MANAGEMENT ACCOUNTING – PERFORMANCE EVALUATION

In their second of two articles on constructing a budget for a business, **Tim Thompson** and **Vaughn White** use a marginal costing approach.

In our article in the previous issue, we used absorption costing principles to construct a detailed budget for a fictitious manufacturing company. Now we will follow the same basic worked example as before, but this time using marginal costing. Again, we will be preparing the budget for the months of January to April inclusive, but we will also have to process some data from before and after these months.

As before, the sales volume in our company is forecast to be 10,000 units for January, which is expected to grow by 200 units a month. The selling price is £2 per unit, which means that we can construct the sales budget for January to June in both units and money (*see panel 1*). These calculations are identical to those that we did under absorption costing, because the costing method that we use does not affect sales volumes or prices.

Other information given in the first article was that the company's inventory policy is to hold sufficient units of finished goods at the end of each month to meet 40 per cent of the forecast sales for the following month. Also, each unit of finished goods requires 3kg of raw material, which costs £0.15 per kg and 0.1 hours of direct labour, which costs £7.50 per hour.

The finished goods inventory budget, in terms of units, will be identical to that calculated under absorption costing, because the costing method we use does not affect inventory quantities. But the monetary values of these inventories will be different because, under marginal costing, the product cost includes variable production costs only. Here is the product cost calculation:

Material:	3.0kg x £0.15 per kg =	£0.45
Labour:	0.1 hours x £7.50 per hour =	£0.75
Total:		£1.20

With these figures we can prepare the full finished goods inventory budget (*see panel 2*).

The production budget, expressed in units, will be identical to that calculated under absorption costing, because the costing method we use does not affect production quantities. For completeness, this budget is again shown in panel 3.

The raw material inventory budget, the purchases budget and the direct labour budget will all be identical to those calculated under absorption costing. For completeness, these budgets are again shown in panel 4, above, and in panels 5 and 6 on the next page.

From the changes we have identified in our detailed budget preparation, we can evaluate how these affect the three elements of the master budget: the budgeted income statement, the cash budget and the budgeted balance sheets.

For the budgeted income statement, because we are now using marginal costing we must deduct variable costs from sales to give us the contribution and then deduct all of the fixed costs to arrive at the profit (*see*

1 Sales budget

	Jan	Feb	Mar	Apr	May	Jun
Units	10,000	10,200	10,400	10,600	10,800	11,000
Money	£20,000	£20,400	£20,800	£21,200	£21,600	£22,000

2 Finished goods inventory budget

Month	Jan	Feb	Mar	Apr	May
Closing inventory: (units)	4,080	4,160	4,240	4,320	4,400
(£)	4,896*	4,992	5,088	5,184	5,280

* Jan inventory money = 4,080 units x £1.20 per unit = £4,896

3 Production budget

	Jan	Feb	Mar	Apr	May
Sales	10,000	10,200	10,400	10,600	10,800
Closing inventory	4,080	4,160	4,240	4,320	4,400
	14,080	14,360	14,640	14,920	15,200
Opening inventory	(3,000)	(4,080)	(4,160)	(4,240)	(4,320)
Required production	11,080	10,280	10,480	10,680	10,880

4 Raw material inventory budget

	Jan	Feb	Mar	Apr	May
Production units	11,080	10,280	10,480	10,680	10,880
Raw material usage (kg)	33,240*	30,840	31,440	32,040	32,640
Closing inventory: (kg)	9,252^	9,432	9,612	9,792	
(£)	1,388°	1,415	1,442	1,469	

* Jan raw material usage = 11,080 (Jan production units) x 3kg = 33,240kg

^ Jan raw material inventory weight = 30,840 (Feb production usage) x 30% = 9,252kg

° Jan raw material inventory in monetary terms = 9,252kg x £0.15 per kg = £1,388

panel 7). We can now compare these budgeted monthly profits using absorption costing with those using marginal costing that we prepared in the previous article (*see panel 8*). It's clear that there is a difference in the budgeted profit for each month between the costing methods we have used.

