**Session-01: Introduction to Power BI / Connecting & Shaping Data**

Welcome to the session on "Introduction to Power BI / Connecting & Shaping Data." In today's data-driven world, the ability to transform raw data into actionable insights is crucial for making informed business decisions. Power BI, a powerful business analytics tool by Microsoft, enables users to visualize data, share insights across their organizations, and embed them in apps or websites.

In this session, we will embark on a journey to explore the fundamental aspects of Power BI Desktop, focusing on connecting to various data sources, shaping and transforming data, and creating interactive reports and dashboards. Whether you are new to Power BI or looking to enhance your data analytics skills, this session will provide you with the foundational knowledge and practical skills needed to harness the power of Power BI.

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**Key Topics We Will Cover:**

1. **Downloading and Installing Power BI Desktop:**
2. **Understanding Power BI’s Role in the Microsoft Ecosystem:**
3. **Exploring the Power BI Desktop Interface:**
4. **Reviewing the Business Intelligence Workflow:**
5. **Delving into Power BI’s Query Editor:**
6. **Connecting to Various Data Sources:**
7. **Checking Data Quality and Profiling Data:**
8. **Transforming Data:**
9. **Combining, Modifying, and Refreshing Queries:**

**1. Download and Install Power BI Desktop**

**Steps to Download and Install Power BI Desktop:**

1. **Visit the Power BI Website:**
   * Navigate to the official [Power BI website](https://powerbi.microsoft.com/).
2. **Download Power BI Desktop:**
   * Click on "Download" in the top menu and select "Power BI Desktop".
   * Alternatively, you can directly download it from the Microsoft Store if you are using Windows 10 or later.
3. **Install Power BI Desktop:**
   * Once the download is complete, open the installer file.
   * Follow the on-screen instructions to install Power BI Desktop on your computer.
   * After installation, open Power BI Desktop.
4. **Adjust the Settings:**
   * Go to "File" > "Options and settings" > "Options".
   * Adjust settings such as regional settings, data load options, privacy levels, and custom visuals.

**2. Understand the Role of Power BI within the Broader Microsoft Ecosystem**

**Power BI’s Role:**

* **Integration with Microsoft Products:**
  + **Excel:** Import and analyze Excel data.
  + **Azure:** Connect to Azure data services for advanced analytics.
  + **Office 365:** Seamless sharing and collaboration via Office 365.
* **Data Visualization:**
  + Create interactive and shareable dashboards and reports.
* **Business Intelligence:**
  + Transform raw data into meaningful insights.

**3. Explore Core Components of the Power BI Desktop Interface**

**Power BI Desktop Interface Components:**

1. **Home Ribbon:**
   * Access common tasks like getting data, recent sources, and data transformations.
2. **Report View:**
   * Design reports with various visualizations.
3. **Data View:**
   * Inspect and explore the data in your model.
4. **Model View:**
   * Manage relationships between tables.
5. **Query Editor:**
   * Access advanced data shaping and transformation tools.

**4. Review the Business Intelligence Workflow**

**Business Intelligence Workflow:**

1. **Data Collection:**
   * Gathering data from various sources.
2. **Data Preparation:**
   * Cleaning and transforming data to make it ready for analysis.
3. **Data Modeling:**
   * Creating relationships between different data sets.
4. **Data Analysis:**
   * Applying analytical techniques to extract insights.
5. **Data Visualization:**
   * Presenting data in an easily understandable format.
6. **Sharing and Collaboration:**
   * Distributing reports and dashboards to stakeholders.

**5. Explore Power BI’s Query Editor and Power Query**

**Query Editor in Power BI:**

* **Purpose:**
  + Clean, shape, and transform data before loading it into Power BI.
* **Features:**
  + **Applied Steps:** Track changes made to the data.
  + **Transformations:** Apply a variety of data transformation techniques.
  + **Combine Queries:** Merge or append queries to create a consolidated data set.

**6. Introduce Different Types of Connectors and Connectivity Modes**

**Types of Connectors:**

1. **File-Based:**
   * Excel, CSV, XML, JSON, etc.
2. **Database:**
   * SQL Server, Oracle, MySQL, etc.
3. **Online Services:**
   * SharePoint, Dynamics 365, Google Analytics, etc.
4. **Other:**
   * Web pages, OData, REST APIs, etc.

**7. Review Tools for Checking Data Quality and Key Profiling Metrics**

**Data Quality Tools:**

1. **Column Distribution:**
   * Visualize the distribution of values within a column.
2. **Empty Values:**
   * Identify columns with missing data.
3. **Errors:**
   * Detect errors in the data set.

**8. Transform Tables Using Various Tools**

**Transformation Tools:**

1. **Text Tools:**
   * Split columns, change case, trim, and clean.
2. **Numerical Tools:**
   * Aggregations, percentage calculations, and rounding.
3. **Date/Time Tools:**
   * Extract year, month, day, and perform date arithmetic.
4. **Pivot and Group:**
   * Pivot columns, group by specific fields to summarize data.
5. **Conditional Columns:**
   * Create new columns based on conditions and rules.

**9. Practice Combining, Modifying, and Refreshing Queries**

**Combining Queries:**

* **Merge Queries:**
  + Combine data from two tables into one based on a common column.
* **Append Queries:**
  + Stack data from two tables vertically to create a single table.

**Modifying Queries:**

* **Edit Queries:**
  + Apply additional transformations or corrections as needed.

**Refreshing Queries:**

* **Scheduled Refresh:**
  + Set up automatic data refreshes to keep data up to date.
* **Manual Refresh:**
  + Refresh data manually to reflect the latest changes.