

Excel Solutions for Accountants

An Online Course

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About the Author



Duncan has been Teaching and Training in the areas of Accounting, Finance and Business for many years and has done so across the globe.

Duncan is known by his audiences as unflappable, always well prepared, able to aim his materials at exactly the right level and tempo.

The courses Duncan currently offered include Financial Modelling in Microsoft Excel as well as in Power BI for the Desktop, Spreadsheet Modelling using Microsoft Excel: in both cases, modelling best practices are of paramount importance. Duncan also provides training on an in house basis where the topics are targeted to the specific needs of the client rather than the general needs of the delegates to public

courses.

From time to time, Duncan leads courses on the International Financial Reporting Standards: both in general and for the Oil and Gas Industry.

As he is a life long learner, delegates are always appreciative of the fact that Duncan is fully up to date with the latest techniques in the software and the trends in the financial modelling and training industry.

Duncan's clients range from some of the largest companies in the world, in all sorts of industrial and commercial sectors to SME organisations, again from a wide range of industrial and commercial sectors.

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Lists and Ranges

In the course of my work, I meet a wide variety of people from entry level clerks to CEOs and my job is always to help all of them to use their version of Microsoft Excel in the most efficient and effective way that I can.

You created a list or a range of data: it came from something you typed in or that you were given as an Excel file or you copied it over from a database. Then you want to carry out some analysis of the data but you find yourself having to create formulas over and over again. Every time you update the list, you need to update your Column Chart or your Pivot Table.

That is, one of the first problems I face is that 85% – 90% of my delegates know how to drop data onto a spreadsheet. They also know how to use the SUM() function the AVERAGE() function and several other functions. We all make mistakes, of course, but I am not talking about that here! What I am interested in is exactly how they entered their data and, much more importantly, how they are going to add to their data in the future.

Hmm! That's a thing?

Yes, it is a thing but why?

If you are in the 85% - 90% bracket, let me ask you how often it is that when you add new data to your list, you have to manually change your SUM() and AVERAGE() to make sure you include your new data?

In the same way, when you have drawn graphs using your data, do you need to update them manually, too?

I really have met accountants who, by my estimation, waste 2 out of their 12 working months by being so inefficient in terms of their knowledge and application of Excel that they sit around for hours every week, waiting for it to whirr and click its way through their data when it should just crack on and behave efficiently and effectively!

What? How is that?

Firstly, errors: things that go clunk in the night!

If you have to manually update your formulas and your graphs, then you are certain to get it wrong at some stage. Certain!

What kind of errors are we talking about?

- Firstly, forgetting to update the formulas and the graphs ... there, you've done that, haven't you! So have I!
- Secondly, you changed the formula from, say, =SUM(A10:A150) to =SUM(A10:250) when it should have been =SUM(A10:A205). If you are lucky, it made no difference but if you are unlucky, your answers are massively wrong. That means that your total is wrong and since you were probably programming =AVERAGE() by hand as well, there is a chance that you've got =AVERAGE(A10:205) and not =AVERAGE(A10:A250) ... and you didn't even spot the inconsistency.
- Thirdly, how do you cope with the situation where millions become billions? It has happened to a lot of companies ... how are you coping with that?
- Fourthly, what does your graph look like? How did you update that?

Lists v Ranges and How Excel can Help

Excel is like the knight in shining armour: it lets you convert your potentially dangerous list of data into a range by using the functionality of an Excel Table. An Excel Table is exceptionally rich in features that will save you hours of work and turn up your work one more notch towards the Office Guru status!

Excel Tables

Really? Who knew? Well, you do now and here is what it means.

Drop your data into your worksheet as normal, looking for any obvious problems as you do so: empty cells, cells with text rather than numbers, cells with multiple values or even weird characters ... the normal range of problems that we all face. Get rid of those problems and then do this:

Click somewhere on the list

Press Ctrl+T and Excel will open up a dialogue box that shows what Excel thinks is the range of your list

The dialogue box also shows whether the first row is the header row ... make sure it is!

Change the name of your new table in the Table Design Ribbon

That's it!

Having done that, all of the kind of worries we were just discussing will have gone. You need to try it: draw a graph and then copy and paste some more data to the end of it and watch what happens to your graph ... it updates automatically now. Every time you update that table now, it will update your graph.

More than that, if you create a Pivot Table from the Excel Table, too, it will also update every time you add new data.

Learning just that one thing, turning a list into a range into an Excel Table will make your model more efficient and effective and it will save you potentially a great deal of time.

Mega Formulas

A mega formula looks like this:

```
=SUM(C8,C22,C34,C45,C56,C66,C77,C87,C99,C110,C121,C133,C143,C154,C164,C174,C184,C194,C204,C214,C225,C235,C245,C255,C268,C279,C290,C300,C311,C321,C331,C341,C351,C361,C371,C382,C392,C402,C412,C422,C432,C442,C453,C463,C473,C484,C494,C505,C515)
```

It's mega because it is big. It is NOT mega in the sense that it is awesome or amazing!

