

Exp No: 7 Date:	Data Visualization Using Power BI
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Aim:

To learn the Tableau interface and develop skills in connecting to various data sources (Excel, CSV, SQL databases), creating basic visualizations (bar charts, line charts, pie charts), creating calculated fields, and building interactive dashboards and stories.

Procedure:

Step 1: Launch Tableau and Explore Interface

- Open Tableau Desktop.
- Familiarize yourself with the interface:
- Start Page (Connect pane, Open options)
- Data Pane (lists tables and fields)
- Sheets (for building visualizations)
- Dashboard and Story tabs

Step 2: Connect to Data Sources

- In the Connect pane, choose your data source type:
- Excel: Browse and select an Excel file, choose the sheet, and click Sheet1.
- CSV: Browse and select the CSV file, click Sheet1.
- SQL Database: Enter server, database credentials, select tables, and connect.
- Ensure your data appears in the Data Pane.

Step 3: Create Basic Visualizations

- Drag fields from the Data Pane to the Rows and Columns shelves:
- Bar Chart: Place a categorical field on Columns and a numerical field on Rows.
- Line Chart: Place a time/date field on Columns and a numerical field on Rows.
- Pie Chart: Use Marks → Pie, drag a categorical field to Color and numerical field to Angle.
- Use the Show Me panel to explore recommended visualization types.
- Format visualizations with colors, labels, and titles.

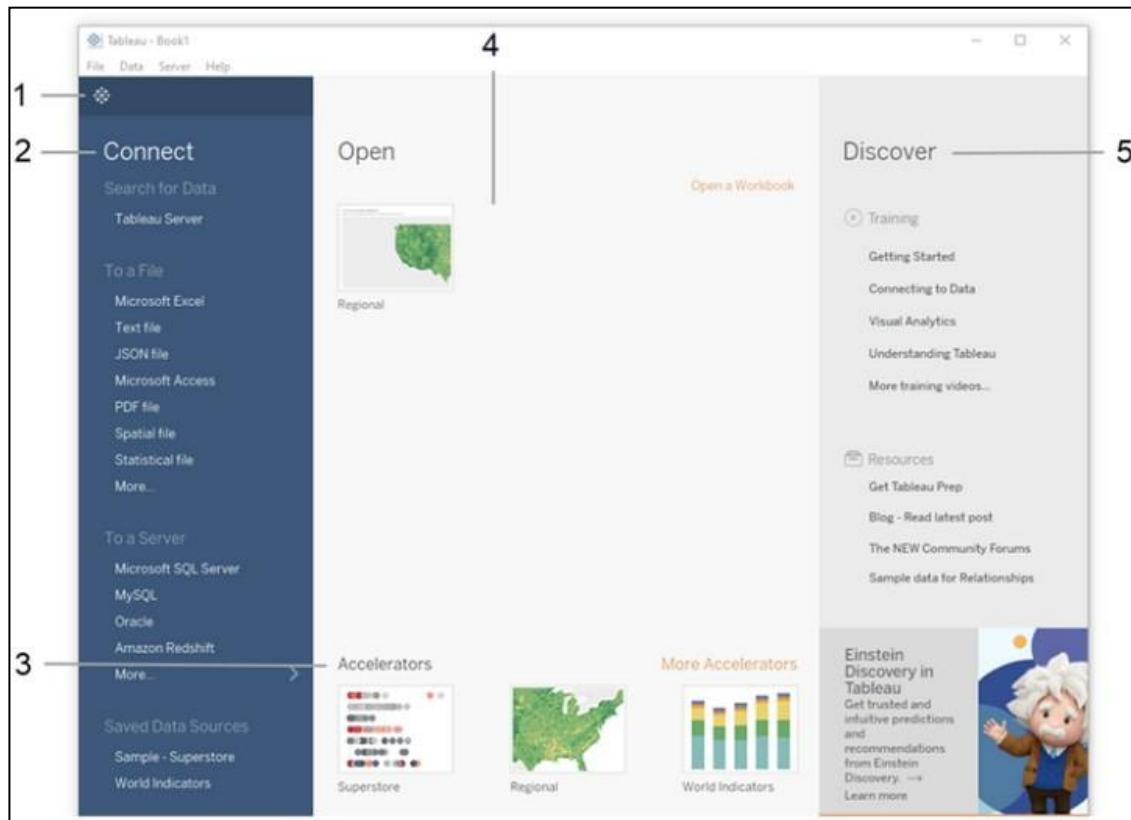
Step 4: Create Calculated Fields

- Click Analysis → Create Calculated Field.
- Enter a formula, e.g., TotalSales = [Quantity] * [UnitPrice].
- Use the calculated field in your visualizations to enhance insights.

