

Self-Service Analytics with Power BI

*Learn how to build an end-to-end
analytics solution in Power BI*

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Rishiraj Deb
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Foreword

Data, Analytics and Reporting have fascinated me ever since I started my career as a software developer in IT industry. It has been a transformational journey so far, wherein I worked on a wide spectrum of products and technologies and helped customers across industries with the best business intelligence solutions to meet their objectives. Being in industry for more than 19 years and a leader of Analytics and Cloud practice, I have had the opportunity to build capabilities in Analytics and Reporting space and drive strategic initiatives to evangelize business intelligence, maximize leverage of the best tools, and cultivate a culture for continuous innovation, capability enrichment, top talent development, process assurance, and quality.

Power BI is a suite of business intelligence, reporting and data visualization products and services that helps organizations to create a data-driven culture with business intelligence for all. It is a range of software services, apps, and connectors that work in conjunction to turn unrelated data sources into insights that are cohesive, interactive, and visually immersive. In any business, system generates a wide variety of data in the size of terabytes, petabytes or more, and business intelligence is used to analyze this data and create actionable insights. The organization's success relies on these decisions so its critical that companies leverage the potential of business intelligence and reporting to make complex business decision and be successful in the competitive world.

Business intelligence is critical for making decisions in today's competitive market. Irrespective of the business size, to truly understand the business performance and monitoring critical metrics is essential. Another key aspect is the self-service that enables end-users to access, analyze, and interpret data without relying on extensive IT support or expertise. With the help of self-service Business Intelligence, business users can create their reports and visualizations using intuitive tools and user-friendly interfaces. Power BI is one such powerful tool that can generate insights into data and drive informed decisions. As per Gartner, Power BI is a powerful and flexible platform for self-service and enterprise business intelligence. One of the standout features of Power BI is its ability to connect to and visualize any data, enabling users to reveal insights, and create visually stimulating reports quickly and easily.

This book provides a good overview of why business intelligence reporting is critical to success of any business and how Power BI enables any organization to provide data insights to support decision making. It starts with “why” providing an insight into the importance of visualization and musically taking you through journey of how Power BI addresses different dimension of problems in this space. It provides a detailed view of key features of Power BI and the capabilities of both built-in and custom visuals. What I liked the most is the way authors have provided a simplified step-by-step journey into wide range of features and capabilities of Power BI. How it can be used to build customizable dashboards, drag-and-drop report authoring, data modelling, managing large data volume and more. The right mix of business scenarios, challenges, and pictorial view of how Power BI features can be used to solve the problems is commendable.

As a reader, I find this book relevant. Its easy to follow details makes it very helpful for me and anyone interested in Power BI. This book justifies the title and provides adequate information on Power BI with clear objectives and a step-by-step approach to enhance your knowledge and provide you with good sources of information.

—*Rajesh Kumar*

Dedicated to

My son Shikhar Srivastava, an ardent reader and budding writer
— Annu Roy

My daughter Irene Deb (Dhun), with all my love and best wishes
— Rishiraj Deb

My beloved wife Shuuby & My Daughter Aarchi
— Gaurav Aroraa

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- **Rishiraj Deb** is a Senior Consultant and Subject Matter Expert, having vast experience in designing & delivering complex data analytics and business intelligence projects, helping businesses gain a better insight on their data. Rishiraj strongly believes enterprise data is an asset and is fascinated about creating data driven solutions using various data science and data analytics platforms and frameworks. Rishiraj has a master's degree in computer science apart from having various professional certifications. Having worked for multiple big enterprises across industries, he is familiar with the real-life challenges businesses face today regarding utilizing their data and making the most out of it. Various concepts explained in the book should help address most of those challenges.
- **Gaurav Arora** is a passionate technology leader and hands-on technologist, with a track record of driving technical innovation. Gaurav has delivered solutions for enterprises and start-ups operating in leadership, management, architectural, and development capacities. Gaurav has over 26 years of experience, collaborating with some of the most well-known technologies like Java, Microsoft, Angular, React, Python, PHP etc. pertaining to the domains Medical, Media, Construction, Gaming, Finance, ATM, Supply-chain, and so on. Gaurav has a doctorate in computer science (Machine Learning) from California Public University. Gaurav is a Microsoft MVP award recipient. He is a Mentor of Change with AIM NITI Aayog, Govt. of India, Business Coach

