ASSIGNMENT 7

PROBLEM STATEMENT:

Data Visualization from Extraction Transformation and Loading (ETL) Process.

OBJECTIVE:

1. To understand the concept of Data Visualization.
2. To understand the Data Visualization using Power BI.

THEORY:

Data Visualization

- Data visualization aims to communicate data clearly and effectively through graphical representation.
- Data visualization has been used extensively in many applications for example, at work for reporting, managing business operations, and tracking progress of tasks.
- More popularly, we can take advantage of visualization techniques to discover data relationships that are otherwise not easily observable by looking at the raw data.
- Three major trends have shaped the direction of data visualization software.
    - More Chart Types. Most data visualizations are in the form of some standard chart type. The numerical results are converted into a pie chart, a scatter plot, or another chart type. Now the list of chart types supported by data visualization software has grown much longer.
    - Interactive Visualization. Visualizations are no longer static. Dynamic chart types are themselves user interfaces. Your users can review a result chart, manipulate it, and then see newer views online.
    - Visualization of Complex and Large Result Sets. You users can view a simple series of numeric result points as a rudimentary pie or bar chart. But newer visualization software can visualize thousands of result points and complex data structures.

Drive better decision making with data visualization

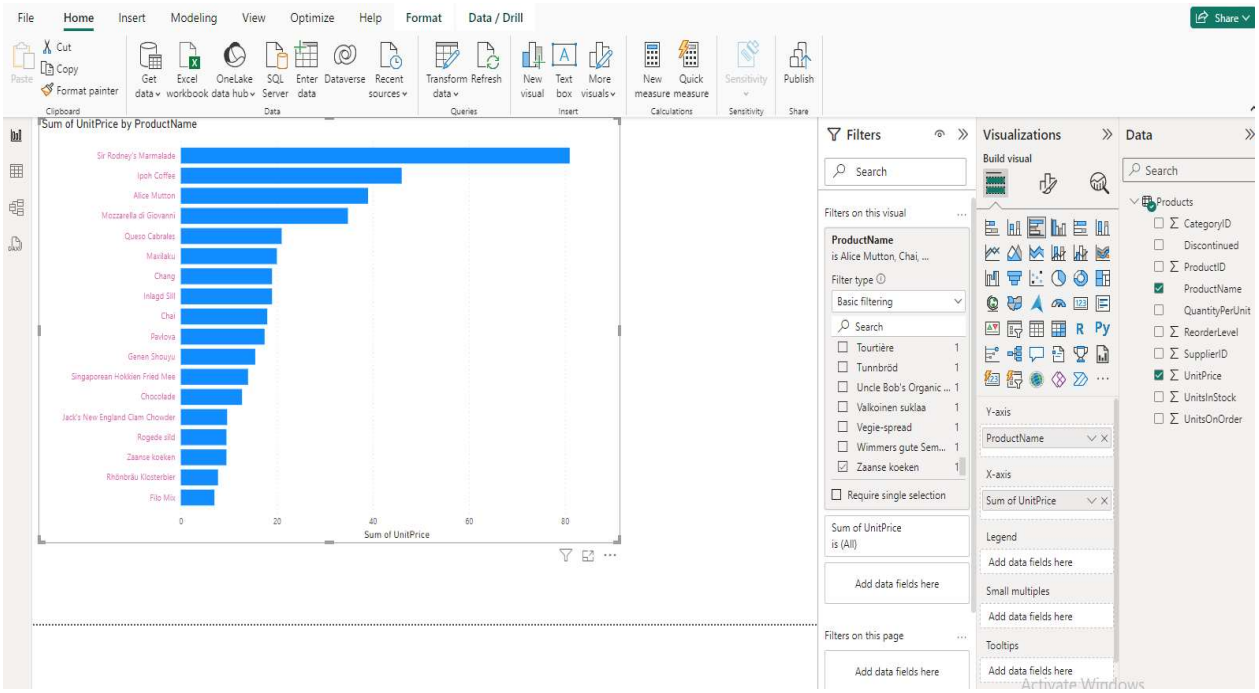
- **See the big picture.** There's a clear picture of performance buried within the transaction, interaction, process, and behavioral data stored in your systems. Data visualization allows you to recognize the broader context and higher-level scenario within it. As a result, you'll notice trends and spot patterns you wouldn't be able to see if you were looking at numbers on their own.

- **Identify the significance.** Bringing visual clarity to the story told within your data helps you identify insights that lead to better decision making, planning, strategies, and actions. How is your business performing, what needs to be modified, and where should you focus your resources? The ability to understand the significance of your data drives more effective operations and decisions.

