

EXPERIMENT 2

Task :

Explore Microsoft Power BI desktop:

- *Connecting to data sources and Importing data from it.*
- *Cleaning the data in the Power Query editor.*
- *Creating a visual.*
- *Creating a dashboard.*
- *Publishing dashboard.*

➤ **Connecting to data sources and Importing data from it:**

- *Open Power BI Desktop:* Launch Power BI Desktop on your computer.
- *Connect to a Data Source:* Open the Home tab: In Power BI Desktop, go to the Home tab.
- *Select Get Data:* Click on the "Get Data" button in the Home tab. A menu will appear with a list of available data sources.
- *Choose Your Data Source*

Power BI can connect to a wide variety of data sources, including:

- Excel
 - SQL Server
 - Azure
 - Online Services
 - Text/CSV
 - Web
 - OData Feed
 - Other Database Servers (e.g., MySQL, PostgreSQL, Oracle, etc.)
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- Choose the appropriate data source for your needs. For example, to connect to an Excel file:
 - *Select Excel:* Click on the "Excel" option from the data source list.
 - *Navigate to Your File:* In the file dialog, navigate to the location of your Excel file, select it, and click "Open."
 - *Select Tables/Sheets:* After selecting your data source, Power BI will show a Navigator pane listing all available tables or sheets within the file or database. Select the tables or sheets or specific attributes you want to import.
 - *Load or Transform Data:* Click on "Load" to directly load the data into Power BI. If you need to transform or clean the data first, click on "Transform Data" to open the Power Query Editor.

➤ **Cleaning the data in the Power Query editor.**

In the Power Query Editor, we can Transform and Clean Data if required:

Following are a few basic operations that we perform to clean and transform the data

- Filter rows
- Remove columns
- Change data types
- Merge tables
- Add calculated columns And many more

Let's see a few of them in detail:

- *Remove Columns:* Remove any columns you don't need.
 - *Single Columns:* Right-click on the column header and select "Remove."
 - *Multiple Columns:* Use the "Choose Columns" button in the Home tab to select or deselect multiple columns at once.
- *Rename Columns:* Give meaningful names to your columns.
 - *Rename:* Double-click the column header and type the new name, or right-click the column header and select "Rename."
- *Change Data Types:* Ensure each column has the correct data type (e.g., text, date, number).
 - *Select Column:* Click on the column header.
 - *Data Type:* Use the "Data Type" button in the Transform tab to change the data type.
- *Filter Rows:* Remove unnecessary rows by applying filters.
 - *Filter Icon:* Click the filter icon in the column header to set filters.
 - *Advanced Filtering:* Use "Keep Rows" or "Remove Rows" options in the Home tab for more complex filtering.
- *Remove Duplicates* if they do not impact the analysis results
 - Remove duplicate rows based on selected columns.
 - *Select Columns:* Highlight the columns to check for duplicates.
 - *Remove Duplicates:* Use the "Remove Duplicates" button in the Home tab.
- *Handle Missing Data*
 - *Replace Nulls:* Replace null or missing values with a specified value using "Replace Values" in the Transform tab.
 - *Remove Empty Rows/Columns:* Use the "Remove Rows" or "Remove Columns" options in the Home tab.

Make the necessary transformations and then click "Close & Apply" to load the data into Power BI.

➤ Creating a visual.

Create a New Report: After loading the data, you will be in the Report view.

Select a Visualization Type: Click on the bar chart icon in the Visualizations pane.

Add Data to the Visual: Drag the attributes in field pane to the Axis area and Values area appropriately

Customize the Visual: Click on the Format icon (paint roller).

Customize colors, add data labels, and adjust axis titles as needed.

Interact with the Visual: Resize the bar chart by clicking and dragging its edges.

Move the bar chart to the desired position on the canvas.

Create Visualizations

Once the data is loaded, you can start creating visualizations.

Choose Visualization Type: In the Visualizations pane, select the type of visualization you want (e.g., bar chart, line chart, pie chart, etc.).

Drag Fields: Drag fields from the Fields pane onto the canvas or into the Values, Axis, and Legend areas of the Visualization pane.

Let's assume car sales dashboard:

Say we selected a Stacked Bar Chart:

Y-Axis: Add the "Model" field.

X-Axis: Add the "Sum of Sales" (in thousands).

Result: Displays a stacked bar chart showing sum of sales by model.

Say we selected a Pie Chart:

Add model to legend and Sum of fuel to values pane

Result: Represent the "Sum of Fuel Capacity" for each model.

Types of Analysis:

Similarly we can perform univariate, bivariate, and multivariate analysis using various visuals available in the Visualization pane.

Creating New Measures for more customized visuals:

Method 1:

Go to the "Insert" tab. Select "Measure".

Method 2:

Go to the "Modeling" tab. Click on "New Measure".

Examples of Measures Created:

Total Car Sales.

Average Price of Car Sales.

Data Options:

Car, Passenger

➤ **Creating a dashboard**

Now, After performing all the above steps It's time to create the Dashboard:

- *Assemble the Dashboard*
 - *Arrange Visuals:* Drag and drop your visuals onto the canvas and arrange them to create a cohesive layout.
- Add Filters and Slicers
 - *Insert Slicer:* Click on the slicer icon in the Visualizations pane.
 - *Add Field:* Drag fields such as "Model", "Year", or "Region" to the slicer to enable interactive filtering.
- *Customize Layout:* Adjust the size and position of each visual for a clear and organized dashboard.

➤ **Publishing dashboard.**

- *Save Report:* Click on the Save icon or go to File > Save to save your report.
- *Publish Report:* To share your report online, click on "Publish" in the Home tab and select your workspace in the Power BI service.