

# 7 MANAGEMENT ACCOUNTING

*After studying this chapter, you should:*

- *understand how to produce a budget and a cash flow forecast, and know how to monitor them;*
- *be able to calculate the unit cost of labour;*
- *understand the concept of overheads and the different ways in which they may be distributed;*
- *be able to determine how much it costs to produce a particular product or provide a specific service.*

## 7.1 PLANNING AND MANAGEMENT INFORMATION

The last chapter was concerned with financial accounting, that is, with reports about the financial state of a company as a whole. Such reports are public and are required to meet standards set by the law and by stock exchanges. The information they contain is intended primarily for potential investors and trading partners. It is historical, that is, it is concerned with what has happened in the past.

The reports produced by financial accounting are not very useful in the day-to-day running of the company. Managers need plans and accounting information that will help them to make good business decisions; this means, above all, up-to-date information about costs and sales so that the company's actual progress can be monitored against the plans, as contained in its budget and its cash flow forecast. It is these documents that are the main subject of this chapter.

## 7.2 BUDGETS AND OVERHEADS

A budget is a financial plan showing the expected income and expenditure for an organisation over a specific period, typically one year. In order to produce a budget for the company we have to make some more assumptions about what it will be doing. We shall illustrate the idea of a budget by considering a small company that sells desktop computers that it assembles from bought-in components and basic software. We suppose the owner runs the company and it employs three technicians and a part-time secretary. It owns a van that it uses for delivering computers to customers.

The company makes three models of computer, the Basic, the Advanced and the Professional. Table 7.1 shows the cost of the components for each model, the number of hours of technician time it takes to build one and the expected sales of that model over the next year.

**Table 7.1 Direct costs and expected sales**

<b>Model</b>	<b>Cost of components</b>	<b>Technician timesales</b>	<b>Expected</b>
<b>Basic</b>	£200	10 hours	200
<b>Advanced</b>	£300	12 hours	100
<b>Professional</b>	£400	15 hours	50

A possible budget for the company is shown in Table 7.2; it contains an estimate of the company's costs and its income over the next year of operations.

The costs under the heading 'Overhead expenditure' are costs that the company will have to pay regardless of how many computers it sells. For this reason, they are sometimes known as 'fixed costs'. Most of these costs are obvious enough but three items may require some explanation. We have said that the company is run by its owner. For many reasons, to do particularly with taxation and social security, the owner should be treated as an employee and pay himself or herself a salary, rather than attempt to live on the company's profits. This accounts for the item labelled 'Owner's payroll costs'. Unless the owner is an experienced accountant, the services of an accountant will be necessary to help prepare the annual accounts and possibly to give advice from time to time. The advice of a lawyer may also be necessary from time to time. These items are covered under the heading 'Professional fees'. Finally, employers are legally required to carry insurance to cover any claim against them for injuries suffered by employees during the course of their employment; other insurance, against theft from the company's premises for example, may also be necessary. This explains the heading 'Insurance'.

The total figure of £63,500 for overheads is money that the company has to pay out and which it therefore needs to recover from its sales.

Unlike the overheads, the figures under the heading 'Operating costs' depend on the number of computers the company sells. For this reason they are known as 'variable costs'. The cost of components is directly connected to the number of computers sold, while the cost of the technicians can be adjusted to match the sales volumes, though less easily, by recruiting another technician or making a technician redundant.

**Table 7.2 An example budget****Overhead expenditure**

Owner's payroll costs	42,000
Secretary's payroll costs (part time)	8,000
Costs of van (including depreciation)	3,500
Internet connection, telephone, postage, etc.	1,000
Advertising	2,000
Premises (heating and lighting, rent, rates, etc.)	4,500
Professional fees	1,000
Insurance	500
<b>Total overheads</b>	<b>63,500</b>

**Operating costs**

Technicians' payroll costs	66,000
Bought-in components	90,000
<b>Total operating costs</b>	<b>156,000</b>

<b>Total costs</b>	<b>219,500</b>
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**Sales income**

Basic model (200 @ £595)	119,000
Advanced model (100 @ £795)	79,500
Professional model (50 @ £895)	44,750

<b>Total income</b>	<b>243,250</b>
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<b>Profit</b>	<b>24,750</b>
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The sales income is based on the company's best estimate of how many computers it can sell and at what price. We note that the prices are not directly related to the costs (by whatever method of calculation).

