

# Chapter 2

## Cost terms and concepts



### LO Learning objectives

After studying Chapter 2, you should be able to:

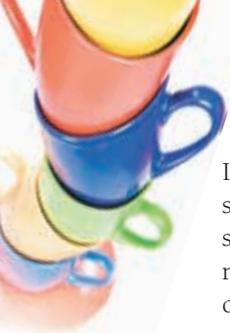
- 1 Understand the need for costing for external financial reporting
- 2 Identify each of the three basic cost elements involved in the manufacture of a product
- 3 Distinguish between product costs and period costs and give examples of each
- 4 Understand the basics of cost behaviour
- 5 Identify and give examples of variable costs and fixed costs
- 6 Define cost classifications used in making decisions: differential costs, opportunity costs and sunk costs

### Concepts in Context

This chapter introduces issues concerned with the classification of costs. These issues may be controversial. For example, the British Broadcasting Corporation (BBC) has been accused of concealing the true costs of its individual channels by reporting the cost of items such as news gathering, marketing and publicity under separate headings instead of allocating them as overheads to each channel. It was alleged that the corporation wished to reduce the apparent costs both of expanding into digital broadcasting and the budget of BBC1, the channel that competes with the main commercial broadcasters. The BBC responded by claiming that the new format reflected the corporation's internal reporting system and that the new format was 'more transparent'.<sup>1</sup>



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In introductory financial accounting, you learn that firms prepare periodic financial reports for creditors, shareholders and others to show the financial condition of the firm and the firm's earnings performance over some specified interval. Since firms are generally legally obliged to produce financial statements, many organizations may only produce cost data for such *financial reporting* purposes. The financial accounting concepts of cost classification will concern us in the first part of the chapter.

Later in this chapter, we will also consider other ways of looking at costs. For example, how do costs *behave* especially with changes in the level of activity? Which costs are fixed and which are variable and over what range of activity level?

Finally, we will explore different concepts of costs classified according to the principle of 'decision-relevance'. The decision-relevance approach may suggest that the costs collected for finance reporting purposes may not be either appropriate or sufficient for decision-making purposes.<sup>2</sup>

LO 1

## Costing for financial reporting purposes: an example from manufacturing

### Manufacturing costs

Costs are associated with all types of organizations – business, non-business, manufacturing, retail and service. Generally, the kinds of costs incurred and the way in which these costs are classified depends on the type of organization involved. Management accounting is as applicable to one type of organization as to another. The focus in this chapter is on manufacturing companies, since their basic activities include most of the activities found in other types of business organizations. Manufacturing companies are involved in acquiring raw materials, producing finished goods, marketing, distributing, billing and almost every other business activity. Therefore, an understanding of costs in a manufacturing company can be very helpful in understanding costs in other types of organizations. Most manufacturing companies divide manufacturing costs into three broad categories: **direct materials**, **direct labour**, and **manufacturing overhead**. A discussion of each of these categories follows.

LO 2

### Direct materials

The materials that go into the final product are called **raw materials**. This term is somewhat misleading, since it seems to imply unprocessed natural resources like wood pulp or iron ore. Actually, raw materials refer to any materials that are used in the final product; and the finished product of one company can become the raw materials of another company. Direct materials are those materials that become an integral part of the finished product and that can be physically and conveniently traced to it. Sometimes it isn't worth the effort to trace the costs of relatively insignificant materials to the end products. Such minor items would include the solder used to make electrical connections in a TV. Materials such as solder and glue are called **indirect materials** and are included as part of manufacturing overhead, which is discussed later in this section.

### Direct labour

The term direct labour is reserved for those labour costs that can easily (i.e., physically and conveniently) be traced to individual units of product. Direct labour is sometimes called *touch labour*, since direct labour workers typically touch the product while it is being made. The labour costs of assembly-line workers, for example, would be direct labour costs, as would the labour costs of carpenters, bricklayers and machine operators.

Labour costs that cannot be physically traced to the creation of products, or that can be traced only at great cost and inconvenience, are termed **indirect labour** and treated as part of manufacturing overhead, along with indirect materials. Indirect labour includes the labour costs of caretakers, supervisors, materials handlers and night security guards. Although the efforts of these workers are essential to production, it

would either be impractical or impossible accurately to trace their costs to specific units of product. Hence, such labour costs are treated as indirect labour.

### Manufacturing overhead

Manufacturing overhead, the third element of manufacturing cost, includes all costs of manufacturing except direct materials and direct labour. Manufacturing overhead includes items such as indirect materials; indirect labour; maintenance and repairs on production equipment; and heat and light, property taxes, depreciation and insurance on manufacturing facilities. A company also incurs costs for heat and light, property taxes, insurance, depreciation and so forth, associated with its selling and administrative functions, but these costs are not included as part of manufacturing overhead. Only those costs associated with *operating the factory* are included in the manufacturing overhead category.

Various names are used for manufacturing overhead, such as *indirect manufacturing cost*, *factory overhead*, and *factory burden*. All of these terms are synonymous with *manufacturing overhead*.

Manufacturing overhead combined with direct labour is called **conversion cost**. This term stems from the fact that direct labour costs and overhead costs are incurred in the conversion of materials into finished products. Direct labour combined with direct materials is called **prime cost**.

### Non-manufacturing costs

Generally, non-manufacturing costs are subclassified into two categories:

- 1 Marketing or selling costs
- 2 Administrative costs

**Marketing or selling costs** include all costs necessary to secure customer orders and get the finished product or service into the hands of the customer. These costs are often called *order-getting* and *order-filling costs*. Examples of marketing costs include advertising, shipping, sales travel, sales commissions, sales salaries and costs of finished goods warehouses.

**Administrative costs** include all executive, organizational and clerical costs associated with the *general management* of an organization rather than with manufacturing, marketing or selling. Examples of administrative costs include executive compensation, general accounting, secretarial, public relations and similar costs involved in the overall general administration of the organization *as a whole*.

### Product costs versus period costs

In addition to the distinction between manufacturing and non-manufacturing costs, there are other ways to look at costs. For instance, they can also be classified as either **product costs** or **period costs**. To understand the difference between product costs and period costs, we must first refresh our understanding of the matching principle from financial accounting.

Generally, costs are recognized as expenses on the *profit and loss account* (sometimes alternatively known as the *income statement*)<sup>3</sup> in the period that benefits from the cost. For example, if a company pays for liability insurance in advance for two years, the entire amount is not considered an expense of the year in which the payment is made. Instead, half of the cost would be recognized as an expense each year. This is because both years – not just the first – benefit from the insurance payment. The unexpensed portion of the insurance payment is carried on the balance sheet as an asset called prepaid insurance. You should be familiar with this type of *accrual* from your financial accounting course.

The *matching principle* is based on the accrual concept and states that *costs incurred to generate a particular revenue should be recognized as expenses in the same period that the revenue is recognized*. This means that if a cost is incurred to acquire or make something that will eventually be sold, then the cost should be recognized as an expense only when the sale takes place – that is, when the benefit occurs. Such costs are called *product costs*.

