



# Cost Model Building: a simple example

Duncan Williamson  
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# [ Why this Presentation? ]

- We recently put together a page in which we said that we can learn a huge amount about accounting by considering what happens in a kitchen.
- Have a read to see what we said:

[www.duncanwil.co.uk/kitchen.html](http://www.duncanwil.co.uk/kitchen.html)

# [ Model Building 1 ]

- The purpose of this basic demonstration is to illustrate two things:
  - how cost models are built
  - that the costs are the last things that are put into such a model: it's the relationships and recipes/standards that are more important than the costs initially

# Model Building 2

- We don't need an elaborate example to illustrate how to build a cost model. Imagine we are baking a cake. The recipe for this cake calls for:
  - 100 grammes of flour
  - 100 grammes of butter
  - 100 grammes of sugar
  - 2 eggs
- The process for mixing this cake is ... the usual and we assume that you know it!

In the Kitchen!

# Model Building 3

- The simple solution we are looking for is to multiply the quantity of a raw material by its price:
- 100 grammes of flour @ £0.50 per 100 g
- 100 grammes of butter @ £0.75 per 100 g
- 100 grammes of sugar @ £0.60 per 100 g
- 2 eggs @ £0.2 each
- In this case the total for one cake is £2.25: check it for yourself.

# Model Building 4

- We are going to build a cost model as if we were working in a bakery. So we now need to take the process, the equipment, the people and so on into account as well as the raw materials.
- For this example we need to know about:
  - Ingredients: raw materials
  - People: labour
  - Bowls, spoons, trays, oven: equipment
  - A room or building: kitchen/property
  - Gas or electricity: power

# [ Model Building 5 ]

- An Input Sheet is a sheet in a spreadsheet file that we use to capture all of the basic data relating to a product or service.
- Whenever we need to use any of these data anywhere in the model, we simply read them from this Input Sheet. This approach is safer, more efficient and more effective than the alternative of storing the data in each sheet in which it's used ... think about this!

# Model Building 6

- Here is part of an Input Sheet in the Excel file we prepared for this example and it takes account the ingredients and other inputs.

## Cake baking example: cost model building

Cake name		
Ingredients	<i>basic</i>	<i>medium</i>
flour: grammes	100	200
butter: grammes	100	200
sugar: grammes	100	200
eggs	2	4
<b>Property</b>		
room number	1	1
<b>Equipment</b>		
mixing bowl: litres	3	5
spoon: wooden	1	1

# Model Building 7

**Cake baking example:  
cost model building**

<b>Cake name</b>					
<b>Ingredients</b>	<i>basic</i>	<i>medium</i>	<i>large</i>	<i>Cost (£)</i>	<i>Per (units)</i>
flour: grammes	100	200	400	0.50	100
butter: grammes	100	200	400	0.75	100
sugar: grammes	100	200	400	0.60	100
eggs	2	4	5	0.20	1

- Here part of the same Input Sheet but with some cost information shown too.

# Model Building 8

- Just for the sake of this presentation, we have included an extra two cake recipes on the Input Sheet to demonstrate that we can account for all sorts of cakes in one Excel file or workbook.
- How are we going to use this information now in building our cost model of our cake making business?

# [ Model Building 9 ]

- In the Excel file we have developed we have used just two worksheets: an Input Sheet and an Output Sheet. As we develop a more complex and realistic model for such a product, we then develop more and more sheets.
- In a more complex case we could use a depreciation sheet, an electricity sheet ... and finally we would need a product cost sheet.

## Model Building 10

- We can conclude now that we have enough information now to prepare a cost sheet for baking cakes.
- Our cost sheet would look as you will see on the next slide.

# Model Building 11



	A	B	C	D	E	F	G
1							
2			<b>Number of cakes to be made</b>	<b>1</b>	<b>2</b>	<b>3</b>	
3							
4			<b>Cake name</b>	<i>basic</i>	<i>medium</i>	<i>large</i>	
5			<b>Ingredients</b>				
6							
7			flour: grammes	0.50	2.00	6.00	
8			butter: grammes	0.75	3.00	9.00	
9			sugar: grammes	0.60	2.40	7.20	
10			eggs	0.40	1.60	3.00	
11			<i>Materials Sub Total</i>	2.25	9.00	25.20	
12							
13			<b>Property</b>	2.67	5.00	10.00	
14							
15			<b>Equipment</b>				
16			mixing bowl: litres	0.05	0.17	0.35	
17			spoon: wooden	0.02	0.04	0.06	
18			baking tin: size	0.10	0.30	0.75	
19			cooker: kW	0.25	10.00	15.00	
20			Labour: grade	5.00	10.00	15.00	
21			<i>Equipment Sub Total</i>	5.42	20.51	31.16	
22			<b>Total Cost</b>	<b>10.34</b>	<b>34.51</b>	<b>66.36</b>	
23							

- This is the Output Sheet where we multiplied ingredients by the cost by the number of cakes made.
- We have assumed that everything behaves in a linear way: two cakes cost twice as much as one cake and three cakes cost three times as much as one cake ... change this for a more realistic model ... what about the economies of scale?

# [ Model Building 12 ]

- To build a proper cost model the formulae you need to build are relatively complex.
- We used =SUM, =X\*Y ... and we used =VLOOKUP among others ...
- Look at the Excel file for full details

# Model Building 13

- In conclusion we can say that when developing a product cost model for ANY organisation or product or process, the last thing that we need to consider is the cost of raw materials, the cost of labour ... the cost of anything.
- It's the relationships and the process that are important to allow us to build a model.
- Even if we were never given any costs at all, we could still build a model of the process.

# [ Finale ]

- This presentation has given you an insight into one aspect of building a cost model ... it might help you if you take a look at the spreadsheet too ... just ask and I'll send it to you!

[www.duncanwil.co.uk](http://www.duncanwil.co.uk)

[duncan@duncanwil.co.uk](mailto:duncan@duncanwil.co.uk)

- There's a sister presentation here that you should see too

[www.duncanwil.co.uk/pdfs/costparty.pdf](http://www.duncanwil.co.uk/pdfs/costparty.pdf)