



Getting Started With
Microsoft Power BI –
Instructional Manual

By Chukwuwike Cephas

CONTENT:

Introduction to Microsoft Power BI

The Parts of Microsoft Power BI

- Power BI desktop
- Power BI service
- Power BI mobile

Getting Started with Building a Simple Report

- Accessing Dataset
- Cleaning (Transformation) of Dataset
- Modelling (Creating Relationships)
- Building and publishing your reports to Power BI Service
- Accessing report on mobile

Introduction

This is a foundational course that aims at exposing us to a tool developed by Microsoft, called Microsoft Power BI, An Analytic tool with key capabilities for building systems that unveils Data insights:

By the end of this Course, we should be able to

- ◆ Understand what the Power BI tool is and offers
- ◆ Understand how to get started with the tool (setting up)
- ◆ How to load data from Microsoft Excel and Comma-Separated Values (CSV) sources
- ◆ How to manipulate the data to prepare it for reporting
- ◆ How to prepare the tables in Power Query and load them into Power BI
- ◆ Create a report and Publishing to Power BI Service (Lab)

Color Code Meaning

[**Trainer** – Trainer Speaking, **Ask** – Question to audience, **Participants** – Response from Audience, **Show** – Visual Illustration], Exercises - **Yellow**

Brief Introduction of Power BI to audience

Trainer: Hey guys! We'll be discussing Power BI today

Ask: Guess we're all excited about this?

Participants: Audience's Response!

Show: The audience should see the logo of Power BI, side by side with a report.

Trainer: So right now, we will delve straight in to know what Power BI is

Ask: How many of us can relate with bar charts, line charts, Histogram in mathematics?

Participants: Response!

Show: A Picture displaying Histograms, bar charts and other basic visuals audience can relate to

Trainer: These bar charts, histograms, and Pie-charts we see, are not necessarily for design but to communicate certain information when fed with data

Ask: How many of us remember how we normally must plot line graphs by marking up the intersecting point between X and Y axis, and pie chart with different angular segments?

Participants: Response!

Show: The audience should be seeing a line graph and a pie chart

Trainer: The way these line charts and pie charts are constructed by the numerical and angular values (**Called Data**) manually, is the same way Power BI automatically works with data to create its own graphs, barcharts, histograms and pie chart which a business user will view and glean information for decisions

Ask: So, will it be right to say Power BI is a tool that helps us to create barcharts, histograms, line graphs, maps that helps us make decisions - [yes, or no?]

Participants: Response!

Show: Create a poll for voting, and get the response from your audience to know where they presently are

Parts of Power BI

Trainer: Before we proceed, it is important for us to know the Full meaning of “BI” in **Power BI**

Ask: What do we think “BI” in “Power BI” means?

Participants: Response!

Show: Create a poll with options for the audience to pick from

Trainer: Now we've understood the acronym “BI”, we'll proceed to know the different part of Power BI, the different parts are: *Power BI Desktop*, *Power BI Service* and *Power BI Mobile* - A *trio-Analytic Package*

Ask: Please can we echo the different parts of Power BI?

Participants: Response

Show: Display a picture showing the workflow between the three parts of Power BI

Trainer: Okay, Let's get started with Power BI Desktop and Power BI Service

Ask: How many of us are familiar with or have heard of Excel desktop and Excel Online?

Participants: If there is a yes response, request a student to explain, if none move further

Show: Show the students pictorially what excel online, and Desktop looks like

Trainer: Just like we've seen in Excel, the Desktop version of Power BI is the offline version, why the Power BI Online version requires internet access

Ask: Do we understand?

Participants: Response!

Show: A picture showing the Interface of both the offline and online version

Ask: A quick question should be, what is the difference between these two

Trainer: Function wise, a major difference is that Power BI has a strength in preparing data and creating reports (Cooking reports), why the Power BI Service has strength in creating dashboards and sharing reports to different members of an organization

Ask: so, what can we say that Power BI desktop and service are?

Participants: Responses from every one person in class

Trainer: Why Power BI Desktop and Power BI service can be accessed on a computer system, The third, which is the Power BI Mobile is just like our WhatsApp App which can be gotten from App or Play store and used to view the reports prepared and shared in desktop and power BI service respectively

Show: A video showing how the three distinct parts work – Case scenario

Getting Power BI Desktop and Mobile Installed

Trainer: To download any Power BI related tools,

Go to: Microsoft store or to the link: <https://powerbi.onmicrosoft.com/en-us/downloads>, also, to create an M365 company account, use this Link: <https://aka.ms/M365DevAccount> to create an account.

