

Need help with training resources or case studies?

1. Get help via WhatsApp to Dr. Shegorika Rajwani's team on +91 8828007972.
2. Save +91 8828007972 for updates. (Limited communication without saved number)

Module-1

Module-2

DATA DRIVEN DECISION MAKING

Module-3

DATA ANALYST VS BUSINESS ANALYST

Module-4

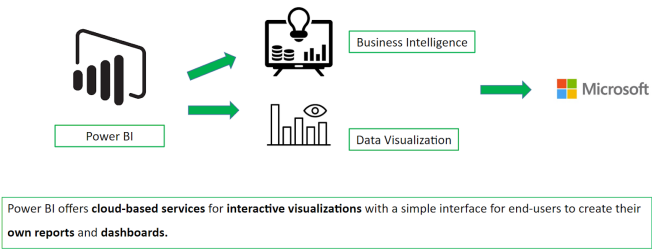
MS EXCEL

Module-5

POWER BI

POWER BI

Power BI is Business Intelligence and data visualization software developed by Microsoft. Power BI offers cloud-based services for interactive visualizations with a simple interface for end-users to create their reports and dashboards.

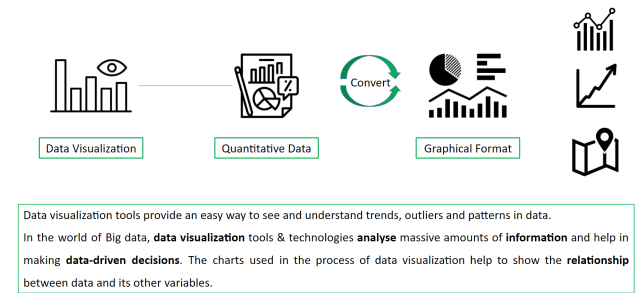


To better understand Power BI we'll first understand what Data Visualization is and its importance.

Data visualization

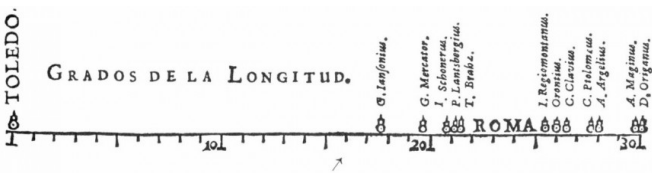
means the representation of quantitative data information in a graphical format. It makes use of visual elements like charts, graphs, and maps and data visualization tools provide an easy way to see and understand trends, outliers, and patterns in data.

In the world of Big Data, data visualization tools and technologies are essential for analyzing massive amounts of information and making data-driven decisions. The charts used in the process of data visualization help to show the relationship between data and its other variables.



But how did Data visualization come into the picture and why did it gain importance?

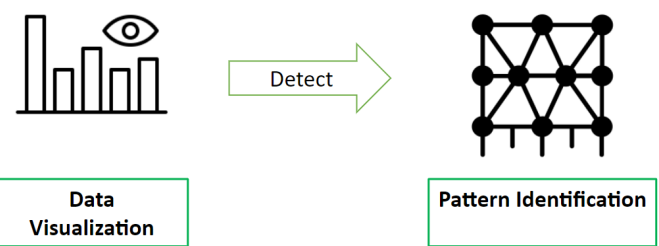
Before the seventeenth century, data visualization was primarily used to represent landmarks, towns, highways, and resources on maps. Better representations were required as the demand for more precise mapping and physical measurement expanded. An astronomer named Michael Florent Van Langren is thought to have created the first visual depiction of statistical data in 1644. The one-dimensional line graph below depicts the twelve known estimates of the difference in longitude between Toledo and Rome at the time of the assessment, as well as the names of the astronomers who made the estimate. While Van Langren might have supplied this information in a table, the usage of the graph truly highlights the vast range of estimations.



Benefits of Data Visualization:-

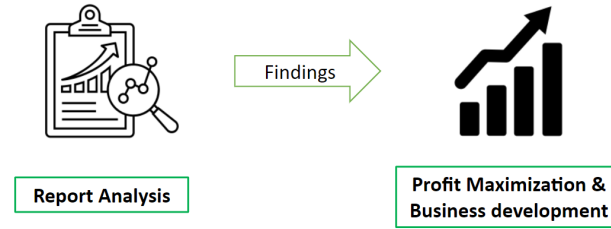
1. Pattern Identification

When we view large volumes of complex data, we may get a lot of new insights. Business users may utilize visualization to detect relationships between data, giving it more significance. Exploring these patterns allows the user to focus on specific parts of the data that demand attention, allowing them to determine the importance of those areas in moving their business forward.



2. Advanced analysis

Business stakeholders can make use of data visualization to analyze reports concerning sales, marketing, strategies, and product interest. The reports/ findings from this analysis can then be used to give attention to areas that will increase profits and aid in business growth and development.



