Unit-1

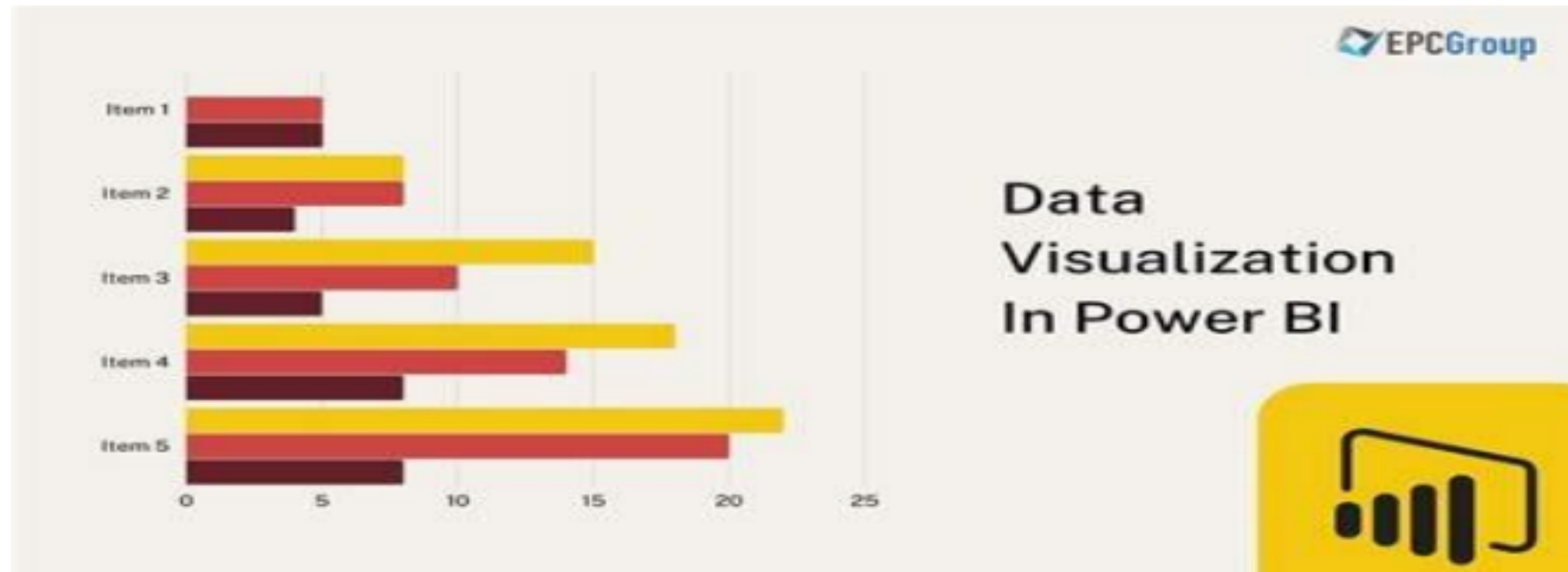## Introduction to Power BI

Introduction to Power BI

• Power BI is a business analytics service provided by Microsoft. It aims to provide interactive visualizations and business intelligence capabilities with an interface simple enough for end users to create their own reports and dashboards.

• Power BI is a cloud-based Business Intelligence Service developed by Microsoft for non-technical business users with tools to aggregate, analyze, share, and visualize data

Process Flow of Power BI

Features of PowerBI

Certainly! Microsoft Power BI is a powerful business intelligence tool that empowers users to create insightful visualizations and reports.

Here are some key features:

Data Connectivity: Power BI allows you to connect to various data sources, including databases, spreadsheets, cloud services, and APIs.

Data Modeling and Transformation: You can shape and transform your data using Power Query and Power Pivot, ensuring it's ready for analysis.

Customizable Visualizations and Dashboards: Create interactive charts, graphs, and dashboards to visualize your data. Customize them to suit your needs. **Collaboration and Sharing Capabilities**: Collaborate with colleagues by sharing reports and dashboards. You can also embed Power BI visuals in other applications. **AI-Powered Insights and Recommendations**: Power BI provides smart insights and recommendations based on your data, helping you discover patterns and trends. **Report Sharing**: Easily share reports with others, whether they have a Power BI account or not.

Mobile App: Access your reports and dashboards on the go using the Power BI mobile app.

Components of Power BI

1.Power Query

Power Query is the data transformation tool you can use to give a new shape to your data. It enables you to discover, connect, combine, and refine data sources to meet your analysis needs.

You can download it as an add-in for Excel or as part of the Power BI Desktop.

2.Power Pivot

Power Pivot is a data displaying method. You can use it to create data models and calculations and establish relationships. It uses Data Analysis Expression (DAX) language to model simple and complex data.

3.Power View

Power View is available in Excel, Power BI, and others. You can use it to create charts, maps, graphs, and visuals. You can connect it to data sources and segregate data based on your needs.

4.Power Map

It is a 3-D data visualization tool you can use to map data. Furthermore, you can plot rows of data on Bing maps in 3-D format. You can export data from an Excel table or Data Model in Excel. It uses Bing maps for visualizing data with the help of details like latitude, longitude, city, country, and much more.

