

You're fired ... maybe

Job losses can sometimes be a false economy**FT**

Andrew Taylor

Life is about to get even tougher in the jobs market, with employers expected to announce a spate of redundancies over the next few months.

Businesses, if they can avoid it, do not fire people in the run-up to Christmas. Harsh decisions tend to be postponed until after the holidays.

Hence the foreboding that January and February will see even more job losses, as employers decide they can wait no longer to respond to plummeting order books.

However, cutting permanent jobs is expensive – particularly if employers are only going to have to replace axed staff when trading improves.

A study published this week by the Chartered Institute of Personnel and Development (CIPD) calculated the 'real' average cost of firing a worker at more than £16,000. And this did not take into account the psychological effect that redundancies have on surviving staff in terms of lower morale, productivity and output.

Instead of pursuing short-term savings, employers might be better off if they respond 'by retaining their people, rather than downsizing and risking long-term damage to their business', says the CIPD.

Recent moves to introduce short-term working and extended Christmas breaks, as an alternative to cutting permanent staff, suggest that some manufacturing employers, have heeded this lesson.

www.ft.com, 8 January 2009.

Source: Reproduced with permission from *The Financial Times*.

Questions relating to this news story can be found on pages 414–415 ➡

About this chapter

In the previous chapter we suggested that the use of absorption costing in most decision-making situations may lead to some unwise decisions. We suggested that a contribution approach using marginal costing would normally be more appropriate. Marginal costing involves classifying costs on a fixed/variable basis, instead of on a direct/indirect basis as in absorption costing. There are, however, other ways of classifying costs and we outline some of them in this chapter.

The chapter also uses your overall knowledge of management accounting to examine some specific decision-making situations. We cover four main types of decision:

- those that involve determining whether to close or shut down a plant or a factory;
- those that involve deciding whether we supply or make our own materials and components;
- those that involve determining what price to charge for goods and services;
- those that involve deciding what price to charge for one-off or special orders.

Learning objectives

By the end of this chapter, you should be able to:

- outline the nature of decision making;
- list six ways of classifying costs for decision-making purposes;
- incorporate cost and financial data into specific decision-making situations.



Why this chapter is important

The previous chapter was one of the most important in the book and this one is also very important. It tells you a little more about decision making and the classification of costs. It then uses some numerical examples to illustrate the particular direction that various decisions should take.

The chapter is heavily biased towards helping you as a non-accountant to make and take effective decisions. This means that it is *essential* if you are to become an all-round first-class manager.

Nature and purpose

News clip

Decision-making challenge

Paul Boyle, the Chief Executive of the Financial Reporting Council, has argued in a recent speech that the corporate governance challenge is about making boards more effective. He believed that the main challenge was to improve both decision making and the behaviour of directors.

Source: Adapted from www.frc.org.uk/press/pub1878, 25 February 2009.

We start our examination of this important topic by examining the nature and purpose of decision making.

The term *decision* will be familiar to you in your everyday life. It means coming to a conclusion about a particular issue, e.g. when to get up in the morning, whether to have tea or coffee for breakfast, or choosing between a holiday and buying some new clothes. Similarly, in a managerial context, decisions have to be taken about whether or not to sell in particular markets, buy some new machinery or spend more money on research.

Management accountants will be involved in collecting data and supplying information for such decisions. While the information that they supply will be primarily of a financial nature, they will highlight other considerations that need to be taken into account before a decision is made. The eventual decision will rest with the responsibility centre manager concerned. It may well be that non-cost factors turn out to be more important than measurable financial considerations. For example, an entity may buy components from an external supplier because they are cheaper. But what happens if the

supplier becomes unreliable? It might then be worth the extra cost of manufacturing the components internally in order to avoid the risk of any disruption to normal production.

The information required for decision-making purposes tends to be more wide-ranging and less constrained than that used in cost accounting. Its main characteristics are summarized below and they are also shown in Figure 18.1.

- *Forward looking.* While historical data may be used as a guide, information for decision making is much more concerned with what *will* happen rather than with what *did* happen. As so much of the information required is concerned with the future, considerable initiative and intuitive judgement is required in being able to obtain it.
- *One-off decisions.* Decision making often involves dealing with a problem that is unique. So a solution has to be geared towards dealing with that particular problem.
- *Data availability.* While some of the data required for decision making may be extracted from the cost accounting system, much of what is required may have to be specially obtained.
- *Net cash flow.* Managers will be concerned with the impact that a decision may have on the expected net cash flow of a particular project, i.e. future cash receipts less future cash expenditure. The calculation of periodic profit and loss based on accruals and prepayments will be largely irrelevant.
- *Relevant costs.* Costs and revenues that are not affected by a decision are excluded from the analysis. For example, fixed costs would normally be ignored because they are not likely to change.
- *Opportunity costs.* Those benefits that would be foregone or lost as a result of taking a particular decision are known as opportunity costs. They form an important part of any decision-making analysis. You may decide, for example, to look after your own garden yourself instead of doing some paid overtime. The opportunity cost would be the wages or salary you lose by not working overtime less the amount you save by not employing a gardener.
- *Probability testing.* Much of the information used in problem solving is speculative because it relates to the future and so it is advisable to carry out some probability testing. This is an extremely complex area and it goes beyond this book. In broad terms it involves calculating the *expected value* of a particular project or proposal. The basic idea is demonstrated in Example 18.1.