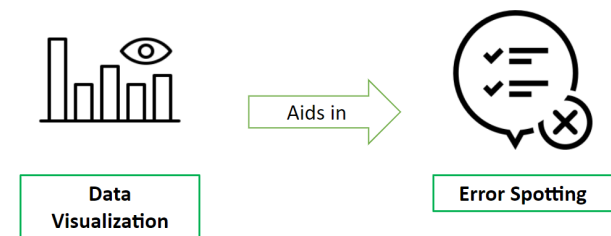
3. Immediate Action

Our Human brain is programmed to understand visual data and graphs quicker as compared to tabular or statistical data. Data visualization allows the decision-makers to gain faster insights into data and take the appropriate decisions for the business.



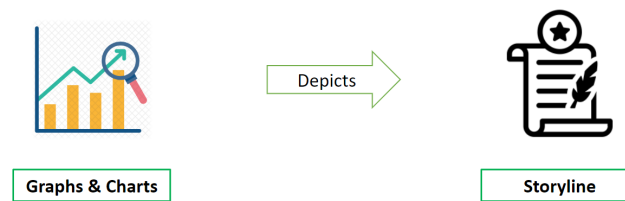
4. Error-identification

Visualizing your data allows you to instantly spot any mistakes. If the data tends to recommend the wrong actions, visualizations can assist in identifying erroneous data earlier in the process, allowing it to be eliminated from the analysis.



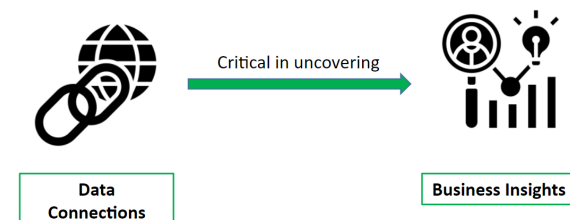
5. Storytelling

Graphs and charts are easier to understand and depict a storyline when looked at carefully. These visuals grab the attention of the stakeholders and convey the data in the simplest of forms.



6. Gaining business insights

Finding data connections via visual representations is critical in today's competitive corporate climate for uncovering business insights. Exploring these insights is critical for business users or executives to choose the best course for accomplishing the company's objectives.



7. Trend Analysis

Data visualization can help to decipher the latest trends to provide quality insights and problem identification of products and services even before they arise. Trend analysis can directly help in improving the business activities and thus increasing profitability.



Various Power BI tools -

- Power BI Desktop

Power BI Desktop is a free application you install on the local computer that lets you connect to, transform, and visualize your data. With Power BI Desktop, you can connect to multiple different sources of data, and combine them (often called modelling) into a data model.

- Power BI service

Power BI is a collection of software services, apps, and connectors that work together to help you create, share, and consume business insights in the way that serves you and your business most effectively.

- Power BI Data Gateway

Power BI Gateway is software that is required to access data situated in a secure on-premise network. The gateway acts as a gatekeeper for such data. The request goes through the gateway if anyone needs to access on-premises data from a cloud or web-based app.

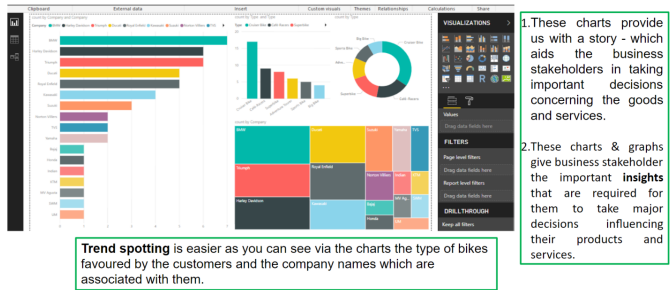
- Power BI Report Server

Power BI Report Server is an on-premises report server with a web portal in which you display and manage reports and KPIs. Along with it come the tools to create Power BI reports, paginated reports, mobile reports, and KPIs.

- Power BI Mobile Apps

Power BI mobile apps are applications for your mobile and tablet devices that enable you to quickly view your Power BI reports and dashboards. They allow you to connect to your data, make insights, collaborate on the go, and get notified whenever your data changes.

Power BI Dashboard

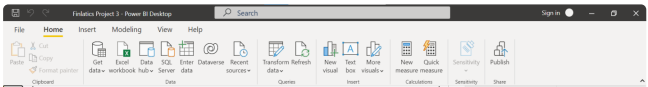


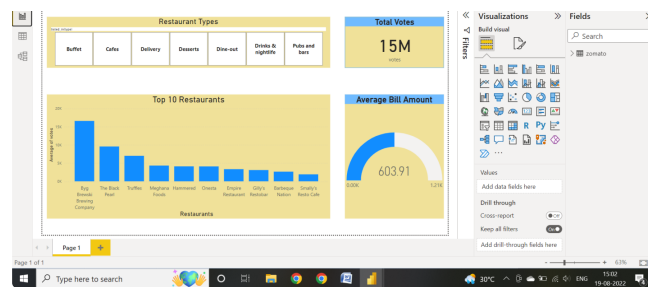
Power BI desktop can be used for connecting data, transforming, and cleaning the data to create data models. It can be used to create visuals, such as charts or graphs that provide visual representations of the data. Power BI Desktop can be used to create reports that contain collections of visuals. These reports can then be shared via Power BI Service.