### Product costs

For financial accounting purposes, product costs include all the costs that are involved in acquiring or making a product. In the case of manufactured goods, these costs consist of direct materials, direct labour and manufacturing overhead. Product costs are viewed as ‘attaching’ to units of product as the goods are



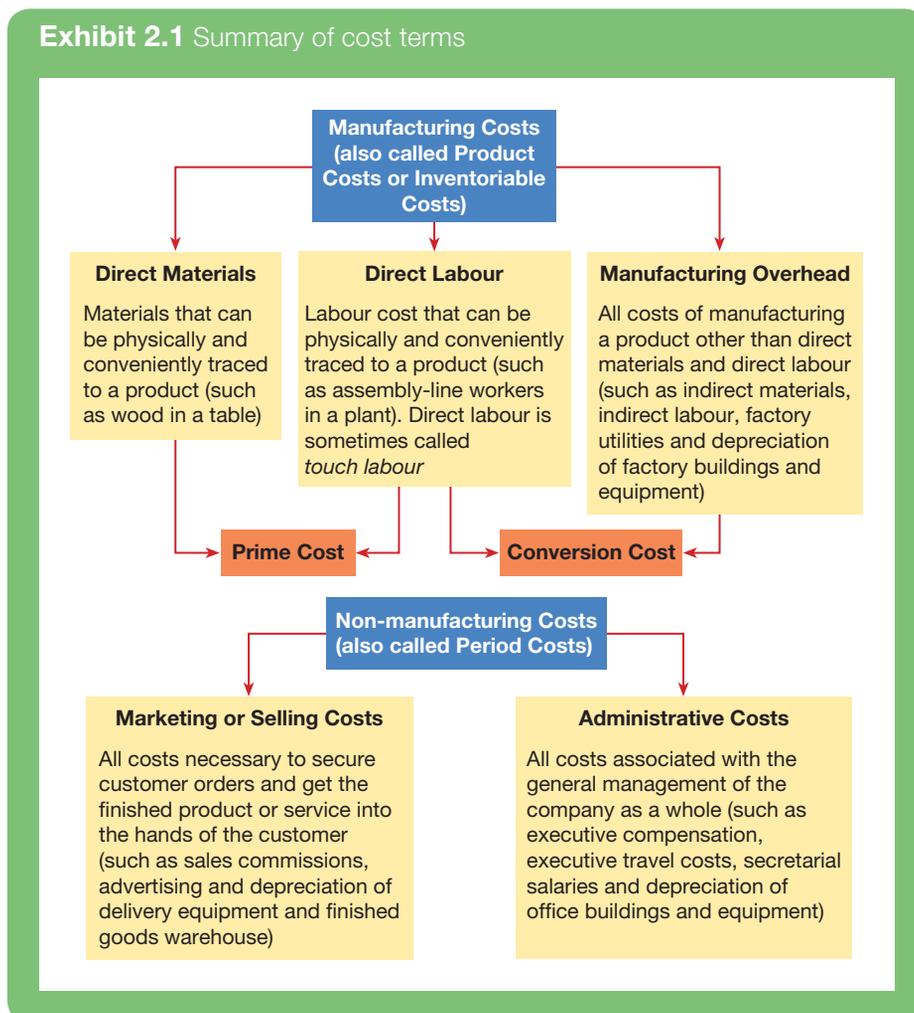
purchased or manufactured, and they remain attached as the goods go into stock awaiting sale. So, initially, product costs are assigned to a stock account on the balance sheet. When the goods are sold, the costs are released from stock as expenses (typically called cost of goods sold) and matched against sales revenue. Since product costs are initially assigned to stocks, they are also known as *stock-related costs*.

We want to emphasize that product costs are not necessarily treated as expenses in the period in which they are incurred. Rather, as explained above, they are treated as expenses in the period in which the related products *are sold*. This means that a product cost such as direct materials or direct labour might be incurred during one period but not treated as an expense until a following period when the completed product is sold.

### Period costs

Period costs are all the costs that are not included in product costs. These costs are expensed on the profit and loss account in the period in which they are incurred, using the usual rules of accrual accounting you have already learned in financial accounting. Period costs are not included as part of the cost of either purchased or manufactured goods. Sales commissions and office rent are good examples of the kind of costs we are talking about. Neither commissions nor office rent are included as part of the cost of purchased or manufactured goods. Rather, both items are treated as expenses on the profit and loss account in the period in which they are incurred. Thus, they are said to be period costs.

As suggested above, *all selling and administrative expenses are considered to be period costs*. Therefore, advertising, executive salaries, sales commissions, public relations, and other non-manufacturing costs discussed



earlier would all be period costs. They will appear on the profit and loss account as expenses in the period in which they are incurred.

Exhibit 2.1 contains a summary of the cost terms that we have introduced so far.

## Product costs – a closer look

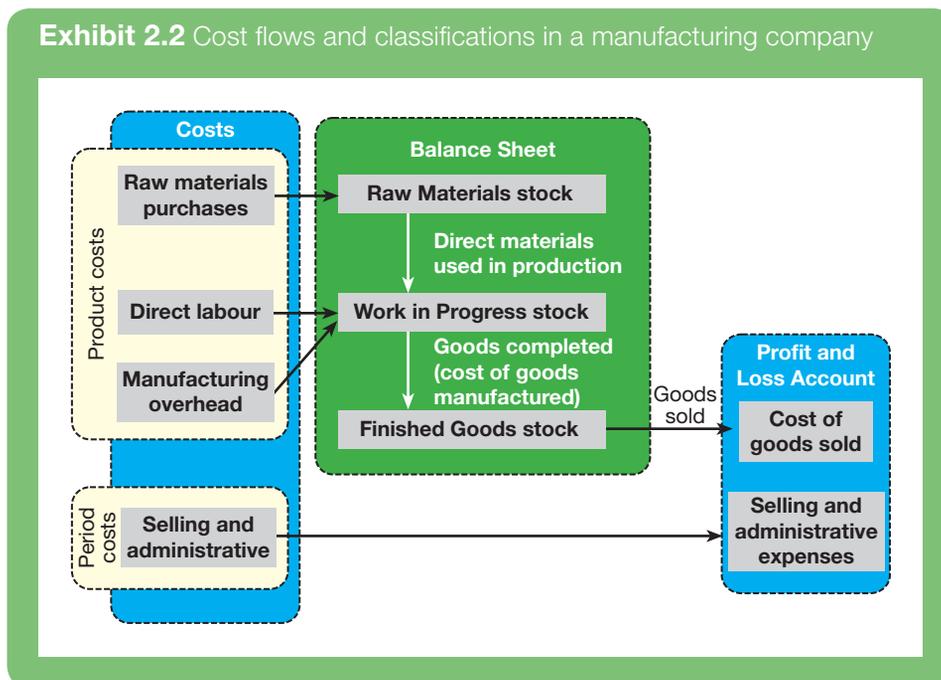
To understand product costs more fully, it will be helpful at this point to look briefly at the flow of costs in a manufacturing company. By doing so, we will be able to see how product costs move through the various accounts and affect the balance sheet and the profit and loss account in the course of producing and selling products.

Exhibit 2.2 illustrates the flow of costs in a manufacturing company. Raw materials purchases are recorded in the Raw Materials inventory account. When raw materials are used in production, their costs are transferred to the Work in Progress inventory account as direct materials. Notice that direct labour cost and manufacturing overhead cost are added directly to Work in Progress. Work in Progress can be viewed most simply as an assembly line where workers are stationed and where products slowly take shape as they move from one end of the assembly line to the other. The direct materials, direct labour and manufacturing overhead costs added to Work in Progress in Exhibit 2.2 are the costs needed to complete these products as they move along this assembly line.

Notice from the exhibit that as goods are completed, their cost is transferred from Work in Progress into Finished Goods. Here the goods await sale to a customer. As goods are sold, their cost is then transferred from Finished Goods into Cost of Goods Sold. It is at this point that the various material, labour and overhead costs that are required to make the product are finally treated as expenses.

### Stock/inventory-related costs

As stated earlier, product costs are often called stock-related (or inventoriable<sup>4</sup>) costs. The reason is that these costs go directly into inventory accounts as they are incurred (first into Work in Progress and then into Finished Goods), rather than going into expense accounts. Thus, they are termed **stock-related costs**. *This is a key concept in management accounting, since such costs can end up on the balance sheet as assets if goods are only*





partially completed or are unsold at the end of a period. At the end of the period, the materials, labour and overhead costs that are associated with the units in the Work in Progress and Finished Goods stock accounts will appear on the balance sheet as part of the company's assets. As explained earlier, these costs will not become expenses until later when the goods are completed and sold.

