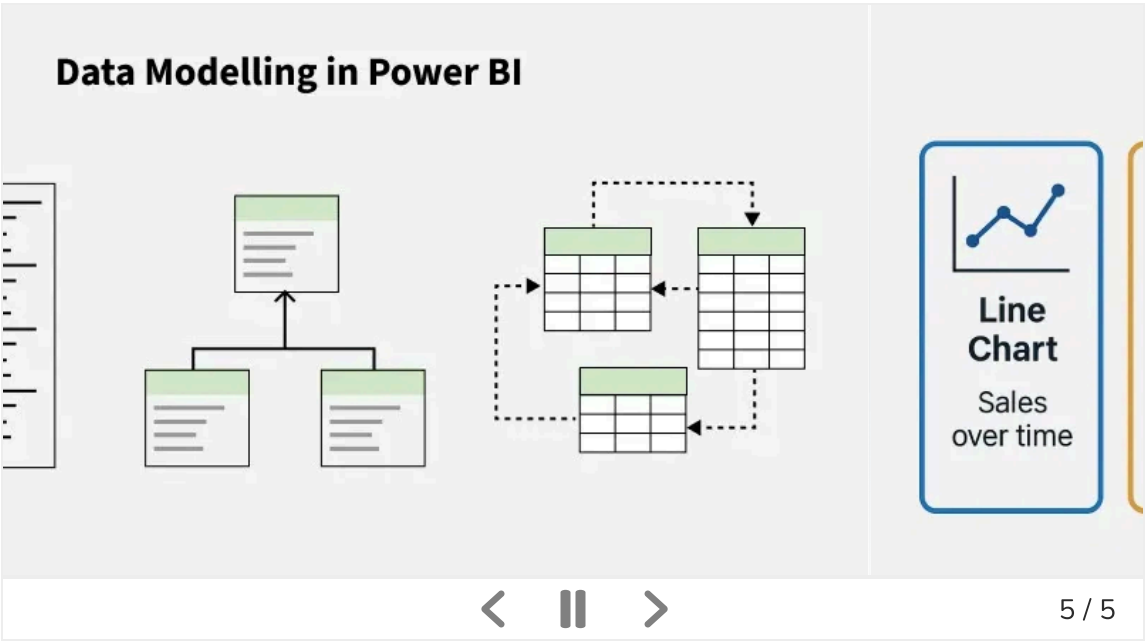
Power BI Tutorial | Learn Power BI

Last Updated : 27 Sep, 2025

Power BI is a Microsoft-powered business intelligence tool that helps transform raw data into interactive dashboards and actionable insights. It allow users to connect to various data sources, clean and shape data and visualize it using charts, graphs and reports all with minimal coding.

It's widely used in industries for data storytelling, decision-making and analytics and integrates well with tools like Excel, databases, Cloud and even Python. Tools like **Microsoft Power BI** are used by over **3000 companies** for business intelligence.



What is Power BI Used For?

Power BI is a tool that helps you understand your data better. you can:

- Bring in data from different places like Excel files, SQL databases, CSVs, JSON files and even websites.
- Clean and fix your data easily without writing code.
- Create visuals like bar charts, line graphs, pie charts and dashboards to help you see patterns and trends.

- Analyze your data using filters and slicers, so you can focus on specific details like sales by region or product performance over time.
- Share your dashboards with your team or clients so everyone stays informed and can explore the data on their own.
- Set up automatic updates so your reports always show the latest information without you having to do anything.

The tutorial is divided into **5 sections** and each section provides you the necessary materials to progressively learn Power BI. As you complete each section you move forward to your goal of becoming a **Power BI specialist**.

Section 1: Power BI - Introduction & Setup

In this section We will start with an introduction to Power BI, learn how to install it and understand the basic settings required to get started. Additionally we will cover the key components of Power BI, its real-world applications and compare it with tools like SSRS.

- PowerBI Installation
- What is Power BI and Why Power BI in Data Analysis
- Power BI Components
- Practical Applications
- Advantages of Power BI, Disadvantages of Power BI
- Differences Between Microsoft Power BI and SSRS
- Power BI Free vs Power BI Pro vs Power BI Premium

Section 2: Power BI - Query Editor

Now we'll explore how to clean and shape data using Power BI's Query Editor. You'll learn how to transform values, create conditional columns, group data and merge queries. By the end you'll be able to prepare datasets effectively for analysis.

- Query Editor in Power BI
- Working with Numbers in Power BI
- Working with Date & Time Tools
- Conditional Columns in Power BI
- Grouping & Aggregating Records

- Merge and Append Queries in Power BI
- Manage data source settings and permissions
- Data refresh in Power BI
- Power BI Data Types
- Power BI – Excel Integration

Section 3: Power BI Dashboard and Visualization

Wll learn how to build interactive dashboards and bring data to life with visualizations in Power BI. You'll discover how to use charts, filters, slicers, maps and KPIs to explore data and share insights

- Creating a dashboard
- Inserting Basic Charts & Visuals in Power BI
- Build table relationship and Data models
- Conditional Formatting
- How to add Reports to Dashboards
- Using Charts: Bar, Column, Area, map, Waterfall, Tree map, Table
- Adding Trend Lines & Forecasts
- Power BI Report Filtering Options
- Exploring Data with Matrix Visuals
- Filtering with Date Slicers
- Editing Power BI Report Interactions
- Adding Drillthrough Filters

Section 4: DAX Introduction

Data Analysis Expressions (DAX) is the formula language used in Power BI for creating custom calculations. We'll understand how to build measures, use common DAX functions and understand the role of filter context.

- Data Analysis Expressions (DAX) and Measures
- Filter Context in Power BI
- Common DAX Function : Date & Time, Conditional, Logical, Text and Window
- DAX Information Functions
- Basic Math in Power BI and Index Functions
- Power BI - DAX Trigonometric Functions

- COUNT Functions
- DAX Aggregate Functions in Power BI
- Power BI - DAX Depreciation Functions
- Power BI- DAX Bitwise Functions

Section 5: Creating Table Relationships & Data Models

In this section we'll explore how to structure your data effectively using **data models and table relationships** in Power BI. You'll learn how to link multiple tables, apply normalization principles and manage relationships to build efficient and scalable data models.

- What is a "Data Model"?
- Principles of Database Normalization
- Understanding Data Tables vs. Lookup Tables
- Creating , Managing & Editing Table Relationships | Power BI
- Managing Active vs. Inactive Relationships in Power BI
- Connect Multiple Data Tables in Power BI
- Understanding Filters in Power BI
- Hiding tables, columns and fields from Power Pivot

If you want to prepare for Job Interview or build projects Check the below links:

- Top 30 Power BI Interview Questions and Answers
- Power BI Project ideas for Data Science

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What is Business Intelligence?

Last Updated : 12 Jul, 2025

Business Intelligence is the talk of a new changing and growing world that can be defined as a set of concepts and methodologies to improve decision-making in business through the use of facts and fact-based systems. The **Goal of Business Intelligence** is to improve decision-making in business ideas and analysis. Business Intelligence is not just a concept; it’s a group of concepts and methodologies. Business Intelligence uses analytics and gut feelings for making decisions.

In this article, we will learn about what **Business Intelligence is, its role, and its process**. We will also delve into its u**se cases, advantages, and disadvantages.** Let's get started!!

Table of Content

Business Intelligence Overview

Business intelligence refers to a **collection of mathematical models and analysis methods** that utilize data to produce valuable information and insight for making important decisions.

Main Components of Business Intelligence System:

1. Data Source
2. Data Mart / Data Warehouse

3. Data Exploration
4. Data Mining
5. Optimization
6. Decisions

1. Data Source

The first step is **gathering and consolidating data** from an array of primary and secondary sources. These sources vary in origin and format, consisting mainly of operational system data but also potentially containing unstructured documents like emails and data from external providers.

2. Data Mart / Data Warehouse

Through the utilization of extraction and transformation tools, also known as **extract, transform, load (ETL),** data is acquired from various sources and saved in databases designed specifically for business intelligence analysis. These databases, commonly known as data warehouses and data marts, serve as a centralized location for the gathered data.

3.Data Exploration

The third level of the pyramid offers essential resources for conducting a **passive analysis in business intelligence.** These resources include query and reporting systems, along with statistical methods. These techniques are referred to as passive because decision makers must first develop ideas or establish criteria for data extraction before utilizing analysis tools to uncover answers and confirm their initial theories. For example, a sales manager might observe a decrease in revenues in a particular geographic region for a specific demographic of customers. In response, she could utilize extraction and visualization tools to confirm her hypothesis and then use statistical testing to validate her findings based on the data.

4.Data Mining

The fourth level, known as active business intelligence methodologies, focuses on extracting valuable information and knowledge from data. We will delve into various techniques such as mathematical models**,** **pattern recognition**, **machine learning**, and **data mining**. Unlike the tools discussed in the previous level, active models do not rely on decision makers to come up with hypothesis but instead aim to enhance their understanding.

5.Optimization

As you ascend the pyramid, you'll encounter **optimization models** that empower you to choose the most optimal course of action among various alternatives, which can often be quite extensive or even endless. These models have also been effectively incorporated in marketing and logistics.

6.Decisions

At last, the pinnacle of the pyramid reflects the **ultimate decision made** and put into action, serving as the logical end to the decision-making process. Despite the availability and effective utilization of **business intelligence methodologies,** the decision still lies in the hands of the decision makers, who can incorporate informal and unstructured information to fine-tune and revise the suggestions and outcomes generated by **mathematical models.**

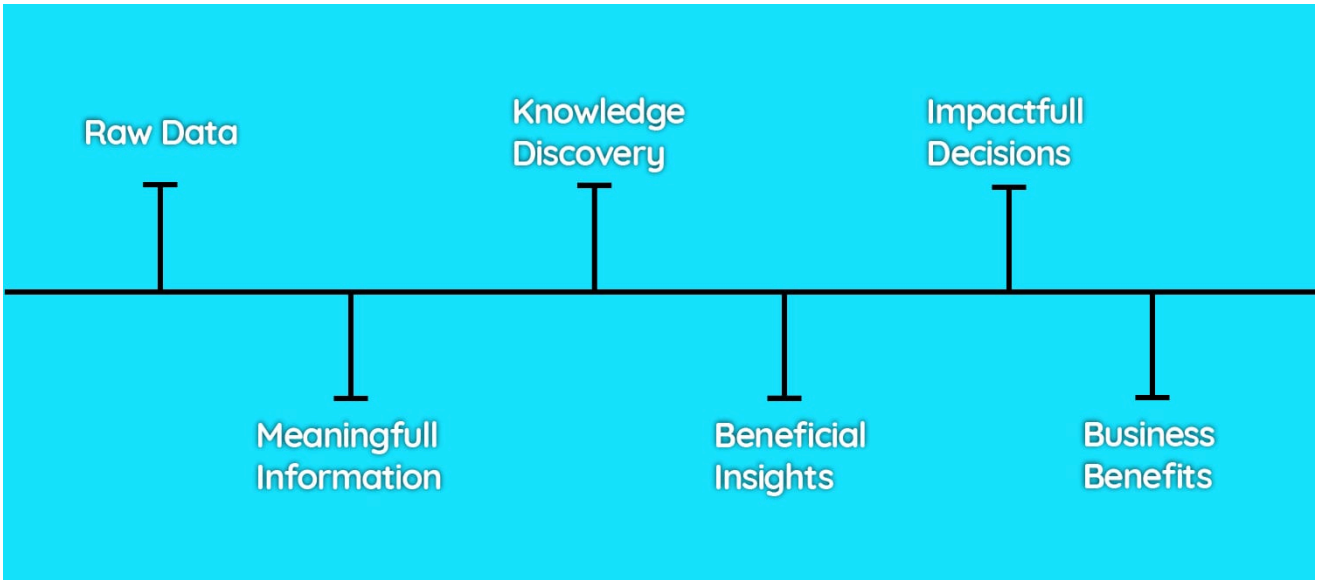
Role of Business Intelligence

The **characteristics of a business intelligence analysis** can be summarized by a rational and methodical approach.

- Firstly, the objectives are clearly identified and performance indicators are chosen to evaluate different options.
- Next, mathematical models are created by utilizing the connections between control variables, parameters, and evaluation metrics.
- Finally, "what-if" scenarios are explored to understand the impact of changing control variables and parameters on performance.

Process Used in Business Intelligence

BI (Business Intelligence) uses a set of processes, technologies, and tools (such as Informatica/IBM) to transform raw data into meaningful information and then transform information to provide knowledge. Then afterwards some beneficial insights can be extracted manually and by some software then the decision-makers can make an impact decision on the basis of insights.



To sound short and clear – Business Intelligence provides accurate information in the right and ethical format to the decision-makers of the organization. **Some Important features of Business Intelligence are:**

- Fact-based decision making.
- 360 degrees perspective on your business.
- Measurement for creating KPI (Key Performance Indicators) on the basis of historic data fed into the system.
- Identify the benchmark and then set the benchmarks for different processes.
- Identify market trends and also to spot business problems that need to be identified and solved.

Types of Users of Business Intelligence

- **Analyst (Data Analyst or Business Analyst):** They are the statistician of the company, they used BI on the basis of historical data priorly stored in the system.
- **Head or Manager of the Company:** Head of the company uses Business Intelligence used to increase the profitability of their company by increasing the efficiency in their decisions on the basis of all the knowledge they discovered.

- **Small Business Owners:** Can be used by a small businessman because it is quite affordable too.
- **Government Officials:** In the decision-making of the government.

Types of Decisions Supported by Business Intelligence

- **Strategic Level:** The strategic level is the level where the Heads of the company decide the strategies of any business.
- **Tactical Level:** Once the strategy is made though for handling all the details and matters have a tactical level where all the technologies and methodologies come under one umbrella. This level is further responsible for continuously updating the data.
- **Operational Level:** Operation decisions are made at this level. Operational decisions help in operating the system.

Applications of Business Intelligence

- In Decision Making of the company .
- In Data Mining while extracting knowledge.
- In Operational Analytics and operational management.
- In Predictive Analytics.
- In Prescriptive Analytics..
- In Executive Information System (EIS).

Comparison Table: Popular Business Intelligence Tools

BI Tool	Description	Key Features	Platform	Strengths
Tableau	A data visualization and business intelligence tool that allows users to connect to various data	Data visualization, dashboard creation, data connection, sharing insights.	Desktop, Cloud	Excellent visualizations, user-friendly, strong community support.

BI Tool	Description	Key Features	Platform	Strengths
	sources, create interactive dashboards, and share insights.			
Microsoft Power BI	A cloud-based BI tool that allows users to connect to a wide range of data sources, create visualizations, and communicate findings.	Data connection, visualization, cloud service integration, sharing reports.	Cloud, Desktop	Integrates wel with Microsoft products, affordable, large user base.
QlikView	A platform for data analysis and visualization that helps users create interactive dashboards and explore data in different ways.	Data exploration, interactive dashboards, associative data engine.	Desktop, Cloud	Powerful associative model, strong for self-service BI, great data exploration features.
SAP BusinessObjects	A full BI suite that includes tools for data visualization,	Reporting, analytics, data visualization,	On-premises, Cloud	Comprehensive suite, strong enterprise support, works

BI Tool	Description	Key Features	Platform	Strengths
	reporting, and analytics.	integration with SAP data sources.		well with SAP systems.
IBM Cognos	A BI tool for performance management and corporate intelligence that helps build reports, dashboards, and scorecards.	Reporting, dashboards, performance management, analytics, integration with enterprise systems.	Cloud, On-premises	Excellent for large organizations, strong governance features, customizable.
Oracle Business Intelligence	A comprehensive BI suite with tools for reporting, analytics, and data visualization.	Data visualization, reporting, analytics, integration with Oracle databases.	On-premises, Cloud	Powerful reporting and analytics, integrates wel with Oracle databases and enterprise systems.
Looker	A BI and data visualization tool designed to create interactive dashboards and explore data in innovative ways.	Data exploration, custom dashboards, integration with multiple data sources, visualization.	Cloud	Good for modern data exploration, excellent for collaborative analysis, integrates with SQL.

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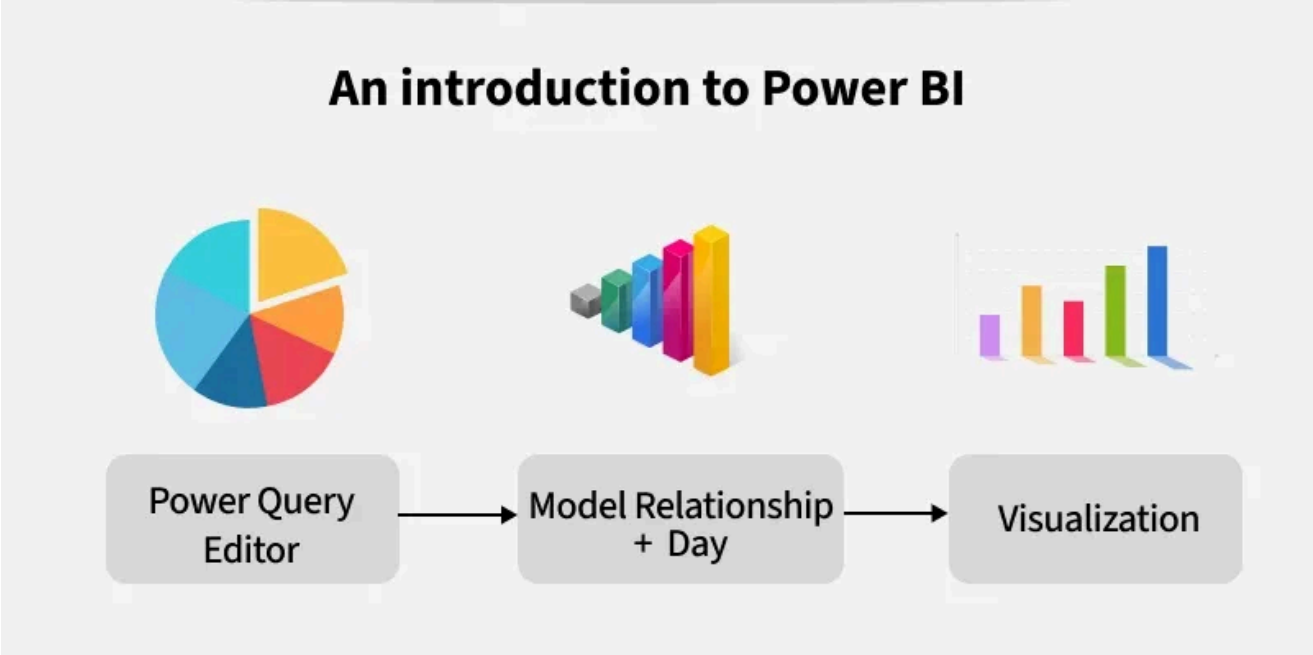
Power BI - Introduction

Last Updated : 23 Jul, 2025

Power BI is a software developed by Microsoft that helps you to turn raw data into clear and useful information. It helps to create interactive charts, reports and dashboards so you can easily understand your data. Whether you work in business, research or any field that uses data Power BI makes it easier to find patterns, spot trends and make better decisions.



Introduction to Power BI

Why Do We Need Power BI?

It is a important tool for transforming raw data into valuable insights. It’s not just about creating reports it’s about understanding complex data in a simple and efficient way. Below are reasons why it is important:

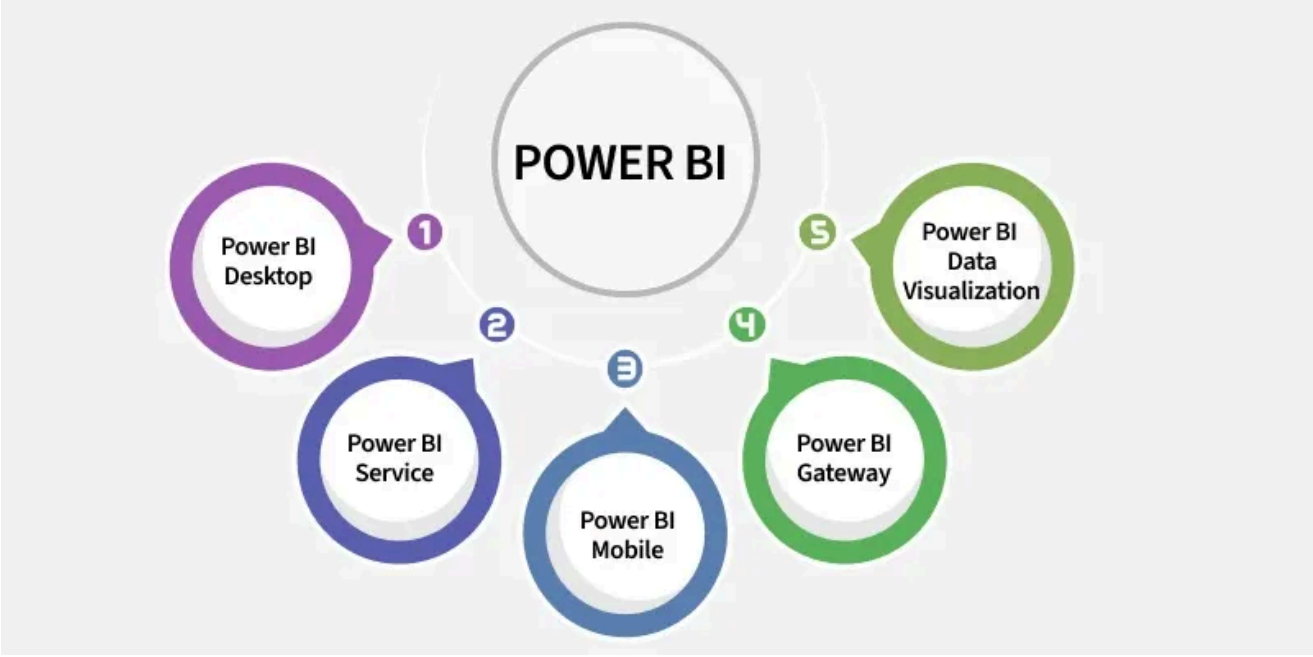
- **Data Visualization**: It turn complex data into clear and simple charts, graphs and dashboards. This makes it easy to quickly spot trends and patterns in our data.
- **Improved Decision-Making:** It helps us to create reports that highlights most important areas, all the key information is in one place so you can

quickly make decisions based on data.

- **Real-Time Data Analysis:** By using it we can keep track of our data in real time and set up live dashboards to monitor how things are going. This is used in sales, operations or customer support who need to respond changes quickly.
- **Easy Access to Data from Multiple Sources :** It allow us to connect to various data sources like Excel, SQL databases and cloud services such as Google Analytics or Salesforce.
- **User-Friendly Interface:** We can just drag and drop our data into charts and graphs with no coding required. Also it offers templates and visuals to help us get started quickly even if we're new to data analysis.