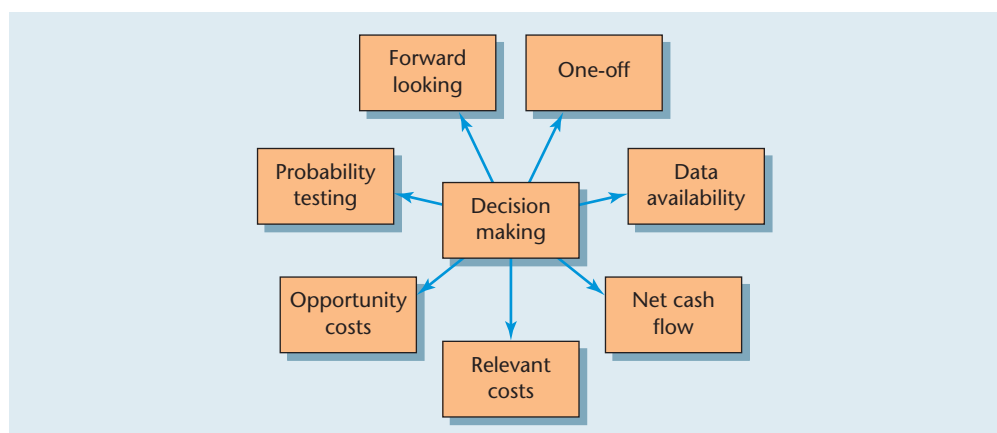


Figure 18.1 The nature of decision making

Example 18.1**Probability testing**

Company X sells one product codenamed A1. The marketing department has estimated that the sales of A1 for a forthcoming budget period could be £1000, £1500 or £2000. On further investigation it would appear that there is a 70 per cent chance that the sales will be £1000, a 20 per cent chance that the sales will be £1500 and a 10 per cent chance that the sales will be £2000.

Required:

Calculate the expected value of sales for product A1 during the forthcoming budget period.

Answer to Example 18.1

The question requires us to calculate the expected value of the sales of A1 for the forthcoming period. It might be easier for you to think of the expected value as the *weighted average*, which perhaps provides a clue to what is required. In order to calculate the expected values the budgeted sales figures are multiplied by their respective chances or probabilities. So:

Budgeted sales (1)	Probability (2)	Expected value (3)
£	%	£
1 000	70	700
1 500	20	300
2 000	10	200
	<u>100</u>	<u>1 200</u>

Tutorial notes

- 1 The expected value (or weighted average) of the sales for the forthcoming budget period is £1200 as per column (3).
- 2 The answer has been obtained by multiplying the three estimated levels of sales by their respective probabilities (column (1) multiplied by column (2)).
- 3 In this exhibit, the probabilities are expressed in percentage terms. When combined they should always total 100%. Note that sometimes they are expressed in decimal terms; they should then total 1.0 (in our example $0.7 + 0.2 + 0.1 = 1.0$).
- 4 The probabilities are estimates. They may be made partly on past experience, partly on an investigation of the market and partly on instinct. In other words they might be better described as 'guesstimates'.
- 5 Does the solution make sense? The expected value is £1200; this is £200 more than the lowest level of sales of £1000; the probability of this level being achieved is 70 per cent. So the chance of the sales being at least £1000 is quite high. By contrast, there is only a 20 per cent probability that the sales could be as high as £1500 and only a 10 per cent chance that they could reach £2000. It seems reasonable to assume, therefore, that the sales are likely to be nearer £1000 than £1500. So £1200 appears to be a reasonable compromise.

Activity 18.1

Tick the appropriate box.

In decision making:	True	False
(a) Profit is not usually taken into account when considering the launch of a new product.		
(b) Qualitative factors are ignored because they cannot be quantified.		
(c) Net cash flow will always be the deciding factor in going ahead with a proposed project.		

Cost classification

News clip

Bringing out the axe

The Japanese car-maker Toyota announced its quarterly results on Tuesday. They beat expectations. But, like its peers, Toyota has had to bring out the axe, managing to save \$1.5 billion of fixed costs in the quarter. Unfortunately most of it was offset by exchange rate effects.

Source: Adapted from www.ft.com/com/cms, 4 August 2009.

As we have demonstrated in previous chapters, costs and revenues may be classified into various categories depending upon the purpose for which they are going to be used. In cost accounting, information is required mainly for product costing and stock valuation purposes, and so the most important category is the distinction between direct costs and indirect ones.

A direct/indirect cost classification is not normally appropriate in decision making. The preferred classification is that relating to fixed and variable costs but you will come across other cost classifications. We show the main ones used in decision making in Figure 18.2 along with a brief explanation of them below.

Fixed and variable costs

We covered such costs in the previous chapter. Fixed costs are those that are likely to remain unchanged irrespective of the level of activity. Variable costs are those that move directly proportional to activity – one unit results in £1 of variable cost, two units results in £2 of variable cost, three units in £3 of variable cost and so on.

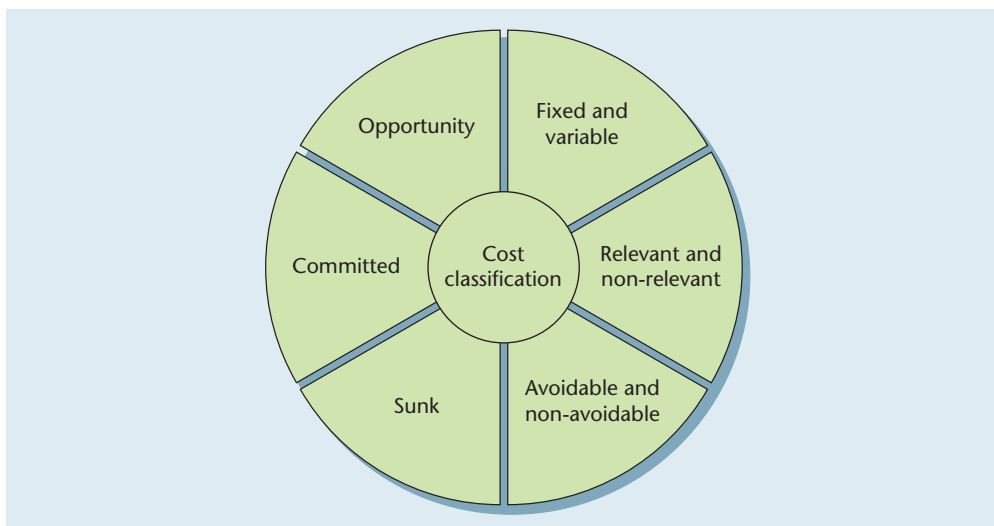


Figure 18.2 Cost classification

In theory, those costs classified as 'fixed' will remain the same irrespective of whether the entity is completely inactive or if it is operating at full capacity. In practice, fixed costs tend to remain fixed only over a relatively small range of activity range and only in the short term.

