Chapter 6

Job costing

Real world case 6.1

This case study shows a typical situation in which management accounting can be helpful. Read the case study now but only attempt the discussion points after you have finished studying the chapter.

The film *Monster* was a box office success but, coming from an independent film maker rather than the giant studios of Hollywood, did not bring the early profits that other successes could achieve. This extract explains the problems.

Monster generated a respectable $34.5m at the US box office, according to Nielsen EDI, the cinema research body. However, because it is riskier for cinemas to show small, niche films instead of mainstream blockbusters, cinema chains tend to keep a larger proportion of the ticket price. Although the figures have yet to be audited, according to Mark Damon, another co-producer on the film, this amounted to about 62 per cent for *Monster*, compared to the typical 45 per cent to 55 per cent. As a result, more than $20m of the box-office revenues stayed with the cinema operators. Some 18 per cent was kept by Newmarket, the film's distributor, leaving behind about $10m.

Then there was the cost of the release campaign, which included posters and television commercials as well as the cost of making celluloid copies and transporting them to different venues. The film industry categorises these costs as 'print and advertising' or P & A. Usually the P & A cost is advanced by the distributors. But, in the case of *Monster*, the producers struggled to find a partner willing to distribute the film.

In total, the P & A cost came to about $12m, pushing *Monster* into a loss of $1.26m at the US box office.

Source: Thomas Clark, *Financial Times*, 15 February 2005, p. 14, 'Why a monster hit did not make giant profits'.

Discussion points

1 Why is a job costing approach suitable for a film production?

2 Why will each job have a different pattern of costs and revenues?

Contents

Learning outcomes

After reading this chapter you should be able to:

- Explain the contents of a job cost record.
- Prepare a job cost record showing direct material, direct labour, other direct costs and production overhead.
- Analyse transactions involved in job costing, using the accounting equation.
- Describe and discuss examples of research into methods of job costing.

6.1 Introduction

In Chapter 3, direct materials and direct labour costs were explained. Chapter 4 explained the accounting treatment of production overheads. This chapter brings together the elements of a job-costing system and explains the procedures for analysing them to calculate the cost of a job undertaken during a period of time. In a job-costing system there will be a job cost record for each job, showing the costs incurred on that job. A job cost record is illustrated in Exhibit 6.1. The transactions of the period are analysed and recorded using the accounting equation.

A **job-costing system** for recording the cost of output is appropriate to a business which provides specialised products or makes items to order, so that each customer's requirements constitute a separate job of work. Job costing is appropriate in manufacturing industries such as shipbuilding, bridge building, construction, property development and craft industries. Job costing would also be used in costing the provision of services by professional persons such as lawyers, doctors, architects and accountants. It could also be used for repair contracts, or specialist service contracts.

Definition

A **job-costing system** is a system of cost accumulation where there is an identifiable activity for which costs may be collected. The activity is usually specified in terms of a job of work or a group of tasks contributing to a stage in the production or service process.

Exhibit 6.1
Illustration of a job cost record

Job Cost record **Job No……..**		**Customer reference ……** **Product description ……**		**Product code ……**	
DATE	CODE	DETAILS	QUANTITY	£	p
		Direct materials:			
		Type A	kg		
		Type B	kg		
		Type C	litres		
		Direct labour:			
		Employee A	hrs		
		Employee B	hrs		
		Employee C	hrs		
		Other direct costs			
		PRIME COST X			
		Indirect materials			
		Indirect labour			
		Other indirect costs			
		TOTAL PRODUCTION OVERHEAD Y			
		TOTAL PRODUCT COST X + Y			

The **job cost record** shows the costs of materials, labour and overhead incurred on a particular job. The accounts department knows from the stores requisition the quantity of materials issued to production and knows from the invoice the price per unit charged by the supplier. This allows the cost of direct materials to be recorded as the materials are used. Each job will have a job number and that number will be entered on all stores requisitions so that the materials can be traced to the job cost record.

Direct labour costs will be calculated using hours worked and the hourly rate for each employee. The hours worked will be collected from employee time sheets which show each job under its own job number. Hourly rates for the employee will be available from personnel records.

Other direct costs will be charged to jobs by entering on the expense invoice the appropriate job number. The invoices will be used as the primary source from which information is transferred to the job cost record.

- Production overhead costs will be shared among the jobs to which they relate, as explained in Chapter 4.

Activity 6.1

You have been employed as the management accountant at a car repair garage. Write down a list of the types of costs you would expect to find on a job cost record for a car service and repair. (You don't need to put any money amounts into the list.)