Key Components of Power BI

Power BI consists of several parts each have a unique role in the data analysis process:



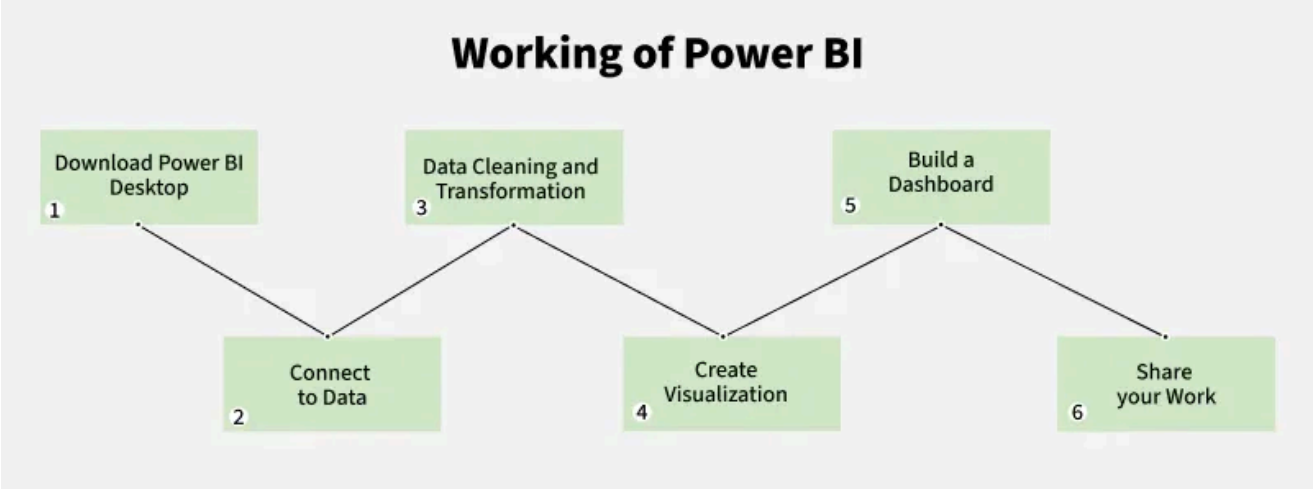
Power Bi Components

- **Power BI Desktop:** This is the free version you can install on your computer. It lets you connect to data, clean it and create reports.
- **Power BI Service:** This is the online version. You can upload your reports here share them with others and view them from anywhere using the internet.
- **Power BI Mobile:** There are mobile apps for iOS and Android and you can use them to see and interact with your reports on your phone or tablet.

- **Power BI Gateway:** This helps you to connect data from your own company's servers to Power BI and you can use that data in your reports and dashboards.
- **Power BI Report Server:** This provide companies to keep and share Power BI reports on their own private server instead of using the cloud.
- **Power BI Embedded:** It allow businesses to add Power BI reports into their own apps or websites. People can view the reports without opening Power BI separately.

Step-by-Step Guide to use Power BI

Getting started with Power BI is easy. Here's a simple guide to help you:



Working of Power BI

Step 1: Download Power BI Desktop

- Go to the Microsoft website and download Power BI Desktop for free. Install it on your Windows computer.
- This version is free and lets you create reports and dashboards. Once installed you'll get a clean workspace to begin working with your data.

Step 2: Connect to Your Data

- Open Power BI and click on "Get Data." You can choose different sources like Excel files, SQL databases or online tools like Google Analytics or Salesforce.
- Pick your data source and follow the steps to bring the data into Power BI and can also combine data from different sources into one report.

Step 3: Clean and Transform Your Data

- Before you use your data it's important to clean it Power BI has a tool called Power Query which helps to remove any unnecessary information, fix data types and handle missing values.
- This step ensure that your data is accurate and ready for analysis and make it easy to work with and find insights from it.

Step 4: Create Visualizations

- Now it's time to turn your data into visuals. Just drag and drop fields onto the report area. Power BI will make charts, graphs or tables for you.
- You can choose the type of visualization that best represents your data and allow you to see trends, patterns and key metrics clearly. Visualizations make your data more understandable and provide insights.

Step 5: Build a Dashboard

- After making visuals you can organize them into a dashboard dashboard is a single page with many visuals.
- This makes it easy for viewers to explore the data further by clicking elements to get more details by creating a dynamic and engaging experience for anyone looking at the dashboard. Dashboards can also be customized to focus on the most important data for your audience.

Step 6: Share Your Work

- When your report or dashboard is ready, you can publish it to Power BI Service (online). It allow you to share it with others so they can view it anytime.
- You can also set up automatic updates to ensure that your data stays fresh so your reports and dashboards are always up to date. You can also share your work in Power BI makes it easy for team members or stakeholders to access the latest data anytime.

Tips for Using Power BI Effectively

- **Learn DAX for Advanced Calculations**: DAX is a formula language that can help you perform advanced calculations. If you want to create more complex analytics learning DAX is a good idea.
- **Master Power Query**: Power Query helps you to prepare your data. The more you learn about it the more efficient your workflow will be.
- **Stay Organized**: When you create more reports it's important to keep things organized by giving fields, calculations clear and descriptive names.
- **Explore Templates**: It has many templates for different industries. Use them to get started quickly and spark new ideas for your own reports.

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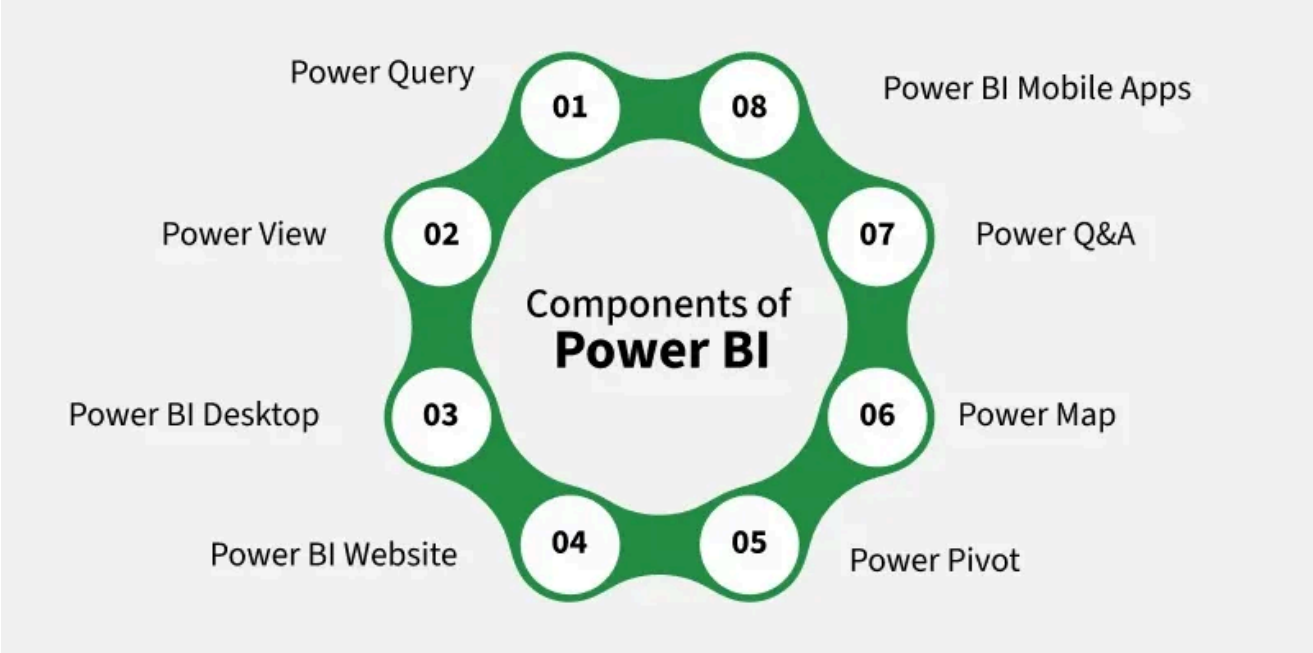
Power BI - Key Components

Last Updated : 23 Jul, 2025

Power BI is a data visualization and business intelligence tool created by Microsoft. It helps us to turn raw data into easy to understand reports and interactive dashboards which non-technical users can also create easily. In this article, we will understand its key components.



Components of Power Bi

1. Power Query

- Power Query is the first step in working with data in Power BI. It allows you to connect to different data sources like Excel files, databases, web pages or even cloud-based services. Once the data is imported Power Query helps you to clean, transform and shape it into a useful format.
- We can remove unnecessary rows, change column names, combine data from multiple tables and much more all without programming using Power BI. This process is called “data wrangling" and Power Query makes it easy and visual.

2. Power View

- Power View helps us to **create visuals and reports** by simply dragging and dropping data fields. It support wide range of chart types like bar charts, pie charts, line charts, maps and more.
- It's interactive which means you can click on parts of the chart to filter other parts of the report. It is mainly used to explore your data visually and discover trends. It is helpful for users who prefer to see patterns through visuals rather than numbers.

3. Power BI Desktop

- Power BI Desktop is the main platform where most of the work happens. It combines all the features like Power Query (for cleaning data), Power Pivot (for modeling data) and Power View (for visualizing data) into one tool. This is where you build complete reports and dashboards.
- This interface is user-friendly and it allows you to **design everything offline** before publishing it online. It is like workshop were we prepare everything here before sharing it with our team or organization.

4. Power BI Service

- After we create our reports in Power BI Desktop you can **publish them to the Power BI Service** which is also known as the Power BI Website. Here we can **share** your reports with others, collaborate in teams and access your data from any device using a browser.
- It's a cloud-based platform that also lets us schedule data refreshes and receive automatic updates. We can also create dashboards here by pinning visuals from different reports into one view for easy monitoring.

5. Power Pivot

- Power Pivot is the **engine behind the scenes** that helps you work with large datasets quickly. It lets you create **data models** which means you can link different tables together and use formulas (called DAX formulas) to perform calculations.

- Even if you have millions of rows it compresses the data and processes it efficiently. This is great for building powerful reports without slowing down your system. It's especially useful for users who want to do in-depth analysis.

6. Power Map

- Power Map is used when your data includes **geographical locations** like countries, cities or coordinates. It creates 3D maps that let you view your data based on location. You can see patterns like sales by region, customer distribution or delivery routes.
- The maps are animated and you can even show changes over time. For example, how sales grew across different areas month by month.

7. Power Q&A

- Power Q&A is like **talking to your data** using natural language. You don't need to know any query language just type a question like "Show total sales for 2024" or "Top 5 selling products" and Power BI will understand and give you the answer instantly in the form of a chart or graph.
- It uses smart algorithms to understand your words and give meaningful answers. This feature makes data analysis more accessible to people who may not be experts.

8. Power BI Mobile Apps

- Power BI has mobile apps for iPhone, Android and Windows devices. These apps allow you to **access your reports and dashboards anywhere and anytime.** You can view the latest data, check KPIs and stay updated on business performance while traveling or during meetings.
- The mobile interface is designed to be clean and responsive so you can scroll through your visuals easily even on a small screen.

Power BI brings together powerful tools to connect, analyze and visualize data in one place. Its flexible components make it easy for anyone to turn raw data into meaningful insights.

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Power BI - Practical Applications

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A feature of Microsoft Office 365 called Power BI gives business users access to insights from their data. Users of the software can visualize information using a range of tools, such as graphs and diagrams. In other words, Power BI serves as a link between your data and the individual who will ultimately utilize it to make crucial decisions. Power BI is a tool that businesses frequently utilize for informational purposes. When various departments collaborate on a project, for instance, it may be necessary to transmit information across them in such a way that everyone can understand. So that everyone is on the exact page as they do their individual jobs.

Applications of Power BI

1. Visualize Details Easily

Microsoft Power BI provides such tools that will let you visualize key data points accurately from various sources in a single dashboard. For instance, you can have a dashboard that displays the different products in your store, allowing you to track sales, costs, and expenses in one location. This will help managers at the same time that they keep their employees updated on sales and expenses.

2. Real-Time Performance

You can understand the Real-Time performance of enterprises on a variety of levels using Microsoft Power BI. For instance, have a dashboard that lists all of the projects that are active as well as their due dates. On these projects, you may also keep a close watch on how each individual employee is doing. This is a fantastic way to tell your team of changes and deadlines, keep them informed

of one other's duties for certain tasks, and even allow the staff to keep an eye on their own performance.

3. Sales Analysis

Another common use for business intelligence tools like Power BI is sales analysis. Multiple dashboards that display charts can be set up to monitor user activity throughout an online session. Additionally, what product categories do your clients purchase the most frequently, or which geographical areas generate the highest revenue for you? You can adjust your business practices based on this knowledge to better meet the needs of your clients and boost sales.

4. Improving Marketing

These dashboards can show all kinds of data to assist you to enhance your marketing campaign if you or the rest of your team are working on any kind of extensive marketing effort. The software can track parameters like the price at which each product is sold individually and present all of this data so that you may develop a more successful marketing plan for upcoming campaigns.

5. Create Consistent Reporting Standards

You may gather the data and produce reports using Power BI to give you consistent reporting. If the data is delivered in a graphical manner each time, it is less stressful for the managers, and takes less time to find insights from it, and the organization may find it helpful to predict information. Additionally, it enables you to carry out targeted marketing initiatives that are guaranteed to be effective.

6. Controlling Costs

The average cost of each campaign that has been running on your website can be displayed on a dashboard. This can assist you in determining which promotions will benefit your clients and your organization. It also assists you in

deciding how much money to spend on anything in the future. You can also develop dashboards that show how much money is being spent on each specific campaign this will help to have proper control of the cost of each product which leads to control of the overall cost of the organization.

7. Product Development

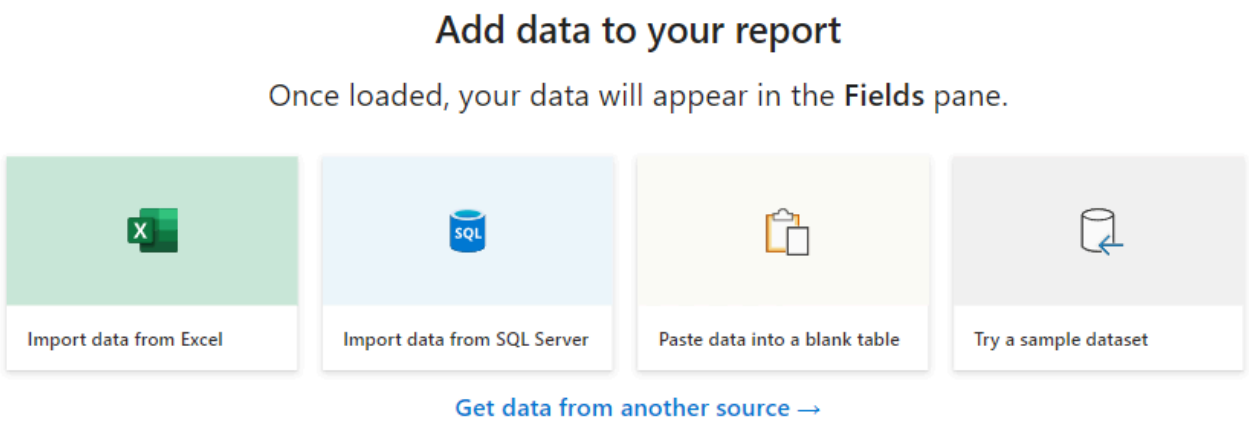
Another typical use for business intelligence software like Power BI is product development. When it's time to pull one product off the market and replace it with a newer and more successful one, This dashboard shows how much money is being produced for each particular product that can help your organization.

Practical Applications of Power BI

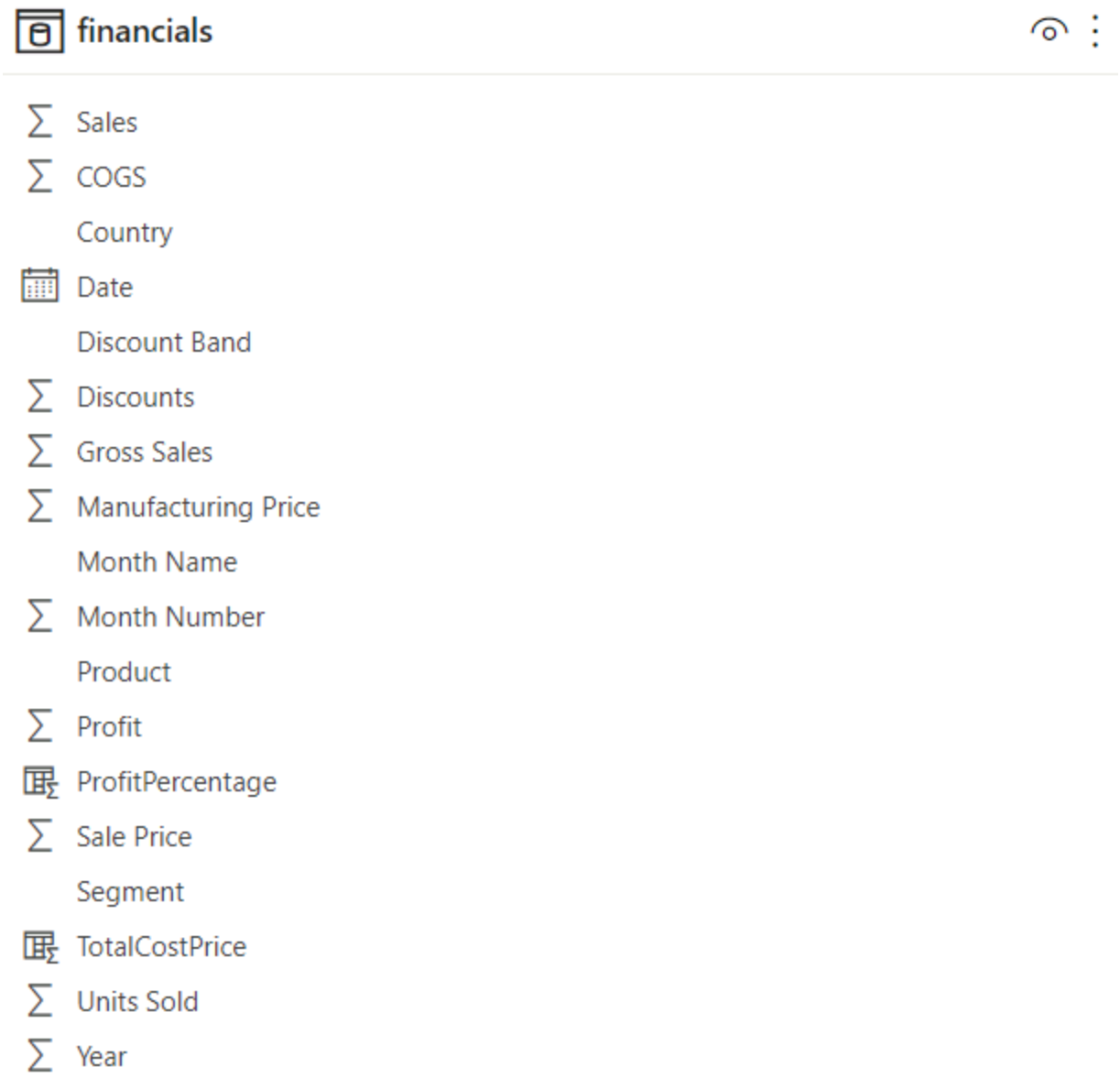
Power BI is a Microsoft tool that allows you to use datasets from multiple sources and create reports and charts to address specific business needs. Using Power BI is about providing practical solutions for real-world problems, making it the perfect tool for organizations seeking quick and easy insights with minimal effort. Let's see by creating a simple Line chart in Power BI of the Financial sales analysis dataset. Let's see the different practical applications of Power BI:

Financial Sales Analysis in Power BI

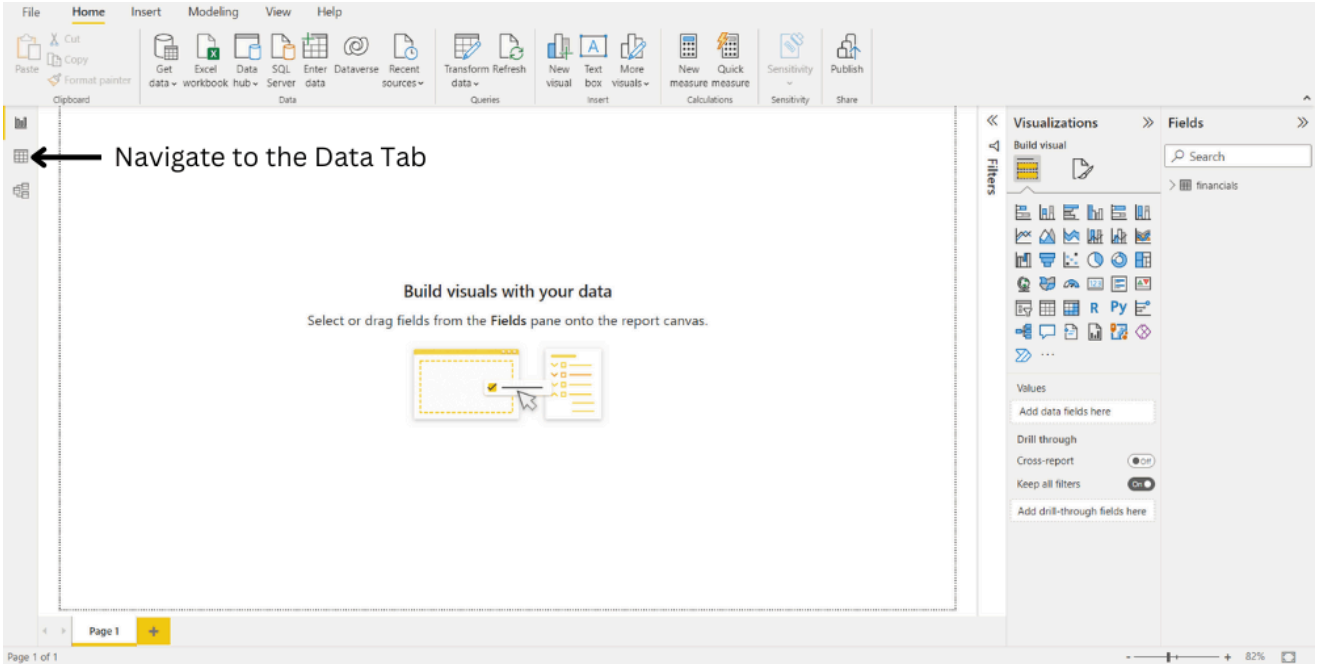
On launching the Power BI Desktop App, we get an option to *Try the sample dataset; by* clicking on that option, we can import the sample Financial dataset and start using it to create our Power BI Report.



