christophe	17-01-2024	129.99	1	129.99	
25	1024	12-01-2024	Jessica Mar	17-01-2024	19.99	4	79.96	
26	1025	13-01-2024	David Wilso	17-01-2024	149.99	1	149.99	
27	1026	13-01-2024	Sarah Smith	14-01-2024	69.99	2	139.98	

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SuperMarket Sales

Formulas

Sort and filter

Conditional Formatting

Pivot table

Dashboard

## **12. Conclusion**

The Supermarket Sales dataset provides valuable insights into revenue trends, product line performance, customer preferences, and payment behaviors. Analysis reveals the most profitable branches and categories, highlights peak sales periods, and uncovers customer spending patterns. These findings support data-driven decisions to optimize inventory, improve customer satisfaction, and boost overall sales performance.