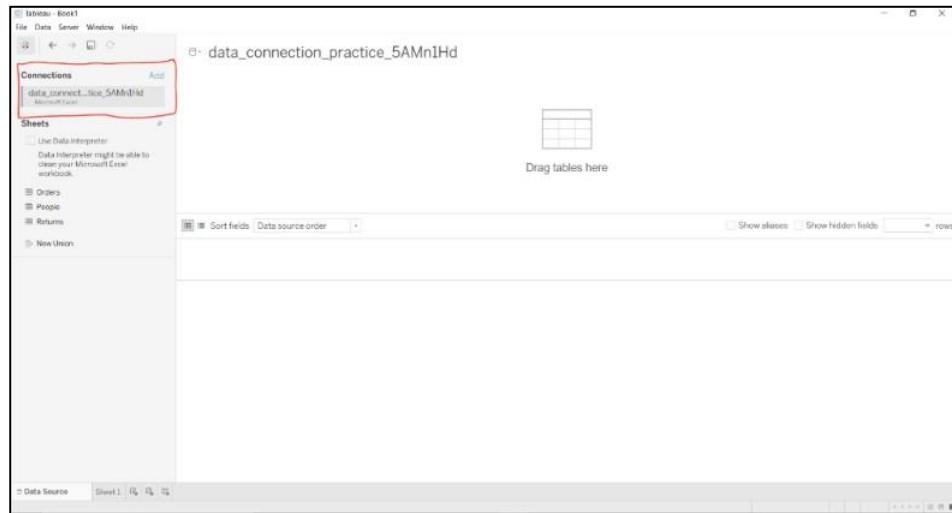
Step 5: Build Dashboards and Stories

- Click Dashboard → New Dashboard:
- Drag multiple sheets onto the dashboard canvas.
- Add filters, legends, and interactivity.
- Click Story → New Story:
- Combine multiple dashboards and visualizations into a narrative format.
- Add captions and navigation points.
- Customize layout, formatting, and interactivity for clarity.
- Save the workbook: File → Save As.

7.1 Introduction to Tableau and its interface



Connecting to various data sources (Excel, CSV, SQL databases)



Screenshot of Microsoft Excel showing a data connection named "data_connection_practice_5AMn1Hd". The "Orders" sheet is selected. The data source is "data_connect...dice_5AMn1Hd". The table has 16 columns: Order ID, Order Date, Ship Date, Ship Mode, Customer ID, Customer Name, Segment, City, State, Global Area, Postal Code, Order ID, Order Date, Ship Date, Ship Mode, Customer ID, Customer Name, Segment, City, State, Global Area, Postal Code. The data shows various orders from Mexico, Colombia, and Brazil.

Order ID	Order Date	Ship Date	Ship Mode	Customer ID	Customer Name	Segment	City	State	Global Area	Postal Code	Order ID	Order Date	Ship Date	Ship Mode	Customer ID	Customer Name	Segment	City	State	Global Area	Postal Code
1	MX-2014-1348058	02-10-2014	Standard Class	KC-20575	Sonia Cooley	Consumer	Mexico City	Distrito Federal	Mexico												
2	MX-2012-1550417	15-10-2012	Standard Class	KW-16570	Kelly Williams	Consumer	Dos Quebradas	Risaralda	Colombia												
4	MX-2012-155047	15-10-2012	Standard Class	KW-16570	Kelly Williams	Consumer	Dos Quebradas	Risaralda	Colombia												
5	MX-2012-155047	19-10-2012	Standard Class	KW-16570	Kelly Williams	Consumer	Dos Quebradas	Risaralda	Colombia												
7	MX-2013-134096	27-09-2013	Standard Class	DP-13000	Darren Powers	Consumer	São Paulo	São Paulo	Brazil												
8	MX-2013-134096	27-09-2013	Standard Class	DP-13000	Darren Powers	Consumer	São Paulo	São Paulo	Brazil												
10	MX-2013-134096	27-09-2013	Standard Class	DP-13000	Darren Powers	Consumer	São Paulo	São Paulo	Brazil												
11	MX-2013-134096	27-09-2013	Standard Class	DP-13000	Darren Powers	Consumer	São Paulo	São Paulo	Brazil												
13	MX-2013-156385	05-09-2013	Standard Class	TB-21250	Tim Brockman	Consumer	Managua	Managua	Nicaragua												
14	MX-2014-121923	24-09-2014	Standard Class	PW-10910	Paul Kruskal	Home Office	Managua	Managua	Nicaragua												
16	MX-2014-137766	19-10-2014	Standard Class	PW-10910	Paul Kruskal	Home Office	Panama	Panama	Panama												