## Focus on Business Practice

### *The full cost of the 2010 Gulf of Mexico oil spill*



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When management accountants talk about the full costs of a product or service this usually means that all costs – materials, labour and a portion of overhead – are included in the cost of the product/service. In more basic terms, this means that whatever the cost object is, accountants ensure that the cost calculated includes as many costs as possible (if not all). Consider for a moment an event like the oil spill from a BP-owned well in the Gulf of Mexico in 2010. How could an accountant begin to work out the full cost of this environmental disaster? The first thing to do would be to try to think of all the costs which might arise. Prior to this oil spill,

the Exxon Valdez tanker leak off Alaska in 1989 was the biggest oil spill in the US. The full cost of the clean up then was \$4 billion, more than 600 times what the oil lost was worth at the time. In the Gulf of Mexico case, which at the time of writing is still ongoing, a picture of the full costs of the disaster is beginning to emerge. The first cost is the cost of the 3 million or so litres of oil per day being lost. The clean-up and containment costs are in the order of \$5–10 million per day. As of early June 2010, BP themselves had incurred costs of \$1.43 billion in clean-up, claims and other costs. Lawsuits to the tune of \$25 billion have been filed against BP and related companies. Lost tourism and fishing in and around the Gulf area accounts for \$8–12 billion in cost. In addition to the mentioned costs, the costs of extra personnel and administrative staff involved might also be included. While this example does not portray a product or service, it does highlight the difficulties faced by management accountants in calculating any full cost. This does not mean they abandon efforts, however, as in most cases a reasonably accurate full cost figure can be determined.<sup>5</sup>

**Exercise:** Look up other examples of cases where large-scale damage has been caused by an industrial or environmental type accident/disaster. Try to find out the full costs to the company and/or the community/environment.

As shown in Exhibit 2.2, selling and administrative expenses are not involved in the manufacture of a product. For this reason, they are not treated as product costs but rather as period costs that go directly into expense accounts as they are incurred.

Thus far, we have been mainly concerned with classifications of manufacturing costs for the purpose of determining inventory valuations on the balance sheet and cost of goods sold on the profit and loss account of external financial reports. There are, however, many other purposes for which costs are used, and each

**Exhibit 2.3** Summary of cost classifications

Purpose of cost classification	Cost classifications
Preparing external financial statements	<ul style="list-style-type: none"> <li>• Product costs (inventoriable)</li> <li>• Direct materials</li> <li>• Direct labour</li> <li>• Manufacturing overheads</li> <li>• Period costs (expensed)</li> <li>• Non-manufacturing costs</li> <li>• Marketing or selling costs</li> <li>• Administrative costs</li> </ul>
Predicting cost behaviour in response to changes in activity	<ul style="list-style-type: none"> <li>• Variable cost (proportional to activity)</li> <li>• Fixed cost (constant in total)</li> </ul>
Assigning costs to cost objects such as departments or products	<ul style="list-style-type: none"> <li>• Direct cost (can easily be traced)</li> <li>• Indirect cost (cannot easily be traced; must be allocated)</li> </ul>
Making decisions	<ul style="list-style-type: none"> <li>• Differential cost (differs between alternatives)</li> <li>• Sunk cost (past cost not affected by a decision)</li> <li>• Opportunity cost (forgone benefit)</li> </ul>

purpose requires a different classification of costs. We will consider several different purposes for cost classifications in the remaining sections of this chapter. These purposes and the corresponding cost classifications are summarized in Exhibit 2.3. To maintain focus, we suggest that you refer back to this exhibit frequently as you progress through the rest of this chapter.

## Cost classifications for predicting cost behaviour

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Quite frequently, it is necessary to predict how a certain cost will behave in response to a change in activity. **Cost behaviour** means how a cost will react or respond to changes in the level of business activity. As the activity level rises and falls, a particular cost may rise and fall as well – or it may remain constant. For planning purposes, a manager must be able to anticipate which of these will happen; and if a cost can be expected to change, the manager must know by how much it will change. To help make such distinctions, costs are often categorized as variable or fixed.

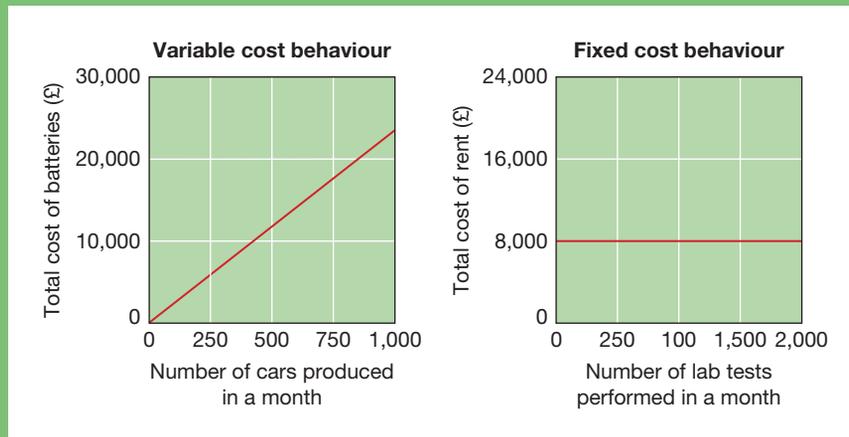
### Variable cost

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A **variable cost** is a cost that varies, in total, in direct proportion to changes in the level of activity. The activity can be expressed in many ways, such as units produced, units sold, miles driven, beds occupied, lines of print, hours worked, and so forth. A good example of a variable cost is direct materials. The cost of direct materials used during a period will vary, in total, in direct proportion to the number of units that are produced. To illustrate this idea, consider the example of a car factory. Each car requires one battery. As the output of cars increases and decreases, the number of batteries used will increase and decrease proportionately. If car production goes up 10%, then the number of batteries used will also go up 10%. The concept of a variable cost is shown in graphic form in Exhibit 2.4.



### Exhibit 2.4 Variable and fixed cost behaviour



It is important to note that when we speak of a cost as being variable, we mean the *total* cost rises and falls as the activity level rises and falls. This idea is presented below, assuming that a battery costs £24:

Number of cars produced	Cost per battery	Total variable cost-batteries
1	£24	£24
500	24	12,000
1,000	24	24,000

One interesting aspect of variable cost behaviour is that a variable cost is constant if expressed on a *per unit* basis. Observe from the tabulation above that the per unit cost of batteries remains constant at £24 even though the total amount of cost involved increases and decreases with activity.

There are many examples of costs that are variable with respect to the products and services provided by a company. In a manufacturing company, variable costs include items such as direct materials and some elements of manufacturing overhead such as lubricants, shipping costs and sales commissions. For the present we will also assume that direct labour is a variable cost, although as we shall see later, direct labour may act more like a fixed cost in many situations. In a merchandising company, variable costs include items such as cost of goods sold, commissions to salespersons and billing costs. In a hospital, the variable costs of providing healthcare services to patients would include the costs of the supplies, drugs, meals and, perhaps, nursing services.

The activity causing changes in a variable cost need not be how much output is produced or sold. For example, the wages paid to employees at a video outlet will depend on the number of hours the shop is open and not strictly on the number of videos rented. In this case, we would say that wage costs are variable with respect to the hours of operation. Nevertheless, when we say that a cost is variable, we ordinarily mean it is variable with respect to the volume of revenue-generating output – in other words, how many units are produced and sold, how many videos are rented, how many patients are treated and so on.

## Fixed cost

A **fixed cost** is a cost that remains constant, in total, regardless of changes in the level of activity. Unlike variable costs, fixed costs are not affected by changes in activity. Consequently, as the activity level rises and falls, the fixed costs remain constant in total amount unless influenced by some outside force, such as price changes. Rent is a good example of a fixed cost. Suppose a hospital rents a machine for £8,000 per month that tests blood samples for the presence of leukaemia cells. The £8,000 monthly rental cost will be sustained regardless of the number of tests that may be performed during the month. The concept of a fixed cost is shown in graphic form in Exhibit 2.4.