The assumption that fixed costs remain unchanged means that they do not normally need to be taken into account. In other words, they can be ignored because they will not be affected by the decision and they are not relevant in any consideration of the issues.

Relevant and non-relevant costs

Relevant costs are those future costs that are likely to be affected by a particular decision. It follows that non-relevant costs are those that are *not* likely to be affected by the decision. This means that non-relevant costs, such as fixed costs (although they are not always irrelevant), can be excluded from any cost analysis.

Avoidable and non-avoidable costs

Avoidable costs are those that may be saved by not taking a particular decision. Non-avoidable costs will still be incurred if the decision is taken. Avoidable and non-avoidable costs are very similar to relevant and non-relevant costs and sometimes the terms are used synonymously.

Sunk costs

Sunk costs are those that have already been incurred as a result of a previous decision. So they are not relevant as far as future decisions are concerned and they can be excluded from any decision-making analysis.

Committed costs

A committed cost arises out of a decision that has previously been taken, although the event has not yet taken place. For example, a proposal to increase the capacity of a factory from 1000 to 1500 units per annum will result in increased capital expenditure. A decision to accept the proposal means that certain costs are *committed* and it only becomes a matter of time before there is a cash outflow. Once the proposal has gone ahead and it has been paid for, the costs become *sunk* costs. Committed costs (like sunk costs) are not relevant as far as *future* decisions are concerned.

Opportunity costs

We referred to opportunity costs in the previous section of this chapter. Just to remind you, an opportunity cost is a measure of the net benefit that would be lost if one decision is taken instead of another decision. Opportunity costs are not normally recorded in the cost accounting system because they are difficult to quantify, so when making a decision they may need to be estimated.

Activity 18.2

Carla Friar is a mature student at university. Her university fees and maintenance cost her £7000 a year. Carla gave up her job in a travel centre to become a full-time student. Her take-home pay was then £20,000 a year but she also lost various travel concessions worth £1000 a year. As a student she has little free time, she socializes infrequently and so she does not spend much. This saves her about £2000 a year but, of course, she misses her friends and her nights out.

What factors do you think that Carla should take into account in trying to work out the opportunity cost of becoming a student?

Types of decision

We now turn to some specific decisions that managers may have to take. They are shown in diagrammatic format in Figure 18.3. The figure is followed by an explanation of each decision. The purchase of capital assets is another important decision that managers have to take but we leave this topic to the next chapter as we need more space to discuss it.

Closure and shutdown decision

News clip

Idling plants

The largest aluminium maker in the US, Alcoa, has announced a lower than expected loss. It achieved this by an aggressive cost-cutting exercise that has resulted in jobs being slashed and idling

plants. The company reported that it had managed to achieve \$280 million of overhead savings in 2009 – representing 134 per cent of its target for the year.

Source: Adapted from www.ft.com/cms, 8 July 2009.

A common problem that managers may face from time to time is whether to close some segment of the enterprise, such as a product, a service, a department or even an entire factory. This is a *closure* decision, the assumption being that the closure would be permanent. A similar decision may have to be taken in respect of a temporary closure. This is known as a *shutdown* decision.

A closure decision sometimes needs to be taken because a segment within the overall entity may have become unprofitable, out of date or unfashionable and therefore no future is seen for it. A decision to close a segment of an entity temporarily would be taken when the segment's problems are likely to be overcome in the near future. So a segment may be unprofitable at the moment but it is expected to recover in (say) a year's time.

Closure and shutdown decisions are often required because a segment is regarded as being 'unprofitable'. The definition of 'unprofitable' has to be looked at very closely.

Type	Question
Closure and shutdown	Will it be temporary or permanent?
Make or buy	Do we make our own or buy outside?
Pricing	Should it be market based or cost based?
Special orders	Will it be profitable?
Capital investment	How much will it cost?

Figure 18.3 Types of decision

A product, for example, may not be making a *profit* but it may be making a *contribution* towards the fixed costs of the company. Should it be abandoned? Great care would need to be taken before such a decision was taken. The abandonment of one product may have an impact on the sales of other products in such circumstances, it may even be beneficial to sell the product below its variable cost (at least in the short term).

Closure and shutdown decisions are not easy to make because they often require staff to be made redundant. They cannot be determined purely on narrow cost grounds, as other wide-ranging factors may need to be considered. We illustrate a relatively straightforward closure decision in Example 18.2 below.

Make or buy decisions

News clip

Outsourcing deals reviewed

In an attempt to cut costs many firms are now attempting to renegotiate their outsourcing contract deals or parcel off elements to different suppliers. But Graham Beck, the senior sourcing adviser at PA Consulting, believes that this may be unwise. It may cut costs, he argues, 'but you will be responsible for putting it all back together again and integrating all your suppliers'.

Source: *Financial Management*, June 2009, p. 7.

Example 18.2

A closure decision

Vera Limited has three main product lines: 1, 2 and 3. The company uses an absorption costing system, and the following information relates to the budget for the year 2012.

Product line	1	2	3	Total
Budgeted sales (units)	<u>10 000</u>	<u>4 000</u>	<u>6 000</u>	
	£000	£000	£000	£000
Sales revenue	<u>300</u>	<u>200</u>	<u>150</u>	<u>650</u>
Direct materials	<u>100</u>	<u>40</u>	<u>60</u>	<u>200</u>
Direct labour	<u>50</u>	<u>70</u>	<u>80</u>	<u>200</u>
Production overhead	<u>75</u>	<u>30</u>	<u>35</u>	<u>140</u>
Non-production overhead	<u>15</u>	<u>10</u>	<u>5</u>	<u>30</u>
	<u>240</u>	<u>150</u>	<u>180</u>	<u>570</u>
Profit (Loss)	<u>60</u>	<u>50</u>	<u>(30)</u>	<u>80</u>

Additional information:

- Both direct materials and direct labour are considered to be variable costs.
- The total production overhead of £140,000 consists of £40,000 variable costs and £100,000 fixed costs. Variable production overheads are absorbed on the basis of 20 per cent of the direct labour costs.
- The non-production overhead of £30,000 is entirely fixed.
- Assume that there will be no opening or closing stock.