Ask: Are you guys with me?

Participants: Responses!

Show: Demonstrate and show how they can download it, while you make the executable file available, Also show how they can go about activating an M365 Account for a company.

Trainer: After downloading is completed or having collected the executable file, go to the file location and install to make it available for use.

Ask: Is anyone having issues?

Participants: Responses!

Show: Demonstrate this by installing the executable file collected or downloaded

Ask: Are we all done with the installation?

Exercise 1:

- 1) Go to Microsoft Store or use link: [Downloads | Microsoft Power BI](https://www.microsoft.com/powerbi/desktop), and download Microsoft Power BI Desktop.

- 2)Create an M365 Developer's Account with Link: <https://aka.ms/M365DevAccount> - You can check this video to get more understanding on how to go about it.
- 3)Watch this video to prepare your mind for our subsequent discussions:
<https://bit.ly/IntroductiontoMicrosoftPowerBI>

Activating a trial account for Power BI Service

Trainer: As against getting a license tied to an organizational account, you can activate a Single User Pro Account, by going to: <https://app.powerbi.com> and sign up with the company email address from previous tasks. After that, you have successfully authenticated and accessed the power BI online, you can click on the account icon and click on the pro trial to access premium feature for 60 days.

Ask: Are you all following?

Participants: Responses!

Show: Demonstrate to the students how to go about signing up for a trial pro account by clicking the topmost right of their screens (account icon)

Getting Started with Building reports

Ask: Guy's do you remember charts like the bar chart, histogram, line chart and pie charts?

Participants: Responses!

Trainer: These charts are called **visuals** in the Power BI space and the collection of these visuals which speaks to a story is called **a report**, and with the installed Power BI desktop we can get running with building these reports.

Show: Display a picture of a report page painting a single story

Ask: Are we all following?

Getting Data into Power BI Desktop

Trainer: Getting started with building report with Power BI starts with pulling in the data to be worked on into the Power BI Desktop or service – depending on what you want to use.

Ask: Guys are you here with me?

Participants: Responses!

Trainer: To achieve this you leverage on something that's called "**Connectors**" or "**data source**"

Ask: Can anyone help us with what a connector is?

Participants: Responses!

Show: Show a page that displays the various connectors.

Trainer: Connectors can simply be seen as a pipeline that links up our data source with Power BI

Ask: are you with me?

Participants: Responses!

Taking Action

Trainer: So right now! We'll delve right into action, and that's opening our Power BI Desktop

Ask: Can we all open our Power BI desktop?

Participants: Responses!

Show: Demonstrate how it can be opened, explaining the writings on the overlaying pane, and finally closing it out.

Trainer: A quick overview of the user Interface, we have the tabs, ribbons, Views, Canvas, visuals pane, report page, fields pane

Ask: Are you all with me?

Participants: Responses!

Show: Demonstrate with a mouse cursor all these parts as you explain!

Trainer: The first step to pulling data into Power BI desktop is to click on the home tab, and subsequently click on **get data** which shows up on the ribbon, when that is done you should see a drop down of the common data sources.

Ask: Are you all with me?

Participants: Responses!

Show: Carry out a live demonstration of the aforementioned.

Trainer: We'll be using Excel and CSV (Comma separated Values) files for our practical activities

Ask: How many of us are familiar with excel.....what about CSV?

Participants: Responses!

Trainer: From the dropdown, click on Text/CSV, and this takes you to your computer file system, where you can select your desired data file.

Ask: Are you all with me?

Participants: Responses!

Show: Carry out a live demonstration of the aforementioned.

Trainer: After selection of the file, the next screen you'll see is the navigator where you can preview your file and make either of these decisions viz, Load, **Transform** or **Cancel**

Ask: Are you all with me?

Participants: Responses!

Trainer: When you preview your data and you perceive that everything is well arranged, then you can proceed with loading as this loads the data straight up into Power BI.

Ask: Guess we're having a nice time with these concepts?

Participants: Responses!