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- *Data Analytics Principles, Tools, and Practices* (BPB)
- *Enterprise Integration with MuleSoft* (BPB)

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She is currently working as a Senior Engineering Manager Lead at Microsoft, Power Platform Customer Advisory Team. In her previous role, she worked as an Associate Director at Novartis, Co-founder at InteGen IT Services, Wells Fargo, Tech Mahindra, and Microsoft, showcasing her impact in architecture, automation, and leadership.

Pujarini holds an MCA from ICFAI University and completed the General Management Program at the Indian School of Business. Her passion for innovation and strategic leadership define her journey.

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My inspiration to undertake anything challenging always comes from my mother, Ms. Krishna Roy, who brought up four of us and provided the best education to us despite not having formal education herself. I continue to draw my courage and belief to be able to undertake difficult tasks from her.

The most special encouragement and motivation comes to me from my son, who always inspires me to keep up with the digital generation.

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- **Rishiraj Deb:** I would like to express my heartfelt gratitude to everyone who contributed to the creation of this book. Your unwavering support and encouragement have been a constant source of strength throughout this writing journey for me.

First and foremost, I want to thank the publisher for believing in the potential of this work and providing the platform to share my knowledge and thoughts with the world.

To my dear mother, Anita Deb, and brother, Biswapriya Deb, your belief in my abilities has fuelled my determination to bring this book to life.

Finally, my deepest appreciation goes to my loving wife, Deboshree Deb. Your understanding, patience, and continuous encouragement have been invaluable during the countless hours I spent writing this book.

To my co-authors, thank you for your collaboration and contributions. Your insights and discussions have enriched the ideas within these pages.

To all the readers, it is with utmost sincerity that I share this acknowledgement. I hope that the book proves to be useful to you, just as it has been shaped by my own experiences and learnings.

Thank you all for being a part of this incredible journey with me. Your support means the world.

- **Gaurav Arora:** In life, it is hard to understand things when you do not find support. My family is one such support system, and I am the luckiest to have them. I would like to thank my wife, Shuuby Arora, and my little angel, Aarchi Arora, who gave me permission to write and invest time in this book.

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I would also like to acknowledge the valuable contribution of my colleagues and co-worker during many years working in the tech industry, who have taught me so much and provided valuable feedback on my work.

Finally, I would like to thank all the readers who have taken an interest in my books and for their support in making it a reality. Your encouragement has been invaluable.

Preface

Data visualization and analysis is a critical task for enterprises that require a comprehensive understanding of the latest technologies and programming languages. Power BI is one of the tools that have become increasingly popular in the field of data analysis and visualization for enterprises.

This book is designed to provide a comprehensive guide to touch every shore of Data Analytics and Visualization with the help of Power BI. It covers a wide range of topics, including Data discovery (ETL capabilities etc.), Data Modeling, Report Distribution and management, covering business use-cases.

Throughout the book, you will learn about the key features of Power BI and various analytic tools. You will also learn about best practices for building enterprise level analytics with numerous practical examples to help you understand the concepts.

This book is intended for developers who are new in the field of analytics and want to excel with the power of these tools. It is also helpful for experienced developers who want to expand their knowledge of these technologies/tools and improve their skills in building robust and reliable applications for data visualization and analytics.

With this book, you will gain the knowledge and skills to become a proficient developer in the field of enterprise development using Power BI and related tools.

Chapter 1: Getting Started with Power BI - elaborates the need of data visualization in today's data driven business world and explains why Power BI can be a tool of choice. The building blocks of the tool will be discussed here along with a quick overview of each of them. It would hand-hold the readers with the required installation processes.