Required:

Determine whether product line 3 should be closed.



Answer to Example 18.2

Points

- 1 The first step in determining whether to recommend a closure of product line 3 is to calculate the *contribution* that each product line makes.
- 2 In order to do so, it is necessary to rearrange the data given in the question in a marginal cost format, i.e. separate the fixed costs from the variable costs.
- 3 If product line 3 makes a contribution then other factors will have to be taken into account before an eventual decision can be made.

Calculations

Product line	1	2	3	Total
Budgeted sales (units)	<u>10 000</u>	<u>4 000</u>	<u>6 000</u>	
	£000	£000	£000	£000
Sales revenue	<u>300</u>	<u>200</u>	<u>150</u>	<u>650</u>
Less: Variable costs:				
Direct materials	100	40	60	200
Direct labour	50	70	80	200
Variable production overhead (question note 2: 20% of direct labour cost)	<u>10</u>	<u>14</u>	<u>16</u>	<u>40</u>
	<u>160</u>	<u>124</u>	<u>156</u>	<u>440</u>
Contribution	<u><u>140</u></u>	<u><u>76</u></u>	<u><u>(6)</u></u>	<u><u>210</u></u>
Less: Fixed costs:				
Production overheads (£140 – 40)				(100)
Non-production overheads (See question note 3)				<u>(30)</u>
Profit				<u><u>80</u></u>

Observations

It would appear that product line 3 neither makes a profit nor contributes towards the fixed costs. Should it be closed? Before such a decision is taken a number of other factors would have to be considered. These are as follows.

- Are the budgeted figures accurate? Have they been checked? How reliable are the budgeted data?
- What method has been used to identify the direct material costs that each product line uses? Is it appropriate for all three product lines?
- The question states that direct labour is a variable cost. Is direct labour really a variable cost? Is the assessment of its cost accurate and realistic?
- Variable production overheads are absorbed on a very broad basis related to direct labour costs. Does this method fairly reflect product line 3's use of variable overheads?
- Product line 3 appears to result in only a small negative contribution. Can this be made positive by perhaps a small increase in the unit selling price or by the more efficient use of direct materials and direct labour?
- Assuming that the cost data supplied are both fair and accurate, would the closure of product line 3 affect sales for the other two product lines or the overall variable costs?
- If closure of product line 3 is recommended, should it be closed permanently or temporarily? More information is needed of its prospects beyond 2012.

The decision

Clearly, without more information it is impossible to come to a firm conclusion. Assuming that the cost accounting procedures are both accurate and fair, it would appear that *on purely financial grounds*, product line 3 should be closed. However, until we have more information we cannot put this forward as a conclusive recommendation.

Make or buy decisions require management to determine whether to manufacture internally or purchase externally. Should a car company, for example, manufacture its own components or purchase them from specialist suppliers? Similarly, should a glass manufacturer concentrate on producing glass and purchase its packaging and safety equipment externally? In local government should a housing department employ its own joiners or contract outside firms to do the necessary work? In modern parlance these types of decisions are known as 'outsourcing'.

The theory beyond make or buy decisions revolves round the argument that entities should do what they are best at doing and employ others to undertake the peripheral activities. In other words, they should concentrate on their main objective and contract out or 'privatize' (in the case of governmental activities) all other essential activities.

A decision to contract out may often be taken simply because it appears to be cheaper (in monetary terms) to do so. This may be an unwise decision. There could be vital non-financial and non-quantifiable factors that are just as important as cost. For example, it may not be possible to obtain exactly what the company wants, or there could be delays in receiving some vital supplies. Both of these difficulties could cause a breakdown or hold-up to the company's own production. This might ultimately prove to be more expensive than manufacturing internally. So when deciding to make or buy, *all* factors should be built into the analysis, even though it may be difficult to quantify some of them.

A simple make or buy decision is illustrated in Example 18.3.

Example 18.3

A make or buy decision

Zam Limited uses an important component in one of its products. An estimate of the cost of making one unit of the component internally is as follows.

	£
Direct materials	5
Direct labour	4
Variable overhead	3
Total variable cost	<u>12</u>

Additional information:

- 1 Fixed costs specifically associated with manufacturing the components are estimated to be £8000 per month.
- 2 The number of components normally required is 1000 per month.

An outside manufacturer has offered to supply the components at a cost of £18 per component.

Required:

Determine whether Zam Limited should purchase the components from the outside supplier.

Answer to Example 18.3

Points

Assuming that the cost data given in the question are accurate, the first step in answering the question is to calculate the cost of manufacturing the components internally. Although the variable cost of each unit is given, there are some fixed costs directly associated with manufacturing internally and these have to be taken into account.

The fixed costs cause us a problem because the monthly activity levels may vary. However, we can only work on the data given in the question, i.e. 1000 units per month.

**Answer to
Example 18.3
continued**

Calculations

Total cost of manufacturing internally 1000 units per month of the component:

	£
Total variable cost (1000 units × £12)	12 000
Associated fixed costs	8 000
Total cost	<u>20 000</u>
Total unit cost (£20 000 ÷ 1000)	<u>£20</u>

Tutorial notes

- 1 Assuming that Zam Limited requires 1000 units per month, it would be cheaper to obtain them from the external supplier (£20 compared with £18 per component).
- 2 The above assumption is based on purchases of 1000 units. The more units required, the cheaper they would be to manufacture internally. In order to match the external price, the fixed costs can be no more than £6 per unit (the external purchase price of £18 less the internal variable cost of £12 per unit). If the fixed costs were to be limited to £6 per unit, the company would need to manufacture 1334 units (£8000 ÷ £6). The total cost would then be the same as the external cost (£24,000), but it would involve a one-third increase in the activity level.
- 3 The cost data should be checked carefully (especially the estimated associated fixed costs) and the monthly activity level reviewed. It might then be possible to put forward a tentative recommendation.

The decision

Given the data provided in the question, it would be cheaper to purchase the components externally. This would free some resources within Zam Limited enabling it to concentrate on manufacturing its main product.

However, there are a number of other considerations that need to be taken into account. In particular the following questions would need to be asked.