5.Power BI Desktop

It is a development tool for Power View, Power Query, and much more. It delivers a seamless BI and data analysis environment through its range of offerings.

6.Power Q&A

You can explore the data the way you want with the help of the Q&A feature of Power BI. You can get insights from the data with natural language. You need to create data models and add them to the Power BI tool.

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Visualizations

1. Power BI is all about representing data visually and it has a crucial role. You can get various options for visualizations. Depending on your business needs, you can get simple or complex visualizations.

2. Here are the different visuals available in Power BI:
   Stacked column chart
   Clustered bar chart
   Clustered column chart
   100% stacked column/bar chart
   Line chart
   Area chart
   Stacked area chart
   Ribbon chart
   Waterfall chart

Scatter chart
Pie chart
Donut chart
Treemap chart
Map
Filled map
Funnel chart
Gauge chart, etc

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- **Get Data (Data Source)**

- Here is a list of data sources you can
  use: Excel
  Power BI datasets
  Power BI dataflow
  SQL Server

MySQL database

Analysis Services

Azure

Text/CSV

Oracle

PDF

Access

XML

JSON

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- **Filtration**

You can filter the datasets and have smaller subsets containing only the important data and contextual relevance. With the help of Power BI, you can in-built data connectors. Some of these include *Oracle, Excel, Azure, and much more.*

- **Customizable Dashboards**

You can get a range of visualizations that offer meaningful insights from raw data. A usual dashboard will include several visualizations that are single-page reports. You can share and print dashboards. • **Flexible Tiles**

You can get a clear view of data as tiles separate visualization. You can adjust their size for a better view. Furthermore, you can place tiles anywhere on the dashboard based on your needs. • **Report**

In the navigation pane, you can find reports, dashboards, and datasets. You can navigate between them when creating reports and dashboards.

- **Natural Language**

You can search data and information by placing queries in natural language in the Power BI system. The Power BI engines search data and visualization to solve user queries.

- **DAX**

It is the Data Analysis Expressions function in the **Power BI** tool. You can get specific functionalities through predefined codes and analysis tools.

What is PowerBI Desktop

- Power BI Desktop is a free software application that can be installed in a local computer, and it allows the user to ingest, transform, integrate, and enrich data. Microsoft Power BI Desktop will enable you to ingest, process, combine, and improve your data. It will connect all your data sources, simplifies them and share with scalable dashboards, embedded visuals, interactive reports, and others.

- It also helps in connecting various data sources and combine them into a data model, build visuals, collect visuals, and share reports with other people in the organization. Most users who work on BI projects choose Power BI Desktop to create reports and to share them with others.

Installing Power BI Desktop

- **1. System Requirements:**

- Windows 7 or later.

- Internet Explorer 10 or higher.

- .NET 4.5 or higher.

- **2. Installation Process:**

- Go to the official Power BI website (https://powerbi.microsoft.com/). • Navigate to the "Products" menu and select "Power BI Desktop." • Click "Download Free" and follow the

installation prompts.

Power BI Service

- To use Power BI Service, you generally need to have a Microsoft account and possibly a Power BI Pro license, depending on what features you need access to. You can sign up and log in via https://powerbi.microsoft.com/. This online service allows for publishing, sharing, and collaboration in the cloud.

- Power BI service is the Software as a Service (SaaS) component of Power BI. You can connect to data, create reports and dashboards, and ask questions about your data.

- Furthermore, you can collaborate with colleagues by grouping your

dashboards, reports, and paginated reports into an app and distributing them. With the help of the Pro license, you get advanced data security.

Connecting to Data Sources

1. Open Power BI Desktop.

2. In the Home tab, click on 'Get Data'.

3. Select the type of data source (e.g., Excel, SQL Server, Web). 4.

Follow the prompts to connect to the data source and import data.

Build Data-Driven Analytics

1. Load Data: Use Power Query to import and transform the data as needed.

2. Create a Model: Define relationships between the tables of data in Power Pivot.

3. Analyze Data: Use DAX (Data Analysis Expressions)to create calculated columns, measures, and analysis.

Build a Basic Dashboard

1. Add Visuals: Use the 'Visualizations' pane to drag and drop different charts and visuals onto the report canvas.

2. Configure Visuals: Adjust properties and filters for each visual to display the desired data correctly.

3. Arrange the Dashboard: Position and size your visuals to create a coherent and attractive layout.

4. Publish: Save your work and publish it to the Power BI Service for sharing. By following these steps, you can start utilizing Power BI to perform complex data analysis and visualization tasks, ultimately building powerful dashboards that can help drive business decisions.

Benefits of PowerBI

- Power BI offers lots of *benefits* that your regular Microsoft Excel usually can't. Some of these advantages include:
- **Memory and speed**: Data can be quickly collected and analyzed. You can

input large data sets that other solutions would probably choke. • **Seamless integration**: Power BI can easily integrate with lots of existing analytics and reporting apps. A few examples include Office 365, SharePoint, Google Analytics, Salesforce and others.

• **Technical know-how not required**: Power BI's user interface is quite similar to other Microsoft Office apps. Just touch a button and see what it does. • **Personalized dashboards**: Power BI offers a rich and power personalization options by enabling you to create your own dashboards.

• **Data security**: Power BI lets you publish reports securely. Power BI also lets you control your data's accessibility freely.