Introduction to Power BI
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CCH Learning:

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Your presenter today is Waqar Awan, Applications Trainer from Lumify Work. Coming from the domain of data analytics, Waqar is an engaging trainer. He is able to offer a wide range of Microsoft end user and project management training. He has extensive experience delivering training in a variety of formats, including classroom, video conference, webinar and one-to-one sessions. I will now hand you over to Waqar to commence today's presentation.

Waqar Awan:

Hello, good afternoon everybody, my name is Waqar. I'm going to be delivering this lovely session on this amazing tool of Power BI.

What we're going to be looking in today is we are going to start talking about what Power BI is, so the basics about the platform itself, then we're going to start looking into connecting different data sources with Power BI and what are the options available for us.

We can have on-premises data repositories, we can also connect with cloud data repositories, so all in all there's about 126 different connections in terms of data sources we could use for Power BI, we're going to be looking into the most important ones, which you can use from the start.

Once we learn how to connect the data, we're going to start looking into building a data model. Okay, so again, we'll be in the space of a Power BI platform itself, and how we can connect different sources of data together, and what are the things you need to consider while you are creating a data model.

Okay, once the model has been created, we would be creating some visualisations and tweaking the visualisations, formatting the visualisations as per our requirement, and then we would take these visualisations or the reports that we have created and would publish it in Power BI service.

Okay, so these are the elements we're going to be looking into. We're going to start by just discussing what Power BI is, so let's move to the next slide.

Okay, so Power BI is a suite of business intelligence tools that enables any users to quickly do a couple of things. A, visualise and analyse the data, and it helps us to do this visualisation relatively quickly and in a much effective manner while comparing other platforms.

It's even quicker than doing things in Excel. Excel has got a lot of limitations, Power BI typically in this space of visualising analysing data is much faster, it's much versatile and can crunch a lot of data in comparison with Excel.

It also allows us to quickly share, this is also a very important element, is once you have created your visualisation or report, and you need to quickly share with people within the organisation or external stakeholders, Power BI service as a platform allows us to load our reports and dashboards in Power BI service, and stakeholders within the organisations are able to quickly see.

Okay, so we'll look into that and look into how to create workspaces in Power BI service and how to load our reports and dashboards in Power BI service.

Looking at just a brief history of what Power BI originated from, so it's originated from the team of Microsoft SQL Server Team, and it was initially named as Gemini, and then in 2009 we came across this platform called PowerPivot and PowerQuery.

Actually there were three platforms, one is at the back burner, which is PowerView, but there were three essential platforms that were combined together in 2015 to develop a new profile platform.

Now, bear in mind that PowerPivot still exists, and PowerQuery is also a very essential element of Excel and Power BI. We're going to be looking into PowerQuery as well, because this is the platform that allows us to do most of data transformation.

Now, PowerPivot typically is used to connect the tables together, but we have a slightly different UI in Power BI to connect the tables with each other, or dashboards.

It gained popularity in 2015, and now it is one of the go-to platform to create visualisation, share your visualisation within the team or by the public. The tool itself is very powerful.

What it satisfies is the need for business intelligence. What is business intelligence? It is a process of analysing and presenting actionable information so that any stakeholder can make more informed decisions. Informed meaning that decisions that are based on data, you are analysing the outcome, or systems are generating a lot of data, you take that data and you analyse the data using visualisations and then you make a decision.

Now, your business intelligence typically is divided into three categories. You've got an enterprise set, you've got team-based, and there you've got personal, which is self-service.

Now, the focus for us is this self-service here, because this is what Power BI satisfies. It allows people with not very extensive coding knowledge to start creating visualisations, to start analysing data through visualisations.

We stand in essentially, with the Power BI in the third tier, and that is the way forward for a lot of platforms that are coming in the market at the moment. They are self-service, meaning they do not require extensive coding, they do not require a complete team to run it. People can run these platforms in-house. That's what the basics of business intelligence and where does Power BI sit in business intelligence.

All right, so a little bit more detail in self-service BI. Let's see what do we do in Excel at the moment, because Excel is also a self-service business intelligence tool. If we use it beyond basic data entry, if we start analysing it, then of course we could start using it as a business intelligence tool.

We can get different sources of data within Excel. We can use data to analyse it and we can do it by summarising, so analysing. One of the things we do in Excel is your PivotTable, that helps us to analyse the data or get insight of really complex data relatively quickly.

We can also create dashboards, we can create reports and dashboards and visualise the data within Excel. Then we can go ahead and share our dashboards that we have created in Excel. Then still have, people would consume it, audience stakeholders consume it.

All that we can do in Excel, we can do in Power BI as well, but the sheer size or the massive or the veracity of the data which we can use in Power BI is cumbersome to manage within the Excel environment.

Let's have a look at some of the on-premises options we have got for analysing the data. You know that within the Excel we have got Power Query, PowerPivot, and then we've got Power View and Power Map, and they all use your existing Excel platform, so they are available as add-ins and we can use them. Then we use SharePoint, essentially it could 2013, to basically publish or consume the data as well.

For cloud we are using Power BI Desktop and Power BI service, which is Power BI.com. Please be aware there's a P missing here, so it's a Power BI Desktop and Power BI.com, which is Power BI service as well.

What are essentially the components of Power BI? Now Power BI has got two main components, which we are going to be looking into, and one component which is popular, but not as much as the first two, which is your Power BI Desktop.

This is an application which you can download from the Microsoft website, and it's readily available if you want to find it on Google, you can find the Power BI Desktop download, you can download that application to use.

It's free to use, you can pull in data and you can analyse, the majority of the features within Power BI Desktop are essentially free. It's the time when you start actually sharing your document, that's the time when they start charging you money.

There's different tiers of subscriptions with Power BI, and these subscriptions, the pricing keeps on changing, it's always a good practise to go online and have a look at the subscription that fits or meets your company's requirement.

Then, at the end we've got the Power BI Mobile Phone, this is an app which you can download from the App Store, you can have it in the I-App store or you can also have it in your Android. You can download and you can put your details inside, the account, and anybody who's sharing the dashboards or reports to you, it would be also available in your Power BI Mobile Phone.

What we're going to do is, we've got this slide which is showing the Power BI interface, where we're going to start looking into Power Query environment and Power BI environment. I think what I'm going to do is, I'm going to stop sharing this PowerPoint and I'm going to share the actual Power BI environment with you.

That is already open, so just bear with me for a second. Yeah, there's a slide we're going to have a look at later on. Bear with me for a second.

Okay, there we go. Let me check if that is visible. Yeah, that is all cool. All right, so when I open Power BI, so essentially after downloading Power BI it's very simple, you go in the search and if it doesn't come on the recent ones, you can always type in your desktop, Power BI, and you'll see the Power BI desktop app would show up. Once you click on it, this app would then open up here.

Now, things we have to consider about this app is its views. Now, the tabs on the top are essentially no different than what you see in terms of their functionality in Excel or the Microsoft platform. Meaning that when you go through these tabs, the tabs have got a set of functions underneath. Home tab would have a clipboard group and all the functions related with that specific group would be sitting there.

What is important is, you see these three views on the left hand side, so you've got a report view, you've got another one which is table view, and the third one is a model view. These are the three views which essentially allows us to work and create the visualisation, to import the data, to look at how the data looks like after it gets imported, to create the data model and to create the visualisation.

In a nutshell, when you're looking at the report view, this canvas over here is the place where you essentially create your visualisation.

Now, we don't have any data at the moment, but as soon as I am on the report view and I click on one of the visualisations, that writing went away, which was essentially giving us an idea saying, "Hey, tell us where the data is sitting," so import the data. This is the report view, where all the visualisations are being created.

The second one is your table view. Now, table view is where you essentially see the data which you have loaded up.

The last one is your model view. What a model view does, it allows you to look at the tables or the queries that you have loaded up, and they would sit over here.

I have a quick example over here, let me show it to you. Just bear with me for a second. I've got an example here. Now, this is how these three different views would essentially look like. When you click on the report view you have got these visuals. They're very rudimentary visuals, and then the underlying data, which is being used to get those visuals, would come over here.

You can see at the moment there is one table view, but when you click on the next data, all the data or the tables which are loaded up are sitting over here. When you click on that you can see all the other data. Please be aware that you cannot double click and change this data.

All the data transformation essentially happens in Power Query environment, and that's the app or the environment we're going to be looking at, just after introducing Power BI, and I'll show you how to get there.

The last view which I wanted to show you is your model view. Now, these are all different data sources. Now, you can see there's one big table in the middle, which is your fact reseller/sales table, and this table is essentially connected with three other tables, which is DIM product, DIM employee and DIM reseller. This is an overview of how your tables are connected.

Meaning that if you pull one of the columns from fact reseller sale, you are able to pull the column from another table and they'll filter out things. This is essentially one big table as they're connected with each other.

I'll show you how to import the data and I'll also show you how does these tables get connected and other things as well. What we want to focus on at the moment first of all, is how do we get our data? Where is our data essentially sitting, how to get it? Which environment do we go in as soon as we get the data? That is something which is really important to understand.

While we are in the home tab, we have an option of data. Now, we have got a lot of, like I mentioned before, it's around 126 connectors we can have with Power BI. There's also custom connectors you can create, if your data repository, a connector cannot be found, you can actually create a custom connector, but we are not going to go in that direction.

What we are looking into is getting the data. The first option over here has got an arrow facing down. Let's click on that. These are the most common data sources. What data source we're going to be looking into primary is Excel Workbooks, however you can see you've got Power BI schematic models, data flow, data work, SQL Server. If your company is using SQL Server database, you can use SQL Server.

All you have to do is to click on the SQL Server, you would have your server name, database name, and then you can specify if you want to look into import a DirectQuery model.

Now, this is a bit complicated, since it's just the beginning course I would suggest to you, if you're using a SQL Server database, please make sure that you have a discussion, either you want to use an import mode or DirectQuery mode before you import the data within the Power BI environment.

Okay, cool, so if you want to see all the connectors, you can always click on more, and a dialogue box will appear here, and in this dialogue box you can possibly see your connector. Okay, so these are all the connectors related with specific platforms.

We can also look for certified connectors and a new browser would open up with all the certified connectors over there. Okay, cool.

When we get the data from an Excel workbook, in this case I'm just going to look at a workbook which we have got here, which is Adventure Works Reseller Sales. Okay, I'm just going to connect on to this workbook, press okay.

Cool. All right, so when I'm connecting to this workbook, we are able to see all the elements of the workbook in this navigation dialogue box.

Now, anything that has got a blue top on the top, and any of these tables, if they've got a blue line on the top or heading, that is essentially a table element in your Excel worksheet. If you want to import a specific table element, you can specify that, "Look, I am entrusted in selecting FactResellerSales," so that's one of the tables I'm interested in.

When I select that table, I can see the components of the table over here. We've got the product key, order date key, dealer key, ship date key, and all that stuff which we need. We can also look into multiple tables at the same time, so I'm entrusted in selecting DIM employees. DIM stands for Dimension Table, Fact stands for Main Fact Table, right, Dimension Table and Fact Table.

One of the dimension of the main fact table is your DIM employee. You would also have a DIM reseller table, let's select that one. Then we've got a DIM product. Now, all the tables which I'm selecting, I have got a preview available.

In this dialogue box I've got two options available. I can load this directly in Power BI environment, or I can click on Transform Data. Loading, it's taking it directly, so if I press load, it would take directly in Power BI. If I press transform data, it would take me to Power Query environment.

Now, please bear in mind that Power Query environment is your go-to environment for data transformation, so regardless of the products you're using, regardless of Excel or Power BI as a product you're using.

This is how a Power Query environment looks like. Now, you can see that all the four tables have been loaded up as queries, and you can see them on the left hand side. For example, if I want to check the data sitting on any of these tables, I can click on that table and it shows me the data.

The thing about Power Query environment is that just like Power BI environment, we can cannot manually click on any of these cells and change the values, we have to use these predefined functions.

We also need to understand that Power Query environment or Power Query, uses M as the language. M stands for mashup language, and if you go on home and then click on Advanced Avatar, you would see the M code that gets written. The beauty about Power Query is that we don't actually have to write this code, it does it by itself and makes our life easier.

Just to keep in mind, for your knowledge, Power Query uses M, which is as I said, a mashup language, as your coding language.

Now, transforming data within Power Query environment is very simple. Most of the things that you intend to change, in terms of names and stuff, you can just go ahead and double click. You have an option of right clicking and then going ahead and renaming it, but takes a bit of more time.

For example, if I need to get rid of fact out of reseller and put a space between reseller and sales, I can double click it and just get rid of fact, put a space between reseller and sales. If I want to get rid of DIM from employee, I can just double click on that and just get rid of DIM. For reseller, the same thing, I can get rid of that, and DIM product I can do the same thing.

You can also do the transformation if you want to change the name of the columns here, you can just double click it. The same story if you want to have a space or you want to remove something, you can double click here.

Now, we can also change the name of the queries, so anything we click on here, we can change the name from here as well. Please be aware that the objects that get loaded in Power Query environment would appear on the left hand side, and they are referred as queries. As soon as we load them in the Power BI environment, they are referred as tables, so that is something that you would need to remember.

Imagine if I have done very extensive transformations, and I'm happy with all of these tables, the way they are looking, I'm happy to load it in Power BI environment. I can go ahead and click on the home tab from here, and then close and apply.

If I press close and apply Power BI takes a bit of time, and it does this processing, you'd be wondering why it is taking a bit more time. Because it does automation in terms of model creation by itself, so it would create the data model on your behalf, and it's always good that you go in the model view and see how your data model is looking, but if you're wondering why it takes more time, it is essentially creating the data model.

Now, when you load the data and when you are in the report view, you cannot see anything because you didn't create any visualisation, because the report view is the one where we create all the visualisations. All the visualisations are sitting over here.

There are three panes actually. You've got a data pane, opens and closes from here, then you've got a visualisation pane, and then you've got a filter pane. The visualisation pan is the one we will use to visualise the data we have.

If we want to actually specifically look at the data that's been loaded up, we can go to the table view and see the data. In this case our data gets loaded up, so we've got these tables and when we want to expand these tables, you can see all the columns within these tables are listed over here.

We've got employee table, product table, reseller table, reseller sales table, and the good thing is that we don't have to technically create a data model, it just does it by itself.

It will put the reseller sales table in the middle, because it's your main table, where the data is coming out from, and then you've got these dimension tables which expand on the dimensions of reseller sales table. That really takes away the hassle of connecting the tables together, initially.

As you proceed through and start creating rather advanced visualisations and reports, I would highly, highly, highly recommend you to always double-check how the tables are connected with each other.

Because the understanding you need to have is that when you click on any of these links, double click on it, a little dialogue box would open up and that would say, "Hey, your reseller sales table has got a column called reseller key," and that reseller key has got whole numbers in there. Then that data is also there in another table, which is reseller table, which is this one here, and that table also has a column called reseller key.

These two tables are actually, have got a column which is similar, so we can use these similar columns to connect the tables with each other, so it becomes a big, what do you say, a big warehouse of data, where we can pull in one column from one table and another column from another table, and it'll filter out. I'll show it to you, how that works a bit as well.

We're going to spend another 10 minutes to start doing some transformations within the Power Query environment so you can understand the basic transformations or the techniques which are being used in Power Query.

Please be aware, at the moment we are in Power BI environment, and at any point we want to go back to our favourite Power Query environment, because we thought that, "Hey, we haven't added another data set," or maybe we want to do some specific transformations, it's always a good practise to go back to the Power Query.

Your question would be like, "Hey, how do I go back to the Power Query environment now?" Well, it's simple. You need to be on the home tab. It doesn't really matter which view you are in, but if you're on the home tab, there is a very popular function over here, which is called transform data. If you use Power BI or are going to use Power BI forward, this is a go-to button, you use it all the time to go back and forth within your Power Query environment and the Power BI environment.

If I want to go back, I can click on this transform data and then click on transform data, and it'll take me to Power Query environment. If I want to do any transformations, I would go ahead and do the transformations.

I don't have to do any transformations from this dataset, but I have other data source, I wanted to show you some transformations using that data source. If I want to add a new query to my dataset here, I can go ahead and click on new source, and then I need to know what my source is. At the moment, let me go to the folder which I've got here, so you guys understand what's going on.

I've got a folder over here, and in that folder I have got a data which is an Excel worksheet, which is called Power BI data, and this is how the worksheet essentially looks like.

If I double click, it takes a bit of time to load up, but it would load up. It's relatively big, it's 11 megabytes, which is on the higher side of Excel. Give me one second, it's just getting loaded up here.

Then, you can see that then this Excel workbook, I have got a lot of sheets, and if you use Excel you'll know these are sheets right at the bottom, and if I click on any of these sheets I can see the objects within those sheets.

Some sheets would have multiple objects, meaning they would have multiple tables in there, and it is a little bit hard to find out different objects within your sheet by just clicking on the sheets at the bottom here, or sorry, in your workbook by clicking on the sheets at the bottom here.

A quick function, which is makes my life easier at times, is just clicking on view and clicking on navigation. Going on view and going on navigation actually opens up the navigation, a pane away here. Then I can go to each sheet and see the objects within each sheet.

This is helpful, but we're not going to go in that direction, we want to make sure that we have a bit of an idea as to how our Excel worksheet looks like, and we are going to import some of the data from this worksheet.

Let's close this and let's go back to our Power Query environment. What we want to do is add a new source and we're going to connect to that Excel workbook, and the workbook was Power PI data. I'm going to press open, and when I click on that, a dialogue box will open up, and this dialogue box is showing me objects and tables in that workbook.

The object I'm entrusted in at the moment is your PTHP Admins, okay, so this is the one I'm entrusted in. Then I'm just going to press, okay.

Cool, so so this query gets loaded up, so the worksheet, let me get the terminology right. Your data sitting in the worksheet has been loaded up as a query in Power Query environment, and when you load this in Power BI it will turn into a table, well it would be called a table.

As soon as you load a query, by default some of the steps get applied to the query. What you have to do is to check if the steps that are being applied are all the right steps. It also is a good practise to actually lead some of the steps that get applied by default, and just go to where it says the navigation, that is the right point. This is the point where the data looks as raw as what we want to see.

Now, let's quickly evaluate what we have in our worksheet here. Okay, so you have got the columns on the top, so you can see there is a green line going halfway through and then there is some empty values here as well, which is 28%.

By the way, I can call these column qualities or column profiles, by just going in the view and selecting, look, I want to see column quality. If I click on that it'll show me how much data in that specific column. If any column is empty, how many are there, how many errors are there, and this line also shows me that, look you have got something missing at the bottom.

Rightfully, so If I scroll a bit further down, you would see that, oh after row number 267 I've got this nonsense, which obviously I need to get rid of. A couple of things we get rid of straight away are the grand totals and totals from our data, because we don't want that to be added up to our visualisation, and also the nulls needs to go.

Let's have a look at the columns we've got here. We've got a total of let's say 10 columns. Out of these 10 columns, column nine and column 10 doesn't have any data. All right, will we need these columns in our report or analysis? Possibly not, it's just extra data or extra columns with nothing in them.

I can select these two columns by pressing control on my keyboard, right click, and remove columns, and what I can do next, those columns are essentially gone, is I can start looking into my rows.

The first row essentially has got all the null values, this is actually the table header, so this is a header of your table in your original dataset. The first row brings no value to us, so we're just going to get rid of the first row.

How do we get rid of the first row? Go to the home tab, and from here you would have reduce rows group, and within that you would have remove columns, remove top columns, and you can say, "I want to get rid of" ... Sorry, remove top rows, apologies, that was rows, remove top row. I can then get rid of the first row, so the first row is gone.

Then we know that we have got nulls starting from 266. Let's say if we want to keep the first 265 rows, we have that function as well. The function is, Keep Top Rows, we'll say 265, cool.

Now, we remove the rest of the rows. We don't have to actually scroll down and double-check, but I'm just doing it for the sake of demonstration. You are always able to see how many empty values here, by looking at the column quality.

Now, column number eight, like I mentioned before, is the grand total, we don't need that, so let's get rid of that as well.

Now, we have got data sitting at the first column, as the date. Then we have got the regions, the name of the regions here, and this is the sales amount.

Now, we want to transform the data in a way that each column represents one specific type of data. Column one only shows me date. If the column two is region, I should only see regions. If the column three is sales amount, I should only see sales amount.

At the moment you can see I've got data types. I've got one data type which is date, another data type which is region, and the third data which we have got as the sales amount.

Instead of having our data spread out or pivoted in let's say seven columns, we can slim or reduce the number of columns in our data, and that would be very helpful for us to create visualisations, because it's hard to create visualisations when your data is already pivoted.

That is a very important aspect to understand when you are importing the data in your Power BI environment, that if it's already been pivoted, then you would struggle to create effective visualisation.

Why? Because when you create visualisation you need to pull a column value. If I want to create a visualisation where I want to do sales amount versus region, my regions are across all the columns, so it's better to have one data type in one column.

What I mean by that, you'll get to know a bit more, when I go ahead and I'll do something here. Yeah, so I'm going to make my first row as a header, so all the column one, column two, the first row would get the name of that. Okay, so what I'm going to do is I'm going to go to transform, and I'm going to go to a function called first row as headers. Look at that, so the first column becomes date, then I've got the region names here.

Now, I know that date has date, this is a region, but these are not regions, this is sales amounts. This is the point where my data is being pivoted, so what I have to do is to un-pivot the data. How do I do that?

I can select the columns by pressing control on my keyboard and then clicking on all the columns and selecting them and then right clicking and say, "Hey un-pivot columns." Or an easy way if you have got a lot of columns is to select the column which doesn't need to be un-pivoted and just right click and then select un-pivot other columns.

Now, I was trying to make a point earlier, that look, the first column has got date and we've got date here. I can call this new column as a region, and I've got region here, and this is my document. Then I can load my data up and then it'll be good for my visualisation.

Another very good use of Power Query is that it can deal with date and time really well. Now, if I specify this column as, let's say date, it's been picked up as date already, but I can specify that again, double-check it as a date.

If I want to extract the year out, I don't want to write code or complex formulas, I can just go click on this column, then go to add column and then go on this function which is date, and I say, "Hey, please extract the year out," and I get the year out.

If I want to get the month out of this column, I can go to date and I can say, "Hey, could you extract the month out for me?" It extracted the month out as well.

If I'm not happy with that, say, "Hey, could you extract the month name out for me? Get the month name out." Normally you can go ahead and extract really complex things, for example age. Age is essentially showing you time from today's date, from this date, so this is the difference.

You can extract that out, but you can see now it that it's showing in rather complex, so I can change the age duration to let's say, total years, and it'll extract me the years out. I can then remove this column and then say, "Hey, can I have this to be just as a whole number?" You can see this difference is 29 years.

Yeah, with date it's absolutely amazing how things work, and if we want to split the columns, again, you have the same functionality of splitting the columns, etc, there as well.

Now, once we have done the data transformation, what we do is we close and apply. We close and apply, and you can see that the new data table would be sitting around here, and it doesn't have any frame, because the thing is there's no common column between this table and any of these tables, so there's no connection between them.

Rightfully so, because I just wanted to load this data and show you the transformation of data. However, we're going to use these three, sorry, four data sets or tables, to create some of the visualisation, because it's time for us to showcase you some visualisations. I'm going to show you a visualisation here. Just bear with me for a second, I have got this here.

Okay, there we go. We have got, type of visualisation, we've got, let me expand this a little bit. We've got a set of cards, the CN charts. CN charts are your X and Y axis, so we've got your bar chart, column chart, a stacked bar chart, column chart, you've got line chart, area chart, etc, so all of these charts they are pretty much very similar to each other. Then you've got a waterfall chart, funnel chart, and then you've got a set of a few more charts.

Well, I want to show you some of the really common ones which you can straightaway use them. I'm going to show you a card. A card is a visualisation, which is really helpful for us to see the total number of something or a count or a distinct count or sum of something.

Now, let's say that we have got employees, and these employees, I want to see how many employees are there in my store. I know that I've got a lot of information here, but employee key is unique and distinct, meaning that it only happens once within my data, within the employee table, and it is different than other employees.

I can just drag that and pull it within the visualisation. What it does, it would show me the count of employee keys, and of course it's not the way I want to represent my data. I want to call it total number of employees, and of course I can go ahead and change this on my visualisation. The best way to do is to quickly go to the field where it gets applied.

Now, there's two ways we can drop the value in the card. One is by dragging and pulling it right in the card itself. Or another way which I think is much better, is to just drag it in the field section, because each visualisation, when you create, let's say I want to create, let's go back, that's not the one.

Let's say I wanted to use this chart over here, which is your column chart. You can see, as soon as I click on the column chart, this visualisation pin gives me an option of adding X axis, Y axis, legends, small multiples, tooltips, etc, here, so it's good practise to drag them in there straight away, instead of pulling into the visualisation, because then you're leaving the visualisation to make the decision, "Hey, do you want a specific value to sit in X axis or Y axis?" It's a good practise to always pull the values in your visualisation pane, and put them in there.

Anyway, let's get rid of this one. What I want to do is, I want to make sure that 296, underneath it shows total employees. I can double click in this part over here, which is in the fields and call it Total Employees. There you go, cool.

Now, if I want to create another visualisation, figuring out how many products we have got. We have got a product key column over here. What I can do is I can pull up a similar visualisation, where I can pull the product key in and it will show me how many different product keys are there.

We can also click on a visualisation and press control C and control V on our keyboard, we duplicate our visualisation. Imagine if my visualisation has a lot of colours and if I've changed a lot of formatting, I want to apply the formatting across to the next visualisation, I can just control C and V, instead of starting the new visualisation, then changing the font there.

Anyway, what we are interested in, we want to make sure that this visualisation shows us the product key, the kind of product key, so we're going to call this Total Products. Total Products.

We have got the next one, which we're going to call reseller. Reseller, we are going to drag the reseller key in there. No, that's not the right one. Let's click on this. I'm going to get rid of this, and I am going to reseller table and pull in reseller key in the field.

This is total reseller, sorry reseller, there you go. Okay, cool. Then if I want to create another one, let's say if I want to create one for the total sales amount we have generated. We can go to this one, which is our total reseller sales table and grab the sales amount and pull it in there. Total reseller sales amount, there you go. Which is 80.45 million. Okay, double click, and I can change the name of that value, Total Sales Amount.

This is one basic visualisation which is your card. Another visualisation, which is quite popular, and being used, is your stacked column chart, this is how it looks like.

Now, imagine if I want to see the sales amount, the sales amount by product colours. Let's say the product has got colours, and then we've got sales amount by product colours.

Now, please bear in mind that the sales amount, let's go to the model view, the sales amount is coming from a reseller sales table, right, the reseller sales table is bringing the sales amount, and the product table is bringing the colour amount, so the reseller sales comes out and gets filtered across the colour. It's just like a very well-mannered pivot table sort of, and does the visualisation.

The beauty about this calculation is because we're pulling data from two different tables, and it'll get filtered across. Let's say we've got sales amount and we want to put sales amount in the Y axis and then we want to put ... I've just put one value now in the Y axis, that says some of the sales amount. This is the total sales amount, which is 80 million, quite similar to one we had before, which is 80.45.

Then, what we want to do is we want to get employee product and put that in the X axis. We've got different product colours at the bottom, and then we've got the sales amount for each of the products. When we hover on this bar, you can see it will show the values in the toolkit.

Now, I can go ahead and create a pie chart as well, and a pie chart could be based on sales amount by business style. All right, so let's create a pie chart.

Click in the empty area of the canvas, and then we'll click on the pie chart. The pie chart is based on your sales amount, sales amount, just going to drag it in there, sales amount by your business type. Business type is sitting in reseller sales table.

When you're creating your Power BI report, you'll get probably 20, 25, 30 different data sources, and a lot of columns, so at times you'll forget about where the data is sitting, so you can always go and type it there on the top, and it will show where the data is sitting. You can drag in and pull it across, so you can see the filtration has happened, sales amount by business time, cool.

We can also create a map. If I want to create a map, and the map needs to show me essentially, let's say location in your country, country and some of the quantities. Location is country. We don't have that in the table, so let's have a look at the first one here, this one, and then we'll show you how to attach that other part of it.

Imagine this was our report and we are done, are happy with our report. What we have to do next is, we want to load the report in a Power BI service. Where is Power BI service? When you log into Power BI, go on the top right corner and then you can click on Power BI service, and it'll take you to Power BI service environment. It takes a bit of time, if you give me two seconds, and it'll take you right here, in Power BI service environment.

Now, this is the environment where you would go ahead and create your container. Your container is called as your workspace. You'd go to the workspace on this left hand side, you click on workspace, you'd say, "I want to create a new workspace." I'm going to call this workspace demo, we'll call it a demo, and I'm not going to go through the settings, but I need to have the workspace created.

Now, please bear in mind that if you're creating the workspaces, etc, you will need a licence and stuff. If I go ahead and click on this one, got it, right, and your workspace gets created over here. What I'm going to do is I'm just going to load my Excel, this file into the Power BI service. Just bear with me for a second.

I can go to home, and then I can go ahead and click publish, and I'll just press save. Yeah, just please make sure you save your document, and then essentially publish again. It again asks you, "Hey, where do you want to save it?" Let's say, we'll call it demo, and just sit here.

Okay, you're saving your file, and then you can open your workspace, which you created, in my case I created earlier my workspace. I'll click on that. Select, and it would get published. The file name is demo and the workspace is actually there, called Workspace.

Okay, so let's go have a look at the Power BI service. Then we'll go to Workspace, my workspace, and this is the demo which I have loaded up.

Please be aware that when you load up a report, so anything you load up from the Power BI, this is named as a report, it gets loaded up as a report, and the semantic model, the underlying dataset gets loaded up as well.

Two things get loaded up, so a report and the data, the supporting data gets loaded up as well. You can also organise your schedule refresh if you want to refresh the data source if you wish to.

If we click on the demo, you can see that our report gets loaded up. Okay, this one here, and then we can go ahead and share this report with other people, by clicking here, and it gets shared.

Another thing which is very, it's a good trick as well, is that you can actually load the semantic model and just click on these three dots and then click on Get Quick Insights.

Imagine if you loaded the data in Power BI, did not create a report, loaded it up in Power BI workspace, and just asked the system to generate a quick report. It would go ahead and create a report for you very quickly. It takes a little bit of time, sometimes the computer is a bit slow, sometimes the service is a bit slow, but it does work around.

Look at that, it has created this report out of nothing, only by data. What I created was here, I created this, I created this one. When I loaded this, my Power BI in Power BI service, I loaded it in workspace and I had this data, the semantic model sitting in, and I'm like, "Oh, wouldn't it be nice if I tell the system to generate a view insight report for me really quickly?" That's what it did, it created a view insight report very quickly.

Okay, where did it go? Just bear with me for a second. It's here. If it's not there, we can always do it again. Go to my workspace, it was just here. Okay, quick insights, there we go, view insights, and there it is.

If I want to generate another report out of this, I can pin the visuals I want into a new dashboard. I can call this new dash. I can pin it, and my dashboard gets created. If I want to add more visuals to that dashboard, which I really like, I can click on that. If I click on my dashboard, I've got two visuals created on my dashboard.

This is what it is about the Power BI, the magic and things you can essentially do with Power BI. I want to sum up by saying that, look, there's a lot of products which are interlinked with each other, and it's a good practise to practise a little bit more on some of the products. Just bear with me for a second.

What is really good for you to understand is Power BI Workflow, and if you're starting it from the get-go, is first of all make sure that you go through Power Query environment to get the data and shape the data, all the data transformation, this is 60 to 70% of the work.

Once you have used Power Query to shape your data, you're pretty happy with it. Please bear in mind that you can go to Power BI environment and go back and forth, but it's always good practise to finish your data cleaning as much as you can, and then move to Power BI environment.

After you've cleaned your data, you load the data in Power BI environment, you create your data model. Now, you can't create visualisations if you haven't created a data model, so have your data model created, make sure you understand relationships, hierarchies and the calculation part. Then you move towards creating the visualisation, which is your charts, licence and pie charts. Once you're done with that, you publish in Power BI service.

Now, Power BI service provides you that extra edge of sharing your Power BI reports. You can create visualisation and export it as a printout and pass it on to people, but that deceives the purpose of using Power BI as a very dynamic tool, that allows the consumer to also analyse data as per the requirement, using different filters.

I hope you guys got the gist of it, and I'm going to hand it back to Alison, and let's get the floor opened up for the questions.

CCH Learning:

Thanks very much, Waqar. Okay, we have had a couple of questions come through, but just a reminder, if anyone else would like to pop one in the questions box, we can quickly answer that for you. I'm conscious we're just on time, but you can always listen to the answers in the recording.

In terms of upcoming webinars, on the 31st of January we're looking at the best of Microsoft Word, then best of Microsoft Outlook. Then a session on Microsoft Teams, working with SharePoint and OneDrive, then best of Microsoft PowerPoint. Then on the 6th of February we have our cybersecurity update and that afternoon is our SME loans session.

All right, Waqar, we'll have a look at these questions that have come through here. The first one is from Suzanne. She's just said, "Sorry, not sure if I missed this, but how would you change or delete the cell contents in Power Query? Is it possible at all, except for the changes using the provided function?"

Waqar Awan:

Okay, excellent question, Suzanne. What you want to do is, if you want to tweak the value of each cell content, I would highly recommend you, if it is possible to do, to do it in Excel first, because it's easy to do it in Excel.

However, if you are landed with tonnes and tonnes and tonnes of data, in that case you cannot load that data in Excel, you can use Power Query to replace the values or change a specific value of the cell, but it is a very complex way to do it.

It's very complex in a sense, because you would need to create another column and that column would test the values in the column of a cell you want to change the value in.

Yeah, it's a bit more complex. I would advise you to change, if you want to change or tweak the cell values, do it in Excel.

Is it possible in Power Query? Yes. Do I do it in Power Query? Yes, I do it most of the time, but if it can be done in Excel really quickly, and you can do it, do it there, all right, cool, yeah.

CCH Learning:

Thank you very much, Waqar. All right, the next question is from Jen, and it is, "How does Power BI make it easier to see the outcomes of a report?"

Waqar Awan:

The outcomes of a report? I just need to clarify what the outcome refers to.

CCH Learning:

Yeah, no, that's okay. I'm not sure if Jen wanted to pop through some more information. Yeah, maybe they just mean analysing data. How does Power BI make it easier?

Waqar Awan:

The thing is, if you're a Power BI developer, the outcome of a report from your perspective is, "Hey, what's the visibility of the report? How many people are watching? How much is the average time a person is spending on the report?"

From that perspective, of course you can go and look at diagnostics within the Power BI service, seeing how the report is performing, how people are doing, that's one thing.

The second thing is, if you're saying, "Hey, I'm creating visualisation, and if I've created a report how the outcomes are much easier to see from the report?"

If you have data from multiple sources and multiple tables and it's rather complex data, Power BI makes it easier because the visualisations it has available. It also is dynamic, it's because if your source data changes, your visualisations would reflect it on the fly as well. That is also something that is useful. Next, please.

CCH Learning:

Perfect, thanks so much Waqar, and last question here from Ben, "Is Power Query or Power BI a better tool for shaping and analysing data?"

Waqar Awan:

A fantastic question. If you want to shape the data, Power Query environment. If you want to analyse the data, Power BI environment. Power Query environment doesn't allow you to analyse data, it is only a tool for you to clean up the data. It's like a cleaning tool, that's the sole purpose of that thing, Power Query. Yeah, so that's it.

CCH Learning:

Perfect, thank you, Waqar. All right, that is all the questions that have come through. Oh, another one's just popped up. Monica has asked, "If you were wanting to report on results of employees, and have one set of visualisations specific to each employee, can you filter by an employee to see all the same information?" Let me know if you want me to pass the screen back, Waqar.

Waqar Awan:

If you can repeat the question, that'll be great.

CCH Learning:

Sure, so if you are wanting to report on results of employees and have one set of visualisations specific to each employee, can you filter by an employee to see the same information?

Waqar Awan:

Yeah, you can use the filtering it's called, which is used, is slicers. You can use advanced slicers and filtering. Now, if you can give me the screen back please for two seconds, there's something I wanted to, I could share that.

All right, okay, so there is a button here which is, let's see. There is a function here called slicer, so you can use a slicer for it. A slicer is on canvas filtering. For example, if we have got here, business type, we'll drag it in slicer, you can see I've got three business types here, okay.

I can see how my data transforms across these three business types. For example, if I want to see data only for warehouse, I'll click on that, and you can see the data changes as per the warehouse. If I want to look at the value added reseller or if I want to look at the specialty bike shop, I can see my data changes accordingly as well.

You can use slicer, that is one thing you can use. You can also use filters. The filters are applied either on the whole page or on the visualisation.

I would suggest you, the best solution at this stage is to start looking at the slicer, but you need to see the value you want to slice it on, what factor or variable you're going to use within the slicer, that also needs to be considered. Right, cool. Yes, Alison.

CCH Learning:

Thanks very much Waqar, and Monica said, "Fabulous, question answered." That is a good way to round up our session today.

Thank you, Waqar, I appreciate you getting through all those questions there, and we will just jump to our next step.

In terms of the feedback survey that will pop up for you all in a second. It's important that we hear your answers there.

Sorry, I'll just pop my screen back up, and then shortly after the session today you will receive an email letting you know when the recording is ready to be viewed. You'll also receive a verbatim transcript, a CPD certificate and the PowerPoint presentation.

Thank you very much to Waqar for the session today, and to everyone in the audience for joining us. We hope to see you back online for another CCH Learning webinar very soon.

Waqar Awan:

Thank you very much guys. Bye-bye.