Screenshot of Tableau showing a data connection named "data_connection_practice...". The "Sheet 1" page is selected. The data source is "data_connect...dice_5AMn1Hd". The table has 16 columns: Sub-Catego., 2011, 2012, 2013, 2014, Order Date, Sub-Category. The data shows sales by category across four years.

Sub-Catego..	2011	2012	2013	2014	Order Date	Sub-Category
Accessories	Abc	Abc	Abc	Abc		
Appliances	Abc	Abc	Abc	Abc		
Art	Abc	Abc	Abc	Abc		
Binders	Abc	Abc	Abc	Abc		
Bookcases	Abc	Abc	Abc	Abc		
Chairs	Abc	Abc	Abc	Abc		
Copiers	Abc	Abc	Abc	Abc		
Envelopes	Abc	Abc	Abc	Abc		
Fasteners	Abc	Abc	Abc	Abc		
Furnishings	Abc	Abc	Abc	Abc		
Labels	Abc	Abc	Abc	Abc		
Machines	Abc	Abc	Abc	Abc		
Paper	Abc	Abc	Abc	Abc		
Phones	Abc	Abc	Abc	Abc		
Storage	Abc	Abc	Abc	Abc		
Supplies	Abc	Abc	Abc	Abc		
Tables	Abc	Abc	Abc	Abc		

The screenshot shows the Tableau Data Source interface for a data connection named "data_connection_practice". The interface includes a top navigation bar with File, Data, Workbooks, Dashboard, Story, Analysis, Map, Formats, Server, Window, and Help. Below the navigation is a toolbar with various icons. The main area is divided into several sections: "Data" (selected), "Analytics", "Pages", "Filters", and "Sheet 1".

Data Section:

- Search bar: Search for []
- Tables list:
 - Category
 - City
 - Customer ID
 - Customer Name
 - Global Area
 - Market
 - Order Date
 - Order ID
 - Order Priority
 - Postal Code
 - Product ID
 - Product Name
 - Region
 - Segment
 - Ship Date
 - Ship Mode
 - State
 - Sub-Category
 - Measure Names
 - Discount
 - Profit
 - Quantity
 - Row
 - Sales **(selected)**
 - Shipping Cost
 - Latitude (generated)
 - Longitude (generated)
 - Orders (Count)

Sheet 1:

Columns: YEAR(Order Date)