Trainer: Also, we have the transform button which can be clicked on if there are issues with the data that needs to be addressed, things like untitled columns, having sets of values occurring in same column, etc. But if you want to discontinue, you can click on cancel.

Ask: Are you all with me?

Participants: Responses!

Trainer: For the sake of this course, we'll be clicking on **transform**, this takes us to Power query engine where we can carry out cleaning operations on the data.

Ask: Any question?

Participants: Responses!

Trainer: Subsequently to pull in more data into Power query, you click on new source under the home tab, which will trigger a dropdown to select your data source type (We'll going with excel this time around), and then take you to your computer's file system to pick up the file, click on open and this redirects you to the navigator where you can select the sheet needed if it has multiple sheets.

Ask: Are you all with me.... any questions so far?

Participants: Responses!

Show: Demonstrate with a mouse cursor what you explained

Exercise 2:

Before you proceed, download the SuperStore_Denormalized (Excel) and DimAccount(CSV) dataset for the exercise [here](#)

- 1) Load the CSV file from your system location where the file is downloaded
- 2) Load the Excel file from your system location where the file is downloaded

Data Transformation (Data Cleaning)

Trainer: In the power query editor where we do our cleaning, we have the different tabs, which houses different functions for working on our dataset. As each tab (like home, transform, Add Column, View) is clicked on, its contents are revealed at the ribbon section.

Ask: Are you all with me?

Participants: Responses!

Show: Demonstrate with a mouse cursor what you explained

Trainer: Also, other parts of the power query engine needed to take note of are the **query pane**: which houses the datasets, also the **Query settings**: which houses the **properties** (shows the details of selected query) and **applied steps** (which registers the transformations carried out on the data).

Ask: Are you all with me?

Participants: Responses!

Show: Demonstrate with a mouse cursor what you explained

Trainer: Immediately your data is pulled into the query editor, the very first recommended transformation after **promoting headers** is changing the **data type**.

Ask: how many of us have heard of data type before now.....(if yes?) request an explanation from them

Participants: Responses!

Trainer: For this course, we'll be considering some commonly used transformation for CSV and Excel files: there are:

- a) Renaming Tables e) Splitting Columns
- b) Renaming Columns
- c) Changing Data types
- d) Promoting headers (majorly for CSV)

Ask: Are you all with me?

Participants: Responses!

Renaming Tables(Queries)

Trainer: Making a table name to be descriptive is highly imperative, hence the need to rename our queries(tables) after loading them into Power Query.

Ask: A quick question is, how can we rename a query (table)?

Trainer: Under the query panel, select a query and then change the name in the properties section under the query settings. You can do the same with the other tables (queries)

Ask: Any Question from renaming a table?

Participants: Responses!

Renaming Columns:

Trainer: Another important thing to do is to rename the column name, it should explicitly refer to its content. To do that, you select the column to be renamed and then you right-click, click rename and then update the name.

Ask: Are we all following?

Participants: Responses!

Show: Demonstrate how it is done, take them through it.

Changing Datatype:

Trainer: Data type is something key that determines the operation a particular column can be subjected to, for instance if a column has number as data type, but formatted as a text, there is no way that column can be summed without Power BI throwing up an error

Ask: Hey guys, are you all with me?

Participants: Responses!

Trainer: Some of the Data types are Text, Whole Number, Decimal Number, Fixed Decimal Number, Percentage, Date and time, Boolean (True/false), time etc.

Ask: Any questions?

Participants: Responses!

Trainer: So, to change data type, you select the column whose data type you want to change and at the header click on the icon by the left and select the most suitable data type for your column.

Ask: Are we all following?

Participants: Responses!

Show: Demonstrate how it is done, take them through it.

Promoting headers

Trainer: Promotion of headers is something that is usually associated with CSV files, it must do with promoting the first rows and using them as headers. Most at times when Power Query senses a file is CSV, it does the promotion automatically, but you can also get to do it manually by clicking on the Transform tab, in the row underneath, you'll see “**Use first rows as headers**” in the ribbon section

Ask: Any questions?

Participants: Responses!

Show: Demonstrate how it is done, take them through it.

Splitting Columns

Trainer: Most times, it is necessary to split contents of columns by some symbols (called Delimiters), for example a column containing a currency sign and values, such a column cannot be used to carry out mathematical calculations, so the best thing to do is to split the currency sign into another column

Ask: Trust you're all with me.... Any questions?