- **Make informed decisions.** With concrete numbers and tangible insights, you can be confident your decisions are backed by data. Having clear insight into performance metrics empowers you with the knowledge and arms you with the tools to make the right decisions at the right time.

- **Track trends over time.** Once you've established a baseline, trends will begin to emerge. Track progress, spot trends, and begin using your insights to drive informed, strategic decisions. As you build your trends, shifts in patterns indicate if things drift off track, allowing you to immediately address any sign of lowered performance.

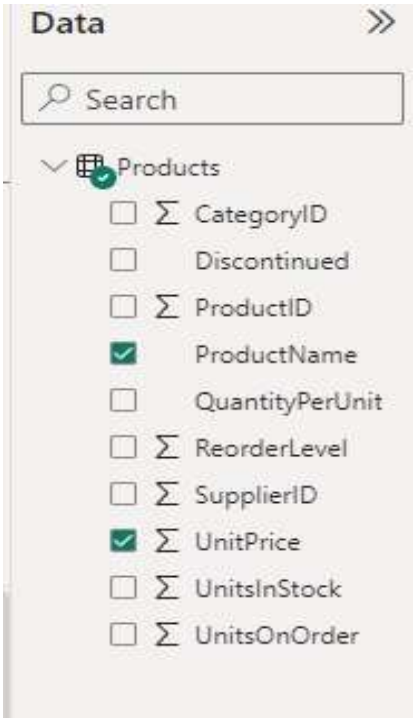
Power BI Desktop lets you create a variety of visualizations to gain insights from your data. You can build reports with multiple pages and each page can have multiple visuals. You can interact with your visualizations to help analyze and understand your data in this task, you create a report based on the data previously loaded. You use the Fields pane to select the columns from which you create the visualizations.



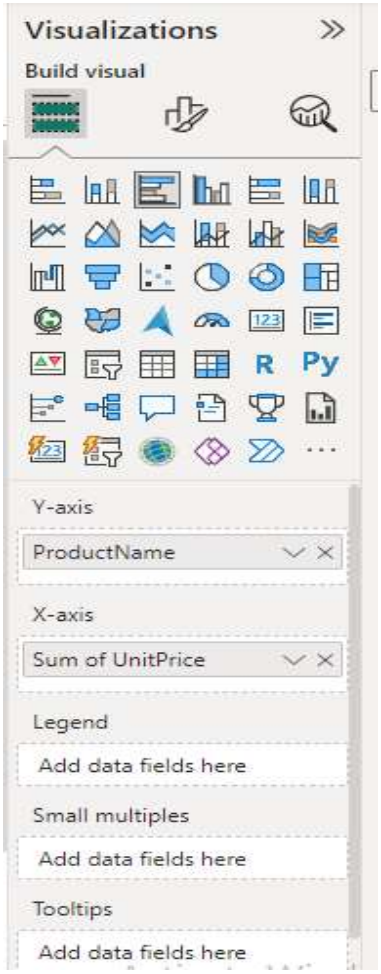
Following are the steps we have to follow to visualize data in Power BI

- Load the data in Power BI by applying ETL process.