Rows: Sub-Category

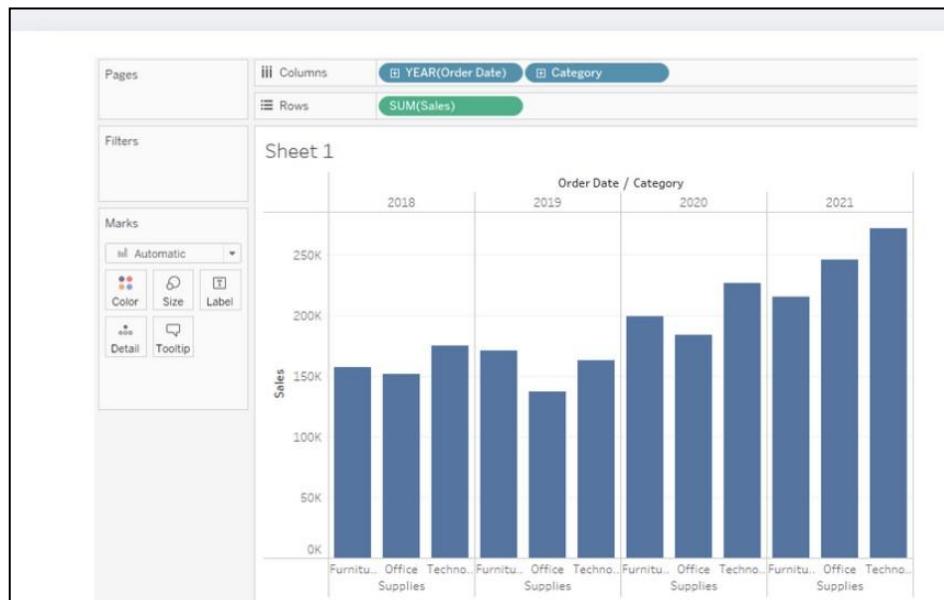
Marks: Automatic

Table Data (approximate values):

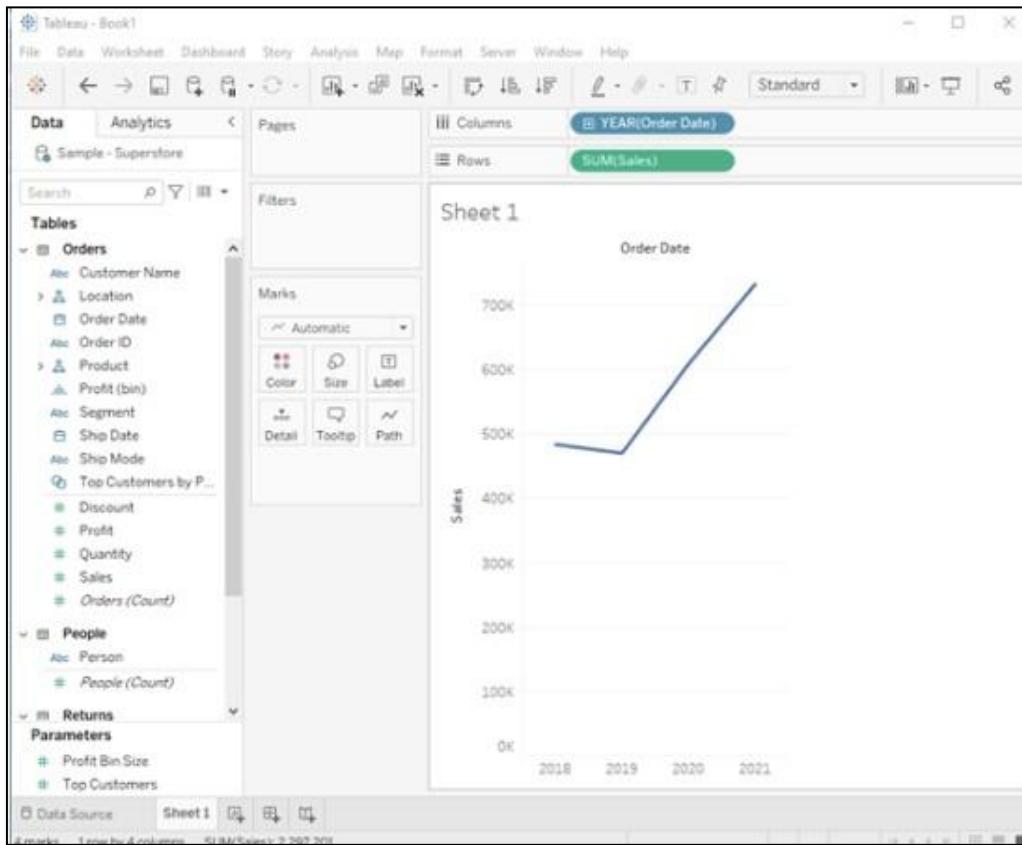
Sub-Categ..	2011	2012	2013	2014
Accessories	Abc	Abc	Abc	Abc
Appliances	Abc	Abc	Abc	Abc
Art	Abc	Abc	Abc	Abc
Binders	Abc	Abc	Abc	Abc
Bookcases	Abc	Abc	Abc	Abc
Chairs	Abc	Abc	Abc	Abc
Copiers	Abc	Abc	Abc	Abc
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Paper	Abc	Abc	Abc	Abc
Phones	Abc	Abc	Abc	Abc
Storage	Abc	Abc	Abc	Abc
Supplies	Abc	Abc	Abc	Abc
Tables	Abc	Abc	Abc	Abc