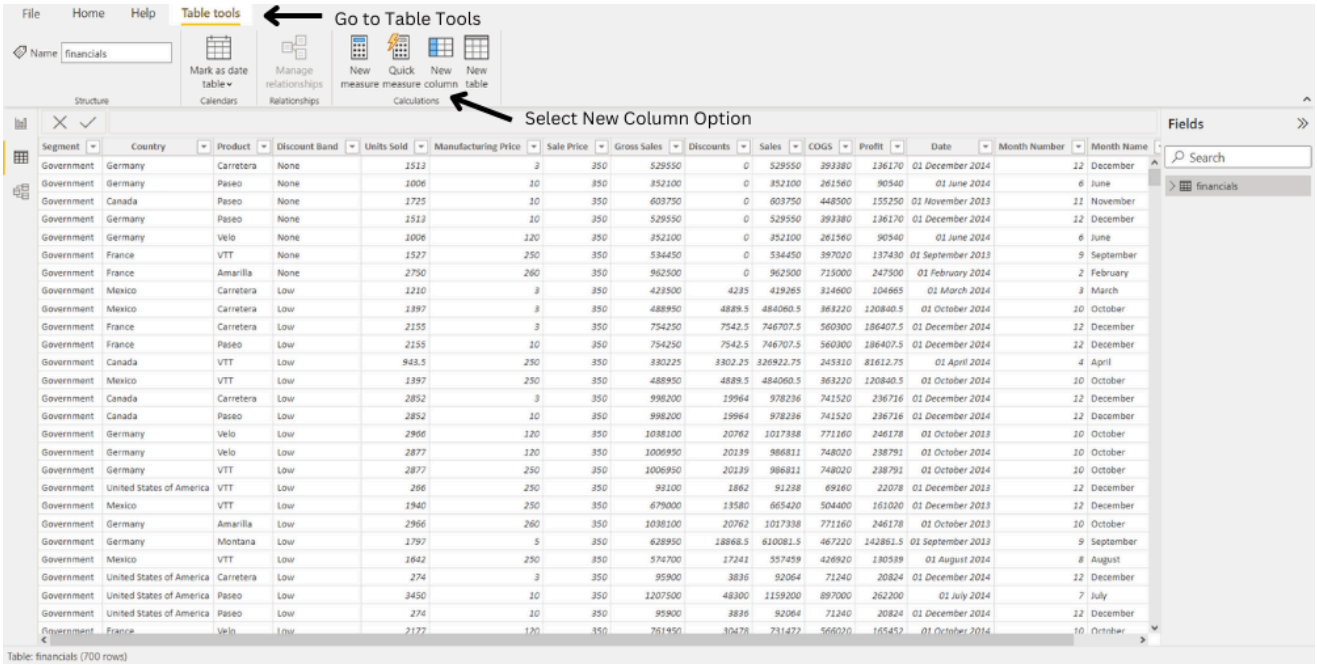
The dataset gives insights into the **Sales and Profits** of certain products belonging to different segments in multiple countries over 2013-14. It comprises the following columns by default:

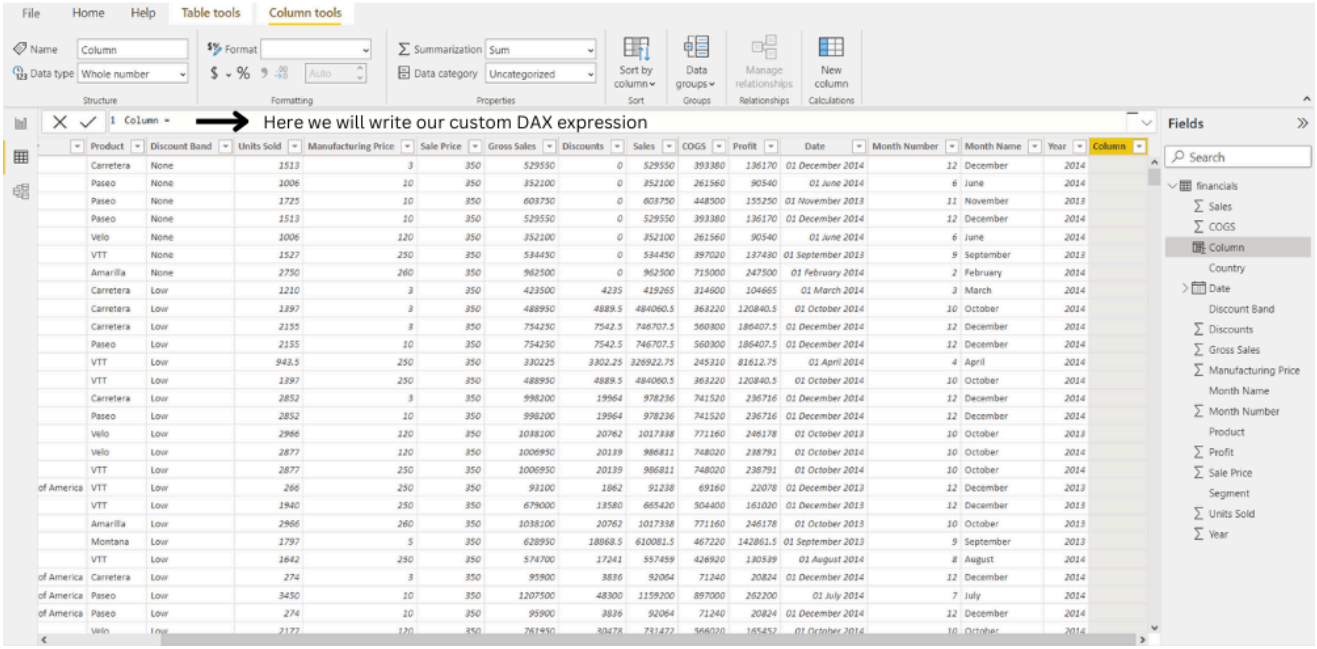


Step 1: First, navigate to the *Data Tab* and select the *Table Tools* options from the top navigation bar. Select the *New Column* option from the table tools and opportunities to create a new custom column.



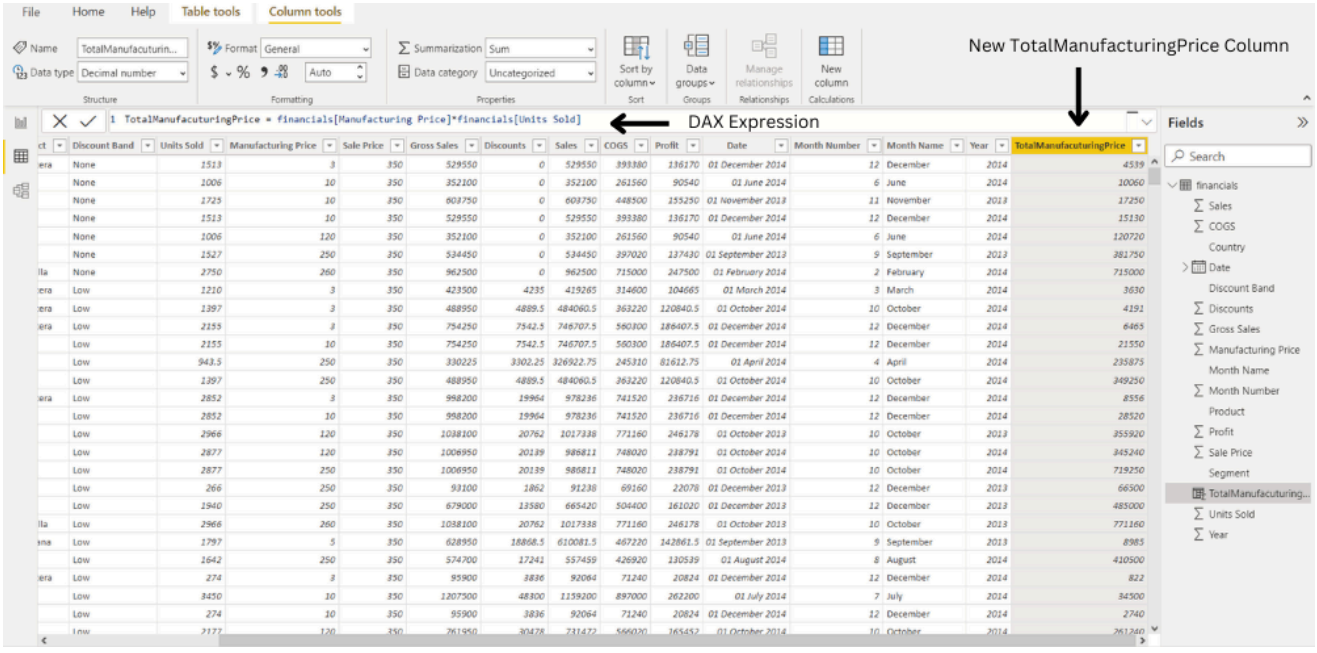
Step 2: On clicking the New Column option, an input bar will appear where we will write a simple *DAX expression* to create our columns.





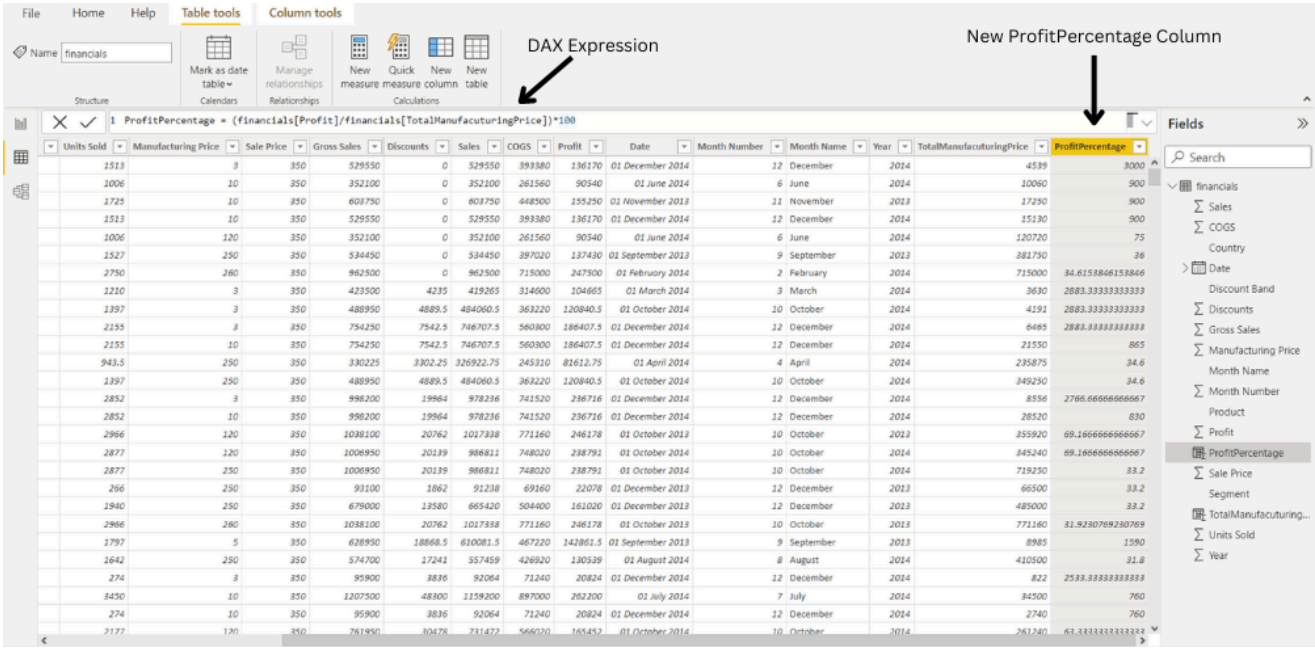
Step 3: In DAX, we can access a particular column using the following syntax - *tableName[columnName],*The following DAX Expression creates a new column named ***TotalManufacturingPrice.***

*TotalManufacturingPrice = financials[Manufacturing Price]*financials[Units Sold]*

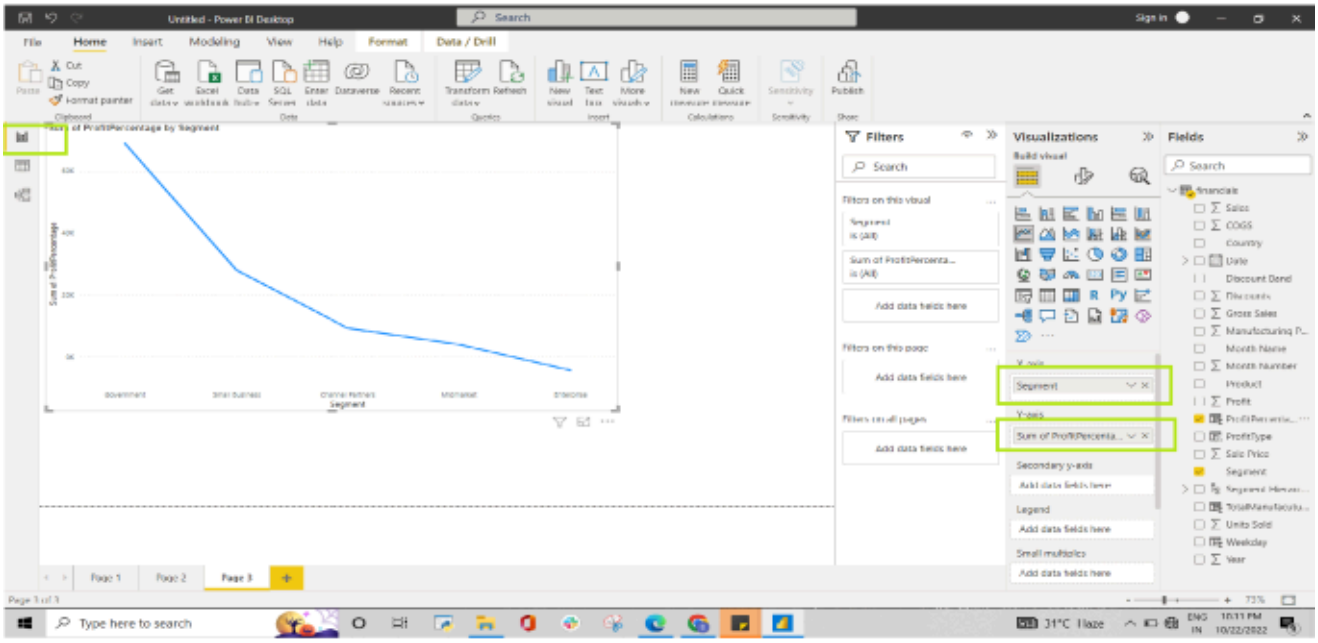


Step 4: Now, using this newly created column, we make our ***ProfitPercentage*** column using the below expression.

ProfitPercentage =
*(financials[Profit]/financials[TotalManufacturingPrice])*100*



Step 5: Now, Select the Line chart from the Visualization. Drag the **segment** and drop to the **X-axis**, Again drag the **ProfitPercent** and drop to the **Y-axis** that we have created our custom columns, we can use a line chart which comes out to be like this:

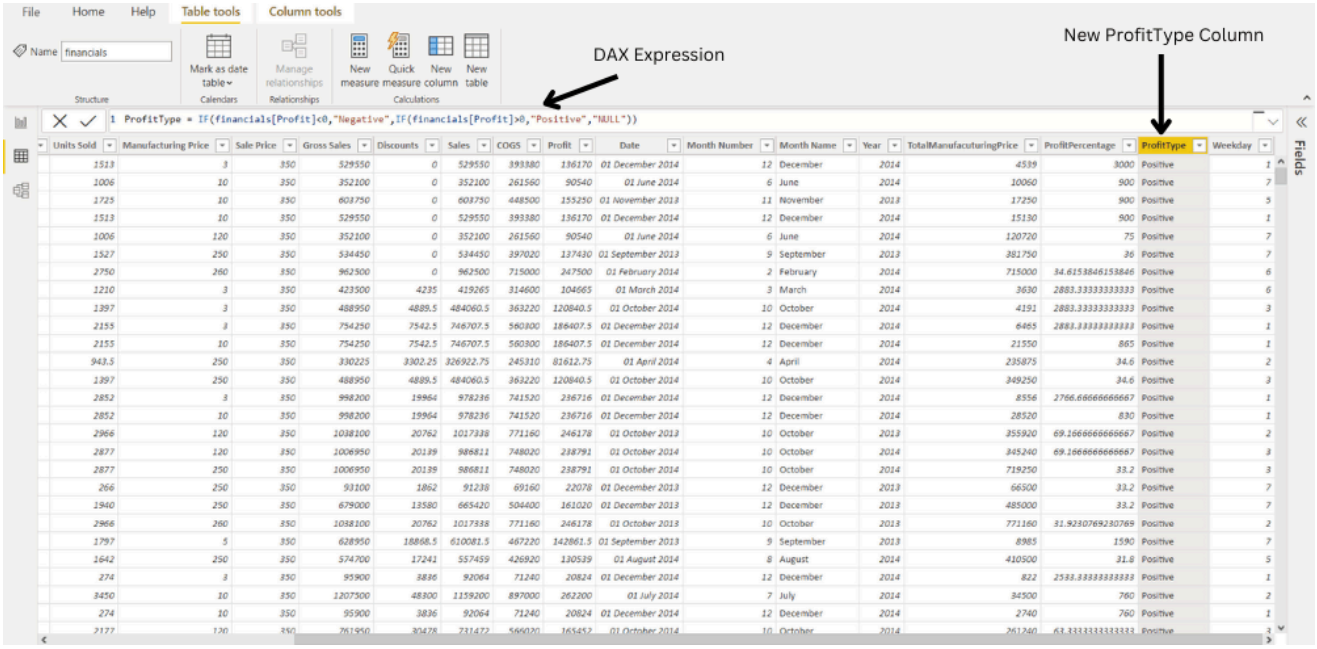


Profit Analysis using Donut Chart in Power BI

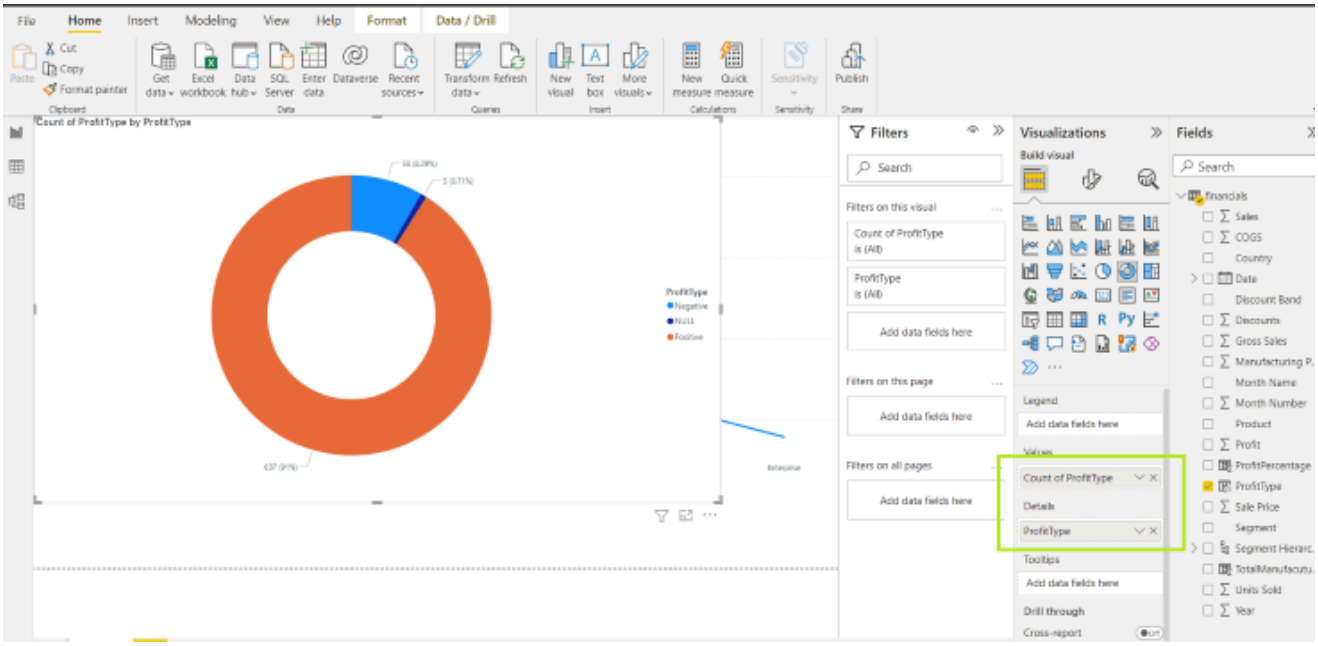
Next, we will create another custom column called ***ProfitType*** to tell if the profit is positive, negative, or null. This can be done by using the IF function in the DAX Expression like this:

```
ProfitType = IF(financials[Profit]
<0,"Negative",IF(financials[Profit]>0,"Positive","NULL"))
```

Step 1: From the top navigation bar, select the *New Column* option from the table tools and opportunities to create a new custom column.



Step 2: Select the donut chart from the Visualization. From the field, option drag the ProfitType and drop to the **values** and **details.** This newly created column can be further used to create a donut chart, as shown below:



Analysis of most profitable day using Bar Chart in Power BI

Suppose we also want to analyze which day of the week has the most significant number of sales or profit; so for this, we can create an additional column, ***Weekday,*** by extracting the day of the week from the Date Column already provided using the DAX WEEKDAY function like this:

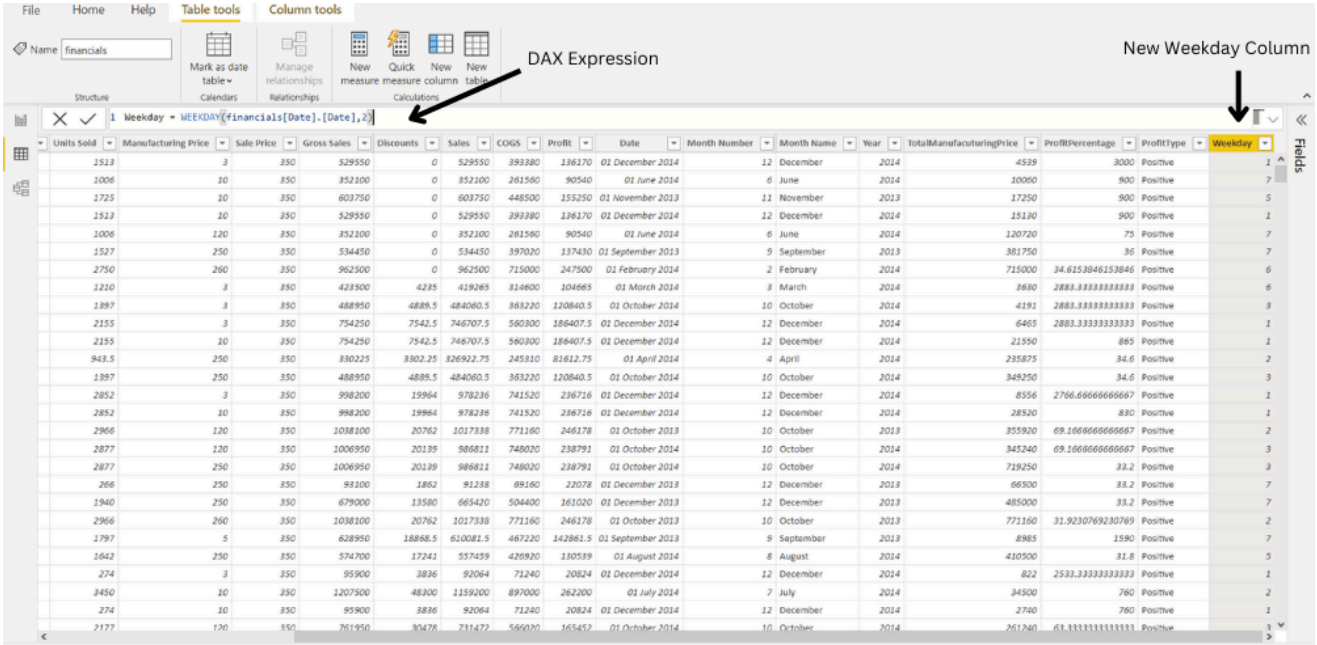
Weekday = WEEKDAY(financials[Date].[Date],2)

Here, the second parameter of the function refers to the return type.

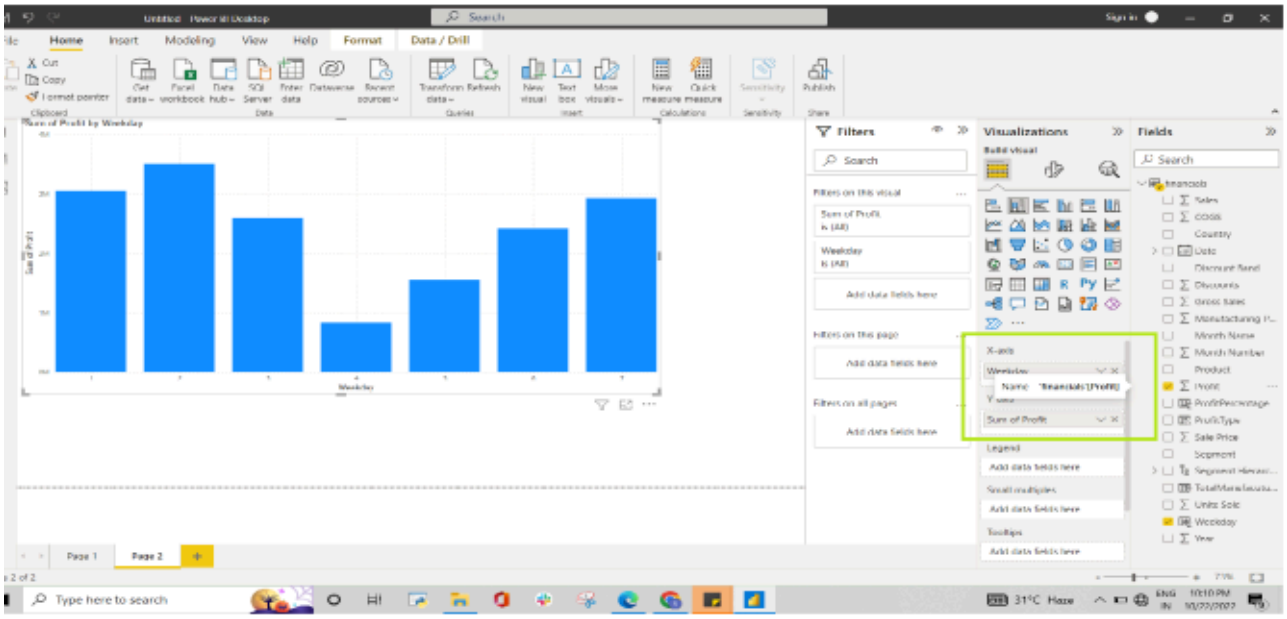
- *If return type = 1, week begins on Sunday (1) and ends on Saturday (7). numbered 1 through 7.*
- *If Return type = 2, week begins on Monday (1) and ends on Sunday (7).*
- *If Return type = 3, week begins on Monday (0) and ends on Sunday (6).numbered 1 through 7.*

For the above function return type is 2, i.e the week begins on Monday.