There are Excel users who believe that mega formulas have their place and if you can cram, say, four or five or even more functions into one formula, that's great.

In this chapter I want to tell you why mega formula rarely are that great.

Let's start by going back to the formula I presented above and say that if ever you create or feel that you are about to create a formula like the one below, you need to attend this course. Seriously! Work on the functions and formulas that we demonstrate throughout this course and you will agree that you will have paid back the course fee many times over providing you stop thinking mega formulas are cool!

Where did that Formula Come From?

What happened to bring that formula to my attention was that I was reviewing the spreadsheet of a Chartered Accountant from the UK. Once I'd seen the formula, I wrote to that accountant with this alternative: =SUMIFS(C3:C518,B3:B518,"Players bought"). The accountant replied by saying

Thanks Duncan, it's a hobby so I do it in my spare time but thanks for the tip as [I am] working on a project presently where that suggestion with save me a large measure of time.

There you have it! In football finance circles, that accountant is very well known. He is truly a Chartered Accountant and he is famous within his sphere. So, the big question is, how on earth could he think that

```
=SUM(C8,C22,C34,C45,C56,C66,C77,C87,C99,C110,C121,C133,C143,C154,C164,C174,C184,C194,C204,C214,C225,C235,C245,C255,C268,C279,C290,C300,C311,C321,C331,C341,C351,C361,C371,C382,C392,C402,C412,C422,C432,C442,C453,C463,C473,C484,C494,C505,C515)
```

might be acceptable? You saw his response to my message: it's obvious that he knew it was a pain in his derriere to have to create his formula! Yet he persisted!

Take a look at this SUMIFS() formula:

```
=SUMIFS(E8:E25,D8:D25,I29)
```

That's not a mega formula, is it? What it is doing is adding together the sales of a product given the Region of sales.

A equivalent formula is

```
=SUMPRODUCT((D8:D25=I29)*E8:E25)
```

Both of these formulas give us the same, correct answer.

It really doesn't matter what we are talking about here except to consider what happens as we increase the number of decision points. As above: total sales of Apples

Let's get Mega

Now total sales of Apples according to region

```
=SUMIFS(E8:E25,A8:A25,F29,D8:D25,I29)
=SUMPRODUCT((A8:A25=F29)*(D8:D25=I29)*E8:E25)
```

Now total sales of Apples according to region and city

```
=SUMIFS(E8:E25,A8:A25,F29,B8:B25,G29,D8:D25,I29)
=SUMPRODUCT((A8:A25=F29)*(B8:B25=G29)*(D8:D25=I29)*E8:E25)
```

Now total sales of Apples according to region, city and retail chain

```
=SUMIFS(E8:E25,A8:A25,F29,B8:B25,G29,C8:C25,H29,D8:D25,I29)
=SUMPRODUCT((A8:A25=F29)*(B8:B25=G29)*(C8:C25=H29)*(D8:D25=I29)*E8:E25)
```

You can see what's happening, can't you: getting mega now.

DSUM Function is not Mega

If we add another decision point, we are going to add another 12 or so characters to our formula but we should ask what to do about that if we don't want to use a mega formula? After all, mega formulas are difficult to write, they are difficult to read, they are error prone and even the slightest slip up can ruin them.

In this case, let me offer the DSUM() function that I know a lot of Excel people do not like. However, let's go compare:

```
=SUMIFS(E8:E25,A8:A25,F29,B8:B25,G29,C8:C25,H29,D8:D25,I29)
=SUMPRODUCT((A8:A25=F29)*(B8:B25=G29)*(C8:C25=H29)*(D8:D25=I29)*E8:E25)
=DSUM(A7:E25,E7,G7:J8)
```

Really?

SUMIFS() ranges from 26 - 59 characters
SUMPRODUCT() ranges from 32 - 71 characters
DSUM IS always 22 characters

Be honest, which one do you prefer?

A Genuine Mega Formula with no Alternative?

Here's another one ... one of my own, this time

```
=IF(OR(D9=12,D9=17,D9=22,D9=27),TEXT(RRI(COUNT(D7:M7),M7,D7),"#.00%"),IF(OR(D9=13,D9=18,D9=23,D9=28),TEXT(RRI(COUNT(D7:L7),L7,D7),"#.00%"),IF(OR(D9=14,D9=19,D9=24,D9=29),TEXT(RRI(COUNT(D7:J7),J7,D7),"#.00%"),TEXT(RRI(COUNT(D7:E7),E7,D7),"#.00%")))))
```

This is the formula I produced for the situation in which there might be 3 values or 4 or 5 or 10 ... and to prevent getting all sorts of errors, I created that mega formula. It works!

What to do with Mega Formulas?

We really cannot have too many mega formulas in one model or workbook so what alternatives do we have?