Exhibit 6.1 shows sufficient details of direct materials, direct labour and other direct costs to give the prime cost of production. Addition of indirect costs (production overhead) gives the **total product cost** of a job.

Definitions

Prime cost of production is equal to the total of direct materials, direct labour and other direct costs.

Production overhead cost comprises indirect materials, indirect labour and other indirect costs of production.

Total product cost comprises prime cost plus production overhead cost.

6.2 Job cost records: an illustration

Job costing is illustrated in the example of Specialprint, a company which prints novelty stationery to be sold in a chain of retail stores. The company has only one customer. Exhibit 6.2 contains relevant information for the month of June in respect of three separate jobs, 601, 602 and 603. Symbols are attached to each transaction so that the information may be traced through the job cost records.

6.2.1 Information for the job cost record

The job cost record requires information on direct materials, direct labour and production overhead. This information must be selected from the list of transactions for the month of June. Care must be taken to extract only that information which is relevant to each job.

Activity 6.2

From Exhibit 6.2 note the transactions which you think are directly relevant to the cost of jobs 601, 602 and 603. Then read the rest of this section and compare your answer with the text. (Use Exhibit 6.1 to remind yourself of the information needed for a job cost record.)

Exhibit 6.2

Specialprint: transactions for the month of June

Date	*Symbol*	*Transaction*
1 June	☝	Bought 60 rolls of paper on credit from supplier, invoiced price being £180,000. The rolls of paper acquired consisted of two different grades. 40 rolls were of medium-grade paper at a total cost of £100,000 and 20 rolls were of high grade at a total cost of £80,000.
1 June	♣	Bought inks, glues and dyes at a cost of £25,000 paid in cash. The inks cost £9,000 while the glue cost £12,000 and the dyes £4,000.
2 June	⊗	Returned to supplier one roll of paper damaged in transit, cost £2,500. The roll of paper returned was of medium grade.
3 June	†	Rolls of paper issued to printing department, cost £120,000. 20 high-grade rolls were issued, together with 16 medium-grade rolls. There were three separate jobs: references 601, 602 and 603. The high-grade rolls were all for job 601 (notepaper); 12 medium-grade rolls were for job 602 (envelopes) and the remaining 4 medium-grade rolls were for job 603 (menu cards).
4 June	ø	Issued half of inks, glues and dyes to printing department, £12,500. Exactly half of each item of inks, glue and dyes was issued, for use across all three jobs.
14 June	Ψ	Paid printing employees' wages £8,000. Wages were paid to 10 printing employees, each earning the same amount.
14 June	λ	Paid maintenance wages £250. Maintenance wages were paid to one part-time maintenance officer.
16 June	‡	Paid rent, rates and electricity in respect of printing, £14,000 in cash. Payment for rent was £8,000, rates £4,000 and electricity £2,000.
28 June	ϖ	Paid printing employees' wages £8,000. Wages were paid to the same 10 employees as on 14 June.
28 June	φ	Paid maintenance wages £250. Maintenance wages were paid to the same maintenance officer as on 14 June.
30 June	♥	Employee records show that: 5 printing employees worked all month on job 601; 3 printing employees worked on job 602; and 2 printing employees worked on job 603.
30 June	ξ	It is company policy to absorb production overheads in proportion to labour costs of each job.
30 June	#	Transferred printed stationery to finished goods stock at a total amount of £160,000, in respect of jobs 601 and 602, which were completed, together with the major part of job 603. There remained some unfinished work-in-progress on one section of job 603, valued at £3,000. Separate finished goods records are maintained for notepaper, envelopes and menu cards.
30 June	≈	Sold stationery to customer on credit, cost of goods sold being £152,000. The customer took delivery of all notepaper and all envelopes, but took only £7,600 of menu cards, leaving the rest to await completion of the further items still in progress.

Direct material

Materials are purchased on 1 June and taken into store but that is of no relevance to determining the cost of a job. For job cost purposes what matters is the issue of paper on 3 June. That is entered on each of the job cost records using the detail given for the event on 3 June.

Direct labour

Employees are paid during the month and there are records (time sheets) of the jobs on which they work. It is only at the end of the month that the employee records are checked to find where the work was carried out. At that point the relevant direct labour costs are entered on each job cost record.

Production overhead

Production overhead comprises indirect materials (ink, glue and dyes), indirect labour (maintenance wages), rent, rates and electricity, all used in the production process.