Very few costs are completely fixed. Most will change if there is a large enough change in activity. For example, suppose that the capacity of the leukaemia diagnostic machine at the hospital is 2,000 tests per month. If the clinic wishes to perform more than 2,000 tests in a month, it would be necessary to rent an additional machine, which would cause a jump in the fixed costs. When we say a cost is fixed, we mean it is fixed within some *relevant range*. The **relevant range** is the range of activity within which the assumptions about variable and fixed costs are valid. For example, the assumption that the rent for diagnostic machines is £8,000 per month is valid within the relevant range of 0 to 2,000 tests per month.

Fixed costs can create difficulties if it becomes necessary to express the costs on a per unit basis. This is because if fixed costs are expressed on a per unit basis, they will react inversely with changes in activity. In the hospital, for example, the average cost per test will fall as the number of tests performed increases. This is because the £8,000 rental cost will be spread over more tests. Conversely, as the number of tests performed in the clinic declines, the average cost per test will rise as the £8,000 rental cost is spread over fewer tests. This concept is illustrated in the table below:

Monthly rental cost	Number of tests performed	Average cost per test
£8,000	10	£800
8,000	500	16
8,000	2,000	4

Note that if the hospital performs only ten tests each month, the rental cost of the equipment will average £800 per test. But if 2,000 tests are performed each month, the average cost will drop to only £4 per test. More will be said later about the problems created for both the accountant and the manager by this variation in unit costs.

Examples of fixed costs include straight-line depreciation, insurance, property taxes, rent, supervisory salaries, administrative salaries and advertising.

A summary of both variable and fixed cost behaviour is presented in Exhibit 2.5.

### Exhibit 2.5 Summary of variable and fixed cost behaviour

Cost	Behaviour of the cost (within the relevant range)	
	In total	Per unit
Variable cost	Total variable cost increases and decreases in proportion to changes in the activity level.	Variable costs remain constant per unit.
Fixed cost	Total fixed cost is not affected by changes in the activity level within the relevant range.	Fixed costs decrease per unit as the activity level rises and increases per unit as the activity level falls.

## Focus on Business Practice

### The cost of phone calls

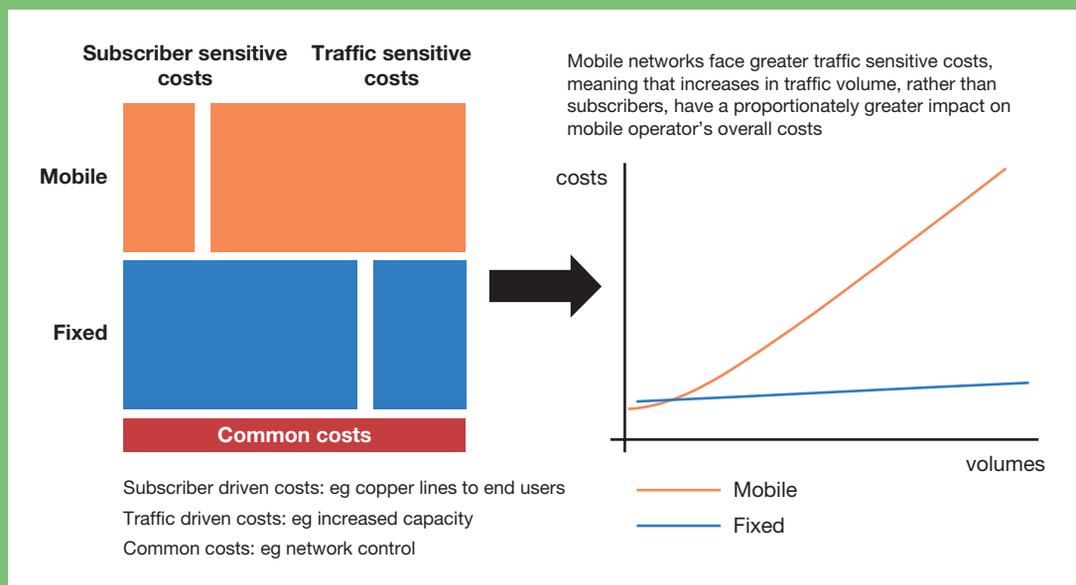


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Because of national and European regulation of the telecommunications industry, considerable research has been published on calculating the cost of providing telecommunications such as phone, text and other forms of communication. In a recent report, the UK regulator discussed the way that these costs have been calculated using many of the terms used in this and subsequent chapters (direct cost, variable cost, common cost allocation, overheads, avoidable costs, and so on...). As Exhibit 2.6 shows, they have estimated cost behaviour for different types of calls and networks. The exhibit shows how the cost structure varies between different types of traffic and networks. Much of the debate between the regulators and providers concerns the *allocation* of 'common costs' rather than direct costs which may be estimated using economic cost models.

**Exercise:** Note how the discussions of fair phone tariffs combine the *technological character* of telecommunications, which helps to explain cost behaviour, with *commercial* decisions based on marketing and accounting issues.

#### Exhibit 2.6 Cost structures in the phone industry



Reproduced with permission from Ofcom. Wholesale mobile voice call Termination Market Review, Volume 2 – Main consultation, 1/04/10.

## The contribution format

Once the manager has separated costs into fixed and variable elements, what is done with the data? We have already answered this question somewhat by showing how a cost formula can be used to predict costs. To answer this question more fully would require most of the remainder of this text, since much of what the manager does rests in some way on an understanding of cost behaviour. One immediate and very significant application of the ideas we have developed, however, is found in a new profit statement format known as the **contribution approach**. The unique thing about the contribution approach is that it provides the manager with a profit statement geared directly to cost behaviour.

### Why a new profit and loss statement format?

The *traditional approach* to the profit and loss statement is not organized in terms of cost behaviour. Rather, it is organized in a 'functional' format – emphasizing the functions of production, administration and sales in the classification and presentation of cost data. No attempt is made to distinguish between the behaviour of costs included under each functional heading. Under the heading 'Administrative expense', for example, one can expect to find both variable and fixed costs lumped together.

Although a profit and loss statement prepared in the functional format may be useful for external reporting purposes, it has serious limitations when used for internal purposes. Internally, the manager needs cost data organized in a format that will facilitate planning, control and decision making. These tasks are much easier when cost data are available in a fixed and variable format. The contribution approach to the profit and loss statement has been developed in response to this need.

### The contribution approach

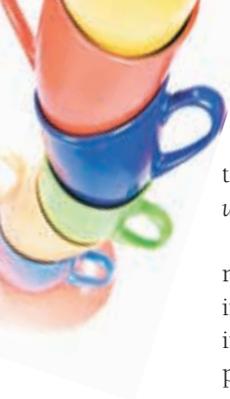
Exhibit 2.7 illustrates the contribution approach to the profit and loss statement with a simple example, along with the traditional approach discussed above.

Notice that the contribution approach separates costs into fixed and variable categories, first deducting variable expenses from sales to obtain what is known as the *contribution margin*. The **contribution margin** is

**Exhibit 2.7** Comparison of the contribution profit statement with the traditional profit statement

Traditional approach (costs organized by function)		Contribution approach (costs organized by behaviour)	
Sales	£12,000	Sales	£12,000
Less cost of goods sold	<u>6,000*</u>	Less variable expenses:	
Gross margin	6,000	Variable production	£2,000
Less operating expenses:		Variable selling	600
Selling	£3,100*	Variable administrative	<u>400</u>
Administrative	<u>1,900*</u>	Contribution margin	9,000
Net profit	<u>£1,000</u>	Less fixed expenses:	
		Fixed production	4,000
		Fixed selling	2,500
		Fixed administrative	<u>1,500</u>
		Net profit	<u>£1,000</u>

\*Contains both variable and fixed expenses. This is the profit statement for a manufacturing company; thus, when the profit statement is placed in the contribution format, the 'cost of goods sold' figure is divided between variable production costs and fixed production costs. If this were the profit statement for a *merchandising* company (which simply purchases completed goods from a supplier), then the cost of goods sold would *all* be variable.



the amount remaining from sales revenues after variable expenses have been deducted. This amount *contributes* towards covering fixed expenses and then towards profits for the period.

