Video 32

We looked at some fairly simple and commonly used chart types in the previous section. In this section, we will look at slightly more advanced types of charts that can be created relatively easily with excel.

One of these are what are called area charts.

Area charts are used when we want to show differences of a quantity in time or over time, but we want to emphasize the differences a little bit more prominently. So you can see, this chart is showing the sales by territory across quarters. When you look at it as an area chart, you can tell which territory has the maximum sales and what are the differences between the quarters and the sales territories very easily. Remember that looking at the scale on the Y axis can be slightly misleading because it is not that in quarter 4 for one of these territories because it's not that, the west region had total sales of 1.2 million. It just means that this is the area occupied in terms of the total number of sales, so 20000, 30000, 40000 etc. by each of these territories so these are... in some sense these are stats.

Let's look at another slightly more advanced type of excel chart which is... let's look at an advanced type of visualisation which involves using a secondary

axis. Sometimes, you may have data that have very different values in terms of magnitude. For example, let's look at this data: I have data on visits based on keyword to a particular website and then I have data on conversion rate. So this is the total number of visits that came in with the keyword fluevog shoes and of those visits, the conversion rate which is eventually people that actually bought shoes on the website was 0.0729, in other words about 7%. Now supposing I wanted to show both visits and conversion on a single chart, this is what will happen; the Y axis is now on the basis of the data for visits which goes all the way to 12000. The conversion rate on the other hand is in the order of magnitude of .01, .02 to about .08. When you try to put both these data values on the same chart, we can barely see any difference on the conversion rate. It is very close to 0, so it appears to be like a flat line almost equal to 0. The solution therefore would be to put the conversion rate on an axis with a different scale, in fact what is called a secondary Y axis.

So let's look at this data. If I simply insert a chart here, and let's say I choose bar chart or a line chart, let's take a line chart, then this is what I see. This is visits and the Y axis is calibrated for visits data and therefore, when it comes to conversion rate, it shows up as a straight line close to 0. What I need to do now is to put this on another axis. The way I can do that is to right click, go to format

data... what we need to do is right click, choose this data series, format data series and then in series options, you can see plot series on primary axis, secondary axis, so I am going to choose secondary axis. So now you can see that this blue line which is visits is on the primary Y axis which has values ranging from 0 to 14000 whereas the conversion rate which is this red line is now on the secondary Y axis, values ranging from 0 to .1. Now, the easiest way to therefore represent data series that have very very difference orders of magnitude is to put one of them on the primary axis and the second on the secondary axis but the axis could have different scale.

Now an extension of the secondary axis idea could be what is called a combination chart which is sometimes you may want to show two types of visualisations on the same chart, so instead of showing two lines, you want to show one line and 1 column. This is what is called a combination chart and that's also easy to do. To look at a combination chart, we just simply, let's say we want to change this which is the conversion rate into a column chart. We can say change series chart type after right clicking on that data series and then, we can say that for conversion rate, I want columns. So now I have 2 different types of charts, 2 different types of visualisation in the same chart, this is why this is called a combination chart. I can change the blue line as well if I wanted to, not necessary that I

click only on the secondary axis and make that a column.

Another kind of advanced excel chart used when we have 3 dimensions when we would need to have a third dimension is what is called a bubble chart. The data here has GDP for BRIC countries (brick countries), Brazil, Russia, India, China , so it has GDP, per capita income and population in millions as of 2014. Now I want to show, represent this data in a chart. Here, I have 3 dimensions, GDP, absolute value of GDP is one dimension, per capita income is another dimension and population is the third dimension. So I can do this using a bubble chart. In a bubble chart, the third dimension is represented by the size of the bubble, so the larger the bubble, the larger the size of the measure that we are using. In this case, GDP is on the Y axis, per capita income is on the X axis and the population size is the third dimension is the size of the bubbles. To create a bubble chart, you have data in three dimensions, the three columns of data. Its actually included as an advanced option in scatter plots. So we choose bubble, any of these bubble charts, and then we have to do some formatting of the data... select the data, and now I am going to add some series, add, I am going to call this China, and series X value is going to be per capita income, series Y value is going to be GDP and the size of the bubble is going to be population, so this is the data series that I have added, now I am going to take off Brazil

and India because they are not in that order and I am going to individually add now for Brazil, X value - per capita income, Y value - GDP and the third dimension is population which is the Z value, okay, now we are going to add Russia and India, so now Russia and finally I am going to add India. So this is what it will look like. This is how we have added the third dimension in a bubble chart.

Finally, let's look at another kind of charts which are directly available from pivot tables. Many times, we use pivot tables to summarize information in lots and lots of data or to aggregate information across many disaggregate elements. Now once you create a pivot table, you can also directly create a pivot chart from a pivot table and the advantage of creating a pivot chart is that it is dynamic, depending on how you change or choose the options you have in the pivot table, your pivot chart will automatically get updated. So let's look at this data set which has information on products sold, date sold, customer, quantity, revenue, cost of goods sold, profit and price, and I have a lot of data here, about 500 rows of data. Now supposing I wanted to understand what is the total revenue and profit by product, by month. Now I can do that by simply inserting a pivot table, so if I insert a pivot table... and I go here, I choose and I want to make sure that my pivot table is created here. Let's just choose the data so this is the data that I am choosing, all the way to 500 or so rows, 564 rows

and then this is where I want to show my pivot table in the same worksheet. So this is where my pivot table is getting created. In this pivot table, what I want is, I want product, I want revenue and profit but now.. I also want product by month. Now what I can do is, right now I have data by date, so I can aggregate this or group this and make this month or quarter, so let's say I want it by quarter because that is easier to see. So now when I do this, I have got for each product, for each quarter, the sum of revenue and the sum of profit. Now I can easily generate a visualisation here by simply saying insert and let's say we choose a column chart. So this, now I am just going to close this, you can see is a pivot chart, and it is dynamic in the sense that we can change some of these **... (12.42)** so for example in the product, now let's say instead of all, I only want DEF, the chart is automatically updated. In the values, instead of sum of revenues, maybe I want to see something else and I could change that as well. So this is a dynamic pivot chart. It gives you some control over what you want to display based on what is included in the pivot table.

So those were different kinds of excel charts, but what we want to also focus on is not just choosing the right type of chart but also the ability to format and present the information in chart in the correct manner. In the next section, we will look at how excel charts can be formatted for easy understanding and inference.