Panel 8 indicates that the total profit for the period under absorption costing would be £528 higher than under marginal costing. This is caused by the change in finished goods inventory figure over the period in question. It increased by 1,320 units during the period (3,000 units at the start of January; 4,320 units at the end of April). The value of each of these extra units includes £0.40 of absorbed overheads under absorption costing that wouldn't be included under marginal costing. This amounts to 1,320 units x £0.40 per unit = £528. Under absorption costing this £528 is carried forward on the balance sheet as an asset (inventory), whereas under marginal costing it's taken to the income statement as a cost for the period.

The second part of the master budget is the cash budget. This will be the same as for the absorption approach because this reports only budgeted cash movements, which aren't affected by the product costing method used. For completeness, the workings for the cash budget are shown in panels 9 and 10, and the budget itself is shown in panel 11.

The final part of the master budget is the budgeted balance sheets. In practice, a company that uses marginal costing for its management accounts would not normally be expected to prepare them. But, for the purposes of this article, it helps to do so in order to compare the similarities and differences that arise between absorption and marginal costing.

To prepare the budgeted balance sheets we first need to obtain the January opening balance sheet. This will be different using marginal costing, since the finished goods inventory will be valued at a lower cost per unit because of the absence of absorbed production overheads (*see panel 12*).

Closing receivables and payables are unchanged from the calculations that we made under absorption costing, because the product costing method used does not affect cash flows. For completeness, they are shown again in panel 13.

We can now prepare the budgeted balance sheets for the months January to April (*see panel 14*). These include the December balance sheet – ie, the position on January 1. As you can see, the values of finished goods inventory and the capital differ from those calculated under absorption costing. All other values are identical.

Having prepared the budget under both costing approaches, we can now consider

5 Purchases budget

	Jan	Feb	Mar	Apr
Production usage (kg)	33,240	30,840	31,440	32,040
Closing inventory (kg)	9,252	9,432	9,612	9,792
	42,492	40,272	41,052	41,832
Opening inventory (kg)	(11,000)	(9,252)	(9,432)	(9,612)
Purchases: weight (kg)	31,492	31,020	31,620	32,220
money (£)	4,724	4,653	4,743	4,833

6 Direct labour budget

	Jan	Feb	Mar	Apr
Production units	11,080	10,280	10,480	10,680
Direct labour: time (hours)	1,108	1,028	1,048	1,068
money (£)	8,310	7,710	7,860	8,010

7 Budgeted income statement

	Jan	Feb	Mar	Apr
Units	10,000	10,200	10,400	10,600
Sales (£)	20,000	20,400	20,800	21,200
Cost of sales (£)	(12,000)	(12,240)	(12,480)	(12,720)
Contribution (£)	8,000	8,160	8,320	8,480
Fixed costs (£)	(6,252)	(6,252)	(6,252)	(6,252)
Net profit (£)	1,748	1,908	2,068	2,228

8 Budgeted net profits compared under the two methods

	Jan	Feb	Mar	Apr	Total
Absorption costing (£)	2,180	1,940	2,100	2,260	8,480
Marginal costing (£)	1,748	1,908	2,068	2,228	7,952
Difference (£)	432	32	32	32	528

9 Cash to be received from sales

	Jan	Feb	Mar	Apr
Turnover (£)	20,000	20,400	20,800	21,200
Cash receipts: opening receivables (£)	4,000			
one month (£)		10,000	10,200	10,400
two months (£)			10,000	10,200
Total cash receipts (£)	4,000	10,000	20,200	20,600

10 Cash to be paid for purchases

	Jan	Feb	Mar	Apr
Purchases (£)	4,724	4,653	4,743	4,833
Cash payments: opening payables (£)	2,000			
one month (£)		4,724	4,653	4,743

the implications for the management's attitudes. Students of financial accounting will be aware that absorption costing is required for the purpose of preparing statutory published accounts. For this reason a firm may be tempted to use absorption costing for its management accounts in order to avoid doubling up on some accounting work. But there is a danger that this expedient approach might not always provide appropriate management information. Profit reporting and inventory valuation form only part of the purpose of management accounting. There are strong arguments that marginal costing can be a more appropriate method for performance measurement and decision-making.