Once a budget has been agreed, it should be used to monitor the company's financial progress. The first step is to break it down to show monthly income and expenditure – a budget broken down in this way is sometimes called a **profiled budget**. At the end of each month, the management then compares what has actually happened during the month with what was planned in the budget. Where income or expenditure differ significantly from what was planned, the management will investigate the reasons for the exceptions and decide what action, if any, to take. If, for example, sales income is 30 per cent lower

than predicted, managers might decide to mount a further advertising campaign or they might decide to cut costs by reducing staff. The point is that they will be made aware of the problem as soon as it appears and can take appropriate action quickly.

### 7.3 COST OF LABOUR

The cost of employing someone is more than just the cost of their salary. In most countries, employers are required to pay a tax for every employee. This tax usually goes by a name such as employers' National Insurance contribution (the UK name) or social security contribution; it is proportional to the employee's salary. In some countries, this contribution may be as large as 60 per cent of salary while in others it is very much smaller. In the UK, the rules for calculating the National Insurance contribution are complicated and change frequently but for the purposes of this chapter we shall take it as simply 10 per cent of salary.

There may be other costs associated with an employee, depending on the law and the practices of the individual country. In the UK, it is common for larger companies to operate a pension scheme of their own, to which the company makes a contribution on behalf of each employee. The company may pay for medical insurance for its employees. Senior employees may be provided with a car or other benefits. The total cost of employing a person, that is, the salary plus employers' social security contributions plus any other costs associated directly with the employee, is sometimes known as the employee's **payroll cost** or **direct cost**.

Consider one of the technicians who is employed to assemble the computers and suppose that they are paid an annual salary of £20,000. To calculate the cost of the time the technician spends assembling a computer, the annual payroll cost is not very helpful. What we need to know is the cost per hour. This is harder to calculate than one might expect. First, we need to calculate how many days we can expect the technician to work. There are 52 weeks in the year. Assuming the company works a five-day week, there will be 260 week days. However, the company will be closed for public holidays and the technician will not be working. The number of public holidays varies from country to country and even within a country. In England and Wales there are eight public holidays a year; there are also eight in Scotland but they are different; in Northern Ireland there are 10.

In addition to public holidays, employees are generally entitled to a certain amount of paid leave. Within the EU, most employees are by law entitled to 20 days of paid annual leave in addition to public holidays. (This is generous by international standards. Indeed, in many countries there is no requirement to grant paid annual leave.)

In addition to their annual leave, employees may miss some working days because of sickness. Although we cannot predict accurately how much time will be lost in this way, it is usual to guess at a reasonable average of, say, five days per employee. Finally, it may well be that there are some days in the year when, because of scheduling difficulties, there will be no revenue-earning work available for the employee. Finally, we assume that employees work for seven hours per day. Table 7.3 shows how all these factors can be taken into account to obtain a figure for the number of revenue-earning working hours that can be expected from an employee over the period of one year.

**Table 7.3 Calculation of the number of revenue-earning hours in a year**

Total number of weekdays (1)	260	
Public holidays (2)		10
Annual leave (3)		20
Sick leave (4)		5
Unproductive time (5)		10
Total non-revenue-earning time = (2) + (3) + (4) + (5) = (6)	45	
Total number of revenue earning days = (1) – (6) = (7)	215	
Total number of hours available (7) × 7	1,505	

Assuming the technician gets no non-salary benefits such as pension contributions, the direct cost of their time will be £20,000 plus 10 per cent National Insurance, i.e. £22,000 per year, so that the direct cost of an hour of their time is £22,000/1,505 = £14.62.