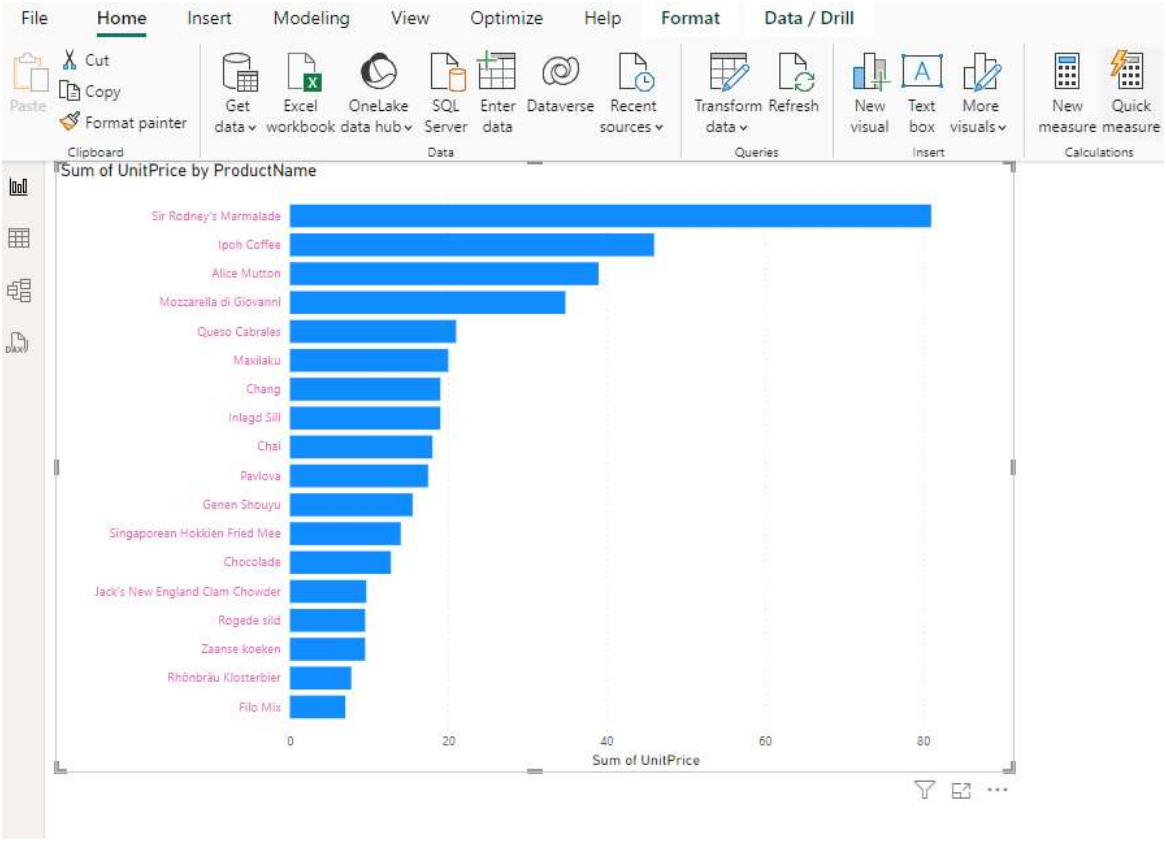
- Select columns from Data section as shown in above figure which you want to display on chart.



- Select the required chart from Visualization section.



- Following output will get after selecting required visualization type



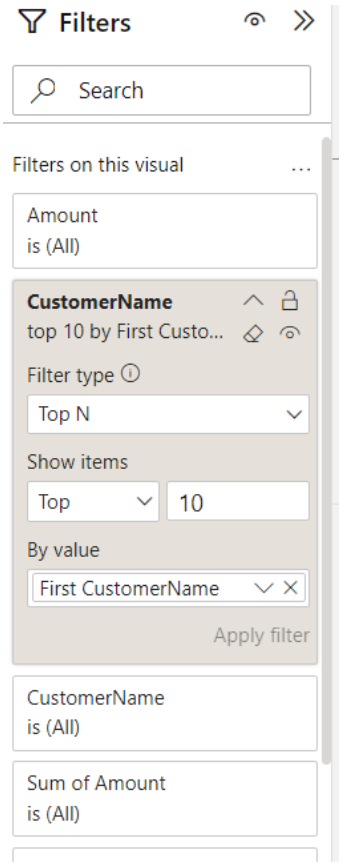
CONCLUSION

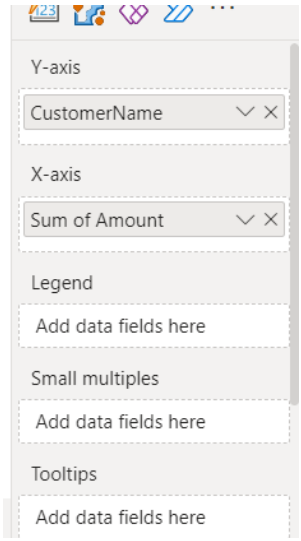
In this way we have explored the concept of Data Visualization using Power BI.