- Find out if DSUM() or any of the other Database functions can be used instead of SUMIFS() and SUMPRODUCT().
- If not DSUM() any other viable alternative ... this is where attending a course like this one will come in very handy
- Break down the formula: in other words, rather than having one mega formula with 248 characters, take it apart and then accumulate like this:

```
A1=IF(OR(D9=12,D9=17,D9=22,D9=27),TEXT(RRI(COUNT(D7:M7),M7,D7),"#.00%"),
A2=IF(OR(D9=13,D9=18,D9=23,D9=28),TEXT(RRI(COUNT(D7:L7),L7,D7),"#.00%"),
A3=IF(OR(D9=14,D9=19,D9=24,D9=29),TEXT(RRI(COUNT(D7:J7),J7,D7),"#.00%"),TEXT(RRI(COU
NT(D7:E7),E7,D7),"#.00%"))))
A4=A1+A2+A3
```

If necessary, break it down even more:

```
A1=IF(OR(D9=12,D9=17,D9=22,D9=27),
A2=TEXT(RRI(COUNT(D7:M7),M7,D7),"#.00%"),
And so on
```

Please note, I have not done this properly but I encourage you to work on it to see how you can improve the situation here.

- Watch out for duplication in a mega formula. If you do not follow my golden rule of PPP: Paper, Pencil, Plan, you will find it really easy to duplicate entries and results in a mega formula.
- If you believe you really must have mega formulas, learn to write them on multiple lines, this makes it easier to read mega formulas, since it helps to make it clear when one function is nested inside another.

Summary

Creating complex solutions to complex problems can be a really satisfying outcome at the end of a working session using Excel. This summary, however, tries to show why mega formulas are sometimes bad because we don't know of any alternatives and they are bad because they are error prone. Here are two more reasons why we should not create mega formulas:

We might not be the one who is going to use the formula and, this is a universal problem, users often do not document their spreadsheets so unravelling a mega formula can be an absolute nightmare.

Pivot Tables

I first started using Pivot Tables in a commercial setting in the late 1990s. That means they were one of the first of Excel's significant functions that I learned and then applied as I did some serious management accounting work: product cost systems for bakeries, ceramic roofing tile manufacturer, industrial valve manufacturer and many more.

Note, I saw the need for them quickly and I learned them quickly. I have been using them and demonstrating them ever since. Even if I don't have a commercial data project on the go, I use several pivot tables every week. It might even be several pivot tables in a day.

It still comes as a surprise to me, therefore, that I meet accountants and others with a need for pivot tables but who do not use them.

What is a Pivot Table?

A pivot table is an inbuilt spreadsheet function that enables the aggregation and analysis of data by means of numerical and categorical variables. A pivot table works in rows, in columns, by using aggregation and statistics and by classifying and sub classifying data so as to enable and enhance analysis.

Why Don't People use Pivot Tables?

Some people have never heard of Pivot Tables. Other people have heard of them but they believe that they are so difficult to use that they are afraid of them so they shy away from using them.

Two Chapters of Pivot Tables

However, it is no accident that there are two chapters on Pivot Tables in this course. Every accountant, accounting technician, accounting assistant and bookkeeper worthy of those titles need to know and be able to apply Pivot Table functions to their data.

Pivot Tables (PTs) will enable you to do things in minutes that could otherwise take you hours to do. Let me try to prove that to you, even in the abstract. Imagine one of your own tables of data, the kind we have already discussed here: five or ten or more columns wide; 1,000, 10,000 or more rows deep. Imagine that I ask you to prepare a table and chart to illustrate the profitability of your product range as well as illustrating your answer with regional sub totals and columns that show the number of customers you have by product and region and then the average sales and profit using the same levels of analysis.

Give me your Data and my Pivot Tables will Rule your World!

Give me your data and within a minute of understanding what is in your table, I will have completed my first pivot table and pivot chart. Without a pivot table and pivot chart, you might well be spending 30 minutes or an hour or more on trying to do the same as me.

Add another 1,000 rows of data and two more columns and within a minute, I can revamp my pivot table. Without a pivot table, you might even have to start from scratch to revise your report and chart.

I am not exaggerating there: you will waste so much time without pivot tables and yet at least 50% of the delegates on my courses do not use them.

The Aha! Moment

When I present pivot tables to delegates for whom they are new, there are so many aha! moments in the room. I don't want anyone to feel ashamed at their lack of knowledge but within minutes of starting to learn about pivot tables, almost all delegates can see how much they are worth to them.

Excel Tables

We have already spent some time talking about Excel Tables in this ebook and with good reason. Here is another reason why you need to learn how to use Excel Tables: Pivot Tables need them, too. Using an Excel Table with all of the features they bring, will mean huge savings in time and efficiency for you and your team.

Tip of the Iceberg

Even though there are two chapters on pivot tables included in this course, even they are just the tip of the iceberg: there is still so much more that they can offer the accountant and for that reason, you would be very well advised to attend our Excel Solutions for Accountants Course II.