Power BI Desktop offers 3 views: -

- Report view

which can be used to create reports and visuals.





- Data view**

wherein users can see the tables, measures, and other data that can be used in a data model associated with the report.

The screenshot shows the 'Data view' in Power BI, displaying a table with columns: productcategory, product, Country, StandardCost, Sales, Discount, and OrderQuantity. The table contains multiple rows of data, including entries for 'Road 600 Road, 60' in the 'United States'.

- Model view**

wherein user can see and manage the relationship amongst tables in a data model.

The screenshot shows the 'Model view' in Power BI, displaying a diagram of the data model. It includes a table named 'AdvWorkData.xlsx - Sheet1' with columns: Country, Discount, OrderQuantity, product, productcategory, Sales, and StandardCost. The 'Properties' pane on the right shows settings for the table, such as 'Show the database in the header when applicable' and 'Show related fields when card is collapsed'.

To start with the process of visualization firstly we need data to carry out the visualization. This data can be added to Power BI via the Get Data function of Power BI. Using the Get Data function files from various formats like Excel, Text/CSV, Power BI datasets, Power BI dataflow, SQL Server, MySQL database, Analysis Services, Azure, Text/CSV, Oracle, PDF, Access, XML, and JSON among others can be imported to Power BI.

The next step is Transforming and cleaning the data to create models.

Before starting with the process of visualization, the data needs to be filtered of any errors or changes. For this, we'll be using **Power Query Editor**.

Power BI Desktop offers Power Query Editor which helps in connecting 1 or more data sources, shaping and transforming the data to meet the needs of the users before loading the models in Power BI Desktop.

To start the Power Query Editor user needs to select **Transform Data** in the Home tab of the Power BI desktop.

The screenshot shows the 'Power Query Editor' in Power BI. It displays a list of queries on the left, including 'AdvWorkData.xlsx - Sheet1'. The main area shows the 'Columns' tab with a list of columns: productcategory, product, Country, Sales, Discount, OrderQuantity, and StandardCost. The 'Properties' pane on the right shows settings for the query, such as 'Name' and 'Applied Steps'.

The Query ribbon consists of four tabs Home, Transform, Add Column, and View.

The Home tab contains the tasks in a common query.

Data can then be connected using New Source and selecting amongst the common data sources. Image - New Sources image of Query editor Power BI

The Transform tab provides access to common data transformation tasks, such as: Adding or removing columns, changing data types, Splitting columns, and other data-driven tasks

The Add Column tab provides additional tasks associated with adding a column, formatting column data, and adding custom columns.

The View tab on the ribbon is used to toggle whether certain panes or windows are displayed. It's also used to display the Advanced Editor.

Now we'll look at the

Queries pane:

The number of active queries and the query name is displayed in the left pane of the Queries pane. When you choose a query from the left pane, the data from that query appears in the centre pane, where you may shape and change it to match your needs.

Secondly, in the

data pane view,

the data of the selected query is displayed thus completing much of the Query view. When you select a right-click menu item (or a ribbon button), the query applies the step to the data. It also saves steps as part of the query itself.

After all these steps are done the user can successfully save his file by clicking on the Close & Apply from the Power Query Editor's File menu.

Power BI Desktop saves a user's work in the form of a .pbix file format. This can be done using File > Save (or File > Save As)

Building Reports -

Power BI reports offer 6 main areas:

- The ribbon at the top displays common tasks associated with reports and visualizations.
- The canvas area is in the middle, where visualizations are created and arranged.
- The pages tab area at the bottom, lets you select or add report pages.
- The Filters pane, where you can filter data visualizations.
- The Fields pane shows the available fields in your queries. You can drag these fields onto the canvas, the Filters pane, or the Visualizations pane to create or modify visualizations.
- The Visualization pane, where you can add, change, or customize visualizations, and apply drill through.

Visuals: - Power BI offers different types of visuals like column charts, bar charts, funnel, pie charts, treemap, matrix, and tables among others. In addition to this, it also offers R script and Python visuals.

Users can select from the data visualization pane. The format option lets you apply formatting and other controls to visualizations. Power BI even lets you merge charts which makes these visualizations even more interesting.

Additionally, Dax functions can be used to carry out many other functions like multiplications, additions, and subtractions among others. Dax functions are similar to functions we enter in the Formula bar in Excel and are mainly used to calculate stuff.

Once these reports are created, these files can be shared with others in the .pbix format. You can even upload a .pbix file from the Power BI service or it can be directly published from the Power BI Desktop to the Power BI service. The publish option is available in the Home Tab. To complete the process users may be required to sign in.