Chapter 2: Data Discovery Using Power Query - discusses the features of Power Query and the capability of connecting to different data sources. The common data transformations would be discussed to shape the data as per business needs. Readers would get introduced to the M (Mashup) language and its uses in the context of Power Query.

Chapter 3: Data Modeling in Power BI - explains about modelling data in Power BI desktop. Power BI works best with a star schema instead of a big denormalized

table. Here we elaborate the star schema design and its relevance to develop Power BI data models optimized for performance and usability. Also, different ways of implementing custom calculation using **Data Analysis Expressions (DAX)** would be discussed to enhance the model.

Chapter 4: Visualizing Data in Power BI - elaborates how to create visualizations in Power BI. Commonly used visuals will be discussed in detail along with different formatting options to impart the knowledge of creating a positive user experience. This chapter also discusses the default visuals and the visuals from the marketplace.

Chapter 5: Managing Reports in Power BI Service - gives special attention with explanation of Power BI reports, hosted on an Azure SaaS platform called Power BI Service. This chapter focuses on covering important topics from the service including workspace management, access control etc. along with data gateways and why to use them. This chapter also explains topics like dataflows and apps along with outlines of how to implement data security in Power BI.

Chapter 6: Working with Large Data Volumes - discusses concepts of big data reporting, which is a pressing need across many industries, thanks to the ever-growing volume of data. The chapter discusses a few of the key capabilities and features of Power BI for handling very large amounts of data. A few external tools that can be integrated easily with Power BI would be discussed here - which help in terms of source control, scripting & metadata deployment.

Chapter 7: DAX Reference Guide - provides a comprehensive guide of **Data Analysis Expressions (DAX)**. The chapter also explains the various commonly used DAX functions, using suitable examples. Readers can also refer to the expressions and customize them as per the business requirement.

Chapter 8: Use Case- Creating a Risk Report in Power BI - discusses how to make use of the concepts learnt with the help of a real-life business use-case.

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CHAPTER 1

Getting Started with Power BI

Introduction

Introducing readers to the world of business intelligence, and one of the most popular tools in this domain which is Power BI. In this chapter, we will try to understand why we need Power BI in the first place and what different dimensions of problems it addresses. We will get familiarized with the tool and the components, see how to set up the environment as well as understand the cost factors involved with different licensing options, which should help us to create a solid foundation for the journey we begin with this book.

Structure

In this chapter, we will discuss the following topics:

- Importance of visualization
- Introduction to Power BI
- Building blocks of Power BI
- Installing Power BI
- Quick tour of Power BI components

- Flow of work in Power BI
- Power BI licensing details

Objectives

This chapter aims to make the readers understand the core concepts of the tool without covering individual topics in detail. By the end of the chapter, readers should be familiar with the common terminologies and have an understanding of the general working principles. This should help us to dive deep into individual components in the subsequent chapters of the book.

Importance of visualization

Data is the new currency – maybe all of us who work with data are familiar with this phrase. However, it is not of much use if the data is not structured or modeled and cannot be visualized. Our minds remember and understand visuals in a much better way in comparison with flat tabular data, and hence, comes the need of creating visuals from raw data, which should be representative of the dataset on which they are built.

If we want to understand this concept further with an example, let us consider the small sample dataset as illustrated in *Figure 1.1*:

Segment	Country	Product	Discount Band	Units Sold	Manufacturing	Sale Price	Gross Sales	Discounts	Sales	COGS	Profit	Date	Year
Government	Canada	Carretera	None	1618.5	\$ 3.00	\$ 20.00	\$ 32,370.00	\$ -	\$ 32,370.00	\$ 16,185.00	\$ 16,185.00	01-01-2014	2014
Government	Germany	Carretera	None	1321	\$ 3.00	\$ 20.00	\$ 26,420.00	\$ -	\$ 26,420.00	\$ 13,210.00	\$ 13,210.00	01-01-2014	2014
Midmarket	France	Carretera	None	2178	\$ 3.00	\$ 15.00	\$ 32,670.00	\$ -	\$ 32,670.00	\$ 21,780.00	\$ 10,890.00	01-06-2014	2014
Midmarket	Germany	Carretera	None	888	\$ 3.00	\$ 15.00	\$ 13,320.00	\$ -	\$ 13,320.00	\$ 8,880.00	\$ 4,440.00	01-06-2014	2014
Midmarket	Mexico	Carretera	None	2470	\$ 3.00	\$ 15.00	\$ 37,050.00	\$ -	\$ 37,050.00	\$ 24,700.00	\$ 12,350.00	01-06-2014	2014
Government	Germany	Carretera	None	1513	\$ 3.00	\$ 350.00	\$ 5,29,550.00	\$ -	\$ 5,29,550.00	\$ 3,93,380.00	\$ 1,36,170.00	01-12-2014	2014
Midmarket	Germany	Montana	None	921	\$ 5.00	\$ 15.00	\$ 13,815.00	\$ -	\$ 13,815.00	\$ 9,210.00	\$ 4,605.00	01-03-2014	2014
Channel Partners	Canada	Montana	None	2518	\$ 5.00	\$ 12.00	\$ 30,216.00	\$ -	\$ 30,216.00	\$ 7,554.00	\$ 22,662.00	01-06-2014	2014
Government	France	Montana	None	1899	\$ 5.00	\$ 20.00	\$ 37,980.00	\$ -	\$ 37,980.00	\$ 18,990.00	\$ 18,990.00	01-06-2014	2014
Channel Partners	Germany	Montana	None	1545	\$ 5.00	\$ 12.00	\$ 18,540.00	\$ -	\$ 18,540.00	\$ 4,635.00	\$ 13,905.00	01-06-2014	2014
Midmarket	Mexico	Montana	None	2470	\$ 5.00	\$ 15.00	\$ 37,050.00	\$ -	\$ 37,050.00	\$ 24,700.00	\$ 12,350.00	01-06-2014	2014
Enterprise	Canada	Montana	None	2665.5	\$ 5.00	\$ 125.00	\$ 3,33,187.50	\$ -	\$ 3,33,187.50	\$ 3,19,860.00	\$ 13,327.50	01-07-2014	2014
Small Business	Mexico	Montana	None	958	\$ 5.00	\$ 300.00	\$ 2,87,400.00	\$ -	\$ 2,87,400.00	\$ 2,39,500.00	\$ 47,900.00	01-08-2014	2014
Government	Germany	Montana	None	2146	\$ 5.00	\$ 7.00	\$ 15,022.00	\$ -	\$ 15,022.00	\$ 10,730.00	\$ 4,292.00	01-09-2014	2014