- How accurate are the cost data?
- How variable is the monthly activity level?
- Is the external supplier's component exactly suited to the company's purposes?
- How reliable is the proposed supplier?
- Are there other suppliers who could be used in an emergency and at what cost?
- What control could be exercised over the quality of the components received?
- How firm is the quoted price of £18 per component, and for what period will that price be maintained?
- How easy would it be to switch back to internal manufacturing if the supplier proved unreliable?

It follows that much more information (largely of a non-cost nature) would be required before a conclusive decision could be taken.

Activity 18.3

A company is considering outsourcing the manufacture of a vital component used in one of its most profitable products. It finds that it would be cheaper to buy the component externally than to make it internally. List all the non-cost factors that you think should be considered before it is decided to purchase the component externally. Then identify which you think is the most important one.

Pricing decisions

News clip

Munich Re

Munich Re, the world's largest reinsurer, has coped well in the financial crisis. The second quarter results were better than the first quarter and this July's insurance treaty renewals showed a price increase of 4.4%. Mr von Bomhard, the Chief Executive, said that he was not unhappy with the pricing level but he thought that the market should shift more quickly into a 'hardening mode'.

Source: Adapted from www.ft.com/cms, 5 August 2009.

A very important decision that managers have to make in both the profit-making sector and the not-for-profit sector is that relating to pricing. Supermarkets, for example, have to price their goods, while local authorities have to decide what to charge for adult education, leisure centres and meals on wheels.

Two types of pricing decisions can be distinguished. The first relates to the prices charged to customers or clients external to the entity. We will refer to this type as *external pricing*. The second type relates to prices charged by one part of an entity to another part, such as when components are supplied by one segment to another segment. This type of pricing is known as *transfer pricing*. We will deal with each type separately.

External pricing

External selling prices may be based either on market prices or on cost (see Figure 18.4). We will deal first with market-based prices.

Market-based pricing

Many goods and services are sold in highly competitive markets. This means that there may be many suppliers offering identical or near-identical products and they will be competing fiercely in respect of price, quality, reliability and service. If the demand for a product is *elastic*, then the lower the price the more units that will be sold. The opposite also applies and higher prices will result in fewer goods being sold. The demand for most everyday items of food, for example, is elastic.



Figure 18.4 External pricing decisions

It follows that when demand is elastic it is unlikely that individual sellers can determine their own selling prices. So within narrow limits, they will have to base their selling prices on what is being charged in the market. Otherwise if they charge more than the market price their sales will be reduced. If they charge less than the market then their sales will increase but the market will quickly adjust to a lower level of selling prices.

Where market conditions largely determine a supplier's selling prices, it is particularly important to ensure that tight control is exercised over costs. Otherwise the gap between total sales revenue and total costs (i.e. the profit) will be insufficient to ensure an adequate return on capital employed.

In some cases the demand for goods is *inelastic* – i.e. price has little or no effect on the number of units sold. The demand for writing paper and stationery, for example, tends to be inelastic, probably because it is an infrequent purchase and it is not a significant element in most people's budgets. So when the demand for goods is inelastic, suppliers have much more freedom in determining their own selling prices and they may then base them on cost.

Cost-based pricing

There are a number of cost-based pricing methods. We summarize the main ones below and the circumstances in which they are most likely to be used.

- *Below variable cost.* This price would be used:
 - when an entity was trying to establish a new product on the market;
 - when an attempt was being made to drive out competitors;
 - as a loss leader, i.e. to encourage other goods to be bought.
 A price at this level could only be sustained for a very short period (unless it is used as a loss leader) since each unit sold would not be covering its variable cost.
- *At variable cost.* Variable cost prices may be used:
 - to launch a new product;
 - to drive out competition;
 - in difficult trading conditions;
 - as a loss leader; price could be held for some time but ultimately some contribution will be needed to cover the fixed costs.
- *At total production cost.* This will include the unit's direct costs and a share of the production overheads. Prices at this level could be held for some time (perhaps when demand is low) but eventually the entity would need to cover its non-production overheads and to make a profit.
- *At total cost.* This will include the direct cost and a share of both the production and non-production overheads. Again, such prices could be held for a very long period, perhaps during a long recession, but eventually some profit would need to be earned.
- *At cost plus.* The cost-plus method would either relate to total production cost or to total cost. The 'plus' element would be an addition to the cost to allow for non-production overhead and profit (in the case of total production cost) and for profit alone (in the case of total cost). In the long run, cost-plus prices are the only option for a profit-making entity. However, if prices are based entirely on cost then inefficiencies may be automatically built into the pricing system and this could lead to uncompetitiveness.

Activity 18.4

Make a list of all the factors that you think may determine the demand for a product.

Transfer pricing

News clip

Transfer pricing problems

Dixons (DGS International) has been informed that it is in breach of HM Revenue and Custom transfer pricing guidelines and it may have to pay back hundreds of millions of pounds. Transfer pricing relates to the value placed on assets or goods moved internally from one subsidiary to another – usually across international borders. HMRC pursues cases where it believes the price has been set artificially low for tax purposes.

Source: Adapted from www.accountancyage.com/articles/print/2240985, 23 April 2009.

In large entities it is quite common for one segment to trade with another segment. So what is 'revenue' to one segment will be 'expenditure' to the other. This means that when the results of all the various segments are consolidated, the revenue recorded in one segment's books of account will cancel out the expenditure in the other segment's books. Does it matter, therefore, what prices are charged for internal transfers?

The answer is 'Yes it does' because some segments (particularly if they are divisions of companies) are given a great deal of autonomy. They may have the authority, for example, to purchase goods and services from outside the entity. They almost certainly will do so if the price and service offered externally appears to be superior to any internal offer and this may cause them to suboptimize, i.e. to act in *their* own best interest although it may not be in the best interests of the entity as a whole.

Let us suppose that segment A fixes its transfer price on a cost-plus basis, say at £10 per unit. Segment B finds that it can purchase an identical unit externally at £8 per unit. Segment B is very likely to accept the external offer. But segment A's costs may be based on *absorbed costs*. The *extra cost* (i.e. the variable cost) of meeting segment B's order may be much less than the external price of £8 per unit. In these circumstances it may not be beneficial for the *entity as a whole* for segment B to purchase the units from an outside supplier.