In a period of declining sales, but at the same level of production, the absorption costing method shows higher profits. This could possibly make managers complacent at a time when this is least desirable. The converse would also be true: absorption costing would show lower profits when the company's existing stocks are used to satisfy sales when demand exceeds output. Managers might, therefore, mistakenly assume that there is a problem with profitability.

This worked example raises some fundamental questions about the treatment of the company's production costs. Which of these are functions of time and which are functions of production volume? Marginal costing does not carry forward fixed production costs from one period to another, whereas absorption costing does carry forward fixed production overheads.

It can be concluded that the marginal costing approach has greater profit sensitivity. This is because the period profit using this method is not affected or distorted by the values of the levels of stocks from preceding periods.

So how did you get on with your budget calculations using marginal costing? Do you understand fully why some of the numbers were different from those prepared under absorption costing and why others were the same? Neither of these product costing methods is "best" for all situations, but are you clear in what circumstances you would use one rather than the other?

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11 The cash budget

	Jan	Feb	Mar	Apr
Opening balance (£)	8,000	(3,062)	(10,248)	(7,313)
Receipts: sales (£)	4,000	10,000	20,200	20,600
Payments: purchases (£)	(2,000)	(4,724)	(4,653)	(4,743)
labour (£)	(8,310)	(7,710)	(7,860)	(8,010)
overheads (£)	(4,752)	(4,752)	(4,752)	(4,752)
Closing balance (£)	(3,062)	(10,248)	(7,313)	(4,218)

12 January opening budgeted balance sheet

		Jan 1
Non-current assets:	cost	20,000
	accumulated depreciation	(4,000)
	net book value	16,000
Current assets:	inventory (finished goods: 3,000 units x £1.20 per unit)	3,600
	inventory (raw materials: 11,000 units x £0.15 per unit)	1,650
	receivables	4,000
	cash	8,000
Current liabilities:	overdraft	0
	payables	(2,000)
Net assets		31,250
Capital carried forward		31,250

13 Closing receivables and payables

	Jan	Feb	Mar	Apr
Sales (£)	20,000	20,400	20,800	21,200
Opening receivables (£)	4,000	20,000	30,400	31,000
Receipts (£)	(4,000)	(10,000)	(20,200)	(20,600)
Closing receivables (£)	20,000	30,400	31,000	31,600
Purchases (£)	4,724	4,653	4,743	4,833
Opening payables (£)	2,000	4,724	4,653	4,743
Payments (£)	(2,000)	(4,724)	(4,653)	(4,743)
Closing payables (£)	4,724	4,653	4,743	4,833

14 Budgeted balance sheets

		Dec	Jan	Feb	Mar	Apr
Non-current assets:	cost	20,000	20,000	20,000	20,000	20,000
	depreciation	(4,000)	(5,500)	(7,000)	(8,500)	(10,000)
	NBV	16,000	14,500	13,000	11,500	10,000
Current assets:	inventory FG	3,600	4,896	4,992	5,088	5,184
	inventory RM	1,650	1,388	1,415	1,442	1,469
	receivables	4,000	20,000	30,400	31,000	31,600
	cash	8,000				
Current liabilities:	overdraft		(3,062)	(10,248)	(7,313)	(4,218)
	payables	(2,000)	(4,724)	(4,653)	(4,743)	(4,833)
Net assets		31,250	32,988	34,906	36,974	39,202
Capital brought forward			31,250	32,998	34,906	36,974
Profit			1,748	1,908	2,068	2,228
Capital carried forward		31,250	32,998	34,906	36,974	39,202