The contribution approach to the profit and loss statement is used as an internal planning and decision-making tool. Its emphasis on costs by behaviour facilitates cost–volume–profit analysis, which we will tackle in Chapter 3. The approach is also very useful in appraising management performance, in segmented reporting of profit data, and in budgeting. Moreover, the contribution approach helps managers organize data pertinent to all kinds of special decisions such as product-line analysis, pricing, use of scarce resources, and make or buy analysis. All of these topics are covered in later chapters.

Managers use costs organized by behaviour as a basis for many decisions. To facilitate this use, the profit statement can be prepared in a contribution format. The contribution format classifies costs on the profit and loss statement by cost behaviour (i.e., variable versus fixed) rather than by the functions of production, administration, and sales.

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## Cost classifications for decision-relevance

Costs are an important feature of many business decisions. In making decisions, it is essential to have a firm grasp of the concepts *differential cost*, *opportunity cost* and *sunk cost*.

### Differential cost and revenue

Decisions involve choosing between alternatives. In business decisions, each alternative will have certain costs and benefits that must be compared to the costs and benefits of the other available alternatives. A difference in costs between any two alternatives is known as a **differential cost**. A difference in revenues between any two alternatives is known as **differential revenue**.

A differential cost is also known as an **incremental cost**, although technically an incremental cost should refer only to an increase in cost from one alternative to another; decreases in cost should be referred to as *decremental costs*. Differential cost is a broader term, encompassing both cost increases (incremental costs) and cost decreases (decremental costs) between alternatives.

The accountant's differential cost concept can be compared to the economist's marginal cost concept. In speaking of changes in cost and revenue, the economist employs the terms *marginal cost* and *marginal revenue*. The revenue that can be obtained from selling one more unit of product is called marginal revenue, and the cost involved in producing one more unit of product is called marginal cost. The economist's marginal concept is basically the same as the accountant's differential concept applied to a single unit of output.

Differential costs can be either fixed or variable. To illustrate, assume that Nature Way Cosmetics is thinking about changing its marketing method from distribution through retailers to distribution by door-to-door direct sale. Present costs and revenues are compared to projected costs and revenues in the following table:

	Retailer distribution (present)	Direct sale distribution (proposed)	Differential costs and revenues
Revenues (V)	£700,000	£800,000	£100,000
Cost of goods sold (V)	350,000	400,000	50,000
Advertising (F)	80,000	45,000	(35,000)
Commissions (V)	0	40,000	40,000
Warehouse depreciation (F)	50,000	80,000	30,000
Other expenses (F)	60,000	60,000	0
Total	540,000	625,000	85,000
Profit	£160,000	£175,000	£15,000

V = Variable; F = Fixed

According to the above analysis, the differential revenue is £100,000 and the differential costs total £85,000, leaving a positive differential profit of £15,000 under the proposed marketing plan.

The decision of whether Nature Way Cosmetics should stay with the present retail distribution or switch to door-to-door direct selling could be made on the basis of the profits of the two alternatives. As we see in the above analysis, the profit under the present distribution method is £160,000, whereas the profit under door-to-door direct selling is estimated to be £175,000. Therefore, the door-to-door direct distribution method is preferred, since it would result in £15,000 higher profit. Note that we would have arrived at exactly the same conclusion by simply focusing on the differential revenues, differential costs and differential profit, which also show a £15,000 advantage for the direct selling method.

In general, only the differences between alternatives are relevant in decisions. Those items that are the same under all alternatives and that are not affected by the decision can be ignored. For example, in the Nature Way Cosmetics example above, the 'Other expenses' category, which is £60,000 under both alternatives, can be ignored, since it has no effect on the decision. If it were removed from the calculations, the door-to-door direct selling method would still be preferred by £15,000.

## Opportunity cost

**Opportunity cost** is the potential benefit that is given up when one alternative is selected over another. To illustrate this important concept, consider the following examples:

### Example 1

Vicki has a part-time job that pays her £100 per week while attending college. She would like to spend a week at the beach during spring break, and her employer has agreed to give her the time off, but without pay. The £100 in lost wages would be an opportunity cost of taking the week off to be at the beach.

### Example 2

Suppose that Tesco is considering investing a large sum of money in land that may be a site for a future shop. Rather than invest the funds in land, the company could invest the funds in high-grade securities. If the land is acquired, the opportunity cost will be the investment income that could have been realized if the securities had been purchased instead.

### Example 3

Steve is employed with a company that pays him a salary of £20,000 per year. He is thinking about leaving the company and going to university. Since going to university would require that he give up his £20,000 salary, the forgone salary would be an opportunity cost of seeking further education.

Opportunity cost is not usually entered in the accounting records of an organization, but it is a cost that must be explicitly considered in every decision a manager makes. Virtually every alternative has some opportunity cost attached to it. In Example 3 above, for instance, if Steve decides to stay at his job, there still is an opportunity cost involved: it is the greater income that could be realized in future years as a result of returning to university.

## Sunk cost

A **sunk cost** is a cost *that has already been incurred* and that cannot be changed by any decision made now or in the future. Since sunk costs cannot be changed by any decision, they are not differential costs. Therefore, they can and should be ignored when making a decision.

To illustrate a sunk cost, assume that a company paid £50,000 several years ago for a special-purpose machine. The machine was used to make a product that is now obsolete and is no longer being sold. Even though in hindsight the purchase of the machine may have been unwise, no amount of regret can undo that decision. And it would be folly to continue making the obsolete product in a misguided attempt to 'recover' the original cost of the machine. In short, the £50,000 originally paid for the machine has already been incurred and cannot be a differential cost in any future decisions. For this reason, such costs are said to be sunk and should be ignored in decisions.



We will explore some applications of relevant cost principles further in Chapter 4 when making a number of important business decisions such as replacing equipment, make-or-buy, special orders and dealing with capacity constraints.

## Focus on Business Practice

### *Cost considerations at a retail florist*



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Terri, the owner of a retail florist shop, has been trying to decide for some time whether she should continue to use a local courier service to deliver flowers to customers or buy a delivery van and use one of her employees to make the deliveries. At a recent family dinner, she brought up the subject of the delivery van with her brother-in-law, who fancies himself as an expert on all management subjects. He grabbed this opportunity to impress on Terri his understanding of costs.

In rapid-fire succession, Terri's brother-in-law told her that the fees paid to the courier to deliver flowers are a variable cost and a period cost, but the costs of the flowers are product costs rather than period costs, even though the flower costs are also variable costs. On the other hand, the depreciation of the delivery van would be a fixed cost and a period cost. And while the fuel for the truck would be a variable cost and a differential cost, the wages of the person making the deliveries would be a fixed cost, not a differential cost, and would involve an opportunity cost. At this point, Terri excused herself, pleading that she had to help in the kitchen. Terri felt that her brother-in-law's comments were more confusing than helpful, but she knew that she could no longer put off the decision about the delivery van.

**Exercise:** Referring to Exhibit 2.3, which costs *should* be considered in this decision?

## Focus on Business Practice

### *Hotel accounting and costs*



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the building itself.

In a recent project, an author was undertaking research into management accounting in the hospitality industry. He noted that many hotels saw room costs in terms of servicing the room and the ongoing expense of maintaining the fixtures and fittings. They did not have an operational measure of the biggest fixed cost of all – the cost of the land and buildings. In the short run, this approach seemed logical as the managers could reduce some of the costs of servicing the rooms through better labour scheduling but they could not (in the short-term) *avoid* the fixed costs of

**Exercise:** In what sense are room servicing costs *variable* in that they vary with activity levels? What other room-related costs are also variable?