		£
Indirect materials	ϕ	12,500
Indirect labour	λ φ	500
Rent	‡	8,000
Rates	‡	4,000
Electricity	‡	2,000
Total production overhead	ξ	27,000

An overhead cost rate is required to determine how much production overhead should be absorbed into each job. We are told in Exhibit 6.2 that it is company policy to absorb production overheads in proportion to the direct labour costs of each job. The total direct labour cost for the period is £16,000 and so the overhead cost rate must be calculated as:

$$\text{Overhead cost rate (in £ of direct labour)} = \frac{27{,}000}{16{,}000}$$

$$= £1.6875 \text{ per } £$$

This rate is then applied to the amounts of direct labour cost already charged to each job (which was £8,000 for job 601, £4,800 for job 602 and £3,200 for job 603). The resulting amounts are recorded in the relevant job records.

Job number	*Calculation*	*Production overhead*
		£
Job 601	8,000 × £1.6875	13,500 ζ
Job 602	4,800 × £1.6875	8,100 ζ
Job 603	3,200 × £1.6875	5,400 ζ
		27,000 ζ

6.2.2 Presentation of the job cost records

The job cost records are set out in Table 6.1. Jobs 601 and 602 are finished in the period and this is shown on the job cost record by a transfer to finished goods of the full cost of the job. Job 603 has a problem with unfinished work-in-progress but the rest of that job is completed and transferred to finished goods. That information is recorded on the job cost record card as shown in Table 6.1.

Table 6.1
Job cost records for jobs 601, 602 and 603

	Job cost record: Job 601		
3 June	Direct materials	80,000	†
30 June	Direct labour	8,000	♥
	Prime cost	*88,000*	
30 June	Production overhead:	13,500	ξ
	Total production cost	*101,500*	
	To finished goods	(101,500)	
	Work-in-progress	nil	
	Job cost record: Job 602		
3 June	Direct materials	30,000	†
30 June	Direct labour	4,800	♥
	Prime cost	*34,800*	
30 June	Production overhead:	8,100	ξ
	Total production cost	*42,900*	
	Finished goods	(42,900)	
	Work-in-progress	nil	
	Job cost record: Job 603		
3 June	Direct materials	10,000	†
30 June	Direct labour	3,200	♥
	Prime cost	13,200	
30 June	Production overhead:	5,400	ξ
	Total production cost	*18,600*	
	Finished goods	(15,600)	
1 July	*Work-in-progress*	*3,000*	

The total work-in-progress record is useful as a check on the separate job costs and is also useful for accounting purposes in providing a total record of work-in-progress at any point in time. It is created by using the totals of the direct materials issued to production, the total direct labour used on jobs and the total production overhead incurred during the month. Table 6.2 shows the total work-in-progress record.

Table 6.2
Record of total work-in-progress for month of June

	Total work-in-progress		
3 June	Direct materials	120,000	†
30 June	Direct labour	16,000	♥
30 June	Production overhead	27,000	ξ
		163,000	
30 June	Finished goods	(160,000)	
1 July	Work-in-progress	3,000	

Real world case 6.2

The following advice is offered on the website of a company designing and making wedding cakes to order.

Costs involved in making a wedding cake:
Wedding cakes come in all shapes, sizes and price ranges. Cost is calculated per slice depending on ingredients and labor involved in creating your design. Average prices fall between $1.50 and $5.00 a slice, but an elaborate creation can run three to four times higher! That means a five-tier cake that feeds 200 guests will cost at least $300 and could run up to $4,000 for a 'couture' creation like those modeled in the bridal magazines. You are primarily paying for the designer's time, but the ingredients you choose can also influence the price. Check out Ways to Save for ideas on taming this budget buster. Be prepared to leave a substantial (and usually non-refundable!) deposit to reserve your date. Many bakeries are booked up to two years in advance. Fortunately, you won't have to make your design selections this early. You are simply reserving the date. Final payment is usually expected two weeks or more prior to the wedding. Ask your designer about delivery and set-up fees. Those costs are often – but not always – covered by the per-slice cost. Make sure you get a written breakdown of all services and fees!

Ways to save:

- Decide on a particular style and size of cake before asking for quotes. You can always decide on a different design later, but you want to be sure that you are comparing the same costs.
- Ask about slice size. You can't compare per-slice costs unless the pieces are the same size. You may get more for your money with a 2-inch rather than a 1-inch slice of cake.
- Be realistic. The magnificent cakes you see in the magazines are usually in the $10- to $15-per-slice range. Ask about modifying designs or substituting ingredients. For example, buttercream icing is very tasty and quite a bit more affordable than the fondant style.
- Substitute fresh arrangements for expensive sugar flowers. Ask your baker to coordinate designs and duties with your florist.
- Be aware of hidden costs when making price comparisons. You may have to pay a fee to your reception site if you hire an outside designer. Or, you may get a great deal on the cake only to find out later that you'll be paying almost as much again to cover the serving fee.
- Order a smaller display cake and then serve your guest slices of sheet cake or a 'side cake.' You can do the traditional slicing of the cake in front of your guests and then have the side cakes served from a back room.
- If you want to impress, consider ordering a smaller cake that will sit on top of fake tiers.
- Order a wedding cake that will feed at least half of your guests and then offer several more-affordable desserts.
- You pay for excessive variety in additional ingredient expenses, design costs and service fees. Many couples are opting for sleeker, less-expensive creations.

