



Storytelling with Data in Power BI

Power BI Guide

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Bold underlined text in Plum color is a clickable link. [**I am a link, click me!**](#)

Introduction to Power BI as a tool

Here you will learn more about Microsoft's Power BI

What is Power BI?

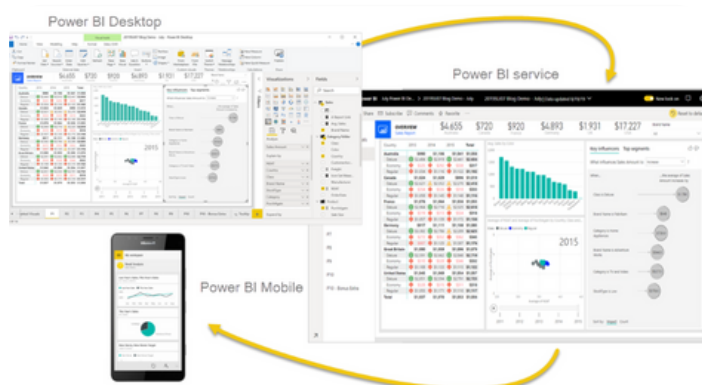
Power BI is a business analytics solution that lets you visualize your data and share insights across your organization or embed them in your app or website. This tool offers multiple products and services that enable an organization to make data-driven decisions.

Power BI is composed of several parts, which can be used separately or integrated for the various needs of your business.

1. **Power BI Desktop** is a desktop app you can install on your own computer.
2. **Power BI service** is an online Software as a Service (SaaS)
3. **Power BI mobile app**, which works for Windows, iOS, and Android devices.

Which tool you will use depends on your role in the company. A data analyst most likely will use Power BI Desktop, but someone who is a stakeholder within the company may only be interested in visualizing the reports and, therefore, would use the Power BI mobile app.

What might your workflow look like in Power BI? — When you start working in Power BI, you begin by connecting one or more data source(s). Then, you transform the data to fit the data model. After transforming the data, you can build a report in Power BI Desktop. You can publish that report from Power BI Desktop to the Power BI service and share it with other end-users. Finally, those end-users can view it on the Power BI service and their mobile devices.



Brief History

In today's world of big data, companies gather information on their customer's purchases, internet habits, wish lists, and more. All this data can be used in order to optimize their business and increase client satisfaction. The main issue is transforming this mountain of raw data into effective insights. Tracking day-to-day or even month-to-month progress implies the need to find meaningful KPIs (key performance indicators) and to take the corresponding action to improve business.

Creating an easy-to-understand story out of data is what enables companies to thrive in a competitive market. The people who untangle the data and build up an informative narrative out of it are called data analysts. Data analysis is the process of cleaning, transforming, modeling, and identifying useful information in data. There are different ways to mine data for information based on what you are trying to extract, whether it is past trends or future expectations. You can read more about it [here](#).

Data analysts have to bridge the technical side of data with the various stakeholders of a business, therefore, it is important to use effective, easy-to-read, and scalable data models. Such models can be created using Power BI.

The first idea behind Power BI appeared in 2006 when Thierry D'hers and Amir Netz were working on a project named "Gemini". Their goal was to build upon Microsoft's SQL Server Analysis Services. "Gemini" first debuted as an Excel extension and was renamed to "PowerPivot", with the PowerQuery function being added soon after. Because handling and exchanging Excel data was a challenging task, Microsoft combined the 2 features into Power BI in 2015. The rest is history!

Why Power BI?

Power BI has been a leader in data analytics and business intelligence platforms for several consecutive years. Especially when combined with other Microsoft features, Power BI is a potent tool for any data-driven goals your business may have.



Power BI is a straightforward and versatile tool, meaning everyone in the company could take a quick look at a data dashboard and understand its main points. Data can be integrated from any data source, such as Excel, CSV, or PDF, with little preprocessing knowledge. In addition, Power BI excels in UX/UI features, making it visually appealing and accessible. Finally, other Microsoft-based technologies, such as AI Insights, can be easily implemented if you want to dive deeper into the data or perform complex analysis.

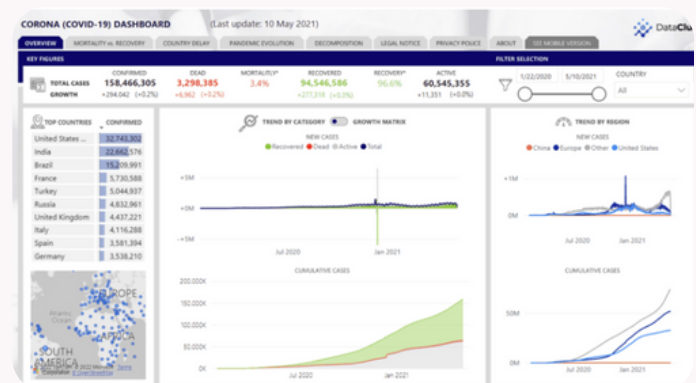
Applications

Power BI can be used in any situation that provides you with data, so everywhere! Whether it is a small company looking to branch out or a researcher looking to prove their theory, creating dashboards in Power BI is a great way to tell a story! Here are a couple of examples of very interesting applications.

- **Transportation Industry.** Heathrow Airport in London provides its customers with an up-to-date, dynamic dashboard with everything they need to know about their flights. Power BI is a great tool to visualize inbound flights, delay times, and any other metric that would make your travels easier.



- **Healthcare.** Power BI can be used in disease monitoring, such as in the case of the COVID-19 pandemic. A useful dashboard can keep track, for example, of infection fluctuations over countries or recovery rates. On a smaller scale, Power BI can also be used to help hospital administrators.



Getting started

Here you will learn more about setting up Power BI of your local computer.

How to set up Power BI

To start practicing with Power BI, you need to:

- Install the Power BI Desktop application – this is where you'll build reports.
- Create a free Power BI Service account using your Techionista email address, (e.g. student_name@techionista-academy.com). This is where you will gain experience sharing reports in the workspace.

Installing Power BI Desktop

With Power BI Desktop, you can build data models, create reports, and share your work by publishing it to the Power BI service.

Power BI Desktop is free to download. You can get Power BI Desktop in two ways: installing it as an app from the Microsoft Store (recommended) OR downloading it directly as an executable file and installing it on your laptop.

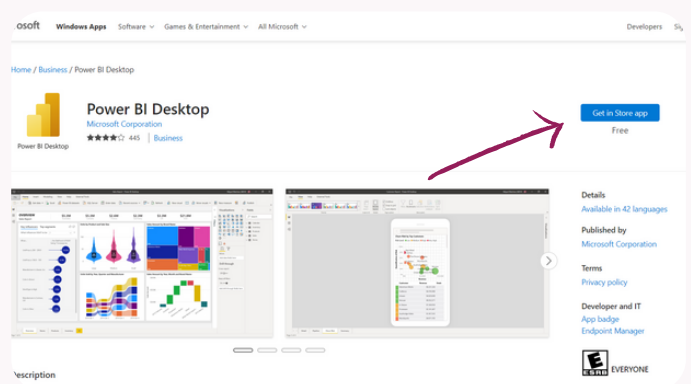
Either approach will get the latest Power BI Desktop version onto your computer. However, installing it from Microsoft Store offers the following advantages:

- **Automatic updates.** Windows downloads the latest version automatically in the background as soon as it's available, so your version will always be up-to-date.
- **Smaller downloads.** The Microsoft Store ensures that only components that have been updated are downloaded to your device, resulting in smaller downloads for each update.
- **Admin privilege isn't required.** You do not have to worry about admin privilege if you get Power BI Desktop from the Microsoft Store. The app will manage all your updates without you having to look into different admin settings.
- **Language detection.** The Microsoft Store version includes all supported languages and checks the language used on your computer each time it's launched.

Installation Guide

Install as an app from the Microsoft Store.

- **Step 1.** Open a browser and search for **Power BI Desktop** on the [Microsoft Store website](#).
- **Step 2.** After you've landed on the Power BI Desktop page, select **Install** or **Get**. If you are in a browser and not in the Microsoft Store app, you will be prompted to open the app. Click on **Install**.

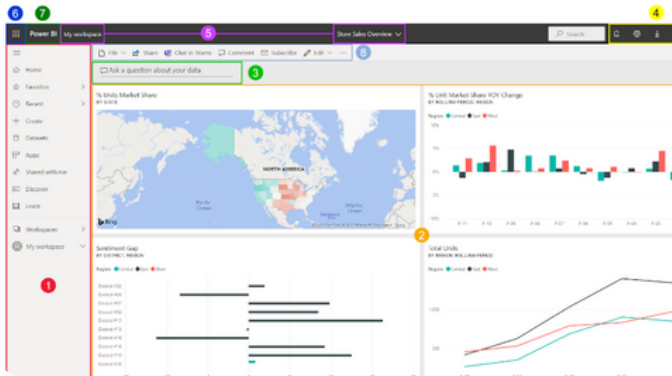


What Email to Use

Power BI requires that you use a work or school email address to sign up. It's not possible to sign up using email addresses provided by consumer email services (outlook.com, hotmail.com, gmail.com, etc.) Please, use Techionista email to sign-up for the Power BI service.