Enterprise	Canada	Montana	None	345	\$ 5.00	\$ 125.00	\$ 43,125.00	\$ -	\$ 43,125.00	\$ 41,400.00	\$ 1,725.00	01-10-2013	2013
Midmarket	United States of America	Montana	None	615	\$ 5.00	\$ 15.00	\$ 9,225.00	\$ -	\$ 9,225.00	\$ 6,150.00	\$ 3,075.00	01-12-2014	2014
Government	Canada	Paseo	None	292	\$ 10.00	\$ 20.00	\$ 5,840.00	\$ -	\$ 5,840.00	\$ 2,920.00	\$ 2,920.00	01-02-2014	2014
Midmarket	Mexico	Paseo	None	974	\$ 10.00	\$ 15.00	\$ 14,610.00	\$ -	\$ 14,610.00	\$ 9,740.00	\$ 4,870.00	01-02-2014	2014
Channel Partners	Canada	Paseo	None	2518	\$ 10.00	\$ 12.00	\$ 30,216.00	\$ -	\$ 30,216.00	\$ 7,554.00	\$ 22,662.00	01-06-2014	2014
Government	Germany	Paseo	None	1006	\$ 10.00	\$ 350.00	\$ 3,52,100.00	\$ -	\$ 3,52,100.00	\$ 2,61,560.00	\$ 90,540.00	01-06-2014	2014
Channel Partners	Germany	Paseo	None	367	\$ 10.00	\$ 12.00	\$ 4,404.00	\$ -	\$ 4,404.00	\$ 1,101.00	\$ 3,303.00	01-07-2014	2014
Government	Mexico	Paseo	None	883	\$ 10.00	\$ 7.00	\$ 6,181.00	\$ -	\$ 6,181.00	\$ 4,415.00	\$ 1,766.00	01-08-2014	2014
Midmarket	France	Paseo	None	549	\$ 10.00	\$ 15.00	\$ 8,235.00	\$ -	\$ 8,235.00	\$ 5,490.00	\$ 2,745.00	01-09-2013	2013
Small Business	Mexico	Paseo	None	788	\$ 10.00	\$ 300.00	\$ 2,36,400.00	\$ -	\$ 2,36,400.00	\$ 1,97,000.00	\$ 39,400.00	01-09-2013	2013
Midmarket	Mexico	Paseo	None	2472	\$ 10.00	\$ 15.00	\$ 37,080.00	\$ -	\$ 37,080.00	\$ 24,720.00	\$ 12,360.00	01-09-2014	2014
Government	United States of America	Paseo	None	1143	\$ 10.00	\$ 7.00	\$ 8,001.00	\$ -	\$ 8,001.00	\$ 5,715.00	\$ 2,286.00	01-10-2014	2014
Government	Canada	Paseo	None	1725	\$ 10.00	\$ 350.00	\$ 6,03,750.00	\$ -	\$ 6,03,750.00	\$ 4,48,500.00	\$ 1,55,250.00	01-11-2013	2013
Channel Partners	United States of America	Paseo	None	912	\$ 10.00	\$ 12.00	\$ 10,944.00	\$ -	\$ 10,944.00	\$ 7,236.00	\$ 3,708.00	01-11-2013	2013