It follows that a transfer price should to be set at a level that will encourage a supplying segment to trade internally and to discourage a receiving segment to buy its goods externally. There are various transfer-pricing methods that can be adopted (see Figure 18.5). We review the main ones below.

- **Market price.** If there are identical or similar goods and services offered externally, transfer prices based on market prices will neither encourage nor discourage supplying or receiving segments to trade externally.
- **Adjusted market price.** Market prices may be reduced in recognition of the lower costs attached to internal trading, e.g. advertising, administration and financing costs. This method encourages segments to trade with each other.
- **Total cost or total cost plus.** A transfer price based on total cost will include the direct costs plus a share of both production and non-production overhead. Total cost-plus methods allow for some profit. The main problems attached to the total-cost methods is that they build inefficiencies into the transfer price (as there is no incentive to control costs) and they therefore encourage suboptimization.

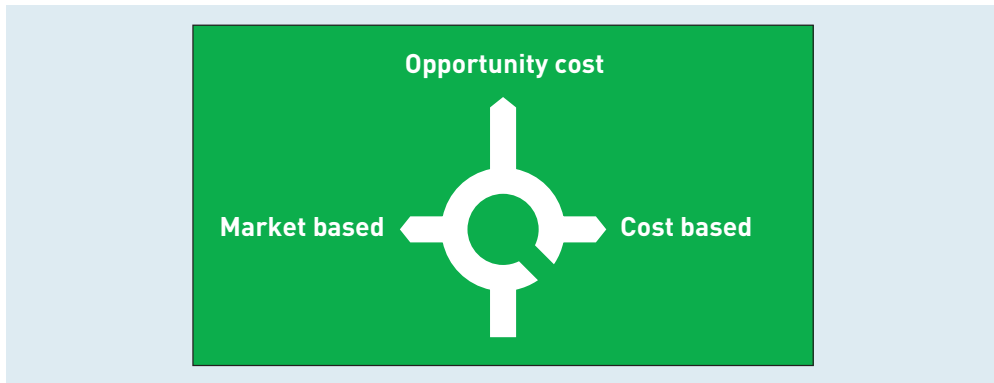


Figure 18.5 Transfer pricing decision

- *At variable cost or variable cost plus.* The variable cost method itself does not encourage a supplying segment to trade internally as no incentive is built into the transfer price, but a percentage addition may provide some incentive since it enables some contribution to be made towards fixed costs. However, transfer prices based on variable costs may be very attractive to *receiving* segments as the transfer price normally compares favourably with the external price. If the variable cost method is adopted it is recommended that it is based on the *standard* variable cost.
- *Negotiated price.* This method involves striking a bargain between the supplying and receiving segments based on a combination of market price and costs. As long as the discussions are mutually determined this method can be highly successful.
- *Opportunity cost.* This method may be somewhat impractical, but if the costs can be quantified it is the ideal one to adopt. A transfer price based on the opportunity cost comprises two elements: first, the standard variable cost in the supplying segment, and second the entity's opportunity cost resulting from the transaction. It is the second element that is the hardest to determine.

Activity 18.5

What is the best way out of the transfer price dilemma? Should it be based on market prices or on costs? Suppose as a manager you have the freedom to negotiate your own transfer prices with other divisional managers. Summarize the arguments that you would use in any ensuing discussions.

Special orders

On some occasions an entity may be asked to undertake an order beyond its normal trading arrangement and to quote a price for it. Such arrangements are known as *special orders*. The potential customer or client would normally expect to pay a lower price than the entity ordinarily charges, as well as possibly receiving some favourable treatment. What pricing policy should the entity adopt when asked to quote for a special order? Much will depend on whether it has some surplus capacity. If this is the case, it may be prepared to quote a price below variable cost if it wants to avoid a possible shutdown. However, the minimum price that it would *normally* be willing to accept would be equal to the incremental (or extra) cost of accepting the order.

The incremental cost involved may be the equivalent of the variable cost. Prices based at or below the variable cost would be extremely competitive, thereby helping to ensure

that the customer accepted the quotation. The work gained would then absorb some of the entity's surplus capacity and help to keep its workforce occupied. There is also the possibility that the customer may place future orders at prices that would enable the entity to make a profit on them. But there is then the danger that in the meantime more profitable work has to be rejected because the entity cannot cope with both the special order and the additional work.

A price in excess of the variable cost would make a contribution towards fixed costs and this would clearly be the preferred option. The quoted price would have to be judged very finely because the higher the price the greater the risk that the customer would reject the quotation. So the decision would involve trying to determine what other suppliers are likely to charge and what terms they would offer.

An indication of the difficulties associated with determining whether a special order should be accepted is demonstrated in Example 18.4.

Example 18.4

A special order

Amber Limited has been asked by a customer to supply a specially designed product. The customer has indicated that he would be willing to pay a maximum price of £100 per unit. The cost details are as follows.

<i>Unit cost</i>	£	£
Contract price		100
<i>Less: Variable costs</i>		
Direct materials	40	
Direct labour (2 hours)	30	
Variable overhead	10	80
Contribution		<u>20</u>

At a contract price of £100 per unit, each unit would make a contribution of £20. The customer is prepared to take 400 units, and so the total contribution towards fixed costs would be £8000 (400 units × £20). However, Amber has a shortage of direct labour and some of the staff would have to be switched from other orders to work on the special order. This would mean an average loss in contribution of £8 for every direct labour hour worked on the special order.

Required:

Determine whether Amber Limited should accept the special order.

Answer to Example 18.4

In order to determine whether Amber Limited should accept the special order, the extra contribution should be compared with the loss of contribution by having to switch the workforce from other orders. The calculations are as follows.

	£
Total contribution from the special order (400 units × £20 per unit)	8 000
<i>Less: the opportunity cost of the normal contribution foregone</i>	
[800 direct labour hours (400 units × 2 DLH) × £8 per unit]	6 400
Extra contribution	<u>1 600</u>

Tutorial notes

Before coming to a decision, the following points should also be considered. You will see that they range well beyond simple cost factors.