## Summary

- In this chapter, we have looked at some of the ways in which managers classify costs. How the costs will be used – for preparing external reports, predicting cost behaviour, assigning costs to cost objects, or decision making – will dictate how the costs will be classified.
- For purposes of valuing stocks and determining expenses for the balance sheet and profit and loss account, costs are classified as either product costs or period costs. Product costs are assigned to stocks and are considered assets until the products are sold. At the point of sale, product costs become costs of goods sold on the profit and loss account. In contrast, following the usual accrual practices, period costs are taken directly to the profit and loss account as expenses in the period in which they are incurred.
- For purposes of predicting cost behaviour – how costs will react to changes in activity – managers commonly classify costs into two categories – variable and fixed. Variable costs, in total, are strictly proportional to activity. Thus, the variable cost per unit is constant. Fixed costs, in total, remain at the same level for changes in activity that occur within the relevant range. Thus, the average fixed cost per unit decreases as the number of units increases.
- For purposes of assigning costs to cost objects such as products or departments, costs are classified as direct or indirect. Direct costs can conveniently be traced to the cost objects. Indirect costs cannot conveniently be traced to cost objects.
- For purposes of making decisions, the concepts of differential costs and revenue, opportunity cost and sunk cost are of vital importance. Differential cost and revenue are the cost and revenue items that differ between alternatives. Opportunity cost is the benefit that is forgone when one alternative is selected over another. Sunk cost is a cost that occurred in the past and cannot be altered. Differential cost and opportunity cost should be considered carefully in decisions. Sunk cost is always irrelevant in decisions and should be ignored.
- These various cost classifications are *different* ways of looking at costs. A particular cost, such as the cost of cheese in a cheese burger, could be a manufacturing cost, a product cost, a variable cost, a direct cost, and a differential cost – all at the same time.

## Key terms

**Administrative costs** All executive, organizational and clerical costs associated with the general management of an organization rather than with manufacturing, marketing or selling (p. 17).

**Contribution approach** A profit statement format that is geared to cost behaviour in that costs are separated into variable and

fixed categories rather than being separated according to the functions of production, sales and administration (p. 25).

**Contribution margin** The amount remaining from sales revenue after all variable expenses have been deducted (p. 25).

**Conversion cost** Direct labour cost plus manufacturing overhead cost (p. 17).



**Cost behaviour** The way in which a cost reacts or responds to changes in the level of business activity (p. 22).

**Differential cost** Any cost that differs between alternatives in a decision-making situation. In managerial accounting, this term is synonymous with avoidable cost and relevant cost. Also see Incremental cost (p. 26).

**Differential revenue** The difference in revenue between any two alternatives (p. 26).

**Direct labour** Those factory labour costs that can easily be traced to individual units of product. Also called touch labour (p. 16).

**Direct materials** Those materials that become an integral part of a finished product and can conveniently be traced into it (p. 16).

**Fixed cost** A cost that remains constant, in total, regardless of changes in the level of activity within the relevant range. If a fixed cost is expressed on a per unit basis, it varies inversely with the level of activity (p. 23).

**Incremental cost** An increase in cost between two alternatives. Also see Differential cost (p. 26).

**Indirect labour** The labour costs of caretakers, supervisors, materials handlers, and other factory workers that cannot conveniently be traced directly to particular products (p. 16).

**Indirect materials** Small items of material such as glue and nails. These items may become an integral part of a finished product but are traceable to the product only at great cost or inconvenience (p. 16).

**Manufacturing overhead** All costs associated with manufacturing except direct materials and direct labour (p. 16).

**Marketing or selling costs** All costs necessary to secure customer orders and get the finished product or service into the hands of the customer (p. 17).

**Opportunity cost** The potential benefit that is given up when one alternative is selected over another (p. 27).

**Period costs** Those costs that are taken directly to the profit and loss account as expenses in the period in which they are incurred or accrued; such costs consist of selling (marketing) and administrative expenses (p. 17).

**Prime cost** Direct materials cost plus direct labour cost (p. 17).

**Product costs** All costs that are involved in the purchase or manufacture of goods. In the case of manufactured goods, these costs consist of direct materials, direct labour, and manufacturing overhead. Also see Stock-related costs (p. 17).

**Raw materials** Any materials that go into the final product (p. 16).

**Relevant range** The range of activity within which assumptions about variable and fixed cost behaviour are valid (p. 23).

**Stock-related costs** (also known as inventoriable costs) Synonym for product costs (p. 19).

**Sunk cost** Any cost that has already been incurred and that cannot be changed by any decision made now or in the future (p. 27).

**Variable cost** A cost that varies, in total, in direct proportion to changes in the level of activity. A variable cost is constant per unit (p. 21).

## Endnotes

- 1 *Financial Management*, September 2003, p. 4.
- 2 These issues are discussed thoroughly in Johnson and Kaplan (1987).
- 3 See note 4.
- 4 In many countries, such as the US, 'stock' is known as 'inventory'. With globalization of capital markets and accounting, terms such as *stock* and *inventory* are increasingly used interchangeably. Other examples of interchangeable terms are *profit* (UK) = *net income* (US), *debtors* (UK) = *accounts receivable* (US) and *creditors* (UK) = *accounts payable* (US), *work in progress* (UK) = *work in process* (US).
- 5 <http://moneymorning.com/2010/05/10/gulf-oil-spill-2/>; <http://news.bbc.co.uk/2/hi/americas/8666276.stm>; <http://www.rte.ie/business/2010/0610/bp.html>



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# Assessment

## Questions connect™

- 2-1 What are the three major elements of product costs in a manufacturing company?
- 2-2 Distinguish between the following: (a) direct materials, (b) indirect materials, (c) direct labour, (d) indirect labour, and (e) manufacturing overhead.
- 2-3 Explain the difference between a product cost and a period cost.
- 2-4 Why are product costs sometimes called stock-related costs? Describe the flow of such costs in a manufacturing company from the point of incurrence until they finally become expenses on the profit and loss account.
- 2-5 What is meant by the term *cost behaviour*?
- 2-6 'A variable cost is a cost that varies per unit of product, whereas a fixed cost is constant per unit of product.' Do you agree? Explain.
- 2-7 How do fixed costs create difficulties in costing units of product?
- 2-8 Why is manufacturing overhead considered an indirect cost of a unit of product?
- 2-9 Define the following terms: differential cost, opportunity cost, and sunk cost.
- 2-10 Only variable costs can be differential costs. Do you agree? Explain.

## Exercises connect™

**E2-1**  **Time allowed:** 15 minutes

The following are a number of cost terms introduced in the chapter:

Variable cost	Product cost
Fixed cost	Sunk cost
Prime cost	Conversion cost
Opportunity cost	Period cost

Choose the term or terms above that most appropriately describe the cost identified in each of the following situations. A cost term can be used more than once.

- 1 Lake Company produces a bag that is very popular with college students. The cloth going into the manufacture of the bag would be called direct materials and classified as a \_\_\_\_\_ cost. In terms of cost behaviour, the cloth could also be described as a \_\_\_\_\_ cost.
- 2 The direct labour cost required to produce the bags, combined with the manufacturing overhead cost involved, would be known as \_\_\_\_\_ cost.
- 3 The company could have taken the funds that it has invested in production equipment and invested them in interest-bearing securities instead. The interest forgone on the securities would be called \_\_\_\_\_ cost.
- 4 Taken together, the direct materials cost and the direct labour cost required to produce bags would be called \_\_\_\_\_ cost.

- 5 The company used to produce a smaller bag that was not very popular. Some three hundred of these smaller bags are stored in one of the company's warehouses. The amount invested in these bags would be called a \_\_\_\_\_ cost.
- 6 The bags are sold through agents who are paid a commission on each bag sold. These commissions would be classified by Lake Company as a \_\_\_\_\_ cost. In terms of cost behaviour, commissions would be classified as a \_\_\_\_\_ cost.
- 7 Depreciation on the equipment used to produce the bags would be classified by Lake Company as a \_\_\_\_\_ cost. However, depreciation on any equipment used by the company in selling and administrative activities would be classified as \_\_\_\_\_ cost. In terms of cost behaviour, depreciation would probably be classified as a \_\_\_\_\_ cost.
- 8 A \_\_\_\_\_ cost is also known as a stock-related cost, since such costs go into the Work in Progress stock account and then into the Finished Goods stock account before appearing on the profit and loss account as part of cost of goods sold.
- 9 The salary of Lake Company's managing director would be classified as a \_\_\_\_\_ cost, since the salary will appear on the profit and loss account as an expense in the time period in which it is incurred.
- 10 Costs can often be classified in several ways. For example, Lake Company pays £5,000 rent each month on its factory building. The rent would be part of manufacturing overhead. In terms of cost behaviour, it would be classified as a \_\_\_\_\_ cost. The rent can also be classified as a \_\_\_\_\_ cost and as part of \_\_\_\_\_ cost.