Figure 1.1: Sample Raw Data

Now, let us understand the data first.

This is sales data for products across different segments, which includes information like manufacturing cost, sales price, number of units sold, gross sales, total cost, profit, discount information in the case offered for any product, date of the transaction and the country where the transaction took place.

Looking at the data one can say it is not really intuitive in terms of deriving insights, isn't it?

Considering the fact that in a real-life business scenario, for potentially millions of records, someone cannot just take a glance at the data and make something out of it. It requires queries to pass to this dataset or table, to retrieve some meaningful information. Data visualization addresses this issue and enables users to gain meaningful insights from a plethora of data, in a quick, universal, and efficient way.

Now, let us create some visuals using the same records and see how that helps as shown in *Figure 1.2*:

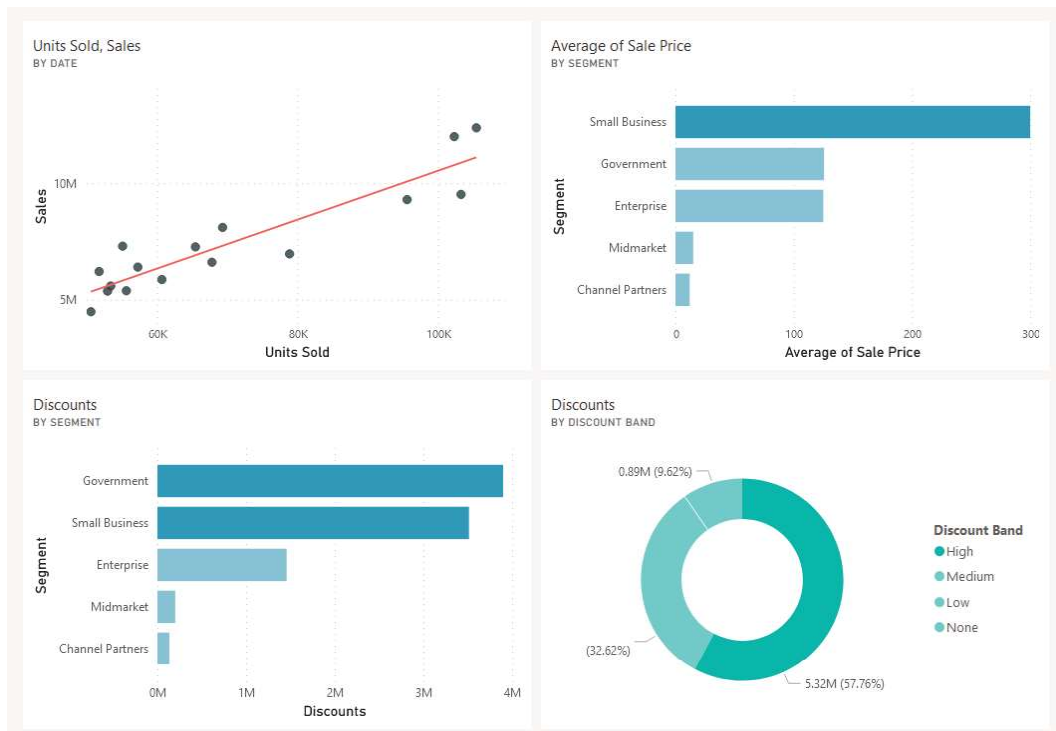


Figure 1.2: Visualizing the sample raw data

Looking at the above visuals, one can instantly draw the following conclusions:

- There is an obvious correlation between units sold and the sales amount.
- The segment *Small Business* has significantly more Sale Price.
- *Government & Small Business* segments also offered more discounts than others.
- Cases where discounts have been offered, *High* accounts for the majority.

In today's fast-paced world of ever-growing data, it would increasingly become difficult to analyse and gain insights from flat tabular data. Hence, effective visualization is becoming the pressing need for telling a story which is based on and can be substantiated by data, also helps businesses across industries to find actionable insights.

Though visualization is important, alone it cannot meet the diverse business intelligence needs of today's enterprises. In the next section, we will see the common requirements of business intelligence projects and understand why Power BI can be a tool of choice.

Introduction to Power BI

As we have seen now why visuals are important, that is not always the only outcome looked for in a report. Visualization is a very important aspect of analytical reports, where we analyse the existing data and try to find trends, patterns in it which otherwise is not intuitively available. Also, it plays an important part in telling a story which best describes the data we are working on and the key outcomes we can get out of it.

However, the requirement might be an operational kind of report to track the day-to-day operational activities of an organization. Probably, a table is all that would be required to be used as a visual in this case, what would matter more is the ability to integrate with the database or data warehouse that stores the data and the ability to process large data volumes.

For a wide range of business users, Excel has been the most popular tool for decades to analyse data and report. Maybe the requirement is to move the users from Excel-based report silos to a centralized online reporting framework. Often one of the biggest challenges with these kinds of scenarios is that people have invested so much time and effort in perfecting their Excel skills that they are reluctant to come out of their comfort zone. Here, it might be wiser not to force users into an abrupt change, rather we need to create something which closely mimics their existing ways of working so that they can self-serve and eventually move to a more robust BI (business intelligence) solution.

Power BI is a business intelligence tool that can meet all the requirements mentioned above, and many more! It excels in:

- *Integration:* Power BI has hundreds of different data source connectors which help to integrate with various platforms for reporting.
- *Transformation:* The data available in real-life business use cases is often far from what is ideal for a data model. Hence, it needs to be shaped and transformed to meet the modeling requirements. Power BI has a rich set

of ready-to-use transformations using just a few button clicks, with the capability of easily customizing those transformations as and when required.