- 1 The costings relating to the special order should be carefully checked.
- 2 The customer should be asked to confirm in writing that it would be willing to pay a selling price of £100 per unit.
- 3 Determine whether the customer is likely to place additional orders for the product or not.
- 4 Check that the *average* contribution of £8 per direct labour hour, obtained from other orders, applies to the workforce that would be switched to the special order, i.e. is the contribution from the other orders that would be lost more or less than £8 per direct labour hour?
- 5 Is it possible that new staff could be recruited to work on the special order?
- 6 Is more profitable work likely to come along in the meantime? Would it mean that it could not be accepted during the progress of the order?

Recommendation

Assuming that the points raised in the above notes are satisfied, then the recommendation would be to accept the special order at a price of £100 per unit. This would mean that Amber's total contribution would be increased by £1600.

The management accountant's main role in dealing with special orders would be to supply historical and projected cost data of the financial consequences of particular options. The eventual decision would be taken by senior management using a wide range of quantitative and qualitative information. The type of questions asked would be similar to some of the issues covered in the tutorial notes in the solution to Example 18.4.

Activity 18.6

The country is experiencing a deep recession. Trade is very bad. Then, rather unexpectedly, Company X is asked to supply one of its main products to a new customer, but unfortunately at a price well below the product's variable cost. In two adjacent columns list (a) all the reasons why it should accept the order; and (b) why it should be rejected. Overall, what would be your decision?

**Questions you should ask**

The questions that you should put to your accountants about any specific decision-making problem will revolve round the robustness of the data that they have used and any non-quantitative factors they have incorporated into their recommendations. You could use the following questions as a guide.

- Where have you got the data from?
- How reliable are the basic facts?
- What assumptions have you adopted?
- Have you included only relevant costs?
- Have you tested the results on a probability basis?
- What non-quantitative factors have you been able to identify?
- Is it possible to put any monetary value on them?
- Do you think that we should go ahead with this proposal?

Conclusion

An important function of the management accountant in the twenty-first century is to assist in managerial decision making. In such a role the primary task of the accountant is to provide managers with financial and non-financial information in order to help them make more effective decisions. Although the information provided may include much historical data, decision making often means dealing with future events, so the information provided consists of a great deal of speculative material. This means that the management accountant needs to exercise considerable skill and judgement in collecting information that is both accurate and relevant for a particular purpose. Non-relevant information can be ignored as it only obscures the broader picture.

The significance of including only relevant data is seen when managers have to make special decisions, such as whether to close or shut down a segment of an entity, make or provide goods and services internally instead of obtaining them from an outside supplier, determine a selling price for the entity's goods and services, or whether to accept a special order and at what price. These are all-important and complex decisions and managers need reliable information before they can make them.

Key points

- 1 Decision making involves having to resolve an outcome for a specific problem.
- 2 The information required relates to the future, it is specific to the problem, it may have to be collected specially for the task and it is geared towards estimating the future net cash flows of particular outcomes.
- 3 The information provided to management should include only relevant costs and revenues, with an estimate of any opportunity costs.
- 4 The data used in a management accounting information report should be subject to some probability testing.
- 5 The terms 'fixed and variable costs', 'relevant and non-relevant costs', 'avoidable and non-avoidable costs', 'sunk costs', 'committed costs' and 'opportunity costs' are all of special significance in decision making.
- 6 Closure and shutdown decisions should be based on the contribution earned or likely to be earned on the segment under consideration and compared with the likely closure or shutdown costs.
- 7 Generally it is more profitable to make goods or to provide services internally than to obtain them externally if their variable cost is less than or equal to external prices.
- 8 The pricing of goods and services for selling externally will normally be determined by the market price for similar goods and services. In some cases, however, selling prices can be based on cost. Depending on market conditions, the cost could be at or below variable cost, the absorbed or the total absorbed cost, with or without an addition for profit.
- 9 The internal transfer of goods and services should be based on market price or adjusted market price. Where this is not possible, any price at or in excess of the variable cost should be acceptable.



**Key points
continued**

- 10 The ideal transfer price is one that is based on the standard variable cost in the supplying segment plus the entity's opportunity cost resulting from the transaction.
- 11 Special orders should be priced so that they cover their variable cost. There may be some circumstances when it is acceptable to price them below variable cost but this can only be a short-term solution. Any price in excess of variable costs helps to cover the entity's fixed costs.
- 12 Cost and financial factors are only part of the decision-making process. There are other factors of a non-financial and non-quantifiable nature (such as behavioural factors) that must be taken into account.

Check your learning

- 1 Define what is meant by a 'decision'.
- 2 List seven main characteristics of decision-making data.
- 3 Identify six ways of classifying costs.
- 4 What is an opportunity cost?
- 5 What is meant by a closure or a shutdown decision?
- 6 What is meant by a make or buy decision?
- 7 What is meant by a pricing decision?
- 8 What are the two main types of pricing decisions?
- 9 What is meant by a market price?
- 10 List six cost-based pricing methods.
- 11 What is the basic problem in determining pricing between segments within the same entity?
- 12 How might it be resolved?
- 13 What is meant by a special order?
- 14 How does it differ from the general pricing problem?

News story quiz

Remember the news story at the beginning of this chapter? Go back to that story and reread it before answering the following questions.

At times of economic difficulty companies seek to cut their costs. This often means making staff redundant but, as this article points out, this may not always be the best decision.

Questions

- 1 If your company was facing economic difficulty where would you first look to cut costs?
- 2 Assuming that you had to cut employment costs what options would you consider before making staff redundant?
- 3 What longer-term factors would have to be taken into account before you opted for redundancies?

Tutorial questions

The answers to questions marked with an asterisk can be found in Appendix 4.