Participants: Responses!

Trainer: To split a column in Power BI table, right-click on the column to be split on the pop up menu, select split column and select by Delimiters

Ask: Are you with me?

Participants: Responses!

Show: Demonstrate to your trainees the above steps explained

Trainer: A Pop-Up menu shows up where you can specify the type of delimiter you want to use to split your column and then select the position to be used to complete the splitting, and thereafter you can click on 'ok', and you should see your column being split into two

Ask: Are you all following?

Participants: Responses!

Show: Demonstrate to your trainees the above steps explained

Trainer: Why we still have some more important transformations, we'll be moving forward by closing and applying all the changes effected so far.

Trainer: When the data has been finally loaded into the Power BI, we can now Build some simple visuals, which we can share to power BI Service, but before then we'll consider what modelling is in our next topic.

Modelling – Building relationships between tables

Trainer: Hey folks, we'll be considering what modelling is in this session.

Ask: I believe what we'll be thinking right now should be, what is this modelling thing all about, right?

Participants: Responses!

Show: At this moment, your audience should see tables linked up with primary and secondary keys

Trainer: So, I want to take us down the memory lane

Ask: how many of us can remember what cross matching was like in primary school?

Participants: Responses!

Trainer: If you can relate with that, then you're at the brink of fully having a grasp of what data modelling is all about. It can be simply seen as the linking up of tables using the Primary and Secondary keys – while there is more to modelling, let's leave it at a basic level

Ask: A quick expected question should be what the primary and secondary keys are all about, right?

Participants: Responses!

Show: The Tutor should display different tables showing relationships with the help of the primary and secondary keys linking them up.

Trainer: When constructing tables in our day-to-day life, we normally use serial numbers to identify each line or item, right? also, something that may be salient but important is the fact that if "one -1" has been initially used it is not used again. These serials of

numbers can be referred to as Primary keys which are used to uniquely identify each item.

Ask: Are we cleared with this?

Participants: Responses!

Trainer: A quick example is a list of Products sold in a company, from the created list, your manager could ask you what product number one (1) is, and then you check the list to give him a reply, at this instance you can't be confused as to what product is number one (1),

because there is only a single serial number associated with each product.... So From this example we can say that "1" is a primary key to the product required from the manager.

Ask: Any question?

Participants: Responses!

Trainer: So, having understood what primary keys are, when we have these primary keys appearing in another tables, it can be seen as secondary keys, and as opposed to primary keys it occurs multiple times.

Ask: Do we understand?

Participants: Responses!

Trainer: So, a good example can be maybe we have a transaction table having a column for products, instead of us placing the product name, we alternatively place the serial number from the products table earlier discussed.... And a key thing to note is that one can transact with a product type so many times, hence the reason why one can have a product serial number appearing multiple times in the transaction table

Ask: Are you all with me?

Participants: Responses!

Show: Demonstrate relationship between a product and transaction tables what primary and secondary keys are.

Trainer: Another key thing to know more about is the two different types of tables, which can be identified by the frequency (Size) of how often rows are added and their functions

Ask: Are you with me?

Participants: Responses!

Trainer: The two different types of table types-based size and Functions – Viz. We have the Dimensions and the Fact Table

Ask: Can someone help us define the two different types of tables?

Participants: Responses!

Trainer: Still with our examples of product and transactions table, while transaction table in terms of size grow so fast; the product table does not grow so fast. Take for example a company carrying out hundreds of transactions per day, but the number of the products being offered for sale does not necessarily increase often, except a new product line is added which can happen in a year or even more than.

Ask: Are you all with me?

Participants: Responses!

Trainer: In terms of function, a dimension table helps to describe the transaction tables, in the sense that if you don't have the Product ID's (i.e., the serial numbers of each of the product) in the transaction table, you can't say what product was transacted

Ask: Are you guys with me?

Trainer: So, let me quickly chip in something really very important, that is creating a very important table that'll help our analysis, and that is the date table. To do that, we'll be using something called Dax in power BI

Ask: A quick expected question should be what is DAX, right?

Participants: Responses!

Trainer: So, DAX basically means – Data Analysis Expression, it is a low code programming language that is used to access the functions to data to get what we want to achieve with our data.