- *Data Modeling:* It is easy to create different data models in Power BI; also one can easily enhance those models with custom calculations using an expression language (DAX) which is very similar to Excel formulas in terms of syntax.
- *Visualization:* Power BI has a wide array of visuals readily available for the users once they install the tool. Additionally, there is a marketplace for certified free and paid visuals created by third parties which users can import in the development environment by matter of a click. If that is not enough, there are provisions for creating custom visuals using R or Python scripting!
- *Distribution:* There is a Software as a Service (SaaS) platform built in Azure cloud, called *Power BI Service*, which hosts all the published Power BI reports and provides different options for collaboration & management.
- *Security:* Multiple layers of data security can be implemented in Power BI which includes access control on Power BI Service as well as role-based security for individual records of a table.
- *Support Framework:* Being a Microsoft product, it has excellent integration with other Microsoft Power Platform components like Power Apps and Power Automate, which enables to create end-to-end solutions. Also, it has integration with multiple external tools which can be used for a range of activities starting from model optimization to big data processing.
- *Licensing Options:* Power BI Desktop is a free software which anyone can download, install, and start learning which eliminates the need for expensive sandboxes. There are other user-based and capacity-based licensing options which can be adopted on a need-to-have basis.
- *Convenience of Use:* It's convenient to try out and learn, easy to get support from online communities and one can start value addition to the work in a matter of hours!

The increasing popularity and adoption of Power BI by every size of enterprise across industries is a testimonial of how useful the product can be in terms of automating routine project reports as well as deploying enterprise-scale BI solutions.

Building blocks of Power BI

The basic elements or building blocks of Power BI content can be categorized as:

- *Datasets:* Datasets are the collection of data on top of which the Power BI contents are built.

- **Visualizations:** These are visuals that are created based on the underlying dataset. They can be a table, a graph, a chart, a card, or any other visual representation of data.
- **Reports:** Reports are a collection of visuals, in one or more pages, used to convey insights about the data in the dataset. Reports can be directly consumed by the users or can be distributed via Apps.
- **Dashboards:** Dashboards are single pages which bring together visuals from one or more reports. Reports are usually function specific, for example, Sales Reports, Inventory Reports, and so on. while dashboards can provide quick overviews across the spectrum of reports.
- **Tiles:** Tiles are individual visuals of a dashboard. They can separately be interacted with and can be used to trigger data-based alerts.

A pictorial representation of Power BI building blocks can look like *Figure 1.3*:

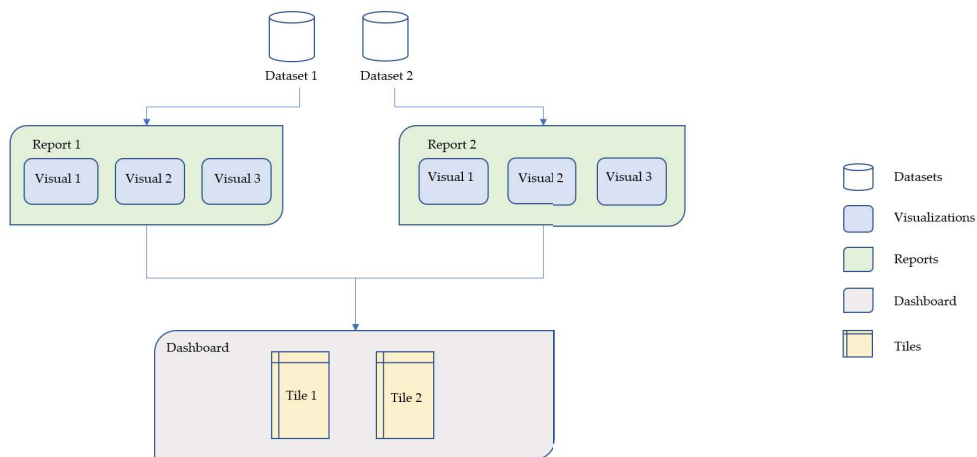


Figure 1.3: Power BI Building Blocks

These elements can be used in different components of the tool, which we will discuss more in the subsequent chapters of the book.