Step 1: On clicking the New Column option, an input bar will appear where we will write a simple *DAX expression* to create our columns.



Step 2: Using this custom column, we can plot the following bar chart and conclude that we get Maximum Profits on Tuesdays (Weekday = 2)



Comment | More info

How to Install Power BI on Windows?

Last Updated : 23 Jul, 2025

Power BI is a business analytics tool developed by Microsoft where "BI" stands for Business Intelligence. It is used to connect, visualize and analyze data from various sources. You can create interactive dashboards, reports, graphs and charts with just a few clicks. Power BI also helps with data cleaning, preparation and discovery.

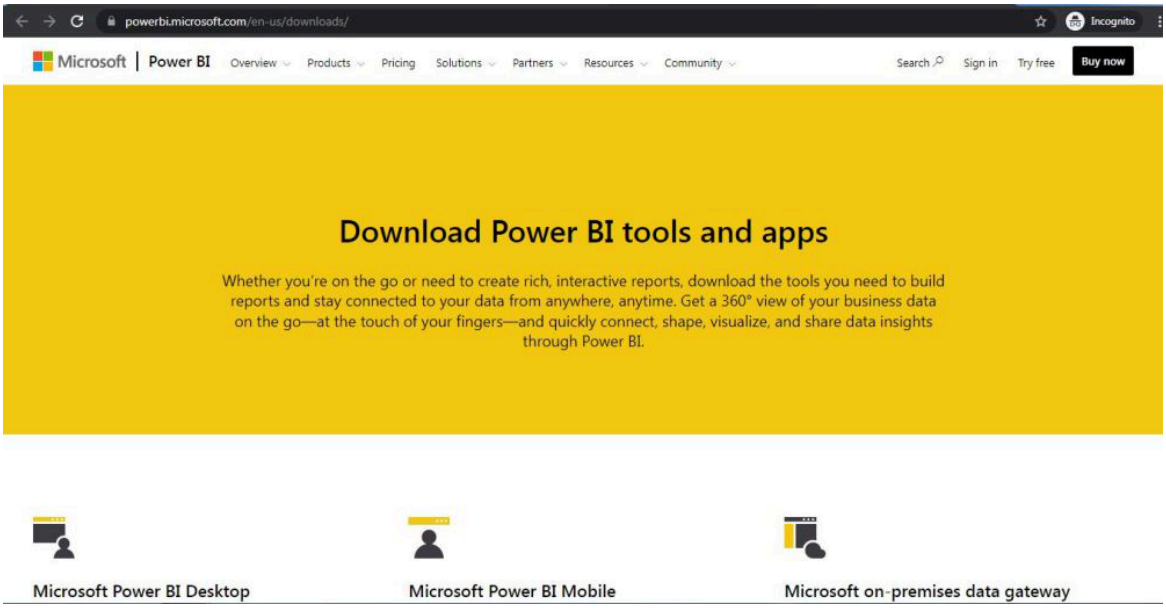
> ***Note:*** *Power BI Desktop is available only for Windows operating systems.*

Steps to Install Power BI on Windows

Follow these simple steps to install Power BI on your Windows computer:

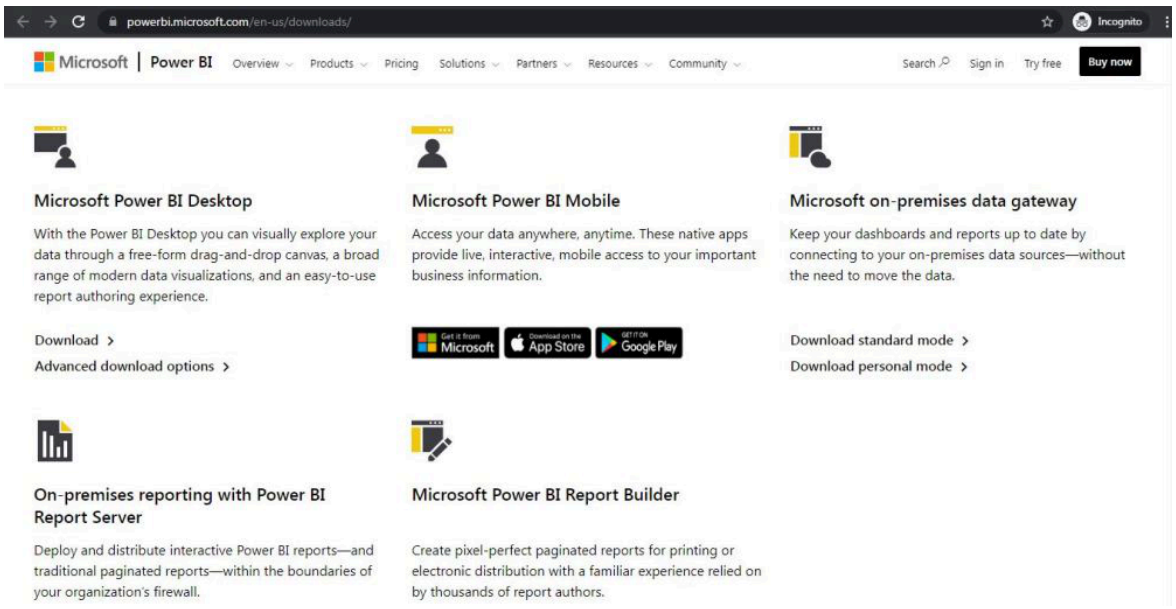
Step 1: Open the Official Power BI Website

Open any web browser like Chrome or Edge and go to the official Power BI website.



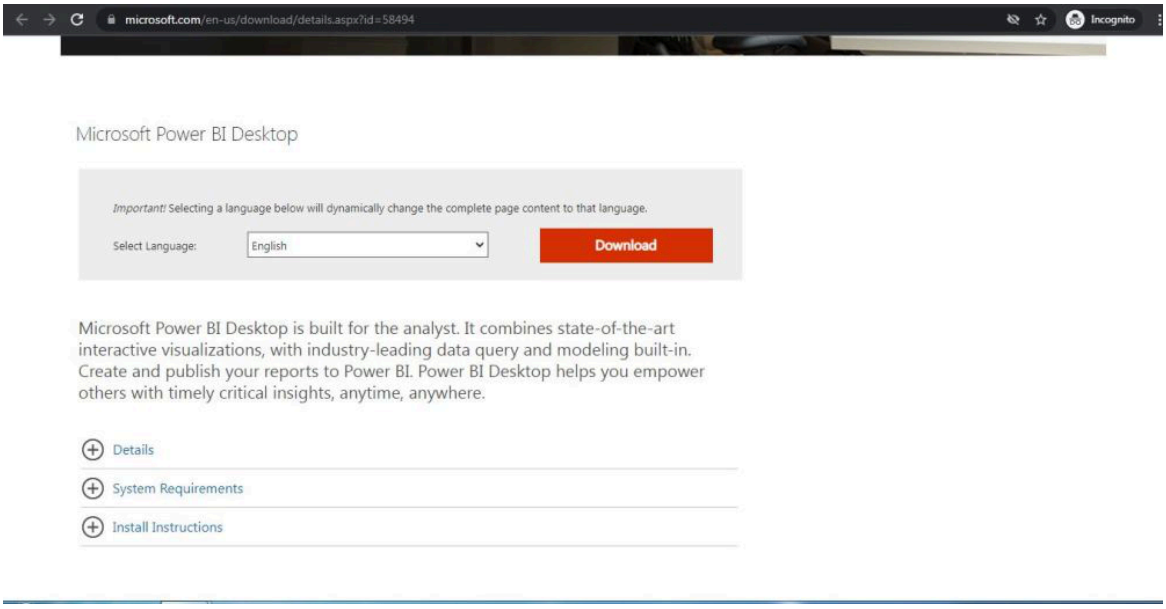
Step 2: Go to the Power BI Desktop Section

On the homepage click on the “Download Power BI Desktop” option.



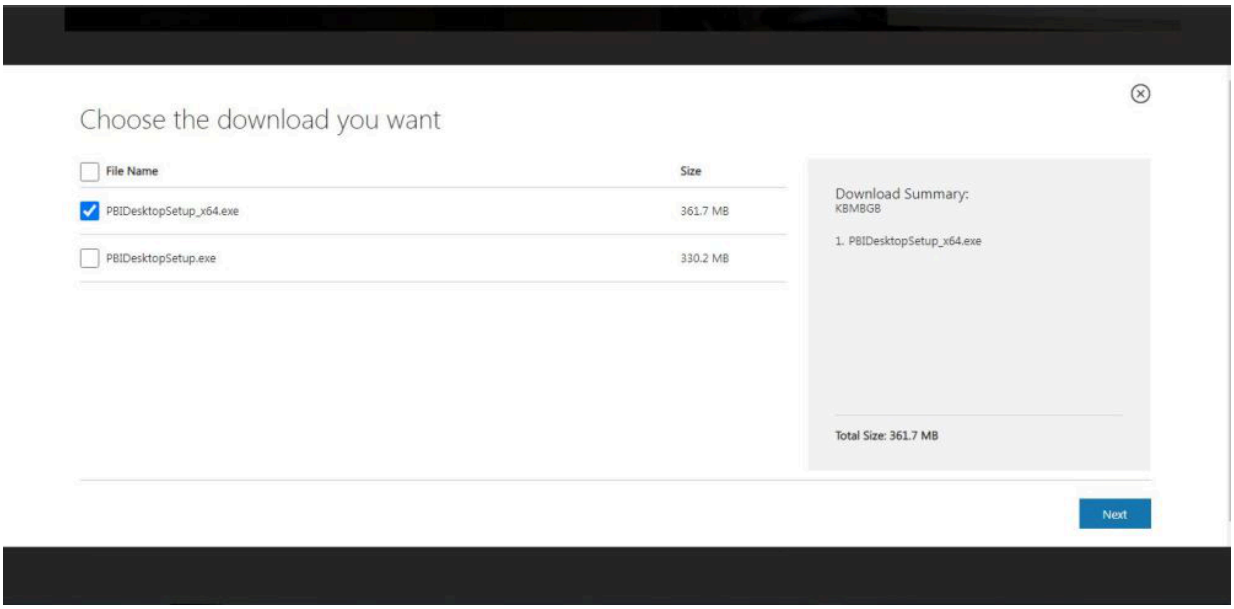
Step 3: Click on the Download Button

You will be taken to a new page. Click on the Download button to start the process.



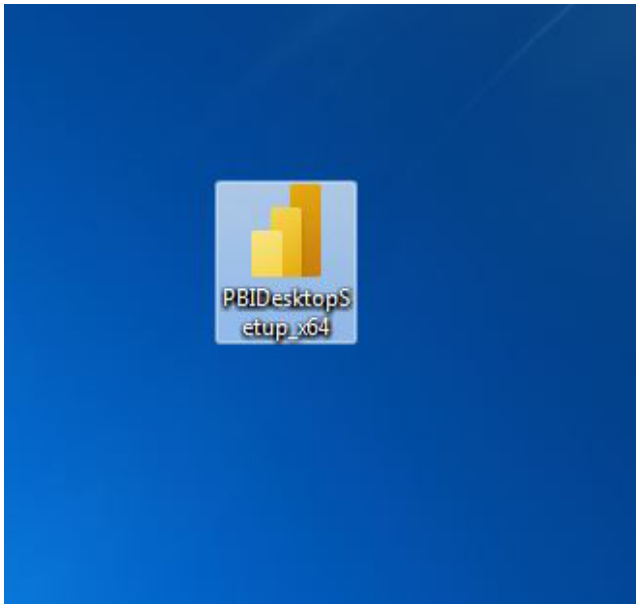
Step 4: Choose the Installer Based on Your System

On the next webpage choose the setup option according to your system configuration, let's take the first setup click on the Next button. Downloading of the executable file will start shortly. It is a big 361.7 MB file that will take some minutes.



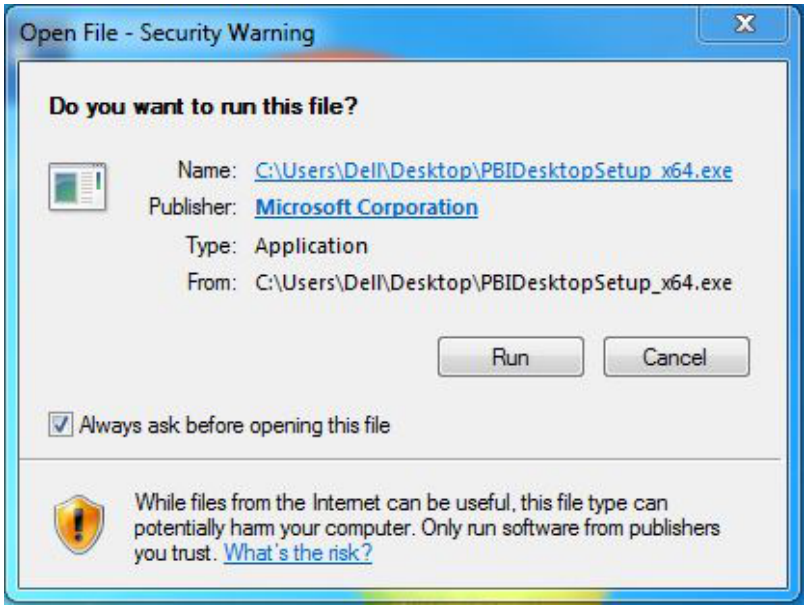
Step 5: Find the Downloaded File

Now check for the executable file in downloads in your system and run it.



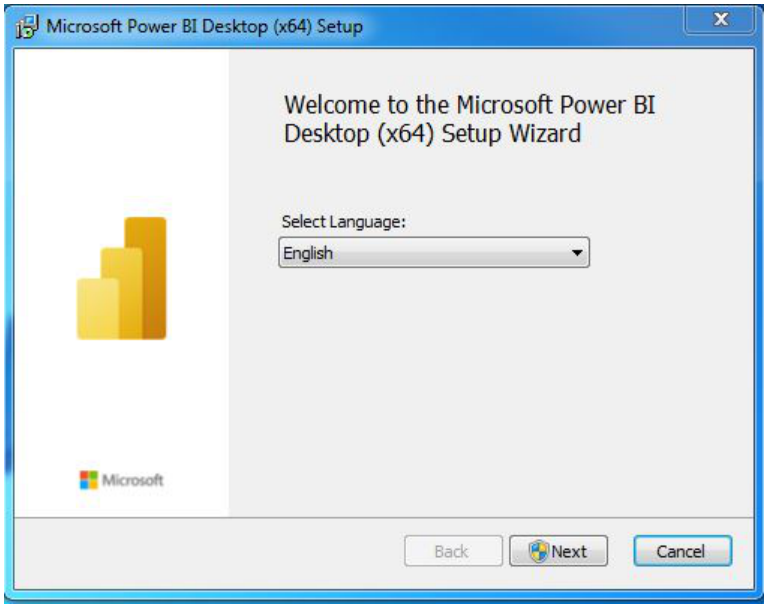
Step 6: Run the Installer

Double-click on the file. If prompted with a security warning click Run.



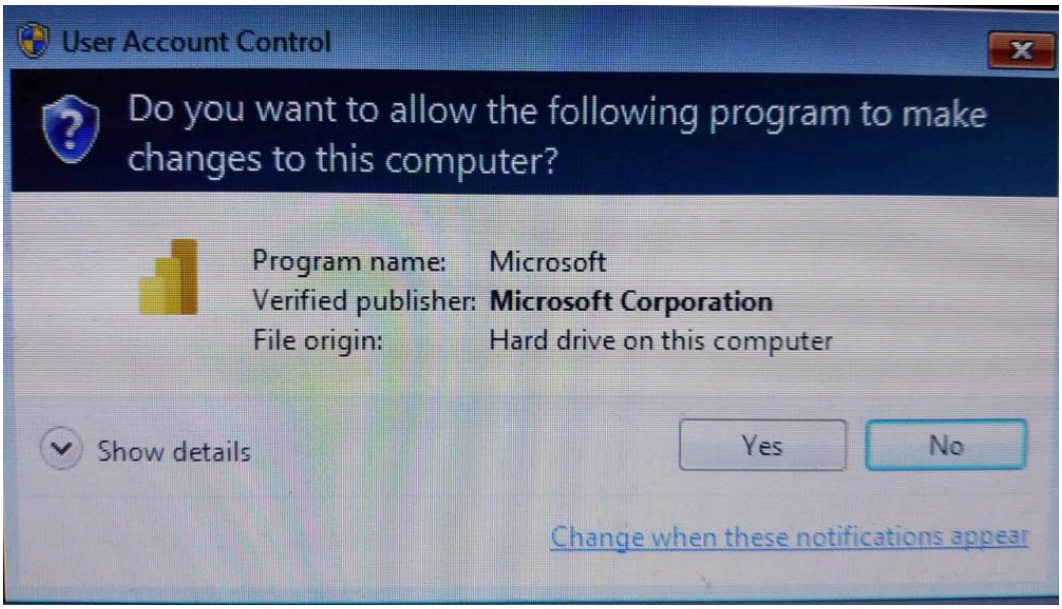
Step 7: Select Your Language

Choose your preferred language and click Next.



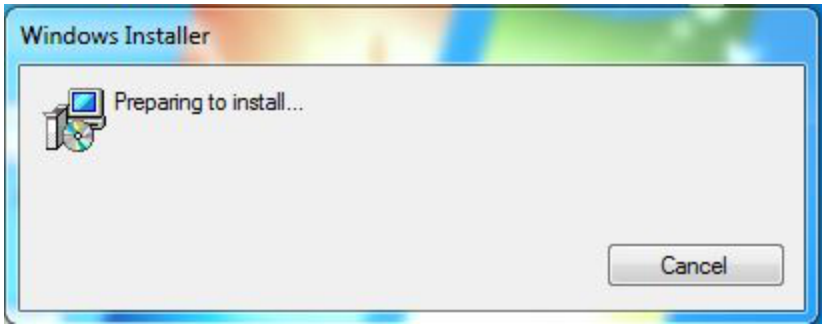
Step 8: Allow Changes to Your System

A pop-up will ask for permission to make changes to your system. Click Yes.



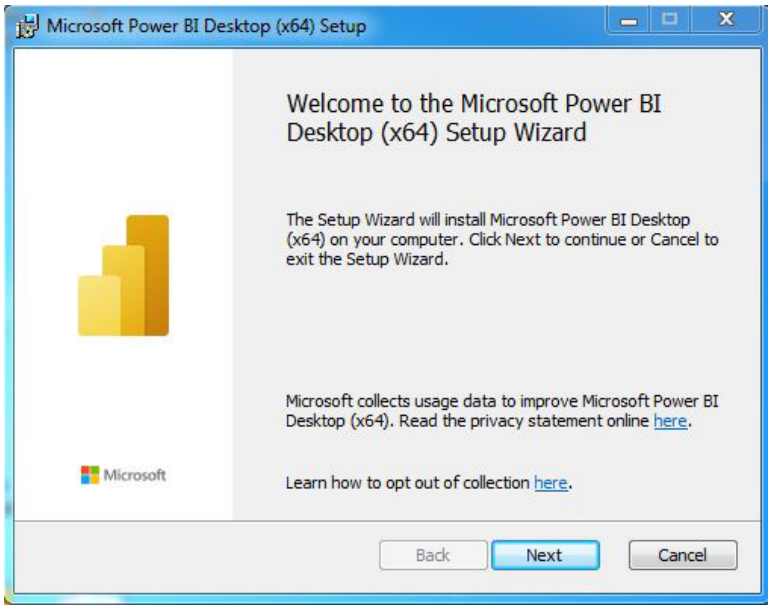
Step 9: Setup Will Start

Power BI will now begin preparing for the installation.



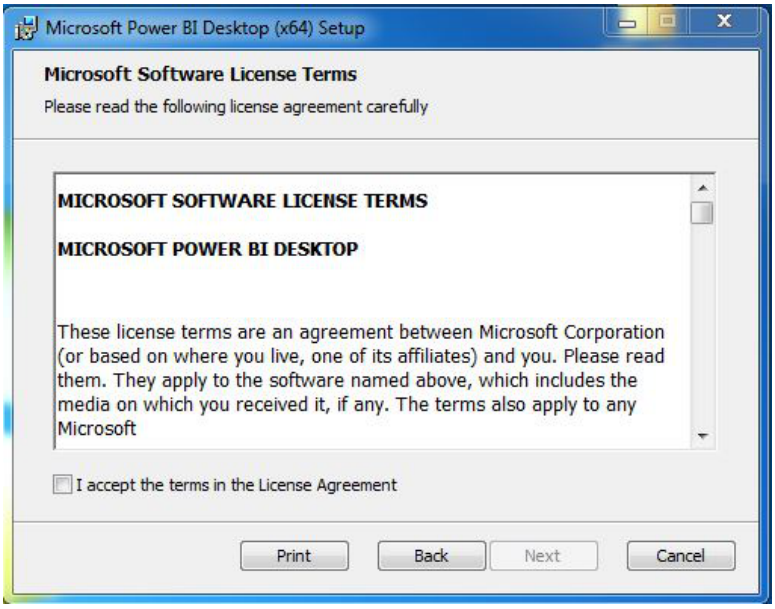
Step 10: Start Installation Setup

Click Next on the setup welcome screen.



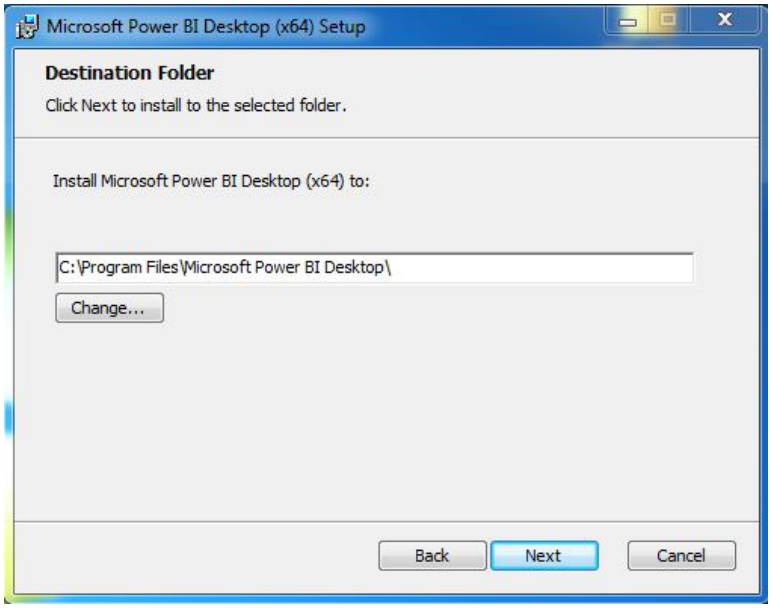
Step 11: Accept the License Agreement

Check the box that says “I accept the terms in the License Agreement” and click Next.



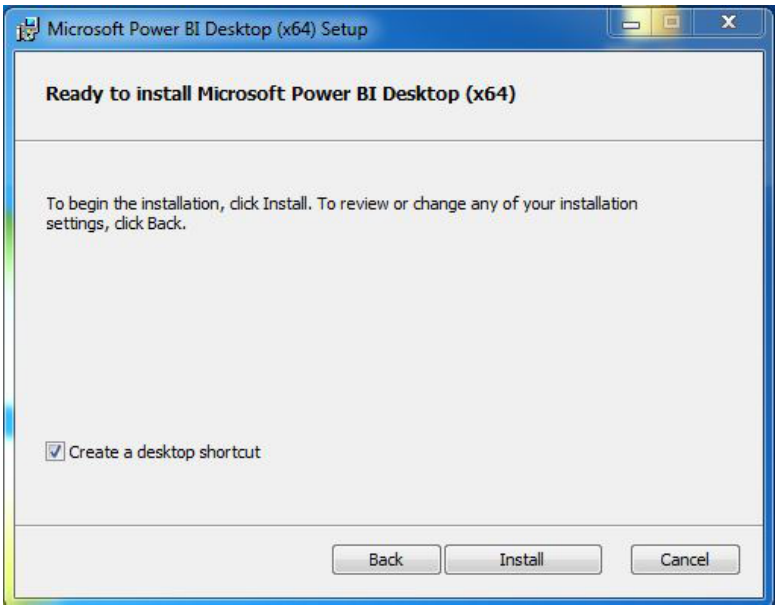
Step 12: Choose Installation Folder

You can either keep the default location or choose a different one. Then click Next.

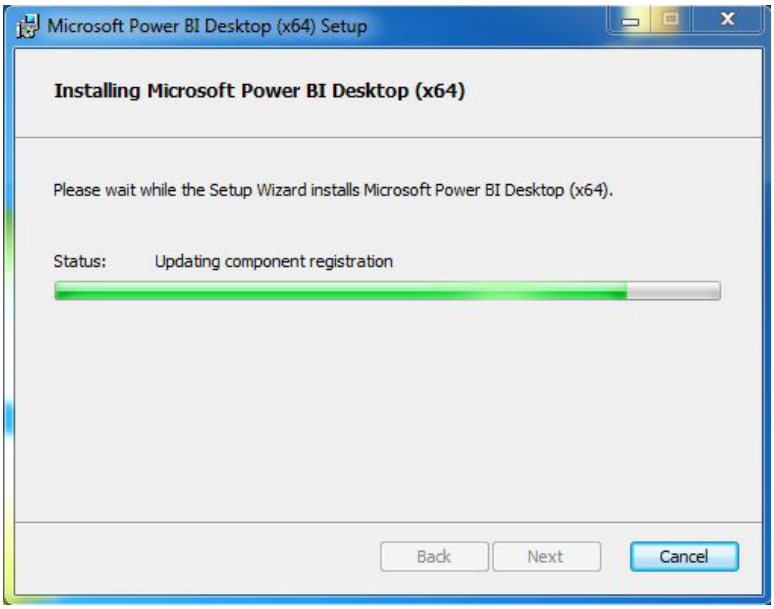


Step 13: Begin Installation

Click on the Install button. Installation will start and usually takes a minute or two.

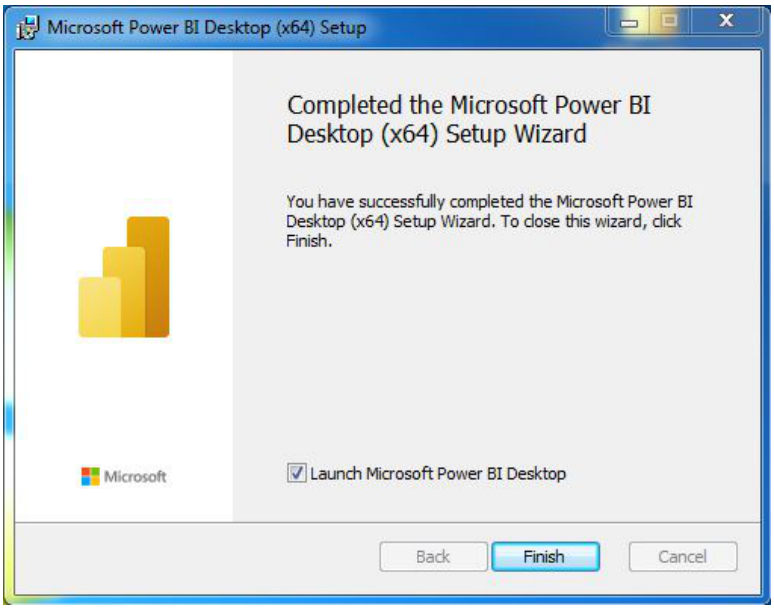


As you can see the installation is started in the below image



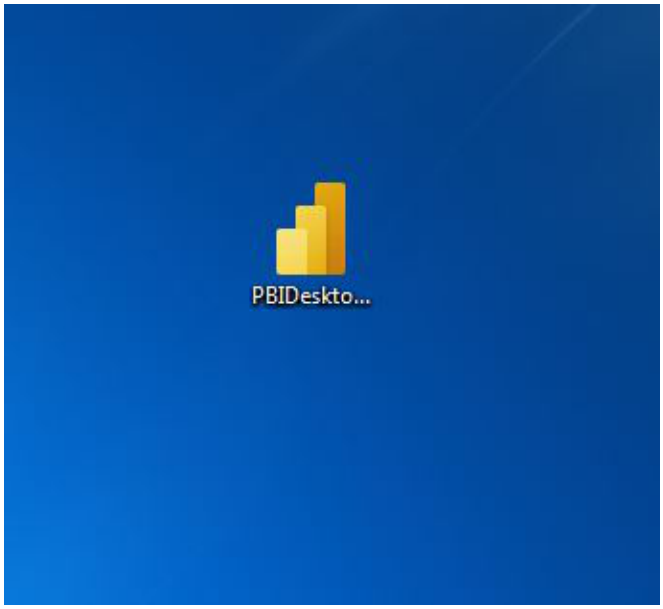
Step 14: Complete Installation

Once done click on the Finish button.

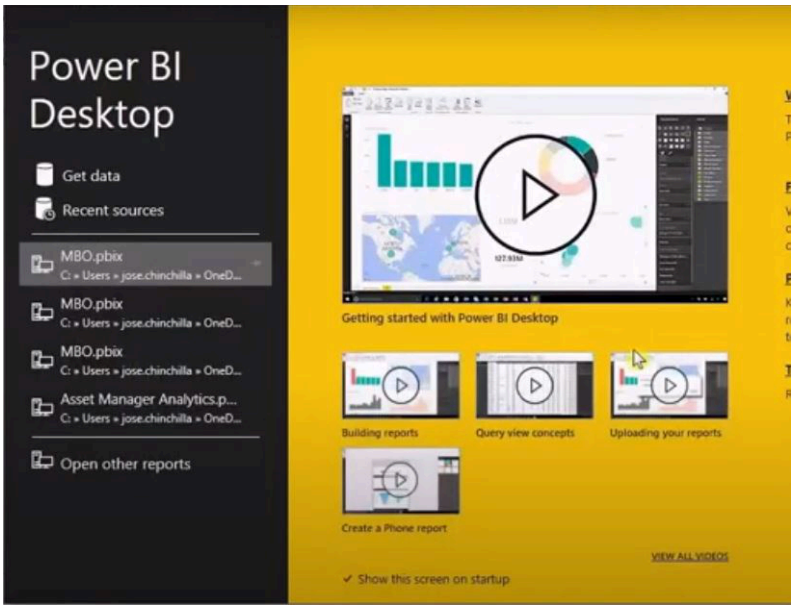


Step 15: Launch Power BI

A shortcut icon will appear on your desktop. Double-click it to open Power BI Desktop.



Now we run the software and see the interface.



Congratulations! At this point you have successfully installed Power BI on your windows system. You can now start exploring your data and building reports in easy manner.

Comment | More info

Power BI - Data Sources and its type

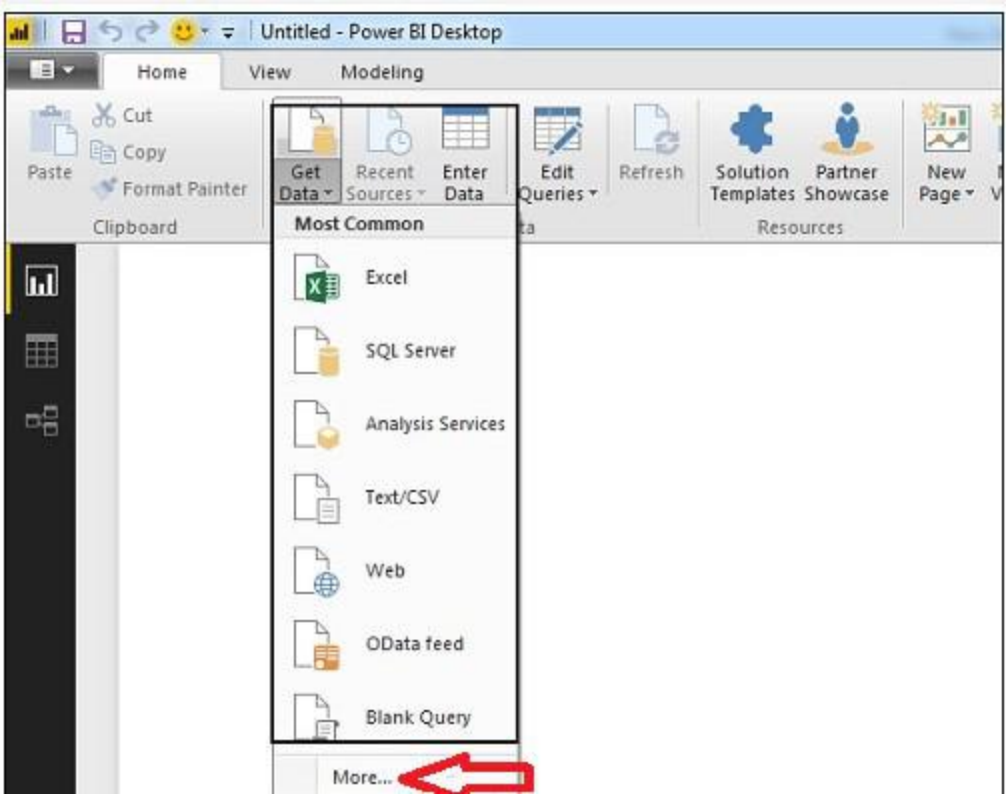
Last Updated : 07 Jun, 2025

In Power BI a data source is simply where your data originally comes from. It could be a file stored on your computer, a database, an online service or any other place that Power BI can connect to. These data sources are important because they provide the basic information that Power BI uses to create datasets. Once the data is imported you can use it to build clear and interactive visuals, reports and dashboards.

How to Find Data Sources in Power BI

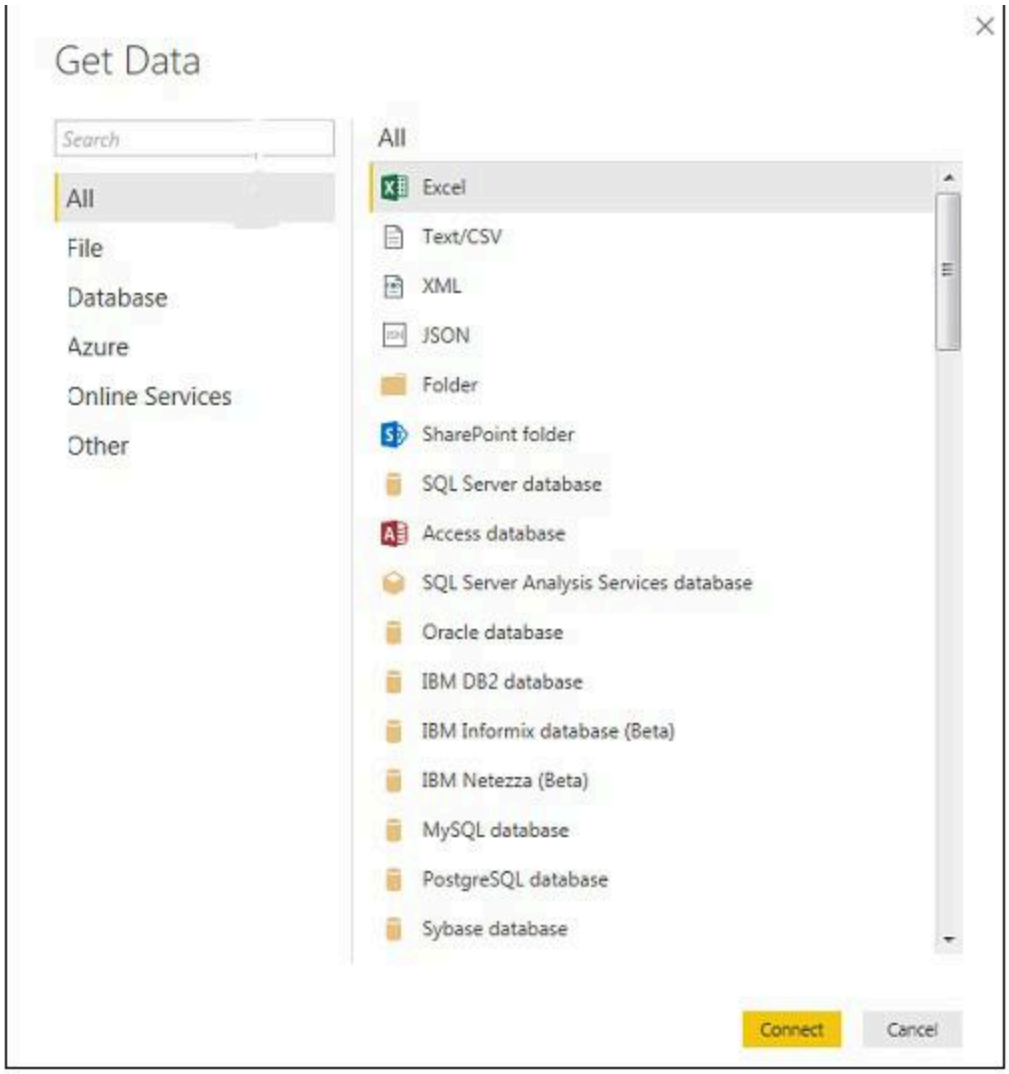
If you want to find and manage your data sources in Power BI Desktop here’s how you do it:

1. Go to the Home tab at the top of the Power BI window.
2. Click on the Get Data button. This will show you a list of the most common types of data sources.
3. If you want to see the full list of available data sources and click on More. This opens a window where you can browse all the types of data you can connect to.



Get Data

As seen in the screenshot above, click the "More." option opens a new navigation window with a category of all accessible data sources on the left side. Additionally a search option is at the top as shown in the screenshot below.



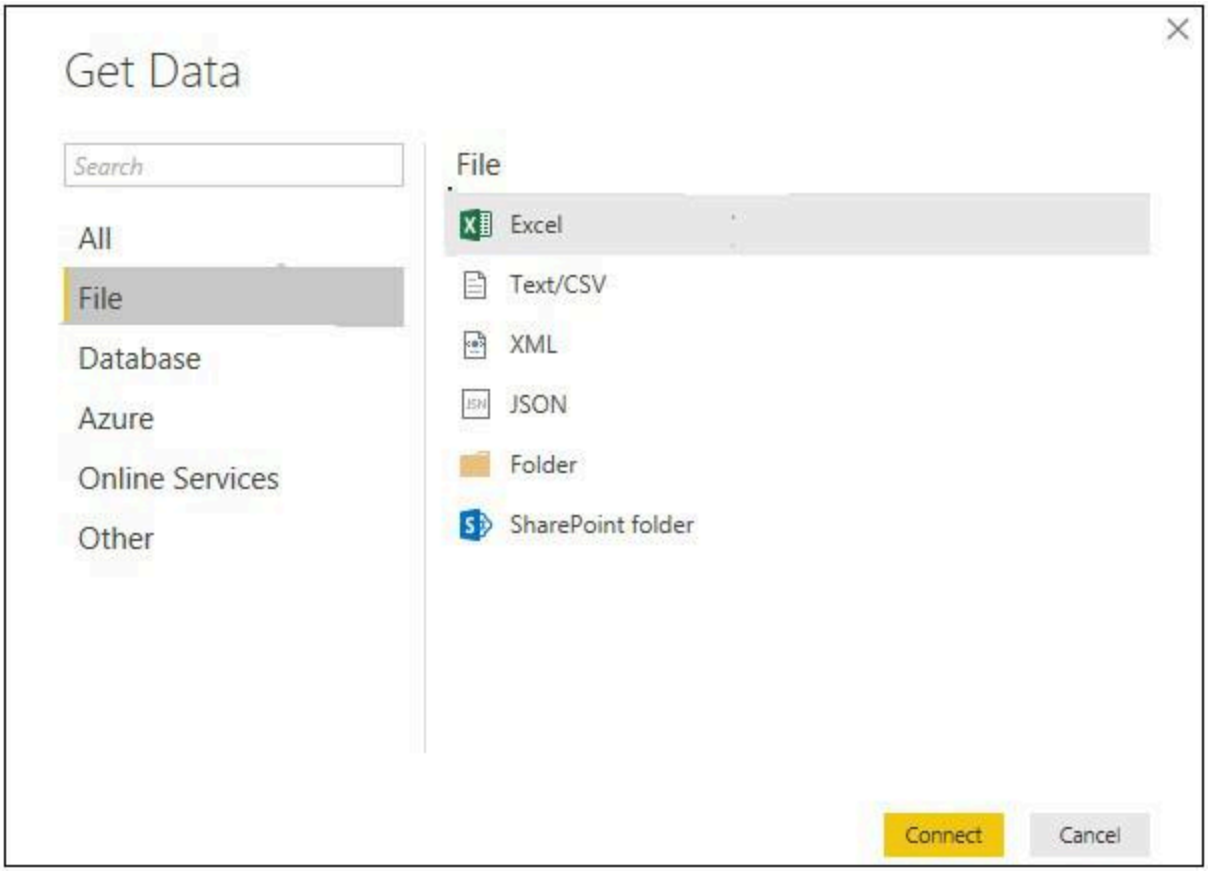
Data Sources

Types of Data Sources in Power BI Desktop

As mentioned above Power BI Desktop categorize data sources into several types below you can explore examples of what data sources there are in Power BI:

File Data Sources

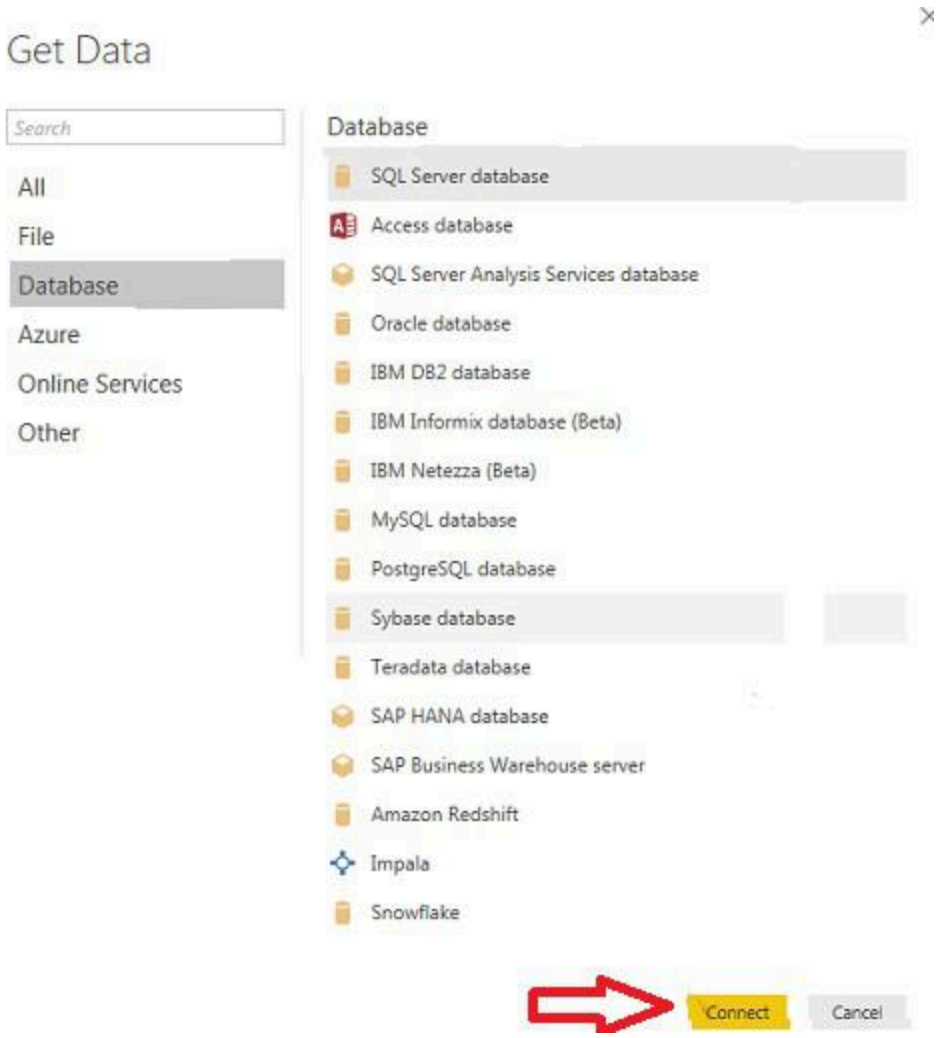
- The File data sources in Power BI include several common file types that you can use to import data. These include Excel workbooks, Text or CSV files, XML files and JSON files. You can also connect to a whole Folder containing multiple files, PDF documents and even SharePoint folders.
- These file types are some of the most popular ways to bring data into Power BI especially when working with data stored locally or on shared drives.



File Data Sources

Database Data Sources

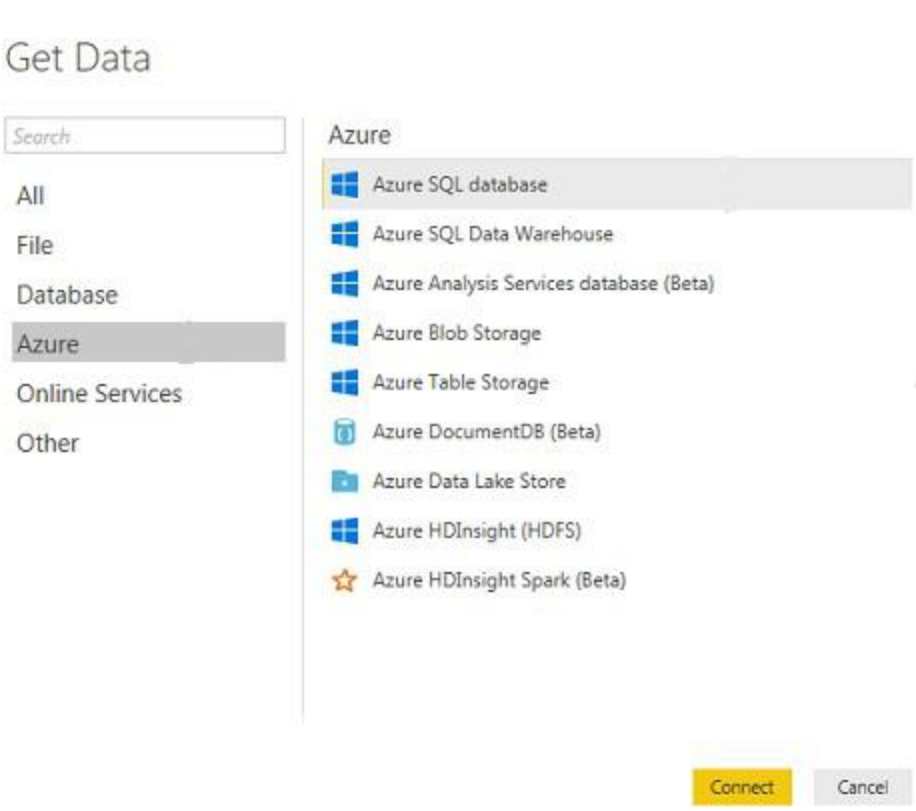
- A list of all the database connections you can connect to is displayed when the user selects the Database option. Choose a database type from the list as shown in the screenshot below to connect to any database. Go to Connect. To connect the user must enter the server name, user name and password.
- Using the advanced settings you can also connect by using a straight SQL query. Additional connectivity options include Import and DirectQuery.



Database Data Sources

Azure Data Sources

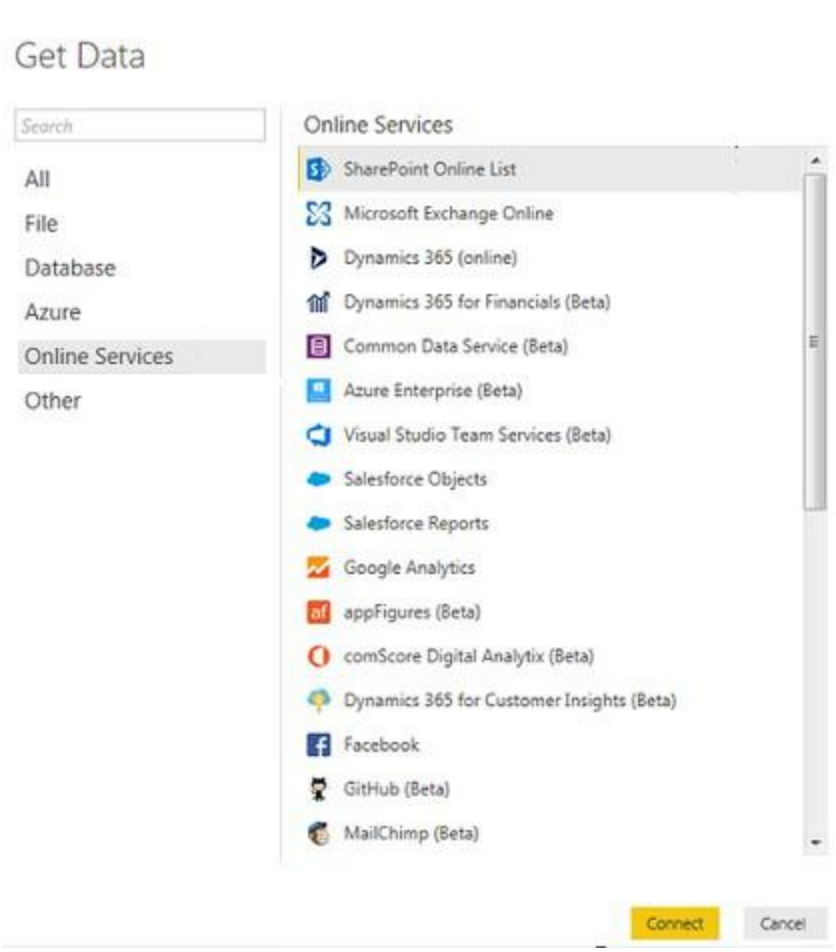
- The Azure category in Power BI includes data sources that come from Microsoft's cloud platform. You can connect to services like Azure SQL Database, Azure Synapse Analytics, Azure Analysis Services and Azure Database for PostgreSQL.
- These options are helpful when your data is stored in the cloud allow you to access and analyze it directly from Power BI without need to download anything locally.



Azure Data Sources

Online Services

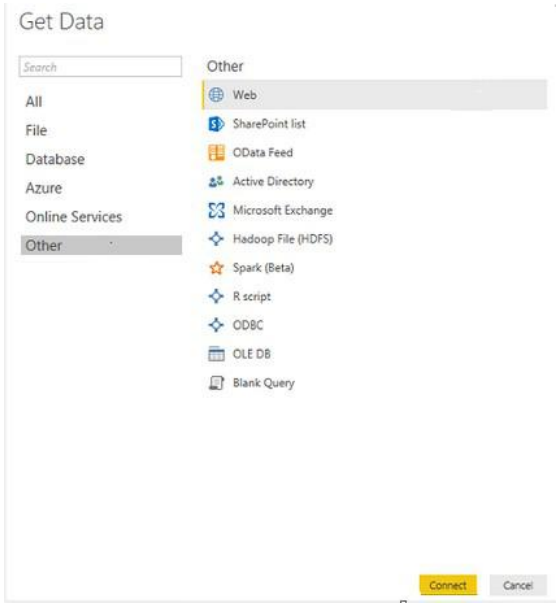
- The Online Services category in Power BI lets you connect to different web-based tools and apps that many businesses use every day. For example you can bring in data from SharePoint Online Lists, Microsoft Exchange Online and different versions of Dynamics 365 including Business Central and Dynamics NAV.
- You can also connect to popular analytics tools like Google Analytics and Adobe Analytics as well as services like LinkedIn Sales Navigator and Twilio. This makes it easy to pull data from the online tools you already use and create reports and dashboards in Power BI without need to move the data manually.



Online Services

Other Data Sources

- The Other category in Power BI includes a mix of different data sources that don’t fit into the main groups. Some examples are Web, SharePoint list, Active Directory, Microsoft Exchange and Python script.
- You can even start from scratch using a Blank Query. This category is helpful when your data comes from less common or more advanced sources.



Other Data Sources

Power BI Desktop can connect to a wide variety of data sources. The exact number of data sources is constantly expanding as Microsoft continuously updates Power BI to support new sources. Currently Power BI supports hundreds of different data connections.

Comment | More info

Differences Between Microsoft Power BI and SSRS

Last Updated : 23 Jul, 2025

SSRS and Power BI are both Business Intelligence (BI) tools that are made to show data to users in a easy to understand way. Even though Microsoft made both but they are designed for **different types of users** and used for **different purposes**. In this article, we will see the differences between Power BI and SSRS to know which tool best suits our specific needs.

Understanding SSRS

SSRS stands for **SQL Server Reporting Services** is a tool used to create visualizations and reports on data such as graphs, tables, charts, etc. It consists of tools for create, distribute and manage reports. It provides insight from information stored in SQL databases and helps to make important decisions based on reports generated by SSRS.

Features of the SSRS

- **No Additional Costs:** It is free with SQL Server and helps us to reduce reporting expenses.
- **Mobile-Friendly:** This allows us to view reports generated from your mobile device. Generates a URL that you can use to open your report from any device, anytime, anywhere using Internet.
- **Advanced Analytics: It** can generate reports in form like graph, chart and tabular format.
- **Microsoft Development Environment:** It uses a feature-rich and user-friendly development environment.

Understanding Power BI

Power BI stands for Power Business Intelligence. It is capable of generating various reports and dashboards from different data sources. It helps businesses

to share reports and visualizations with the stakeholders to take important business decisions. It comes in free and paid versions. The free version provides limited functionality whereas the paid version has much more advanced functionality.

Features of Power BI

- **Interactive Dashboards**: Creates visually rich and interactive dashboards and reports.
- **Real-Time Data**: Supports real-time data streaming and updates.
- **Data Modeling**: Allows data transformation, relationships and calculated fields using DAX.
- **AI Integration**: Uses Microsoft AI for advanced analytics and natural language queries.
- **Mobile Access**: Access and interact with reports using its mobile app for iOS and Android.

Difference between Power BI and SSRS

Let's understand the difference between the Power BI and SSRS

Feature	Power BI	SSRS
Long Form	It Represents Power Business Intelligence.	It refers to SQL Server Reporting Services.
Developer and Release	Developed by Microsoft and released in 2017.	Developed by Microsoft and released in 2004.
License	Has both paid and free versions	This is a free application that comes with SQL Server.

Feature	Power BI	SSRS
Accessibility	Accessible through the web (Power BI service), desktop (Power BI Desktop) and mobile app.	Accessible via the Internet and the desktop.
File Size	The maximum file size is 250 MB.	The file size is unlimited.
Reports	Reports are generated both on the server and in the cloud.	Reports are server-based.
Data Supported	Supports structured and unstructured data.	Supports structured and semi-structured data.
Update Frequency	Updates for Power BI are released monthly.	SSRS gets updates every few years.
Complexity	Easy to use GUI	Requires a user to know SQL queries.

Power BI and SSRS are both great tools, but they are made for different purposes. If you need interactive and easy-to-share reports Power BI is the best option. If you need formal, printable reports SSRS is the better choice.

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Web Development
Data Science
Programming Languages
DevOps & Cloud
GATE
Trending Technologies

Offline Centers

Noida
Bengaluru
Pune
Hyderabad
Patna

Preparation Corner

Aptitude
Puzzles
GfG 160
DSA 360
System Design

Power BI Free vs Power BI Pro vs Power BI Premium

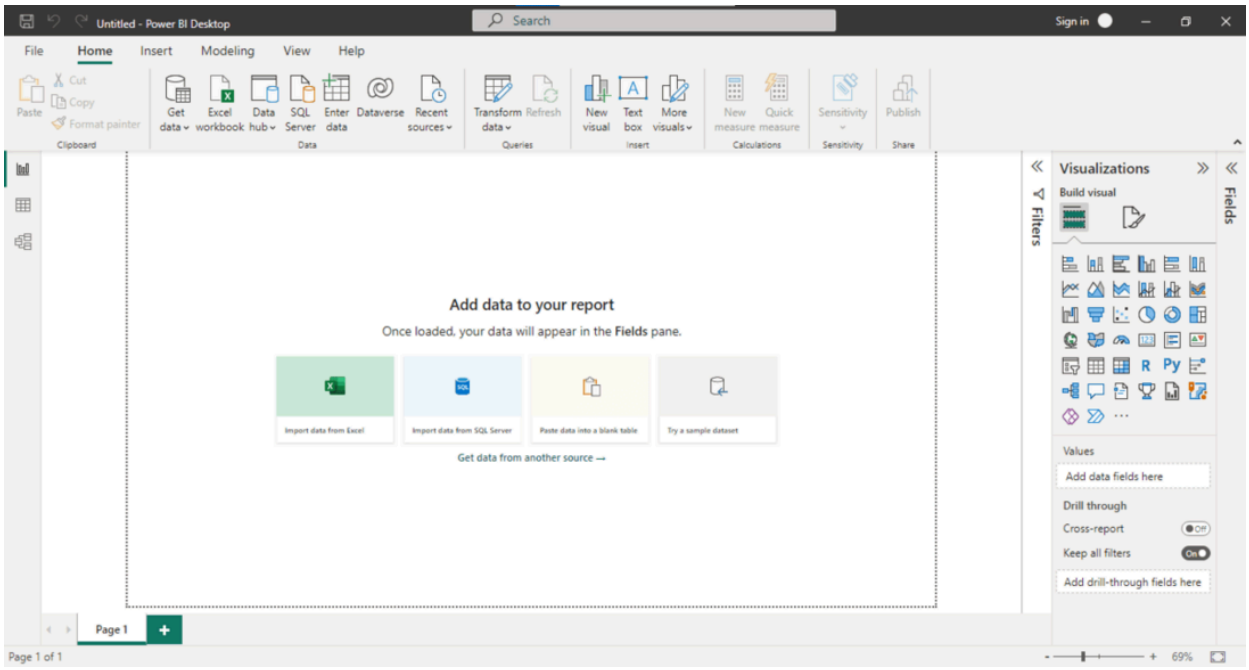
Last Updated : 08 May, 2025

Power BI is a tool developed by Microsoft to help users connect to various data sources and create interactive reports. It allows you to visualize your data in a way that makes it easier to see patterns and insights. Power BI was built using some of the features from Excel, like Power Query, Power Pivot, and Power View to help you analyze and visualize your data. It works together with these first three fundamentals:

- **Power BI Desktop:** A desktop application for data extraction, data modeling, dashboard creation and report creation. Windows desktop software called Power BI Desktop.
- **Power BI service:** An online SaaS (Software as a Service) application is the Power BI service.
- **Power BI Mobile Apps:** Power BI offers mobile apps for Android, iOS, and Windows that allow user to interact with Power BI dashboards and reports.

Power BI Desktop Or Power BI Free

Power BI Desktop is a **free** app you can install on Windows. It helps to connect to many types of data sources like Excel, Azure, Salesforce, SharePoint, JSON, XML and ODBC databases. You can **clean, combine and transform** your data and **build interactive reports. But you can not share reports** online without upgrading. A basic interface of the Power BI Desktop can be seen below:



Power BI Pro

The main difference between Pro and Free is that users who have a Power BI Pro license can access each other's data, reports and dashboards when using Pro. Additionally you can make App workspaces. There is a 10 GB per Pro user data storage limit for Power BI Free and Pro. A below shown comparative analysis would be displayed if you try to start your Power BI Pro journey while purchasing the license. Pro users can share content and work with free and PPU users if a Power BI Premium capacity holds the content.

Get more powerful data analysis with Power BI Pro

What you can do	Power BI Free	Power BI Pro
Create Power BI Pro workspaces	--	●
Discover and interact with other users' datasets, dashboards, and reports with other Power BI Pro users	--	●
Share datasets, dashboards, and reports with other Power BI Pro users	--	●
Use and collaborate on Power BI in Microsoft Teams	◐	●
Get intelligent and augmented analytics capabilities	--	●

Power BI Premium

Power BI Premium uses the Power BI Report Server to deploy and distribute Power BI reports. It improves speed, handle bigger workloads and removes the need for individual licenses for viewers. Premium plans vary based on memory and processing power and help businesses to scale better. These features can be summarized as shown below:

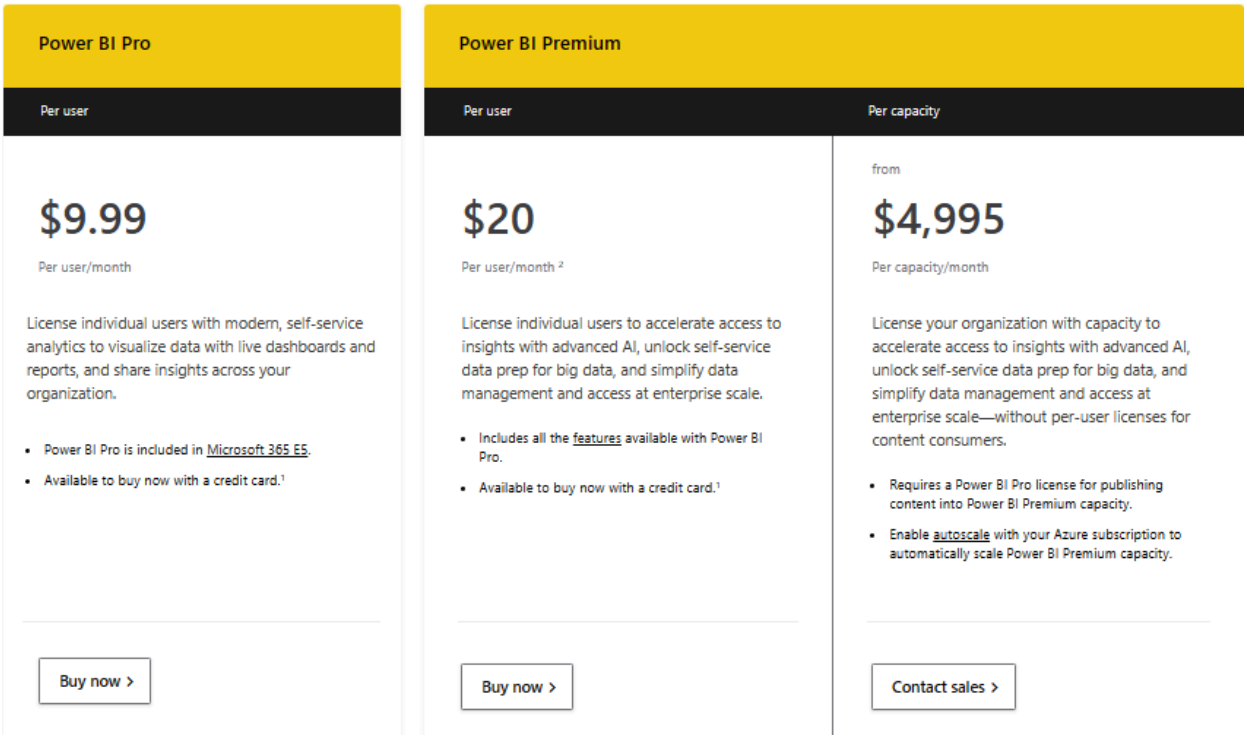
What is Power BI Premium Per User?

Includes all the features available with Power BI Pro – plus the ability to:

- Accelerate access to insights with advanced AI
- Unlock self-service prep for big data
- Simplify data management and access at enterprise scale

Power

With a **Power BI Premium Per User (PPU)** license you get all **Power BI Pro** features plus Premium features like advanced AI, big data prep and faster performance. Only users with a PPU license can access PPU workspaces. To share content everyone must have a PPU license unless the workspace is in Premium capacity. Microsoft provides Power BI Pro and Premium pricing currently as follows:



Difference between Power BI Free, Power BI Pro and Power BI Premium

Good for Personal use and learning with real-time dashboards and reports.

Features	Power BI Free	Power BI Pro	Power BI Premium
License type	Power BI Free per-user license	Power BI Pro license	Power BI Premium per user (PPU) license
Sharing with Others	Accessibility towards the content they produce on their own.	Share dashboards, publish material to other workspaces subscribe to dashboards	Share dashboards, publish material to other workspaces, subscribe to dashboards and reports and share

Features	Power BI Free	Power BI Pro	Power BI Premium
		and reports and share with Pro-licensed users.	with PPU-licensed users.
Premium Workspace Features	Consume material that Pro or PPU users have shared with them.	Provide material to users with PPU or free licensing.	Make material available to consumers with both free and paid licenses.
Max Storage	10 GB/User	100 TB	100 TB
Pricing	Free	$9.99 Per user/month	$20 Per user/month $4,995 Per capacity/month
Advantage	Users can make data preparation easier, get insights faster and manage data more efficiently across the business by buying licenses.	Scalable for large teams no need for individual licenses for viewers and advanced features	Ideal for organizations no need to buy individual licenses for viewers.
Disadvantage	The free Power BI option only lets	Individual licensing for	You can't create reports or

Features	Power BI Free	Power BI Pro	Power BI Premium
	you work on your own computer. You can't share, collaborate or publish reports. It's good for learning or experimenting alone or in a shared network.	every user within the same organization is costly.	manage dashboards with the free version. To make reports users need to buy individual Power BI Pro licenses.

Microsoft provides both of these choices Pro and Premium as a monthly subscription service. You can connect to more than 70 data sources, publish content online and export data to Excel using Power BI Free. The free version has several restrictions.

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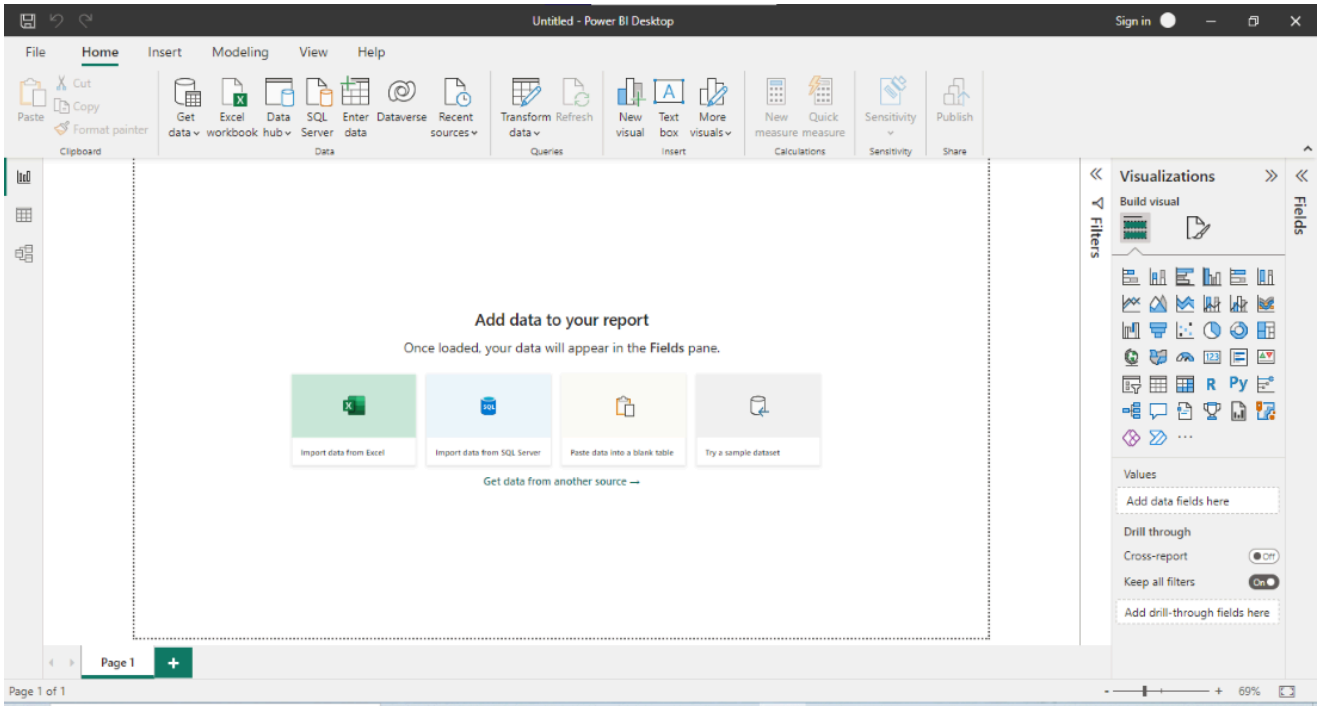
Power BI - How to edit in Power BI App?

Last Updated : 09 Feb, 2023

Power BI is a data visualization application that lets you connect, transform and find insights into the most pressing matters of your business. It helps in sourcing your data and creating visual dashboards, KPIs, and reports by editing the data as per your concerns. You can collaborate, share and integrate your data easily across products documentations. It also has a wide range of visualizations, including charts, tables, and maps, and allows users to create interactive dashboards and reports. Power BI is widely used for data analysis, reporting, and business intelligence. With a cut-down risk of the misgovernment of data, including when data is exported out of your application, it proves worthy of use. Power BI is compelling in the case of compressing the data with millions and billions of rows.



Use of Power BI

It is mainly used to create visualized reports and dashboards through which you can learn more about your data. Uploading your report to the Power BI service enables you and your users to interact and track the report being used. Here, we will go through the steps required for you to create and edit Reports and Dashboards.