First Steps

Now that you have installed Power BI, it's time to explore it a little bit. There are infinite possibilities ahead! Let's first decipher all the buttons:



- **Navigation Pane.** Move between different Power BI features.
- **Canvas.** Main working space. Displays all your visualizations.
- **Q&A Question Box.** Ask a question about your data and you will get a visualization in return.
- **Icons.** Notifications, settings downloads, getting help, and providing feedback.
- **Dashboard Title.** What is your dashboard showing?
- **Microsoft 365 App Launcher.** Have all your Microsoft apps one click away.
- **Power BI Home.** The home button.
- **Labeled Icons.** Additional ways to interact with your dashboard.

Helpful Definitions

Dashboard

A canvas to display and update all the information you're extracting from data.

Report

One or more pages of data visualizations

Datasets

Collections of data. You can use datasets across workspaces and dashboards. .

Dataflow

A structure to help you combine data from multiple sources. Useful to keep the data up-to-date and ready to reuse.

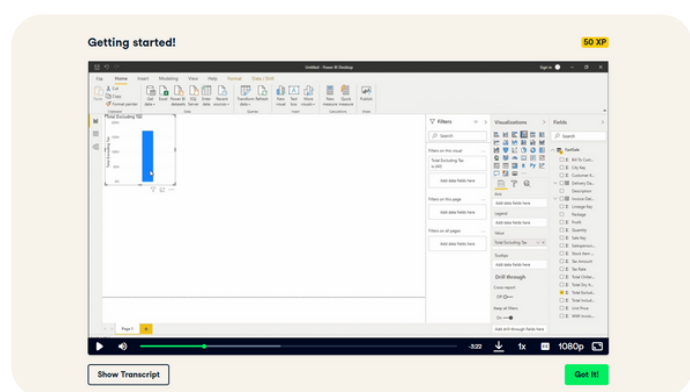
Taking your knowledge further

Here you will find additional resources to help you learn Power BI.

Techionista provided courses

To help you learn the hard skills needed as a Microsoft data professional, we will use the tools listed below.

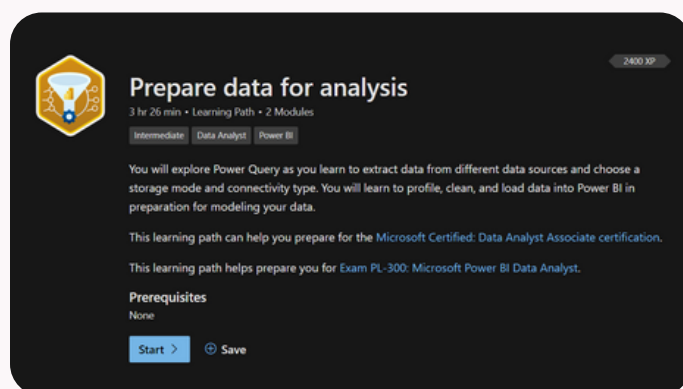
DataCamp



DataCamp is an interactive learning platform for data science. Through DataCamp, you can learn programming languages like Python and SQL through over 100 expert-taught courses. With its in-browser coding exercises, hands-on projects, and gamification features, DataCamp is the favorite learning platform of many Techionistas. After starting at the Techionista Academy, you will receive login details for DataCamp, giving you access to all their premium content during the track. These 7 DataCamp modules will help you learn Power BI.

- [DataCamp: Introduction to Power BI](#)
- [DataCamp: Data Modeling in Power BI](#)
- [DataCamp: Introduction to DAX in Power BI](#)
- [DataCamp: Dax Functions in Power BI](#)
- [DataCamp: Intermediate DAX Functions in Power BI](#)
- [DataCamp: Case Study: Analyzing Consumer Churn in Power BI](#)
- [DataCamp: Case Study: HR Analytics in Power BI](#)

Microsoft Learn



Microsoft Learn provides free interactive, hands-on training content continuously updated by Microsoft. This is especially useful when preparing for Microsoft Certifications, as you can be confident that you are always learning the latest updated content. With over 1000+ courses available on the platform, you can learn a variety of topics. Microsoft Learn offers single modules and learning paths that combine single modules, allowing you to follow a step-by-step learning journey.