### E2-2 Time allowed: 10 minutes

A product cost is also known as a stock-related cost. Classify the following costs as either product (stock-related) costs or period (non-stock-related) costs in a manufacturing company:

- 1 Depreciation on salespersons' cars
- 2 Rent on equipment used in the factory
- 3 Lubricants used for maintenance of machines
- 4 Salaries of finished goods warehouse personnel
- 5 Soap and paper towels used by factory workers at the end of a shift
- 6 Factory supervisors' salaries
- 7 Heat, water and power consumed in the factory
- 8 Materials used in boxing units of finished product for shipment overseas (units are not normally boxed)
- 9 Advertising outlays
- 10 Workers' compensation insurance on factory employees
- 11 Depreciation on chairs and tables in the factory lunchroom
- 12 The salary of the switchboard operator for the company
- 13 Depreciation on a Lear Jet used by the company's executives
- 14 Rent on rooms at a West Country resort for holding of the annual sales conference
- 15 Attractively designed box for packaging breakfast cereal.



**E2-3**  **Time allowed:** 10 minutes

Below are a number of costs that are incurred in a variety of organizations:

- 1 X-ray film used in the radiology lab at Queens Medical Centre in Nottingham
- 2 The costs of advertising a Madonna rock concert in London
- 3 Depreciation on the Planet Hollywood restaurant building in Hong Kong
- 4 The electrical costs of running a roller-coaster at Blackpool
- 5 Property taxes on a local cinema
- 6 Commissions paid to salespersons at McGraw-Hill
- 7 Property insurance on a Coca-Cola bottling plant
- 8 The costs of synthetic materials used to make Nike running shoes
- 9 The costs of shipping Panasonic televisions to retail shops
- 10 The cost of leasing an ultra-scan diagnostic machine at St Thomas's hospital in London.

**Required**

Classify each cost as being variable or fixed with respect to the number of units of product or services sold by the organization. Set out your answers as below.

Cost Item	Cost behaviour	
	Variable	Fixed

Place an X in the appropriate column for each cost to indicate whether the cost involved would be variable or fixed with respect to the number of units of products or services sold by the organization.

**E2-4**  **Time allowed:** 20 minutes

The following cost and stock data are taken from the accounting records of Mason Company for the year just completed:

Costs incurred:		
Direct labour cost		£70,000
Purchases of raw materials		118,000
Indirect labour		30,000
Maintenance, factory equipment		6,000
Advertising expense		90,000
Insurance, factory equipment		800
Sales salaries		50,000
Rent, factory facilities		20,000
Supplies		4,200
Depreciation, office equipment		3,000
Depreciation, factory equipment		19,000
	<b>Beginning of the Year</b>	<b>End of the Year</b>
Stocks:		
Raw materials	£7,000	£15,000
Work in progress	10,000	5,000
Finished goods	20,000	35,000

## Required

- 1 Prepare a schedule of cost of goods manufactured in good form
- 2 Prepare the cost of goods sold section of Mason Company's profit and loss account for the year

### E2-5 Time allowed: 15 minutes

Below are listed various costs that are found in organizations:

- 1 Hamburger buns in a McDonald's outlet
- 2 Advertising by a dental office
- 3 Apples processed and canned by Del Monte Corporation
- 4 Shipping canned apples from a Del Monte plant to customers
- 5 Insurance on a Bausch & Lomb factory producing contact lenses
- 6 Insurance on IBM's corporate headquarters
- 7 Salary of a supervisor overseeing production of circuit boards at Hewlett-Packard
- 8 Commissions paid to *Encyclopaedia Britannica* salespersons
- 9 Depreciation of factory lunchroom facilities at an ICI plant
- 10 Steering wheels installed in BMWs.

## Required

Classify each cost as being either variable or fixed with respect to the number of units sold. Also classify each cost as either a selling and administrative cost or a product cost. Prepare your answer sheet as shown below.

Cost item	Cost behaviour		Selling and administrative cost	Product cost
	Variable	Fixed cost		

Place an X in the appropriate columns to show the proper classification of each cost.

### P2-6 Cost identification

#### Time allowed: 30 minutes

Wollongong Group Ltd of New South Wales, Australia, acquired its factory building about ten years ago. For several years the company has rented out a small annex attached to the rear of the building. The company has received a rental income of £30,000 per year on this space. The renter's lease will expire soon and, rather than renewing the lease, the company has decided to use the space itself to manufacture a new product.

Direct materials cost for the new product will total £80 per unit. To have a place to sell finished units of product, the company will rent a small warehouse nearby. The rental cost will be £500 per month. In addition, the company must rent equipment for use in producing the new product; the rental cost will be £4,000 per month. Workers will be hired to manufacture the new product, with direct labour cost amounting to £60 per unit. The space in the annex will continue to be depreciated on a straight-line basis, as in prior years. This depreciation is £8,000 per year.

## Problems

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Advertising costs for the new product will total £50,000 per year. A supervisor will be hired to oversee production; her salary will be £1,500 per month. Electricity for operating machines will be £1.20 per unit. Costs of shipping the new product to customers will be £9 per unit.

To provide funds to purchase materials, meet payrolls and so forth, the company will have to liquidate some temporary investments. These investments are presently yielding a return of about £3,000 per year.

### Required

Prepare an answer sheet with the following column headings:

Name of the cost	Variable cost	Fixed cost	Product cost			Period (selling and administrative) cost	Opportunity cost	Sunk cost
			Direct materials	Direct labour	Manufacturing overhead			

List the different costs associated with the new product decision down the extreme left column (under Name of the cost). Then place an X under each heading that helps to describe the type of cost involved. There may be Xs under several column headings for a single cost (for example, a cost may be a fixed cost, a period cost and a sunk cost; you would place an X under each of these column headings opposite the cost).

### P2-7 Supply missing production and cost data

 **Time allowed:** 30 minutes

Supply the missing data in the following cases. Each case is independent of the others.

	Case			
	1	2	3	4
Direct materials	£4,500	£6,000	£5,000	£3,000
Direct labour	?	3,000	7,000	4,000
Manufacturing overhead	5,000	4,000	?	9,000
Total manufacturing costs	18,500	?	£20,000	?
Beginning work in progress stock	2,500	?	3,000	?
Ending work in progress stock	?	1,000	4,000	3,000
Cost of goods manufactured	£18,000	£14,000	£?	£?
Sales	£30,000	£21,000	£36,000	£40,000
Beginning finished goods stock	1,000	2,500	?	2,000
Cost of goods manufactured	?	?	?	17,500
Goods available for sale	?	?	?	?

(continued)

Ending finished goods stock	?	1,500	4,000	3,500
Cost of goods sold	17,000	?	18,500	?
Gross margin	13,000	?	17,500	?
Operating expenses	?	3,500	?	?
Profit	£4,000	£ ?	£5,000	£9,000

### P2-8 Cost classification

 **Time allowed:** 20 minutes

Various costs associated with the operation of a factory are given below:

- 1 Electricity used in operating machines
- 2 Rent on a factory building
- 3 Cloth used in drapery production
- 4 Production superintendent's salary
- 5 Cost of labourers assembling a product
- 6 Depreciation of air purification equipment used in furniture production
- 7 Caretaker salaries
- 8 Peaches used in canning fruit
- 9 Lubricants needed for machines
- 10 Sugar used in soft-drink production
- 11 Property taxes on the factory
- 12 Cost of workers painting a product
- 13 Depreciation on cafeteria equipment
- 14 Insurance on a building used in producing TV sets
- 15 Picture tubes used in TV sets.