Source: Shane Co., wedding cake designers, www.shaneco.com/weddings/cake_designers.asp.

Discussion points

1 Why is job costing particularly suitable for a business making wedding cakes?

2 What information would you expect to find in a job cost record for a wedding cake contract?

6.3 Job costing: applying the accounting equation to transactions

The job cost record cards used only a part of the information contained in Exhibit 6.2. All the transactions must be recorded for purposes of preparing financial statements. This section analyses the transactions of Exhibit 6.2 using the accounting equation and concludes with a spreadsheet record of the transactions for the month. The symbols contained in Exhibit 6.2 are used throughout to help follow the cost trail.

In management accounting there is strong emphasis on the flow of costs. This flow starts when materials, labour and other resources are either acquired on credit terms or paid for immediately in cash (line A in Figure 6.1). The management accounting records trace these credit transactions and cash payments through to separate records for materials, labour, production overhead and the administration and selling costs (line B). The separate records are then considered in more detail.

The materials record includes both direct and indirect materials. When the direct materials are issued for use in production, a stores requisition note is produced and this is the basis for transferring that amount of direct materials cost from the materials record to the work-in-progress record (line C). When the indirect materials are issued for use in production a further stores requisition note is produced. This is the basis for transferring that amount of indirect materials cost from the materials record to the production overhead record.

The labour cost record (line B) will include both direct and indirect labour. Direct labour hours are recorded on a time sheet and calculation of the cost of these hours is the basis for transferring that amount of direct labour cost from the labour cost record to the work-in-progress record. Calculation of indirect labour cost is the basis for transferring that amount of indirect labour cost from the labour cost record to the production overhead record.

Some items of indirect cost, not involving either materials or labour, will be transferred from the bank payment record (such as payment of rent, electricity or gas). At the end of the accounting period, probably each month, all the production overhead of the period is transferred to the work-in-progress record.

Finally, on line B there is the record of administration and selling costs. These are not part of the cost of work-in-progress because they are not costs of production. At the end of the accounting period the total of these costs is transferred to the work-in-progress record.

When the work-in-progress is completed there is a transfer of cost to the record for finished goods stock (line D). When the finished goods are sold there is a transfer of the cost of those items to the profit and loss account as cost of goods sold.

The profit and loss account (line E) brings together the sales, cost of goods sold and administration and selling costs in a calculation of profit.

6.3.1 Acquisition of inventory: direct and indirect materials

☝ In purchasing the rolls of paper, the business acquires an asset. In taking credit from the supplier it incurs a liability.