**7.4 ALLOCATION OF OVERHEADS**

In a large business, there are many ways in which overheads can be spread over the different activities the business performs; there is no single 'right' way of doing this.

In the next section we shall show how this scenario might lead to annual overheads of £63,500, which the company has to recover from its sales. There are at least three commonly used ways that we might spread these overheads over the computers sold.

The simplest way is to allocate the same overhead to each computer sold, regardless of the cost of the components or the amount of labour involved. Since we expect to sell 350 units, this means £181.43 per computer. This means that the Basic model, would cost:

$$£181.43 + £200 + 10 \times £14.62 = £527.63.$$

The Advanced model would cost:

$$£181.43 + £300 + 12 \times £14.62 = £651.83$$

and the Professional model would cost:

$$£181.43 + £400 + 15 \times £14.62 = £802.23.$$

The second way of allocating the overhead is to make it proportional to the number of hours of labour involved. This means adding an overhead component to the cost of an

hour of a technician's time. Since we have three technicians, each supplying 1,505 hours of productive labour per year, we need to add:

$$£63,500 / (3 \times 1,505) = £14.06$$

to the cost of an hour's labour, making it up to £14.62 + £14.06 = £28.68. Now the cost of the three models comes out at:

$$£200 + 10 \times £28.68 = £486.80 \text{ (Basic)}$$

$$£300 + 12 \times £28.68 = £644.16 \text{ (Advanced)}$$

$$£400 + 15 \times £28.68 = £830.20 \text{ (Professional).}$$

Finally, we can distribute the overhead in proportion to the total cost, that is, taking into account the cost of components as well as the cost of labour. This means that we take the direct cost (components and labour) and add on a fixed percentage. To calculate this percentage we divide the total overhead by the total direct cost of all the units we expect to sell, that is,  $63,500 / (200 \times 346.20 + 100 \times 475.44 + 50 \times 619.30) = 0.43$ . This means the cost of the Basic model is  $£346.20 \times 1.43 = £495.06$ , of the Advanced model, £679.88 and of the Professional model, £885.60.

Table 7.4 summarises the cost (to the nearest pound) of the three different models according to the three different ways of distributing the overheads.

**Table 7.4 Effects of different overhead calculations**

	<b>Fixed overhead</b>	<b>Overhead proportional to labour content</b>	<b>Overhead proportional to total direct cost</b>
Basic	528	487	495
Advanced	652	644	680
Professional	802	830	886

The costs calculated in this way can form the basis for pricing the computers. Certainly, computers should not normally be sold at prices that are lower than the costs. More commonly, the prices will be set on the basis of 'what the market will bear', that is, how much customers will be willing to pay, and this depends very much on the competition. The cost calculations will, however, show us where our costs lie and how to go about reducing them so that we can sell our products more cheaply.

7.5 CASH FLOW FORECAST

A company may be very profitable but unable to pay its bills. For that reason, it may be forced into receivership. This apparent paradox typically arises because bills have to be met – in particular, staff have to be paid – before the income they generate is received. In order to avoid this difficulty, businesses need to prepare cash flow forecasts, that is, estimates of the amount of cash that will flow into and out of the company each month.

Table 7.5 shows a cash flow forecast for our example company’s operations. In order to keep the overall picture clear, we have only shown a six month forecast. In practice

Table 7.5 A six-month cash flow prediction

Month	Jan	Feb	March	April	May	June
<b>Cash outflow</b>						
Rent and property taxes	500			500		
Energy costs		400	400	300	200	200
Payroll costs	9,666	9,666	9,666	9,666	9,666	9,666
Communications		83	83	83	83	83
Insurance	500					
Components		4,000	7,000	10,000	10,000	10,000
Advertising		500		250		500
Road tax and insurance on van	700					
Professional fees			300			
Van operating costs	100	100	100	100	100	100
<b>Monthly cash outflow</b>	11,466	15,349	17,549	20,899	20,049	20,549
<b>Cash inflow</b>						
Income from retail sales	5,000	5,000	5,000	5,000	5,000	5,000
Income from trade sales		5,000	7,000	10,000	15,000	18,000
<b>Monthly cash inflow</b>	5,000	10,000	12,000	15,000	20,000	23,000
<b>Net monthly cash flow</b>	(6,466)	(5,349)	(5,549)	(5,899)	(49)	2,451
<b>Cumulative cash flow</b>	(6,466)	(11,815)	(17,364)	(23,263)	(23,312)	(22,861)