### Required

Classify each cost as being either variable or fixed with respect to the number of units produced and sold. Also indicate whether each cost would typically be treated as a direct cost or an indirect cost with respect to units of product. Prepare your answer sheet as shown below:

Cost Item	Cost behaviour		To units of product	
	Variable	Fixed	Direct	Indirect
Example: Factory insurance		X		X

### P2-9 Cost identification

 **Time allowed:** 40 minutes

The Dorilane Company specializes in producing a set of wooden patio furniture consisting of a table and four chairs. The set enjoys great popularity, and the



company has ample orders to keep production going at its full capacity of 2,000 sets per year. Annual cost data at full capacity follow:

To units of product	Product cost
Factory labour, direct	£118,000
Advertising	50,000
Factory supervision	40,000
Property taxes, factory building	3,500
Sales commissions	80,000
Insurance, factory	2,500
Depreciation, office equipment	4,000
Lease cost, factory equipment	12,000
Indirect materials, factory	6,000
Depreciation, factory building	10,000
General office supplies (billing)	3,000
General office salaries	60,000
Direct materials used (wood, bolts, etc.)	94,000
Utilities, factory	20,000

### Required

- 1 Prepare an answer sheet with the column headings shown below. Enter each cost item on your answer sheet, placing the pound amount under the appropriate headings. As examples, this has been done already for the first two items in the list above. Note that each cost item is classified in two ways: first, as variable or fixed, with respect to the number of units produced and sold; and second, as a selling and administrative cost or a product cost. (If the item is a product cost, it should be classified as being either direct or indirect as shown.)
- 2 Total the pound amounts in each of the columns in 1 above. Compute the cost to produce one patio set.
- 3 Assume that production drops to only 1,000 sets annually. Would you expect the cost per set to increase, decrease, or remain unchanged? Explain. No computations are necessary.
- 4 Refer to the original data. The managing director's brother-in-law has considered making himself a patio set and has priced the necessary materials at a building supply shop. The brother-in-law has asked the managing director if he could purchase a patio set from the Dorilane Company 'at cost', and the managing director agreed to let him do so.
  - (a) Would you expect any disagreement between the two men over the price the brother-in-law should pay? Explain. What price does the managing director probably have in mind? The brother-in-law?
  - (b) Since the company is operating at full capacity, what cost term used in the chapter might be justification for the managing director to charge the full, regular price to the brother-in-law and still be selling 'at cost'?

Cost item	Cost behaviour		Selling or administrative cost	Product cost	
	Variable	Fixed		Direct	Indirect*
Factory labour, direct	£118,000			£118,000	
Advertising		£50,000	£50,000		

\*To units of product.

## P2-10 Cost classification

 **Time allowed:** 25 minutes

Listed below are a number of costs typically found in organizations:

- 1 Property taxes, factory
- 2 Boxes used for packaging detergent
- 3 Salespersons' commissions
- 4 Supervisor's salary, factory
- 5 Depreciation, executive cars
- 6 Workers assembling computers
- 7 Packing supplies for shipments
- 8 Insurance, finished goods warehouses
- 9 Lubricants for machines
- 10 Advertising costs
- 11 'Chips' used in producing calculators
- 12 Shipping costs on merchandise sold
- 13 Magazine subscriptions, factory lunchroom
- 14 Thread in a garment factory
- 15 Billing costs
- 16 Executive life insurance
- 17 Ink used in textbook production
- 18 Fringe benefits, assembly-line workers
- 19 Yarn used in sweater production
- 20 Receptionist, executive offices.

### Required

Prepare an answer sheet with column headings as shown below. For each cost item, indicate whether it would be variable or fixed with respect to the number of units produced and sold; and then whether it would be a selling cost, an administrative cost, or a manufacturing cost. If it is a manufacturing cost, indicate whether it would typically be treated as a direct cost or an indirect cost with respect to units of product. Three sample answers are provided for illustration.



Cost Item	Variable or fixed	Selling cost	Administrative cost	Manufacturing (product) cost	
				Direct	Indirect
Direct labour	V			X	
Executive salaries	F		X		
Factory rent	F				X

## P2-11 Cost identification

 **Time allowed:** 20 minutes

Tracy Beckham began dabbling in pottery several years ago as a hobby. Her work is quite creative, and it has been so popular with friends and others that she has decided to quit her job with an aerospace firm and manufacture pottery full time. The salary from Tracy's aerospace job is £2,500 per month.

Tracy will rent a small building near her home to use as a place for manufacturing the pottery. The rent will be £500 per month. She estimates that the cost of clay and glaze will be £2 for each finished piece of pottery. She will hire workers to produce the pottery at a labour rate of £8 per pot. To sell her pots, Tracy feels that she must advertise heavily in the local area. An advertising agency states that it will handle all advertising for a fee of £600 per month. Tracy's brother will sell the pots; he will be paid a commission of £4 for each pot sold. Equipment needed to manufacture the pots will be rented at a cost of £300 per month.

Tracy has already paid some start-up fees associated with her business. These fees amounted to £500. A small room has been located in a tourist area that Tracy will use as a sales office. The rent will be £250 per month. A phone installed in the room for taking orders will cost £40 per month. In addition, a recording device will be attached to the phone for taking after-hours messages.

Tracy has some money in savings that is earning interest of £1,200 per year. These savings will be withdrawn and used to get the business going. For the time being, Tracy does not intend to draw any salary from the new company.

### Required

1 Prepare an answer sheet with the following column headings:

Name of the cost	Variable cost	Fixed cost	Product cost			Period (selling and administrative) cost	Opportunity cost	Sunk cost
			Direct materials	Direct labour	Manufacturing overhead			

List the different costs associated with the new company down the extreme left column (under Name of cost). Then place an X under each heading that helps to describe the type of cost involved. There may be Xs under several column headings for a single cost. (That is, a cost may be a fixed cost, a period cost, and a sunk cost; you would place an X under each of these column headings opposite the cost.)

Under the Variable cost column, list only those costs that would be variable with respect to the number of units of pottery that are produced and sold.

- 2 All the costs you have listed above, except one, would be differential costs between the alternatives of Tracy producing pottery or staying with the aerospace firm. Which cost is not differential? Explain.

## P2-12 Cost behaviour; manufacturing statement; unit costs

 **Time allowed:** 40 minutes

Visic Company, a manufacturing firm, produces a single product. The following information has been taken from the company's production, sales, and cost records for the just completed year.

Production in units		29,000	
Sales in units		?	
Ending finished goods stock in units		?	
Sales in pounds		£1,300,000	
Costs:			
Advertising		105,000	
Entertainment and travel		40,000	
Direct labour		90,000	
Indirect labour		85,000	
Raw materials purchased		480,000	
Building rent (production uses 80% of the space administrative and sales offices use the rest)		40,000	
Utilities, factory		108,000	
Royalty paid for use of production patent, £1.50 per unit produced		?	
Maintenance, factory		9,000	
Rent for special production equipment, per year plus £0.30 per unit produced		£7,000	?
Selling and administrative salaries		210,000	
Other factory overhead costs		6,800	
Other selling and administrative expenses		17,000	
	<b>Beginning of year</b>		<b>End of year</b>
Stocks:			
Raw materials	£20,000		£30,000
Work in progress	50,000		40,000
Finished goods	0		?



The finished goods stock is being carried at the average unit production cost for the year. The selling price of the product is £50 per unit.

### Required

- 1 Prepare a schedule of goods manufactured for the year.
- 2 Compute the following:
  - (a) The number of units in the finished goods stock at the end of the year
  - (b) The cost of the units in the finished goods stock at the end of the year.
- 3 Prepare a profit and loss account for the year.