Ask: Are you all with me?

Trainer: So back to creating our date table, the DAX needed is **CalendarAuto()**, function. To do that, you proceed to the modelling tab on the ribbon. Underneath those tabs, you'll see

"New Table", click on it and you will see a space having a name, you can rename the table and then paste DAX – CalendarAuto() function. After you have done that, you can click on enter.

Ask: Is the explanation clear?

Participants: Responses!

Show: Facilitator is to show this whole process to trainees by taking them through it step by step.

Trainer: if there is any date related column in your model, the date table created should automatically create a relationship between that table if not you can manually do that.

Ask: Are you with me?

Participants: Responses!

Trainer: Still with our examples of product and transactions table, while transaction table in terms of size grow so fast; the product table does not grow so fast. Take for example a company carrying out hundreds of transactions per day, but the number of the products being offered for sale does not necessarily increase often, except a new product line is added which can happen in a year or even more than.

Ask: Are you all with me?

Participants: Responses!

Trainer: In terms of function, a dimension table helps to describe the transaction tables, in the sense that if you don't have the Product ID's (i.e., the serial numbers of each of the product) in the transaction table, you can't say what product was transacted

Ask: Are you guys with me?

Trainer: So, let me quickly chip in something really very important, that is creating a very important table that'll help our analysis, and that is the date table. To do that, we'll be using something called Dax in power BI

Ask: A quick expected question should be what DAX is, right?

Participants: Responses!

Trainer: So, DAX basically means – Data Analysis Expression, it is a low code programming language that is used to access the functions to data to get what we want to achieve with our data.

Ask: Are you all with me?

Trainer: So back to creating our date table, the DAX needed is **CalendarAuto()**, function. To do that, you proceed to the modelling tab on the ribbon. Underneath those tabs, you'll see

“**New Table**”, click on it and you will see a space having a name, you can rename the table and then paste DAX – CalendarAuto() function. After you have done that, you can click on enter.

Ask: Is the explanation clear?

Participants: Responses!

Show: Facilitator is to show this whole process to trainees by taking them through it step by step.

Trainer: if there is any date related column in your model, the date table created should automatically create a relationship between that table if not you can manually do that.

Ask: Are you with me?

Participants: Responses!

Trainer: So now we'll be moving to the next stage of building or creating reports

Building and Publishing reports to Power BI Service

This is the core of the whole report's creation and publishing, knowing how important it is, trainers and trainees will be working with a lab with directives from the instructor

Trainer: Hey guys, I guess we're set to get the ball rolling?

Ask: I guess we're set?

Participants: Responses!

Trainer: We're all proceeding to the Platform for our instructive lab for creation and publishing of reports through this [link](#)

Exercise 3

1) Go to the [link](#) to complete a Lab on developing and publishing Power BI report

Accessing Power BI Reports on Power BI Mobile

The need to access reports on the go has made it necessary to have it available on mobile apps, with this, stakeholders who need to make key business decisions don't need to log on into their system to access these reports for decisions to be made.

Trainer: Having downloaded the mobile app needed and shared the created dashboard, What you need to do is sign into your mobile app to access and interact with your report.

Ask: Can we all access our shared reports with the created account

Participants: Responses!

Conclusion:

Microsoft Power BI is an indispensable tool when it comes to reporting and business analytics because of the rich features that are embedded in it. Also, beyond that, it has been designed to enable quick adoption by both coders and non-coders, who just need to learn some fundamentals, hence highly suitable for different individuals depending on the level of adoption required.

Recommended Resources

Getting started: <http://powerbi.com>

Power BI Desktop: <https://powerbi.microsoft.com/desktop>

Power BI Mobile: <https://powerbi.microsoft.com/mobile>

Community site: <https://community.powerbi.com/>

Power BI Getting started support page:

<https://support.powerbi.com/knowledgebase/articles/430814-get-started-with-power-bi>

Support site: <https://support.powerbi.com/>

Feature requests: <https://ideas.powerbi.com/forums/265200-power-bi-ideas>

New ideas for using Power BI: https://aka.ms/PBI_Comm_Ideas

Power BI Courses: <http://aka.ms/pbi-create-reports>

Power Platform: <https://powerplatform.microsoft.com/en-us/instructor-led-training>