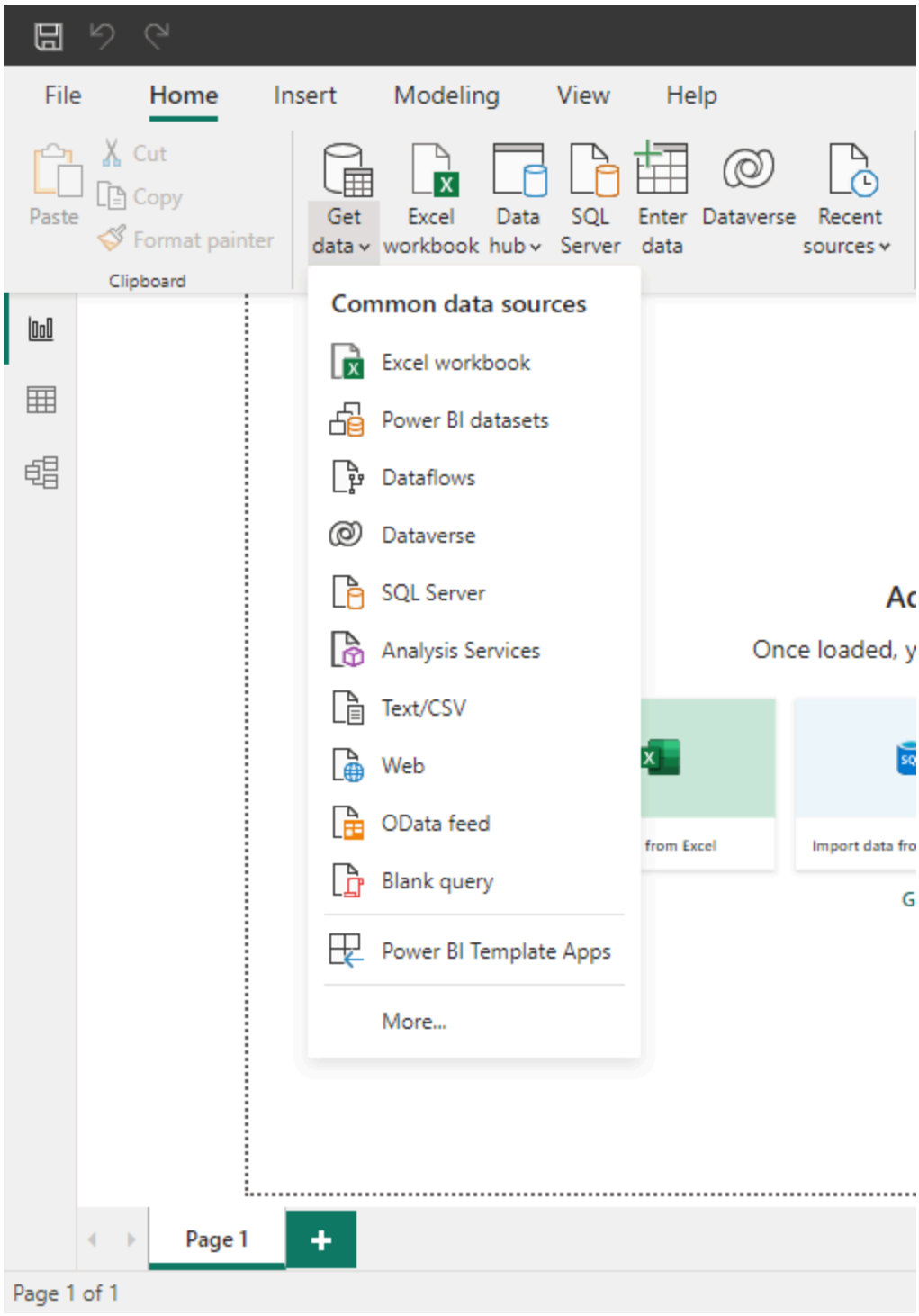
Basic Steps Required:

1. Extract the data
2. Transform the data as required and change the relationship between the tables using a power query.
3. Use DAX to perform the calculation on your data.
4. After getting your data ready, you can jump to your visualizations.
5. Add the graphs, charts, cards, etc., and create edits within them to make your report look more understandable.
6. Upload your dashboard to the cloud enabling your colleagues to access the dashboard and report.

Loading data

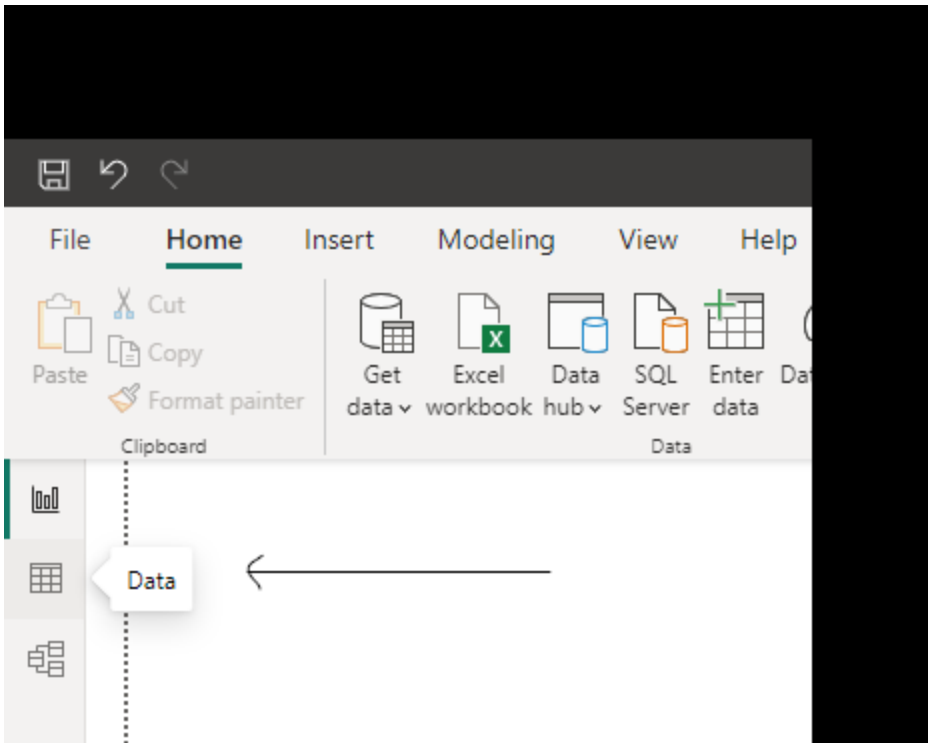
Let’s start with how you can load data in your application. You can load your data from the 'Get data' option in the home tab. You can select from the following options:

- Files: Power BI can import statistics from Excel, CSV, and other record formats.
- Databases: It can connect to several databases, which include MySQL, Oracle, and SQL Server.
- Direct Query: It can retrieve the desired dataset by connecting to a data source without importing it beforehand.
- Online Services: It can connect to various online services for example Google Analytics, SalesForce, and SharePoint.
- Live Connection: An up-to-date live connection with a data source in real-time allows users to retrieve up-to-date data.

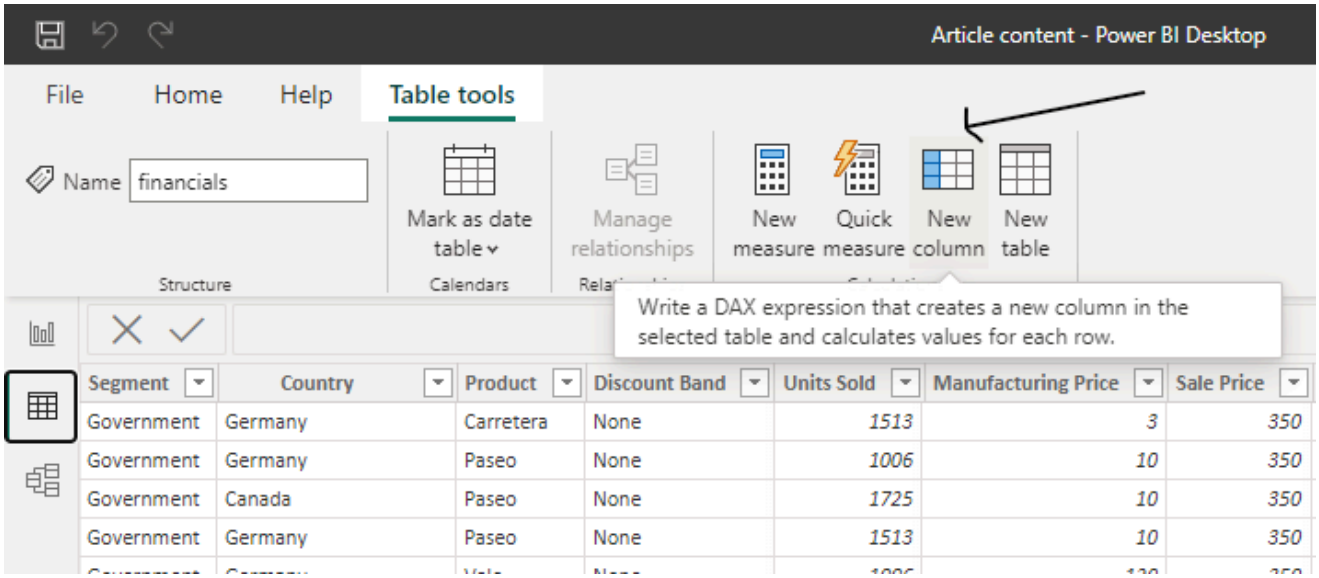


After the data gets loaded into the application, you can begin transforming and modeling your data. You can select add new column option with custom options, and make your own calculated field column.

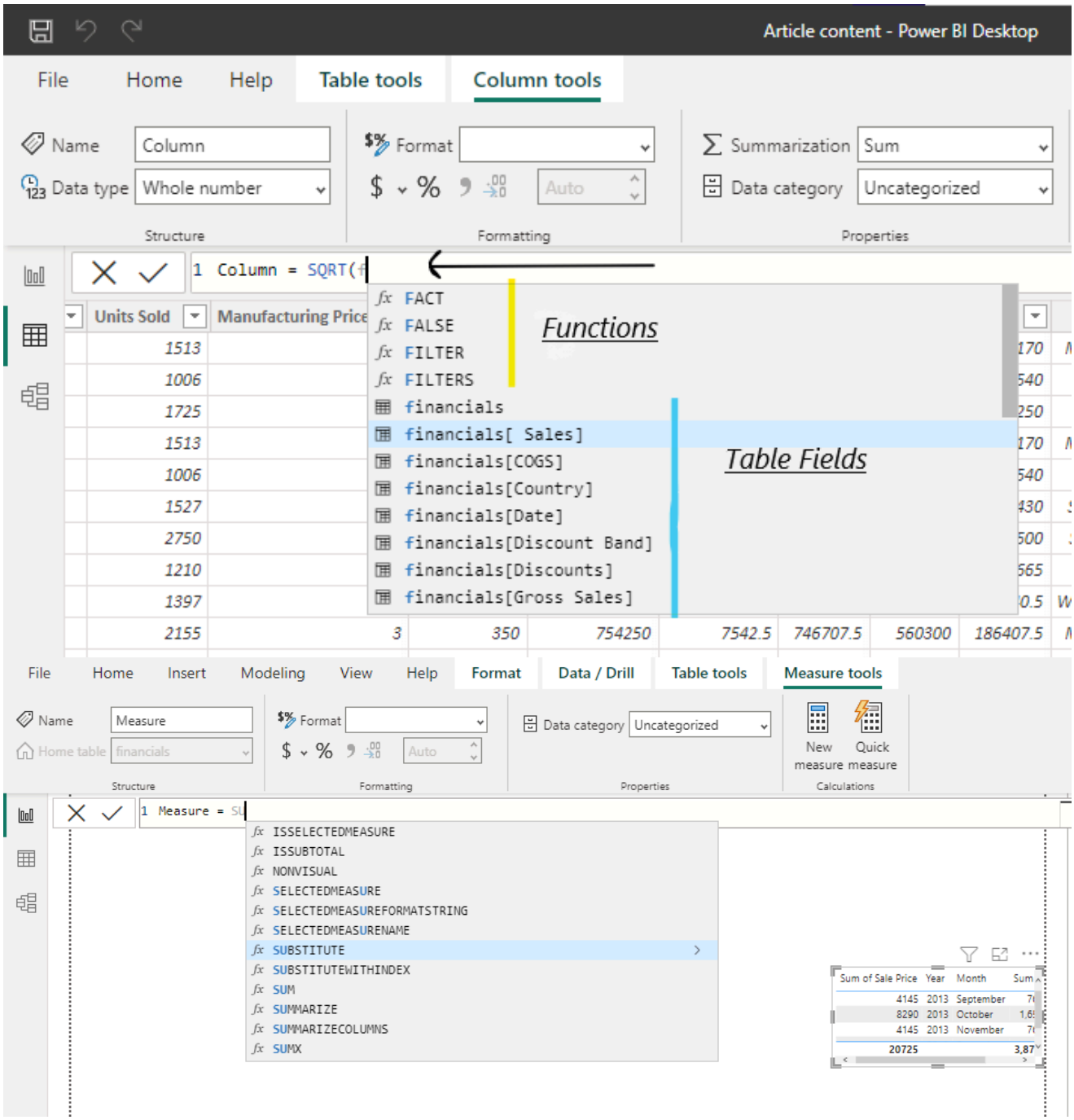
Step 1: For this step Select "Data" from the three options on the left margin.



Step 2: Select "New Measure" from the "Calculation" section in the "Table Tools" tab.



Step 3: Now you can get your desired functions with the table field's name and thus you'll be able to create a new column.



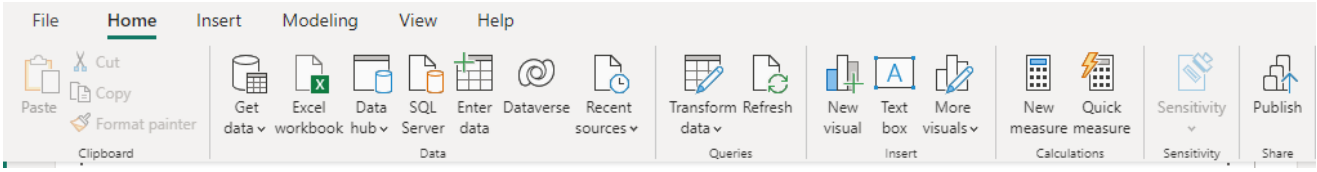
Step 4: After this step, you'll complete your required columns or measures. You should use the "New Column" method when you require this column to be present at data refreshes as well because it gets defined in the table. Whereas measure works as a filter on your table and it is faster because they are not stored in the memory. Power BI has a built-in Power Query Editor that makes your data visuals-ready. It allows you to make advanced changes to clean your data for perfect visualizations and get your model done.

> ***Note**: Reports in Power BI use only a single dataset whereas dashboards use many datasets.*

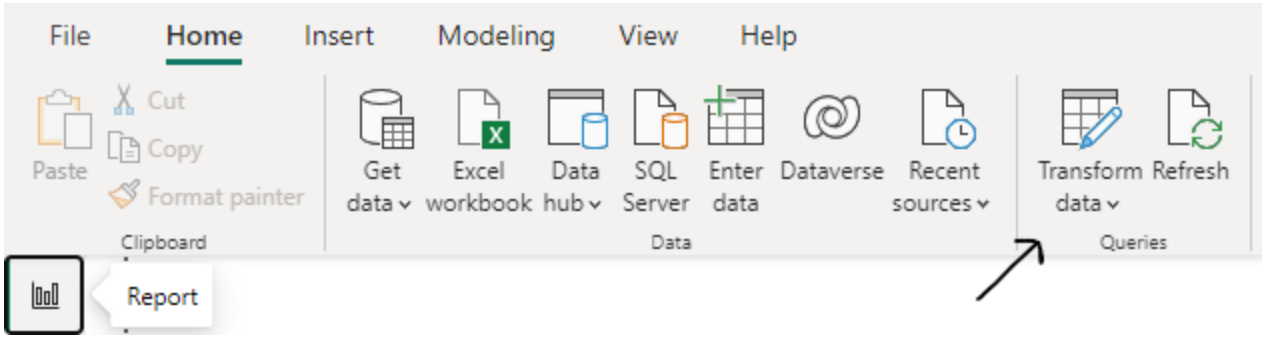
Power Query

Power Query is used to transform data by performing tasks such as filtering, grouping, and pivoting. It helps to create calculated columns and measures by using the formula bar and functions. After the cleaning and transformation of your data, you can move on to your visualizations. Following are the steps to use Power Query.

Step 1: Select "Home" from the top menu.

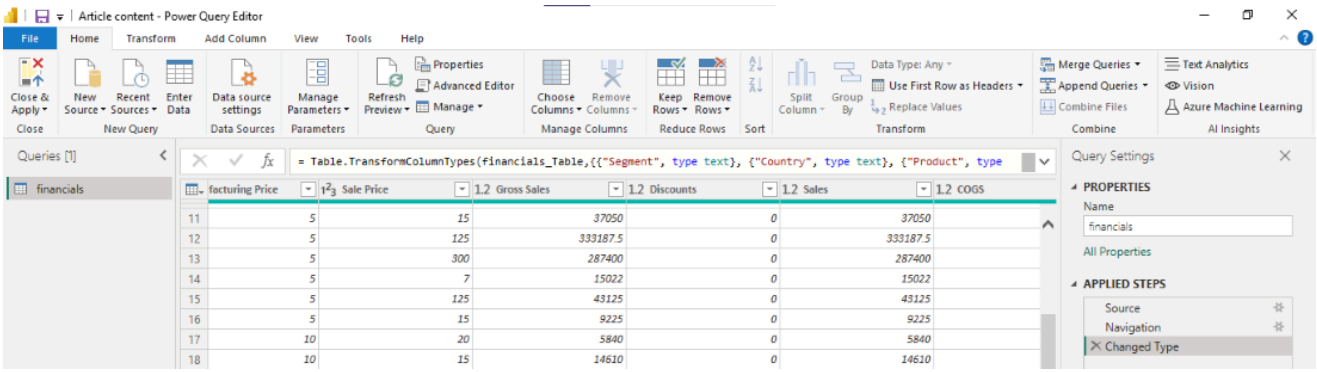


Step 2: From the queries section select “Transform data”.[(A new window will open with Power Query Editor),(If no data connection is made yet then it'd show a blank page)].

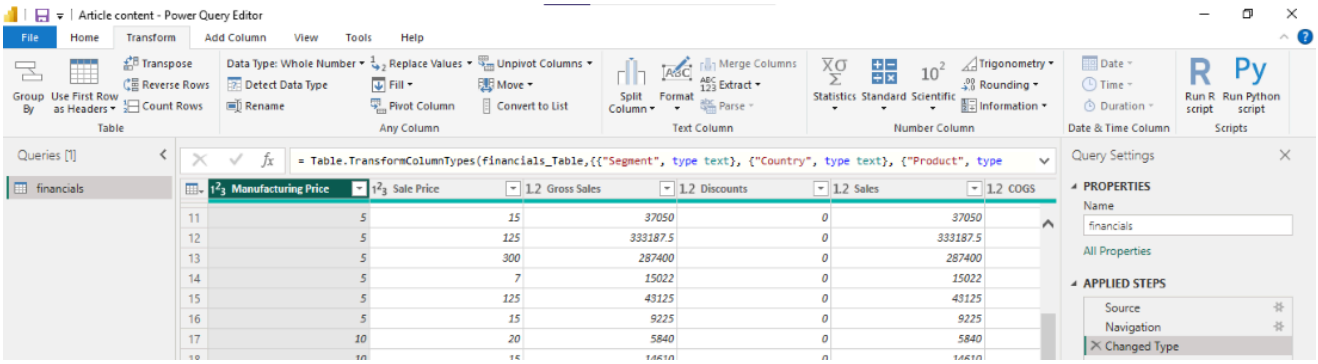


Step 3: On this page you'll get to add, change, view, transform, and correct your data.

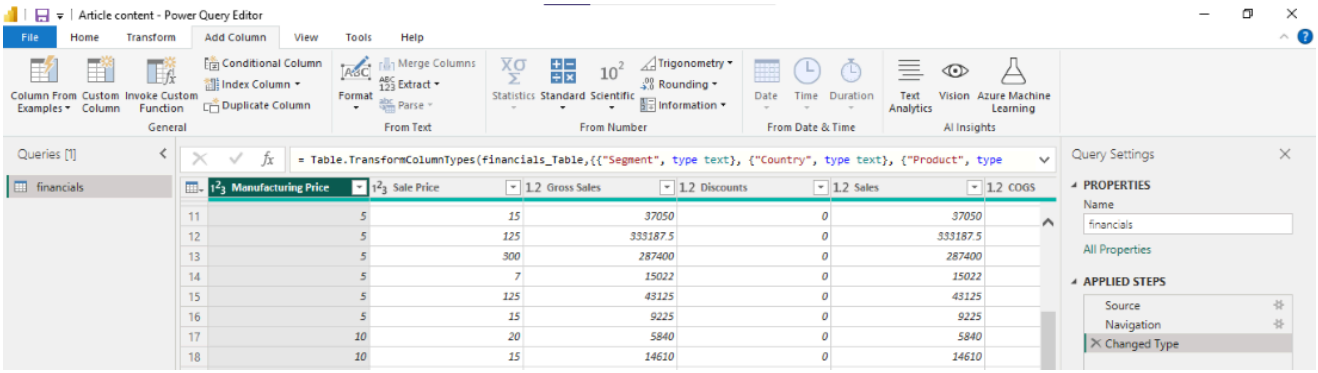
- The "Home" tab provides data source options.



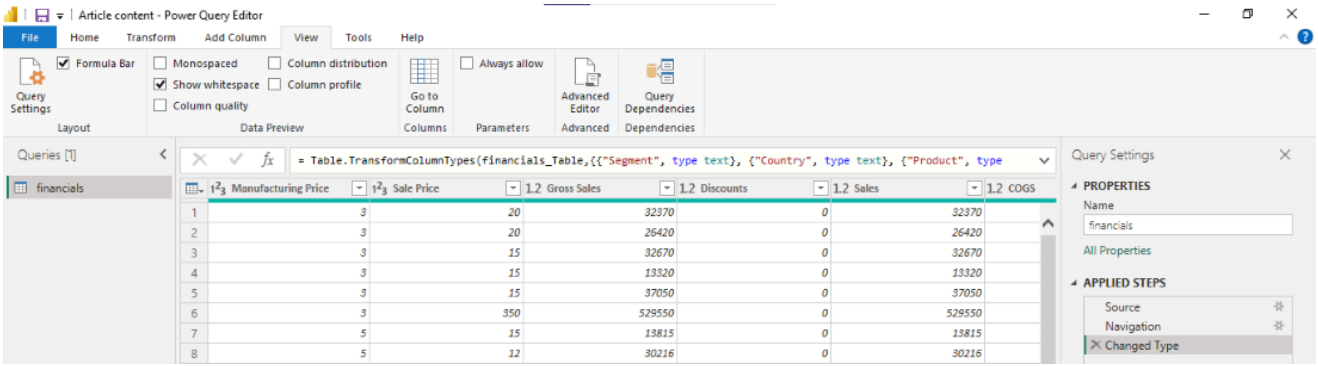
- The "Transform" tab includes addition, deletion, splitting, and changing data types functions.



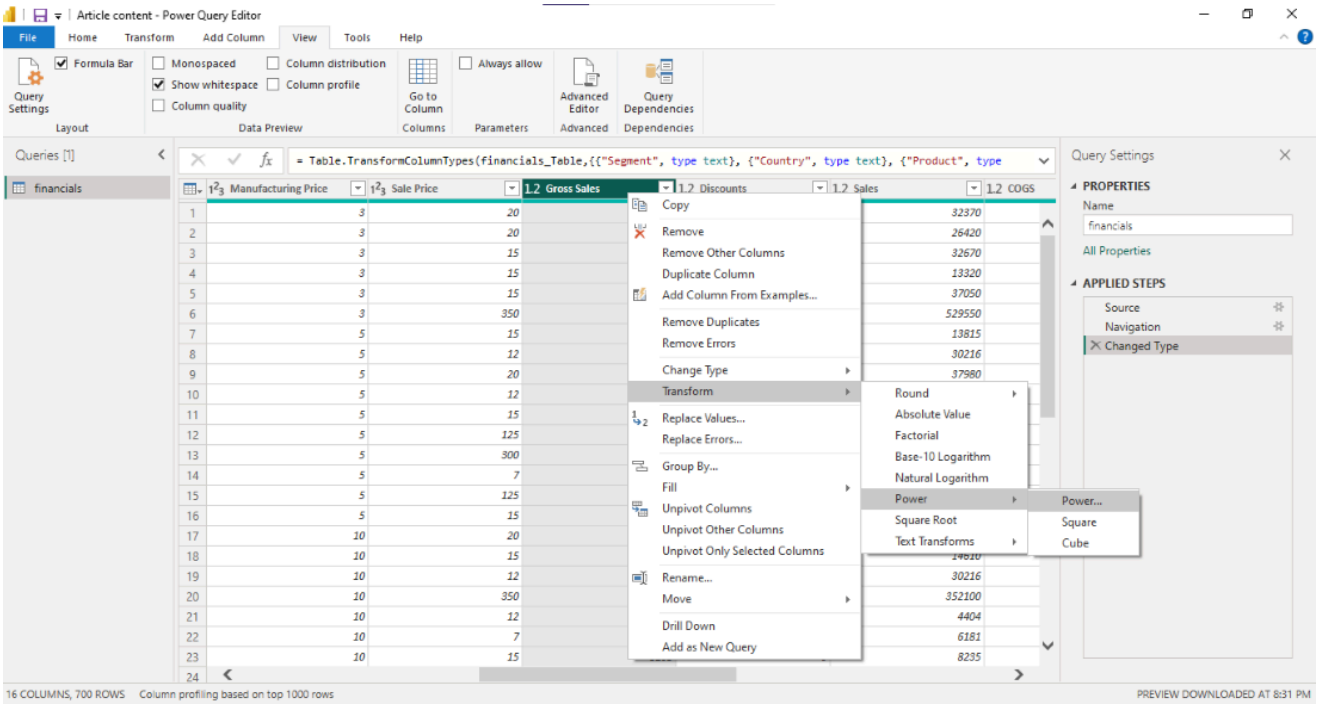
- The "Add Column" tab provides the column addition and formatting of the same.