The learning path that you will complete for your Power BI training looks like this:

- [Microsoft Learn: Getting started with Microsoft data analytics](#)
- [Microsoft Learn: Prepare data for analysis](#)
- [Microsoft Learn: Model data in PowerBI](#)
- [Microsoft Learn: Visualize data in PowerBI](#)
- [Microsoft Learn: Data analysis in Power BI](#)
- [Microsoft Learn: Manage workspaces and datasets in Power BI](#)

Additional learning materials

DAX

As part of Power BI, you will encounter DAX, which stands for Data Analysis Expressions. This language was created by Microsoft to facilitate data-driven methods in a simple and accessible way, even for people without previous programming experience. DAX can be compared to Excel formulas.

While Power BI already has very powerful tools for data visualization, DAX can further aid your data handling. Using DAX, you can manipulate your data to create new measures to boost your dashboard.

- If you need to practice your DAX skills, the first best place to check out is the [Power BI community](#). The thread on DAX gets updated regularly with answered questions from fellow Power BI users.
- **SQLBI** offers an [Introducing DAX](#) video course. This is a free video course about the DAX language. You can download the initial Power BI Desktop file used in the demos and repeat all the steps shown in the videos.

Here is a cheat sheet on [DAX functions and operators](#). The DAX language was created specifically for the handling of data models through the use of formulas and expressions. If you need to look up an expression quickly, here is a list of the most useful ones:

Simple Aggregations

SUM(<column>) adds up all the numbers in a column

AVERAGE(<column>) returns the average of all numbers in a column

MEDIAN(<column>) returns the median of numbers in a column

MIN/MAX(<column>) returns the smallest/biggest value in a column

COUNT(<column>) counts the number of cells in a column that contains non-blank values

DISTINCTCOUNT(<column>) counts the number of distinct values in a column.

Logical Functions

IF(<logical_test>,<value_if_true>,<value_if_false>)) checks the result of an expression.

Text Functions

LEFT(<text>, <num_chars>) returns the first specified number of characters from a text.

LOWER(<text>) converts a text string to all lowercase letters.

UPPER (<text>) converts a text string to all uppercase letters.

REPLACE(<old_text>, <start_num>, <num_chars>, <new_text>) replaces part of a text string with a different text string.

Date and Time Functions

CALENDAR(<start date>, <end date>) generates a column of continuous sets of dates.

DATE(<year>, <month>, <day>) returns the specified date in the date-time format.

WEEKDAY(<date>, <return_type>) returns 1-7 corresponding to the day of the week of a date.

You can also find a complete DAX guide [here](#).

Articles & reading materials

Check out this article on [“Everything you ever wanted to know about Microsoft BI.”](#) In this article, Nicola walks you through all the uses for Power BI, how its possibilities vary based on one's role within the company and the advantages of each component.

Videos and tutorials

Besides the PL-300 track, Microsoft has many resources that involve Power BI. If you already have an idea about what your desired role in a company might be, these additional [courses](#) can help you tailor your path better.

Check out this [YouTube](#) channel to learn Power BI like a pro! Avi Singh has introductory videos if you need to recap for the exam, various tool guides to go more in-depth, and news on Power BI if you've already grown to love this tool.

You are probably familiar with LinkedIn as the platform for online networking, but did you know they also have many learning resources? [On LinkedIn Learning](#), you will find many short courses to brush up on your Power BI knowledge.

Helpful cheat sheets

- Go to learndatainsights.com to access fun Power BI quizzes to help you prepare for the Microsoft Power BI PL-300 Exam. These free quizzes will test your knowledge in a fun and engaging way. The only thing you need to do to access these quizzes? Simply visit the website, create an account, and you are good to go!
- DataCamp has a complete [cheat sheet](#) on Power BI visualization and DAX expressions, but also important knowledge bits that you might want to revisit on Power BI.

Book recommendations

- [This website](#) offers you a list of various books you can get on Power BI. These are great practice tools if you're more comfortable with physical resources. However, all the content can be found in the various Microsoft Learn, DataCamp, and Udemy courses you already followed.