companies normally try to forecast twelve months ahead. We have also made the rather unrealistic assumption that the company is launching into its operations at full stretch from day 1. Finally, because sales and energy costs are both seasonal, we have assumed that the company is starting operations on 1st January.

The figures in each cell show the amount of cash entering or leaving the company during that month, under the heading given at the left-hand end of each row. Thus the figure of £500 given in the January column and the Insurance row means that an insurance premium of £500 will be paid sometime in January. The figure of £7,000 in the March column and the 'Income from trade sales' row means that £7,000 will enter the company's bank account in March as a result of trade customers paying invoices.

The timing of the payments is important and it depends on commercial practice. Thus rents are normally paid quarterly, in advance. Hence the rent payment will be made at the beginning of January and the beginning of April. Components will probably be bought against credit accounts with one or more suppliers. Under such arrangements, invoices for components delivered in one month will be issued at the end of that month and customers will be expected to pay the invoice within 28 days of its being issued. Similar arrangements will probably apply to energy costs but these will reduce as we move from the cold winter months into the warmer season.

We have assumed that retail sales, that is, sales to individuals, are paid for immediately and that these run at a steady level of £5,000 per month throughout the period. Trade sales, that is sales to businesses, are typically paid for in the month following delivery. We expect these sales to increase steadily during the period. The total cash received for the six month period is estimated to be £85,000. Since trade sales made in month 6 will not appear in this figure, it looks as though the sales for the period are estimated to be around £105,000. The budget (Table 7.2) is based on total sales of £243,250, leaving £138,250 to be earned in the second six months. This is not unreasonable; demand both from consumers and from businesses is traditionally at its highest in September, October and November.

Assuming that the estimates are realistic, this forecast shows that, at no time during the period, will the cash received come close to balancing the cash paid out. At the worst point, at the end of month 5, the cash paid out will be £23,312 more than the cash received. This has nothing to do with the company's profitability; it could well be that the company is on track to meet the budget in Table 7.2 and make a respectable profit. Nevertheless, the company will need to have at least £23,312 available in cash if it is to keep operating through this period. Prudence suggests that it should plan on requiring £30,000 to allow for things going wrong.

The amount of cash required to allow the company to continue to operate over a period is known as its **cash requirement**. It is also often referred to as working capital, although, as we have seen in Chapter 6 on liabilities and owners' equity in commercial balance sheets, this term is more correctly used to refer to the difference between current assets and current liabilities. The two concepts are related but they are not identical. The traditional way of funding a company's cash requirement is through a bank overdraft but banks are not always eager to lend to small companies and loans from other sources may be necessary.



An initial cash flow forecast is an essential part of a business plan but a well-run company will maintain a rolling twelve-month cash flow forecast. That is, each month it will produce a new cash flow forecast for the next twelve months, the first eleven months of which will be an updated version of the figures in the previous month's forecast. Such forecasts will provide early warning of any prospective cash shortage and banks will generally respond well to a request for an increase in overdraft facilities that is made well in advance and based on detailed cash flow predictions.

At first sight, cash flow forecasts and budgets seem very much the same thing. It is important to understand the difference. Cash flow forecasts deal with the flow of cash or its equivalents in and out of the company. Budgets deal with income and expenditure. If our company delivers computers worth £100,000 to a large corporate customer today and sends it an invoice, this will immediately appear as income when we are monitoring the budget. However, many large companies are very slow to pay their bills and it may be three or four months before the invoice is paid and the corresponding sum appears as cash. The difference can be crucial.

## FURTHER READING

The book by Atrill and McLaney recommended at the end of Chapter 5 also covers the material in this chapter.