- 18.1 This chapter has emphasized that it is managers that make decisions and not management accountants. How far do you agree with this assertion?
- 18.2 Many of the solutions to the problems posed in this chapter depend on being able to isolate the variable cost associated with a particular decision. In practice, is it realistic to expect that such costs can be readily identified and measured?
- 18.3 Assume that you were an IT manager in a large entity and that the services that you provide are made available to both internal and external parties. Specify how you would go about negotiating an appropriate fee for services sought by other departments within the entity.
- 18.4* Micro Limited has some spare capacity. It is now considering whether it should accept a special contract to use some of the spare capacity. However, this contract will use some specialist direct labour that is in short supply. The following details relate to the proposed contract:

	<i>£000</i>
Contract price	50
Variable costs:	
Direct materials	10
Direct labour	30

In order to complete the contract, 4000 direct labour hours would be required. The company's budget for the year during which the contract would be undertaken is as follows:

	<i>£000</i>
Sales	750
Variable costs	(500)
Contribution	250
Fixed costs	(230)
Profit	20

There would be 50,000 direct labour hours available during the year.

Required:

Determine whether the special contract should be accepted.

18.5* Temple Limited has been offered two new contracts, the details of which are as follows:

<i>Contract</i>	(1)	(2)
	£000	£000
Contract price	1 000	2 100
Direct materials	300	600
Direct labour	300	750
Variable overhead	100	250
Fixed overhead	100	200
	<u>800</u>	<u>1 800</u>
Profit	<u>200</u>	<u>300</u>
Direct materials required (kilos)	50 000	100 000
Direct labour hours required	10 000	25 000

Note:

The fixed overhead has been apportioned on the basis of direct labour cost. Temple is a one-product firm. Its budgeted cost per unit for its normal work for the year to 31 December 2012 is summarized below.

	£
Sales	6 000
Direct materials (100 kilos)	700
Direct labour (200 hours)	3 000
Variable overhead	300
Fixed overhead	1 000
	<u>5 000</u>
Profit	<u>1 000</u>

The company would only have the capacity to accept one of the new contracts. Unfortunately, materials suitable for use in all of its work are in short supply and the company has estimated that only 200,000 kilos would be available during the year to December 2012. Even more worrying is the shortage of skilled labour, only 100,000 direct labour hours are expected to be available during the year. The good news is that there may be an upturn in the market for its normal contract work.

Required:

Calculate

- the contribution per unit of each limiting factor for
 - the company's normal work
 - Contract 1
 - Contract 2.
- The company's maximum contribution for the year to 31 December 2012, assuming that it accepts either Contract 1 or Contract 2.

18.6 Agra Limited has been asked to quote a price for a special contract. The details are as follows:

- The specification required a quotation for 100,000 units.
- The direct costs per unit for the order would be: materials £3, labour £15, distribution £12.

- 3 Additional production and non-production overhead would amount to £500,000, although £100,000 could be saved if the order was for less than 100,000 units.
- 4 Agra's normal profit margin is 20 per cent of total cost.

Required:

Recommend a minimum selling price if the order was for:

- (a) 100,000 units
- (b) 80,000 units.

18.7 Foo Limited has been asked to quote for a special order. The details are as follows:

- 1 Prices are to be quoted at order levels of 50,000, 100,000 and 150,000 units respectively. Foo has some surplus capacity and it could deal with up to 160,000 units.
- 2 Each unit would cost £2 for direct materials, and £12 for direct labour.
- 3 Foo normally absorbs production and non-production overhead on the basis of 200 per cent and 100 per cent respectively of the direct labour cost.
- 4 Distribution costs are expected to be £10 per unit.
- 5 Foo's normal profit margin is 20 per cent of the total cost. However, it is prepared to reduce this margin to 15 per cent if the order is for 100,000 units, and to 10 per cent for an order of 150,000 units.
- 6 The additional non-production overhead associated with this contract would be £200,000, although this would be cut by £25,000 if the output dropped below 100,000 units.

Required:

Suggest

- (a) a selling price per unit that Foo Limited might charge if the contract was for 50,000, 100,000 and 150,000 units respectively;
- (b) the profit that it could expect to make at these levels.

18.8 Bamboo Limited is a highly specialist firm of central heating suppliers operating exclusively in the textiles industry. It has recently been asked to tender for a contract for a prospective customer. The following details relate to the proposed contract.

- 1 Materials:
 - £20,000 of materials would need to be purchased.
 - £10,000 of materials would need to be transferred from another contract (these materials would need to be replaced).
 - Some obsolete stock would be used. The stock had originally cost £18,000. Its current disposable value is £4000.
- 2 The contract would involve labour costs of £60,000, of which £30,000 would be incurred regardless of whether the contract was undertaken.
- 3 The production manager will have to work several evenings a week during the progress of the contract. He is paid a salary of £30,000 per year, and on successful completion of the contract he would receive a bonus of £5000.
- 4 Additional administrative expenses incurred in undertaking the contract are estimated to be £1000.
- 5 The company absorbs its fixed overheads at a rate of £10 per machine hour. The contract will require 2000 machine hours.

Required:

Calculate the minimum contract price that would be acceptable to Bamboo Limited.

18.9 Dynasty Limited has been involved in a research project (code named DNY) for a number of months. There is some doubt as to whether the project should be completed. If it is, then it is expected that DNY will require another 12 months' work. The following information relates to the project.

- 1 Costs incurred to date are £500,000.
- 2 Sales proceeds if the project continues will be £600,000.
- 3 Direct material costs amount to £200,000. The type of material required for DNY had already been purchased for another project, and it would cost £20,000 to dispose of it.
- 4 Direct labour costs have come to £150,000. The direct labour used on DNY is highly skilled and it is not easy to recruit the type of staff required. In order to undertake DNY, some staff would have to be transferred from other projects. This would mean that there was a total loss in contribution from such projects of £350,000.
- 5 Research staff costs amount to £200,000. The staff would be made redundant at the end of project DNY at a cost of £115,000. If they were to be made redundant now, there would be a cost of £100,000.
- 6 The company can invest surplus cash at a rate of return of 10 per cent per annum.
- 7 Non-production overhead budgeted to be apportioned to DNY for the forthcoming 12 months amounts to £60,000.

Required:

Determine whether or not the DNY project should continue.

Further practice questions, study material and links to relevant sites on the World Wide Web can be found on the website that accompanies this book. The site can be found at www.pearsoned.co.uk/dyson