7.2 Creating basic visualizations: bar charts, line charts,

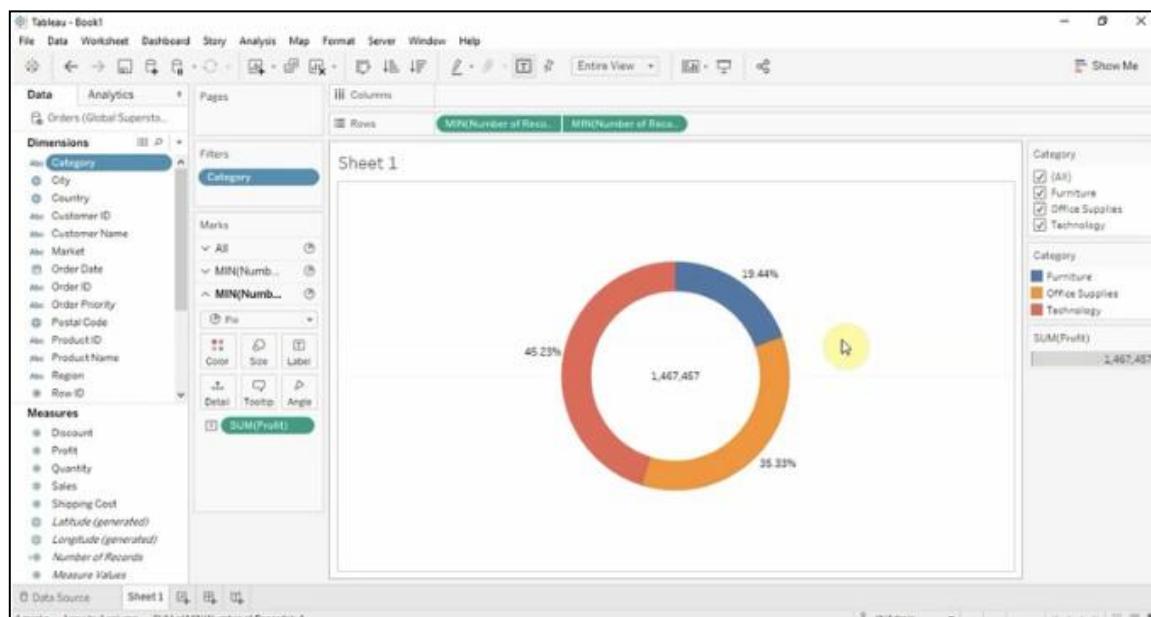
pie charts Bar chart



Line chart



Pie chart



7.3 Creating calculated fields

A calculated field in Tableau is like making your own math rule using the data you already have

The screenshot shows the Tableau Data pane on the left, which includes a search bar, a list of fields categorized by folder (e.g., Order Data, Product, Customer), and sections for Sort by Name and Parameters. A red box highlights the 'Create Calculated Field...' option in the top right corner of the Data pane. A red arrow points from the text 'Create From Here' to the same option. Another red box highlights the 'Calculated Field...' option in the context menu that appears when right-clicking on a field in the Data pane. The main workspace shows a line chart titled 'Calculated Fields Tutorial' with the Y-axis labeled 'Sum of Sales'. A tooltip for the 'ABS(number)' function is displayed, stating: 'Returns the absolute value of the given number. Example: ABS(-7) = 7'. The chart shows a series of sales values: \$816.60, \$819.75, \$944.51, \$900.00, \$1.000.00, and \$1.100.00.



Result:

This experiment introduced Tableau's interface and workflow, including connecting to data sources, creating visualizations, using calculated fields, and building dashboards and stories. Tableau simplifies data exploration and helps communicate insights effectively. To learn the Power BI interface and develop skills in connecting to various data sources (Excel, CSV, SQL databases), creating basic visualizations (bar charts, line charts, pie charts), using calculated columns and measures, and building interactive dashboards.