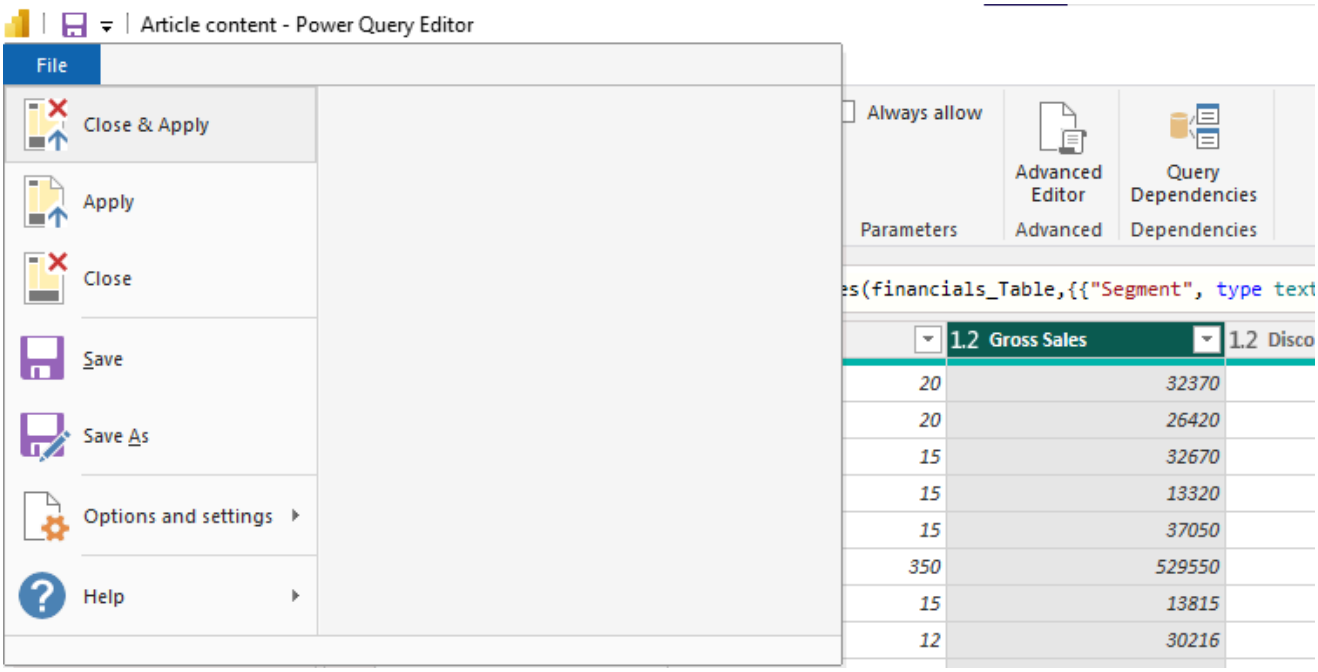
- The "View" tab provides how the page is displayed to you.



Step 4: With a right-click on your column you can make different changes.



Step 5: After making the necessary transformations, click on "Close & Apply" by clicking on the "File" tab to save the changes and return to the Power BI Desktop.



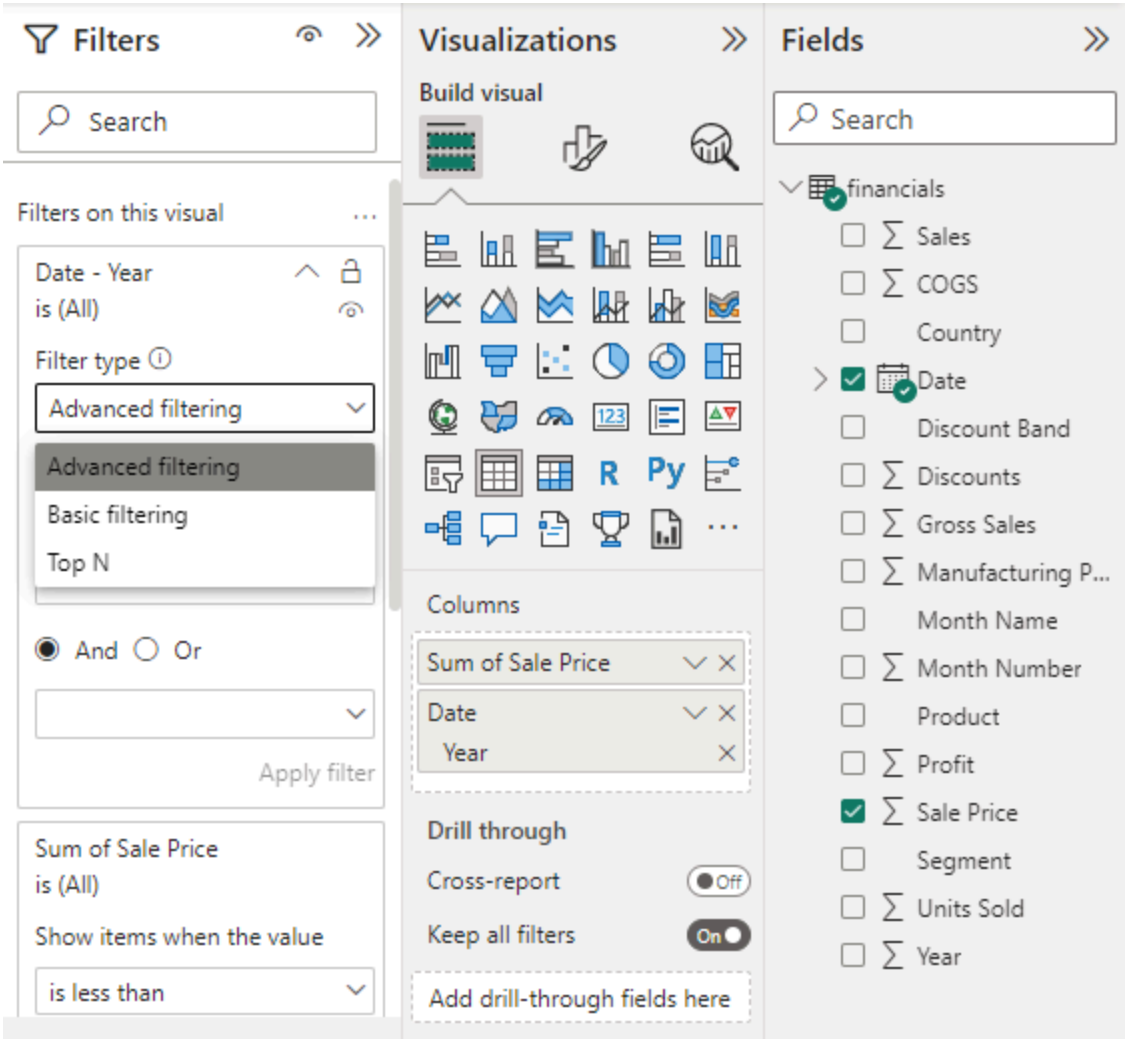
Your data is now ready to be used in visualizations and reports.

> ***Note**: If you want to make more complex changes to your visualizations, you can use the "DAX" formulas to create calculated columns and measures.*

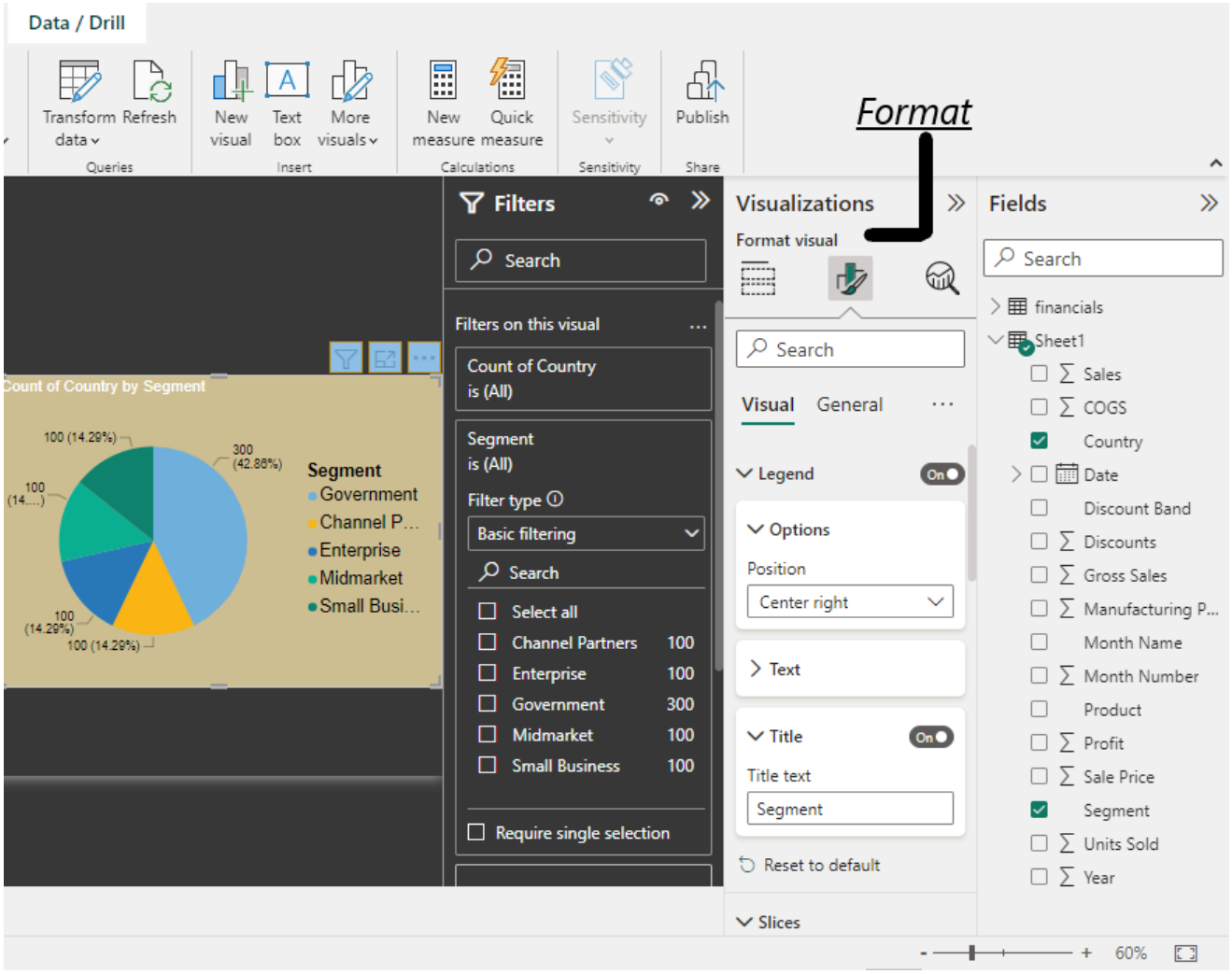
Visualization in Power BI

Format and Fields sidebar is the section to make your dashboard and report visually attractive.

- To edit the layout of a report, use the "Layout" option under the "View" tab. (It provides various theme options to match up with your report.)



- To edit the visualization after it's been added to the report, click on the visualization and use the "Format" option to customize the visualization.

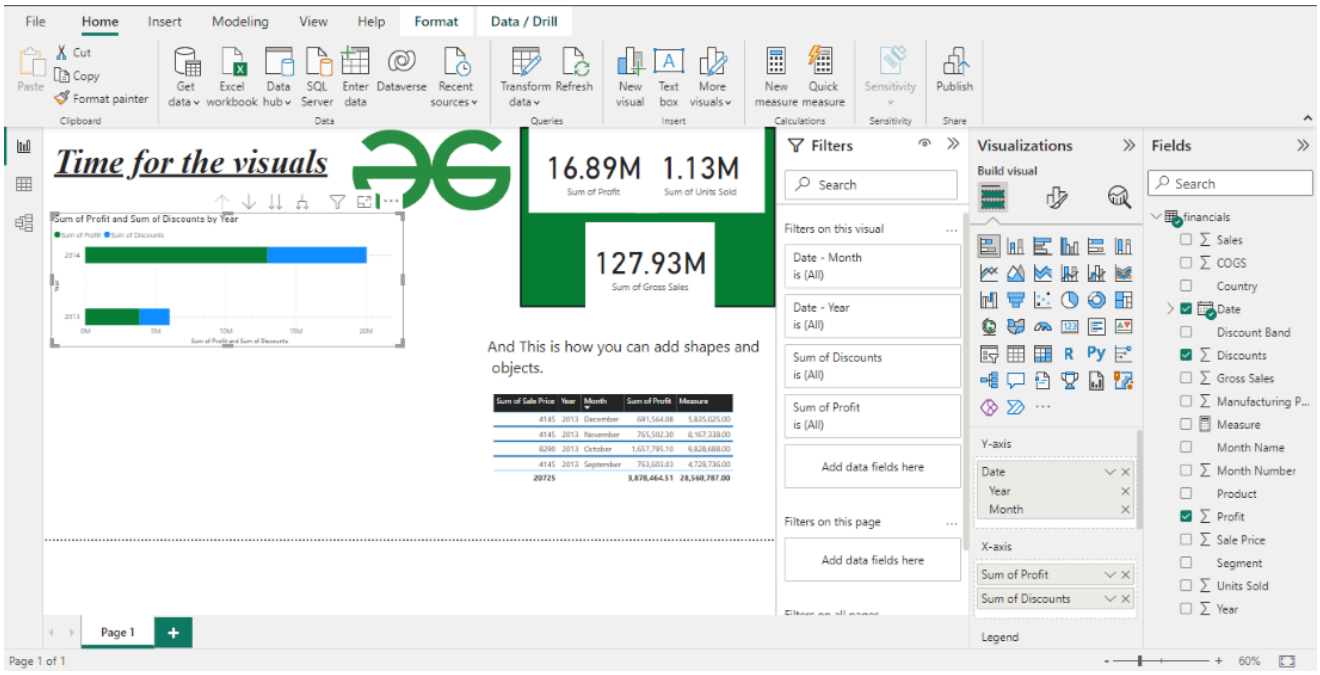


If you want to make more complex changes to your visualizations, you can use the "DAX" formulas to create calculated columns and measures.

Dashboards in Power BI

A dashboard in Power BI is a collection of visualizations and reports that provide an overview of key metrics and data for a specific area of interest. It allows users to view, analyze, and share data in a visually appealing way. It consists of a single page.
It allows the user to make changes in the visualizations i.e. involvement by the end user as well rather than a simple summary of the data.

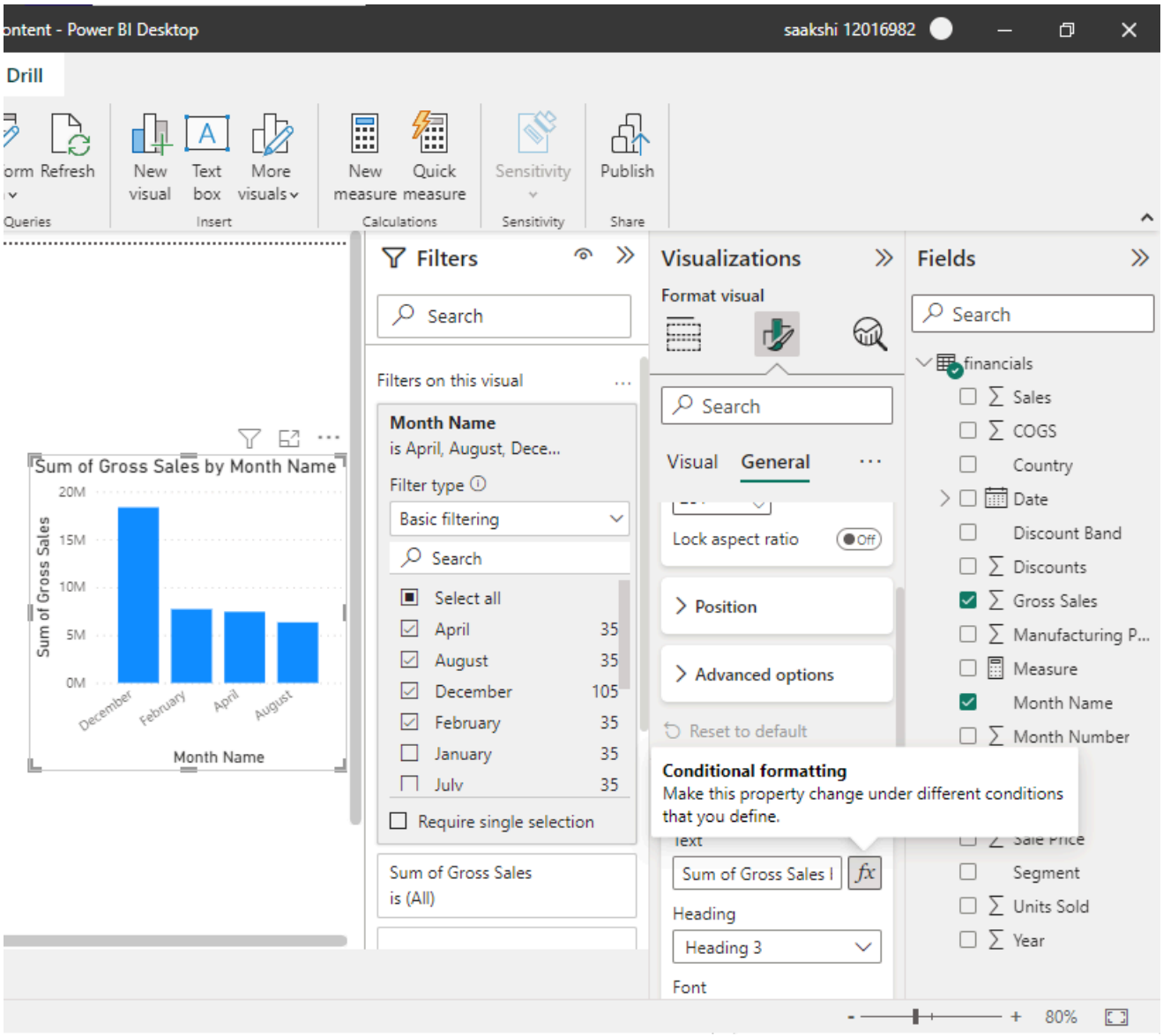
> ***Note**: Dashboards are only provided in the Power BI Service and not in Power BI Desktop or Mobile.*



Types of Reports in Power BI

Reports can be shared and accessed by others inside an organization and embedded in websites, portals, and apps. Users can also engage with the visualizations in a file to discover the statistics and explore new insights. Reports are something that can consist of only one visual/number of visuals or one page/number of pages as per the requirement of your job.

- To create a new report, you can select the "New Report" button in the Home tab of the Power BI Desktop.
- Once you have created a report, you can add different visualizations such as charts, tables, and maps by dragging fields from your data source onto the report canvas.



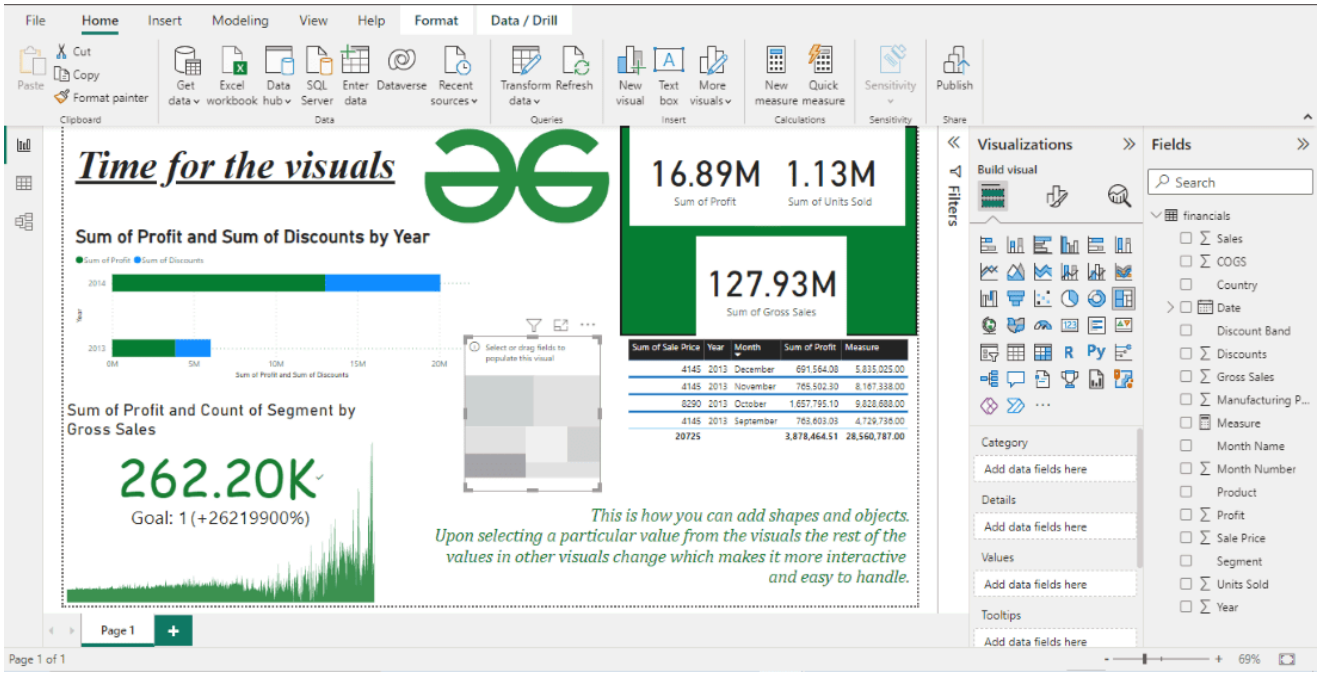
- You can also edit the appearance of these visualizations by adjusting their formatting options. (figure above)
- To edit an existing report, you can simply open it and make the necessary changes.
- You can also make a copy of an existing report, by right-clicking on the report in the Power BI Service and selecting 'Duplicate Report'

These are the reports that you should be acquainted with:

1. **Canvas report:** This is the most basic type of report in Power BI. It allows users to drag and drop visualizations onto a canvas and arrange them as desired.
2. **Paginated report:** This type of report is similar to a traditional paper report, with a fixed layout and the ability to add tables, matrices, and charts.
3. **Dashboard:** A Power BI dashboard is a collection of visualizations and other elements that can be shared with others.

4. **Data Story:** A data story tells a story with the data through a collection of multiple pages.
5. **Interactive visualizations:** Interactive visualizations such as maps, cards, and gauges are used to create engaging and interactive reports.
6. **KPI report:** A KPI report is a type of report that allows you to track key performance indicators and measure the performance of your business.
7. **Mobile report:** A mobile report is an optimized report for viewing on mobile devices. It is designed to provide a great user experience on mobile devices.
8. **Drillthrough report:** A drill-through report allows users to drill down into the data to view more detailed information.

These are some of the most commonplace types of reports that are created in Power BI, however, there are different styles of words that can be created as well.



Conclusion

1. Load the data from your desired data source.
2. Clean the data in excel and load the data.
3. Change the relationship and add-remove columns from the table as required.
4. Create measures and calculated fields to complete your dataset and move on with the visuals.

5. Add the visuals and edit them as per your requirement from the visualizations panel to create your report.

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