Installing Power BI

Power BI Desktop is a free desktop application which can be downloaded and installed from the Microsoft official webpage. Contents can be developed in both Power BI Service (online) and Power BI Desktop (offline), while the latter provides more control and flexibility in terms of features and usability. Power BI Service does not require any installation and users can login to it using their organizational account. We will dive deep into Power BI Service later in the book, this section

will focus on setting up the Power BI Desktop which also should be the preferred development environment for majority of the Windows users.

Power BI Desktop gets an update each month, to install the latest version please type in the following URL or link (or keywords) on your web browser of choice:

<https://www.microsoft.com/en-us/download/details.aspx?id=58494>

Keywords: Download Power BI Desktop

The link should direct you to a webpage where you should be able to see the *Download* option as shown in *Figure 1.4*:

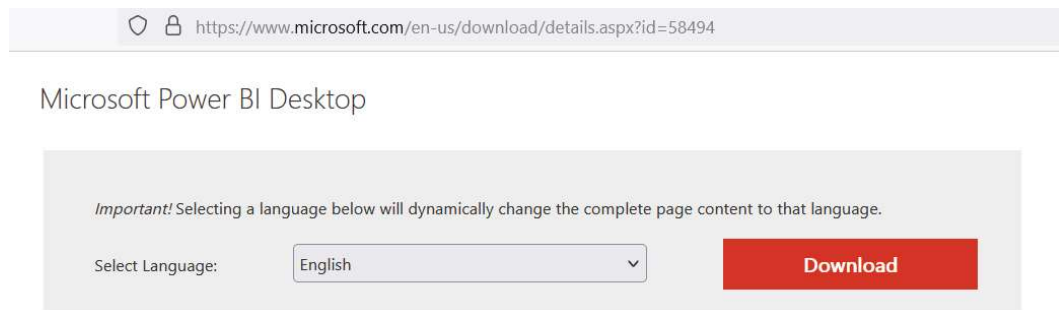


Figure 1.4: Power BI Desktop download page

Clicking on the download button should redirect the user to the download options where the user needs to select the file depending on the bit version of Windows and proceed, refer to *Figure 1.5*:

Choose the download you want

<input type="checkbox"/> File Name	Size
<input checked="" type="checkbox"/> PBIDesktopSetup_x64.exe	377.2 MB
<input type="checkbox"/> PBIDesktopSetup.exe	341.9 MB

Figure 1.5: Power BI Desktop download files

Tip: To check the Windows bit version, please follow the steps outlined in the given link:

<https://support.microsoft.com/en-us/office/determine-whether-your-computer-is-running-a-32-bit-version-or-64-bit-version-of-the-windows-operating-system-aac162a1-0cb3-46f2-888f-2f22897396ce>

Keywords: Check Windows bit version

This should download the executable installer on the user's PC. The installer then should be executed by double clicking and the setup instructions need to be followed to complete the installation process.

Tip: During the installation process, please check on the 'Create a Desktop Shortcut' option to get the app launcher by default on the user's desktop.

Quick Tour of Power BI Components

Power BI has some layers or components that work in tandem to provide a complete BI solution experience. The primary components of Power BI can be categorized as:

- *Power Query or Query Editor*
- *Power BI Desktop*
- *Power BI Service*

Now, let's do a quick tour of each of these components to understand what they actually do. The details of all these components will be discussed throughout the rest of the book in the subsequent chapters.

- *Power Query or Query Editor:* Power Query is the component to perform the ETL (Extraction of data from the data source systems, Transforming the data as per the need of the data model, Loading the transformed data to the next layer) tasks that are required to shape the data for the requirement.

Power Query is integrated with Power BI Desktop and gets installed at the same time.

Once Power BI Desktop is installed with a desktop shortcut, the tool can be launched and logged into with a school or work account. The authentication process is not mandatory at this stage and can be skipped to continue working with the tool, however logging in provides a more integrated experience in terms of working with Power BI Service. Power BI home screen can be seen in *Figure 1.6*: