

Hi welcome to Chandoo.org and Plum Solutions.

I'm really glad to feature this video lesson for you on Quick Dashboards in Excel. This lesson is a sample of the kind of ideas that you will learn in our Advanced Excel Analysis, Dashboards and Power Pivot Masterclass that I am running along with Plum Solutions in Australia this winter.

Let me very quickly tell you about our Masterclasses. We are running a set of two day Masterclasses focussing on advanced Excel and Power Pivot in Sydney, Melbourne and Brisbane. These classes are scheduled to run between the first week of May until the last week of June. In that six week period I will be running these classes in Sydney, Melbourne and Brisbane in that order and we are pretty close to selling out. I think we have a few spots left in Melbourne and Sydney and very, very few spots left in Brisbane.

If you're watching this video sometime in late April or early May, you know you probably don't have much time to book your spot for the conference. In case you miss the time then still you could go and ahead and learn from this video and watch out for more conferences from Plum Solutions as well as Chandoo.org in the future.

The Masterclasses are basically a two day event where it's a hands on workshop kind of model. Each and every person will get a computer with the latest version of Excel installed so you can actually practice all the concepts, build ready to use dashboards, analyse data in many different ways, create powerful interactive charts, understand various integrities for formula writing, Power Pivot analysis and date modelling in the classroom.

You can see me explaining all these concepts and you can practice them, you can ask me questions, you all can discuss as a class and you know also very, very interesting questions and pretty much go in any area of Excel that you wish to learn about from the curriculum.

I only want to this to be a sales pitch so I'm going to keep this fairly short.

Let's first understand how to make quick dashboards in Excel and then if time permits I will talk a little bit more about our Masterclass.

This is our workbook, in case you have not already downloaded it. I recommend you do grab a copy of this workbook before you watch the rest of the lesson so that you can make best use of our time here.

Here is a sales dashboard and believe it or not, this dashboard is made entirely from three powerful and really simple features of Excel. Slicers for interactivity, spark lines for the visualisation and conditional formatting for highlighting. Only three features. Of course there are a few more things that are there but the main ingredients of this dashboard are those three, the visible aspects. This is what I believe as you know, really these things are available in Excel but sometimes we don't even use them. Most of the time people spend learning how to create charts, how to write formulas, how to use form controls etc., to add interactive features to their workbook but you could use these simple features like a slicer, spark lines and conditional formatting. These are so simple and most of the time I have just used the default setting. Sometimes I have done, for certain things, I have done some extra formatting just to make things look good and pretty but even right out of the box they look cool.

This is our sales dashboard. Let me quickly explain the data and then we'll come back to the dashboard and we will understand what this is doing and then understand how this dashboard is constructed.

Okay, if you have not already downloaded the workbook, make a copy of the workbook and keep it open while watching the video for best results.

Let's jump to the data worksheet. Imagine you are running a bicycle store. Your company is Acme Bicycles and you sell various types of bicycles. You sell kids bicycles, mountain terrain bicycles, road bikes, hybrids, lady bikes, commuters and you also sell some accessories. You sell helmets, panniers or those luggage racks. You sell lubricants for bicycles, you know chain cleaners and all sorts of lubricants. You also sell bells and lights and you sell some miscellaneous parts like saddles, handle bar gloves and stuff like that. You have kept track of this data for the financial year 2014. You have the data for all the twelve months here and

you operate in six different regions, so you have your operations in South, North, East, West, Midwest and Far Lands.

Now this is the kind of typical pivot table report that you would generate if I want to know what the sales values are across various combinations. Imagine you have some transactional data in some sort of a database or in an Excel workbook then you create your pivot report from that, it usually looks like this. First column with the region, second column with the product theme, across the row are the month names and each white cell depicts the value. For example, the number here \$5,005 (dollars) is the total sales for MTB's, mountain terrain bikes in the month of February 2014 in the Southern region. So that's the amount that we made from on that combination.

Now given this kind of data, it's a lot you know. You can see that there is, all in all, we have about 792 data points. That's a lot of numbers. If I want to visualise all this, understand and analyse it, it's going to take quite a bit of imagination, work and time. But can you believe it that I created this dashboard in less than one hour. That's right. It's because the data is already there. I used the features of Excel that are really easy to work with, so I used only spark lines, conditional formatting and slicers and I just created this dashboard. Let me show you how the dashboard works and then we will go in and examine the construction part of it; how we made the dashboard.

If I go to the dashboard it actually has two sections. One is a summary for all regions; that's this area. This is what happened across all the regions for the year 2014. This area, the grey colour area, is the dynamic section. It lets you explore any one region at a time. You could also select multiple regions and it works. For example, right now we are looking at the report for all regions and western regions, that's the one highlighted in the slicer.

The product name is listed here. It is also listed on the far right column just for the sake of simplicity when reading the report. You may knock off that column, it doesn't alter the report but I kept it on both sides so that it's easy to compare numbers and do some instant analysis.

The total sales figures are mentioned here and this is the sales trend for twelve months. You can see what kind of variation is there. Certain products have exhibited wavy products. Some

products have experienced a downward pattern while some products might have experienced a general upward pattern. The blue dot and the red dot inside those lines signify the month that has the best sales and worst sales. This is a feature of spark lines that can help you highlight the highest value and the lowest value on a line.

This column tells us the percentage change from January to December. Compared to the value in January, what is the percentage change in December value? This is not a traditional method. Usually you would compare January of this year with January of prior year for a realistic percentage change but since we only have twelve month data I thought we could do a comparison of December with January. So that is showing percentage change. Downward sign means it's a negative number and upward sign means it's a positive number. The icons tell us whether this product is a top rank product or not. So these are the top one third products. Reds are the bottom one thirds and yellows are the middle products. So you could see for all regions, for example, MTB is a green so it is one of the top one third products. In Western regions, MTB is not a top one third, it's probably the lubricants that got added to the top one third and MTB's is pushed into the middle one third of the products.

This area is dynamic. If I change the slicer, for example, I switch to North, I will instantly get new numbers corresponding to North or Far Lands or South. I could also multi-select, you could select two regions by dragging and clicking or you can select multiple regions by holding down the control key. So I can select East and West. A combination of East and West total sales is \$63,000 for kid bikes whereas across all regions it's \$177,000. So you could do a lot of powerful analysis just by using these bare minimum features. That's how the dashboard is working.

Let me show you how it is constructed. As you can see there are three key components. The slicer for selecting the region. The spark lines for monthly values, these monthly values are totalled and printed here so this is not much of a puzzle. If you can calculate monthly breakup, you can calculate the total. Percentage change can also be calculated once we have the monthly values and rank can also be calculated from the same monthly values. So let me show you how the calculations are done. For the sake of simplicity all calculations are placed in a

separate worksheet called 'Calc'. If you go to that worksheet, you can see that there are multiple areas set up.

The very first part of the puzzle is how do I set up a slicer and link it to the dashboard. The bare traditional slicers, at least the ones that you have been using so far, the way we know them is that slicer talks to the pivot table, it doesn't talk to my dashboard or my formulas directly it talks to the pivot table. How do we make the slicer link it to our calculations here? That's the first part of the puzzle. For that, what I have done is, I have listed all the regions in a blank celled range in the calculations. These are just inputs. Let me turn on the formula bar so you can see that this is just hyper values. I have listed everything and then what I did, I inserted a pivot table from that range.

In this example, in the current dashboard, the pivot table was inserted right next to the region list but for demonstration purposes I'm going to insert a new worksheet. So we inserted a new pivot table and let me put this here. What I'm going to do is I'm going to take the region list and right click on it and add it as a slicer. This is 2013 Excel so you can right click and choose. In earlier version of Excel 2010, you could add a slicer by going to your analyse ribbon and inserting a slicer. Both approaches will give you the same result. So let me right click and add the slicer. We get our slicer for our regions and I'm also going to drag and drop this region list into the row area, so all the regions will show up here. Now if I select any slicer value only that value will show up. West mean West, Far Lands means Far Lands and Midwest means Midwest. If you select the pivot table and go to the options for design and you turn off the grand totals, you will only get the slicer selection values in the column A. Third cell contains row labels. From fourth cell onwards you will only get the slicer selection so if I select any one value that shows up, if I select multiple values they'll show up. Beautiful. Now all I need to do is link my formulas to those cells, A4, A5, A6 and A7 and I can calculate the totals accordingly. That's what we have done. This is our slicer linking demo.

Let me go back to the calculations, so that's what I have done. I have set up a slicer and linked it to the pivot table and captured the slicer values here. Where is the slicer? Well the slicer is added. What I have done is I have taken the slicer, cut it (Ctrl X) and pasted it to the

dashboard. So I have created the slicer in a different worktable but I have moved it away to the dashboard area.

Now that you know that part of the puzzle, how the slicer came to be on the dashboard but is talking to a pivot table in the background, let's go to the next step. Right now in the dashboard, we selected East and West so that's what it shows up here but if I change the selection, I select North in the dashboard, our calculations will show North, so that is the one that is selected.

Here is a bit of calculation surrounding that. To keep it very, very clean what I have done is first I counted how many values are selected, so this is telling me that one value is selected. What if I select multiple values, for example, two values I have selected, here I will see two and the selection will be multiple now. Only one value selected I will point to that otherwise it will point to the multiple values. What are those multiple values? These are the multiple values. The first selection is North, the second selection is South and there are no other selections everything else is zero. Then we calculate the data for the charts. This is just basically a subset of this data. Either totalling or doing some of those kind of calculations to get it. For example, I want to know for all regions what the total amount is for kid's cycles in January 2014. This is nothing but a SUMIFS against the table where product is equal to kid's cycle and month is equal to January 2014. Okay so this is what we have done that says SUMIFS Data D4 to D69 that means column D of that table. Column D is nothing but your January 2014, products should be equal to this value. Products is the name given to that column so products should be equal to kid's cycle. We use that formula and once we worked out one formula, we copy and paste it all over the range so we can calculate the totals for every other type of product for every month.

Once these values are there we can calculate the twelve month change by taking the last month value, first month value and dividing the last month value with the first month value minus one. So that tells us the percentage and the total is nothing but the sum of these values so that's that.

How do you calculate the sum of sales of each cycles in January 2014 for regions North and South? This is where we use the power of arrays formulas. This is the only technical formula part of this workbook, believe me, everything else is so straightforward and easy that you could even get away with not writing the SUMIFS formula. But here is one situation where you have to use an array version of the SUMIFS formula. Unfortunately I cannot explain each and every aspect of this formula to you in this short video. Mainly because this technique involves a little bit more explanation and understanding of array formula techniques but what I say to you is this, examine this formula try to understand how this works and listen carefully for the next two to three minutes. In case you don't understand this, do not worry, there are other ways to calculate these values. Some of those additional ways will be explained in our Masterclass as well.

What we have here is another SUMIFS formula but this time what we are asking Excel is what the sum of January values is? We only want the values for January, for February it is a similar formula but we only want the January column. So what is the sum of January values where product is equal to kid's cycle, that means all the kids cycles values but region should be either East or West or North or South or a combination of regions. So that means I want to pick out the kids cycle values and only sum up the values to South or North or East or those combination of regions that we have selected. We want to ignore the kids cycles in West or Far Lands or Midwest because we have not selected those regions. To do that, what we would do is, we would use our good old SUMIFS formula but pass on an array parameter for one of the conditions that specifies the region names because the SUMIFS formula cannot access arrays what it does is when you pass on an array it returns an array of values so we wrap the SUMIF formula with an additional SUM formula that sums up all those values.

If this explanation is Greek and Latin to you, let me simplify this with a smaller set of data because there are so many numbers it's easy to get confused. So let me add a new worksheet. This one is adding SUMIFS. Let's just say we only have two products. Okay not two products, we have six products and we have some values for these. Just for the sake of variety, I'm going to repeat the product names but this time the values are different. A bunch of values. Now if I want to find out what's the total corresponding to A I can simply type A there and simply say SUMIFS, SUM range is that, criteria range is this, and the criteria is equal to that. So the total

value corresponding to A is 15, 10 plus 5. I want to know the sum of B, its 35, 20 plus 15. This is all good but what if I want to know the sum corresponding to A and C. Let's designate an area. Sorry with this obsess with bordering but I like to keep the workbook clean with borders. So this is B, total value is 35. But what if I want to know the total corresponding to any of these four values. We have only typed two but it could be four, what is the total for that. In this case we can't use the SUMIFs. If we use the SUMIFS and said this is the sum range, criteria range is that; criteria should be any one of those four values. So if I do this I'm not going to get the correct answer, I'm only going to get 15. But the total value corresponding to A or C is 10 plus 30 plus 5 plus 25. The total is 70. We are getting some random value as 15.

What's going on here is the SUMIFS does return the values but since it is returning a list of values, in other words an array, Excel can't print that array so it's only printing one of those random values. Let me show you what happens to the SUMIFs. If I set up the SUMIFS and press Ctrl + =, a technique which you can use to beef up the formulas and evaluate portions of it, you can see that this corresponds to the total is equal to 15, 55 and 0. This means the total for A is 15, the total for C is 55, the total for the blank cell is 0 and the total for this blank cell is 0. What we really wanted is not these individual values but the sum of all these values. Hence what we will do is, we will put a SUM formula outside the SUMIFS so because the SUMIFS is already returning an array we are asking the SUM formula to sum up that array. When you press enter again you already get the result because the SUM formula is expecting a bunch of values which the SUMIFs is passing on but because the SUMIFS is not even supposed to work with arrays, Excel is not going to play nice too. So to force Excel to read these arrays and calculate the SUM total, you need to press Ctrl, Shift, and Enter. When you do that you get the answer, you get the total as 70 for A and C. Now you can change this. You could say B and D, what's the total? Or B, D and E what is the total? B, D, E and A what is the total? So you could put any four values here and it'll give you the SUM total for that. Pretty cool right.

This is the same technique that we are using for our calculations here but since we already captured the values there we are using an array SUMIFS formula that just says regions should be that and are wrapping that inside a SUM formula. That will tell you that because it's an array formula and pressing Ctrl Shift Enter when you have an array formula, in the formula

bar, two curly brackets will be shown in the beginning and the end to indicate that this is an array formula.

Once these values are calculated, you could calculate the twelve month change and the total sum just like the way we have done earlier. Once we have done that you could also calculate the rank over time. What is the rank of kids' cycles in the month of January? What is the rank in February, March and so on and so forth and what's the overall rank? There's a small mistake in these calculations, these ranks are done in descending order whereas the overall rank is done in ascending order. For the time being in the dashboard, I'm only using the overall rank column, so you can ignore this portion of the calculation section all together.

Once all of these are calculated we go back to the dashboard and we plug those things. What about those spark lines, how did we get them? It's very simple, all we have to do is to get the spark lines, we select the range, we go to insert > spark line and Excel asks "where do you want these spark lines?" Okay let me get them here. Incidentally spark lines will come corresponding to monthly trends of each product. Once you have the spark lines inside the formatting you can go to the design and you can set highlight the high point and low point. So those points will be shown in red colour dots. You can tell Excel what kind of colours you want. I want the high point to be blue colour and low point to be in the red colour. The spark line itself is blue coloured. If you don't like blue colour or you feel that the colour should be else you can change the spark line colour like the way we have done, use a different colour for all regions and say selected regions. All regions are grey colour and selected regions is blue colour. That's how we get the spark lines.

What about conditional formatting? We plug the values here and we apply some conditional formatting, icon set. So we select the icon set and tell Excel show the green icon when the value is positive, the red icon when the value is negative. All of this is fine but the red icon is showing up 17%, whatever happened to minus sign? I'm not showing the minus sign there it is just showing as 17. But if you go to the calculations, P34 in calculations, you will see that the P34 is showing minus 17% but on the dashboard we are suppressing the minus sign. This is done with this little technique called custom formatting. What I have done is I selected the format cell option and set up a formatting code like this. This is a slightly technical aspect that

you don't need to worry about for a simple dashboard but if you really care about appearance and the slightest things like this then it makes sense to use the custom formatting code. That's the end of the formatting, the conditional formatting.

Let me talk a little bit about the slicer itself. If you look at the slicer linking demo, this is how the default slicer looks but our slicer looks slightly more subtle and blended in. It is not really screaming like I'm a slicer but it looks really cool, so what was going on there?

Well what I have done is I have formatted this slicer so that it looks like that. How to do this? You can go to the slicer options which appears when you select the slicer and customise every aspect of it. The first thing I have done is I have made the slicer three columns wide and then I have just dragged it to look like that. Then I click on the slicer, go to slicer settings and disable the display header option. The header is gone. Once the header is gone, what I have done is I have added my own header to text box so I can customise the look and feel of the header. Once that aspect is done I also remove the border area so that I can control the display of slicer and blend it with the rest of the display. To do that select the slicer and go to the slicer options. Here there are multiple slicer styles that are available. What I have done is, none of these styles are going to work for me because everything has a border around it. I don't want a border so I right click one of the styles, made a duplicate for it and formatted that style to suit my needs. That is my custom style. I'm going to show you how that one is set up. It is a very, very simple style. It is copied from the original style but then I selected the whole slicer complement, formatted it such that there is no border, so border is set to none and fill colour is set to dark grey colour. So when I do this and I just select the size of the slicer this is how it looks. Once that is done, if I move it over to the dashboard, this is how it's going to look like. That's how the slicer formatting is done.

What about the rest of the dashboard formatting? Well that is up to you and your taste. I personally like my dashboards to look slick and interesting but not overwhelming so this is the kind of style that I chose. I set up rows to be slightly wider than they usually are so that the values can be read easily. I only displayed borders around the data area of the dashboard. I set up bold heading and added a grey colour box over the selection area and I set up the title here. There could be more things that you could do here but since my time is budge for this

dashboard is only one hour or maybe one hour twenty minutes tops, I could do whatever I can do in a quick and easy way. Remember the title of this lesson is Quick Dashboards in Excel, okay so that's why I came up with something that is easy to do and easy to format.

So that's all for now. I hope you enjoyed this particular video lesson. I'm really happy to share these insights with you and the dashboard workbook.

Even if you are not attending the Masterclass or even if you are not a student of Chandoo.org or Plum Solutions I highly recommend that you do break this workbook apart, understand each and every aspect and learn more about these things and use them for your work. Obviously things like slicers, spark lines and conditional formatting are really easy to work with as you have seen and they provide bang for buck in my opinion. So go ahead and use them in your work. If you are the kind of person who uses these things and you're asking for more, you're hungry for more techniques and more formula writing, more analysis techniques and more dashboard techniques then you are certainly going to love our Advanced Excel, Power Pivot and Dashboard Masterclasses I am running in Sydney, Melbourne and Brisbane. As I said earlier in the class there are very few spots left so in case you are interested, I would encourage you to take action as soon as possible. For those of you who are interested, click here, click on that big blue button and that will take you to our course enrolment page for our Masterclass to find more information and book your spot.

Thank you so much for you listening. I hope you enjoyed this particular video. I'll talk to you again soon. Bye bye.