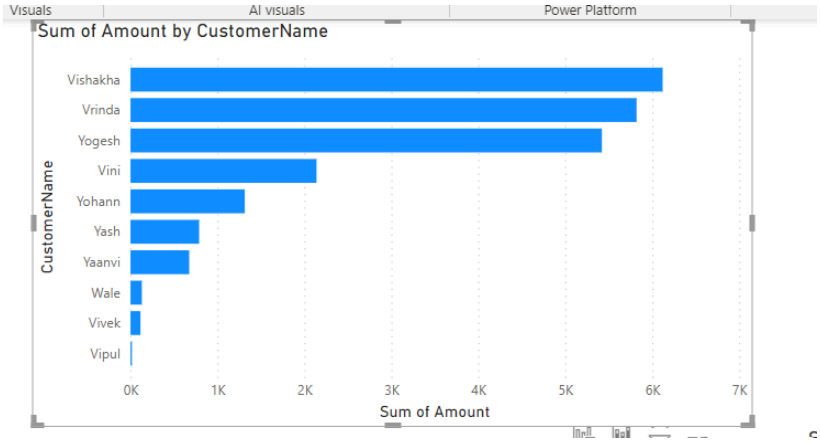
ORAL QUESTION

1. What is the importance of data visualization in the context of the ETL process?
2. How does data visualization enhance the understanding of extracted and transformed data?
3. Can you name some common data visualization tools used in conjunction with ETL processes?
4. Explain the significance of creating dashboards as part of the data visualization process in ETL.

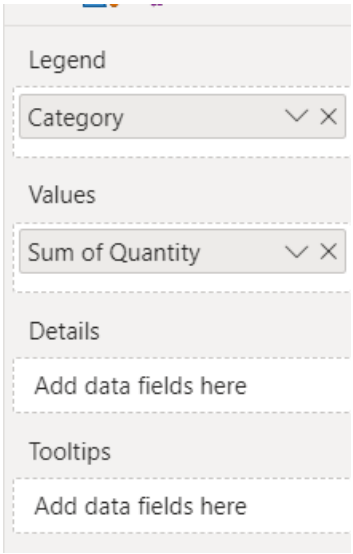
Creating Bar Chart:

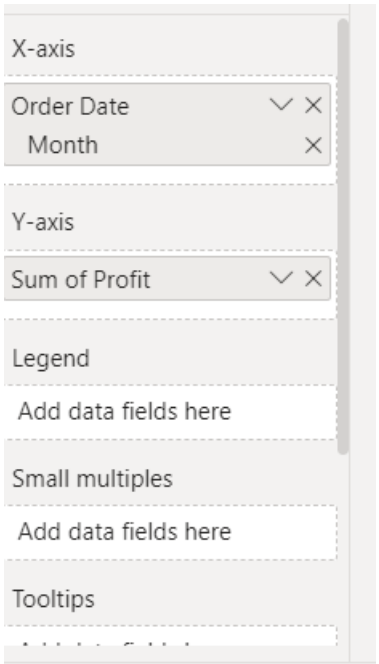


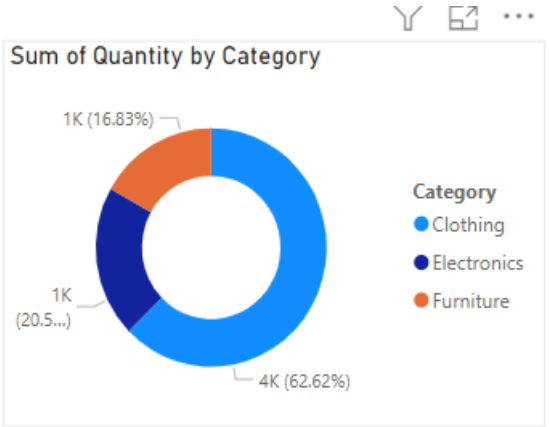




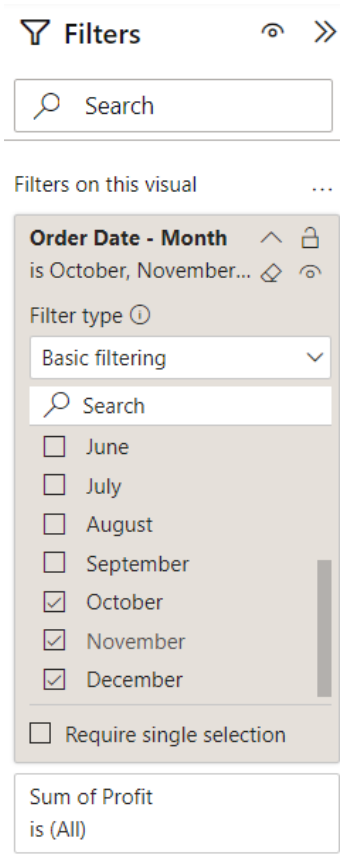
Creating Donut Chart:

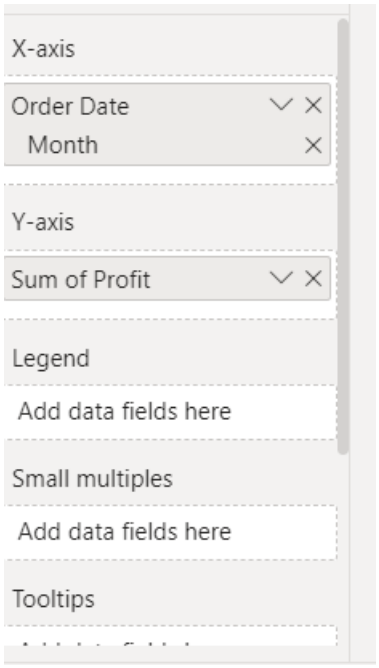


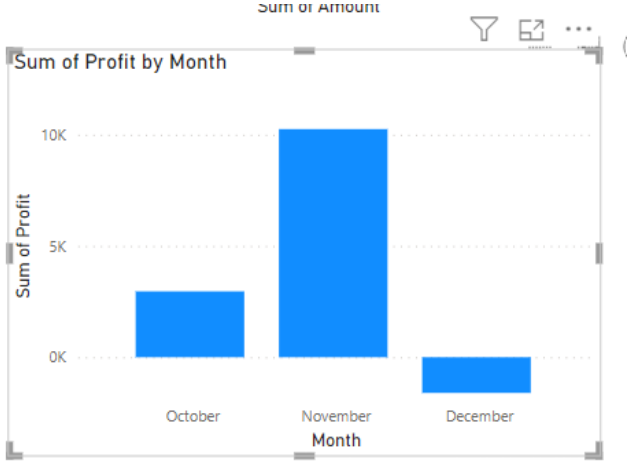




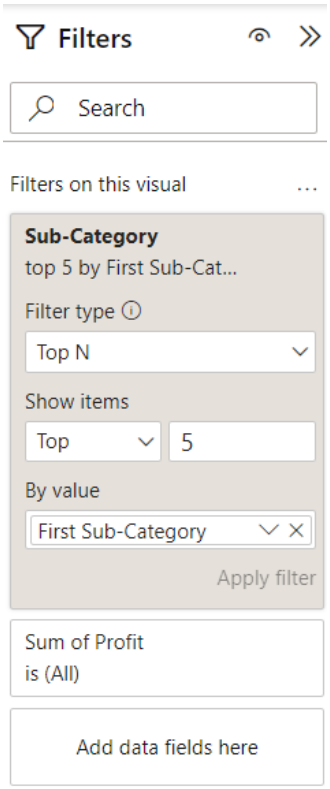
Creating Histogram:

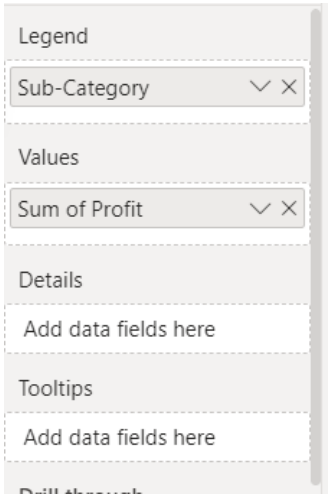


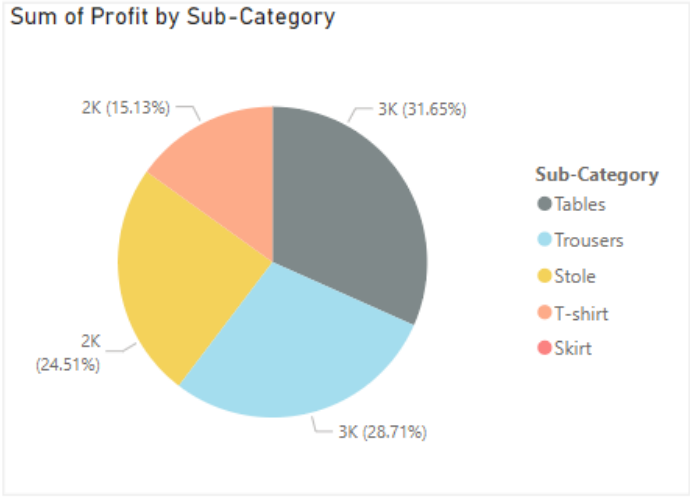




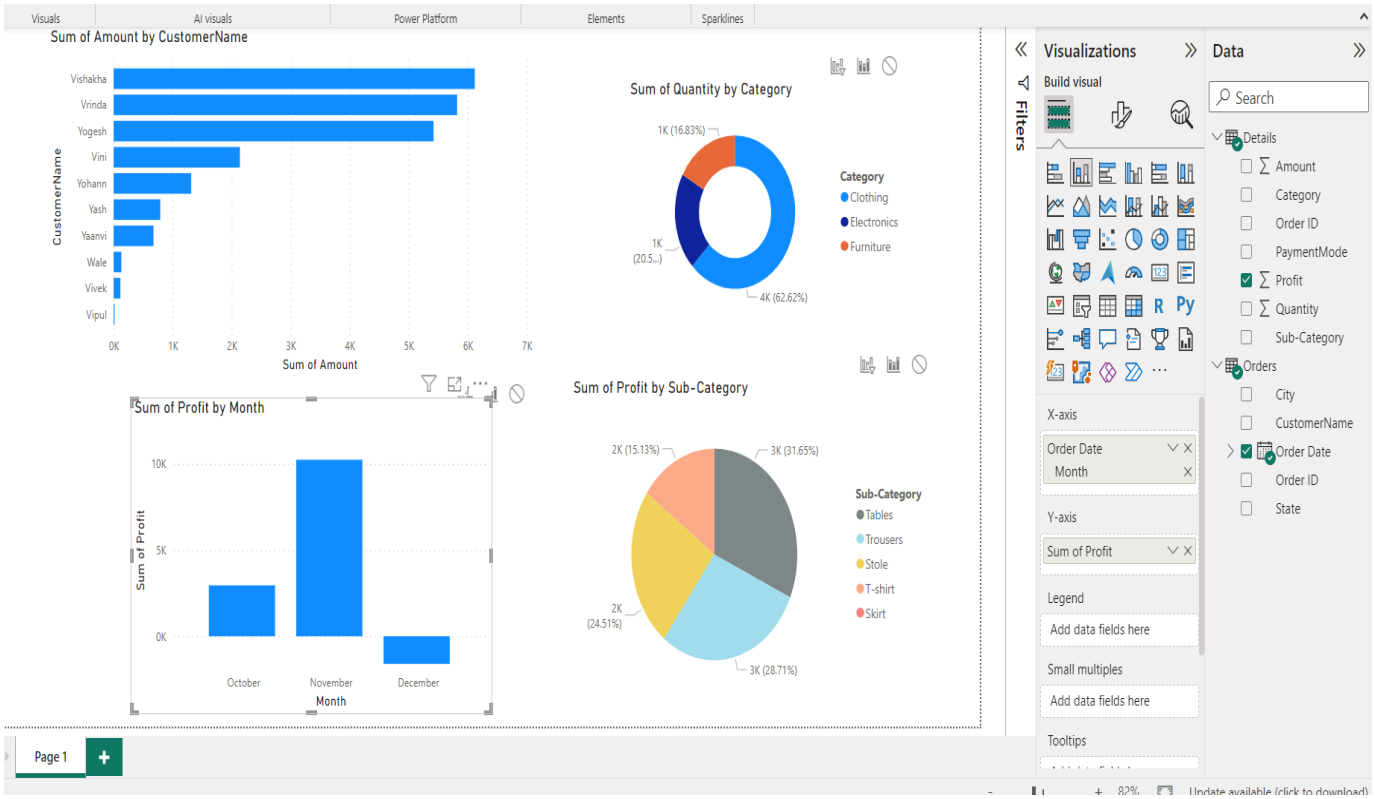
Creating Pie Chart:







Dashboard:


Visuals
AI visuals
Power Platform
Elements
Sparklines
Sum of Amount by CustomerName
CustomerName
Vishakha
Vrinda
Yogesh
Vini
Yohann
Yash
Yaanvi
Wale
Vivek
Vipul
0K
1K
2K
3K
4K
5K
6K
7K
Sum of Amount
Sum of Quantity by Category
1K (16.83%)
1K (20.5...)
4K (62.62%)
Category
Clothing
Electronics
Furniture
Sum of Profit by Month
Sum of Profit
10K
5K
0K
October
November
December
Month
Sum of Profit by Sub-Category
2K (15.13%)
3K (31.65%)
2K (24.51%)
3K (28.71%)
Sub-Category
Tables
Trousers
Stole
T-shirt
Skirt
Page 1
Visualizations
Build visual
Filters
X-axis
Order Date
Month
Y-axis
Sum of Profit
Legend
Add data fields here
Small multiples
Add data fields here
Tooltips
Data
Search
Details
Amount
Category
Order ID
PaymentMode
Profit
Quantity
Sub-Category
Orders
City
CustomerName
Order Date
Order ID
State
82%
Update available (click to download)