Asset ↑ – **Liability** ↑ = Ownership interest

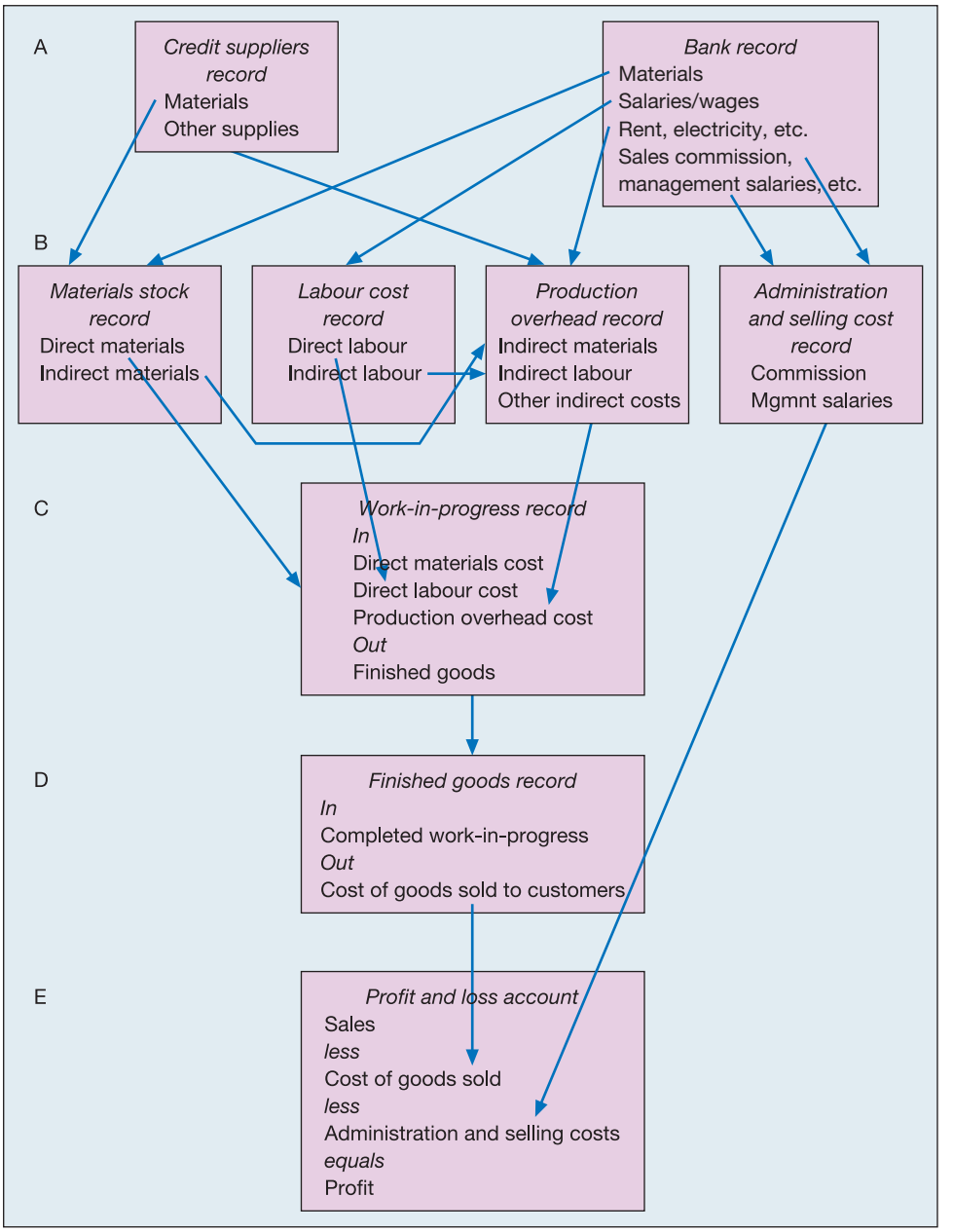
♣ In purchasing the inks, glue and dyes, the business acquires a further asset. In paying cash, the asset of cash is diminished.

Asset ↑↓ – Liability = Ownership interest

⊗ Returning the damaged roll of paper reduces the asset of materials stock and reduces the liability to the trade creditor.

Asset ↓ – **Liability** ↓ = Ownership interest

Figure 6.1
Flow of costs in a management-accounting information system



† 6.3.2 Converting raw materials into work-in-progress: direct materials

† When the rolls of paper are issued from the stores to the printing department, they become a part of the work-in-progress of that department. Since this work-in-progress is expected to bring a benefit to the enterprise in the form of cash flows from sales when it is eventually finished and sold, it meets the definition of an asset. There is an increase in the asset of work-in-progress and a decrease in the stock of materials.

Asset ↑↓	– Liability	= Ownership interest

Ø 6.3.3 Issuing indirect materials to production

Ø Inks, glue and dyes are indirect materials. The indirect cost is part of the production overhead cost, to be accumulated with other indirect costs and later added to work-in-progress as a global amount for production overhead. In this case, only half of the indirect materials have been issued (£12,500), the rest remaining in stock. There is a decrease in the asset of materials stock and an increase in the asset of work-in-progress.

Asset ↑↓	– Liability	= Ownership interest

ψ λ ϖ φ 6.3.4 Labour costs

Ψ ϖ There are two amounts of direct labour costs paid during the period in respect of the printing employees; and
λ φ two amounts of indirect wages in respect of maintenance.

In practice, it will only be after analysis of the labour records for the period that an accurate subdivision into direct and indirect costs may be made. Although it is assumed here that all wages of printing employees are direct costs, it could be that enforced idle time through equipment failure would create an indirect cost. Taking the simplified illustration, the direct wages paid become a part of the prime cost of work-in-progress while the indirect wages paid become part of the production overhead cost within work-in-progress.

For the purposes of this illustration it is assumed that the manager of the business knows that all printing employees' wages are direct costs (♥) and so may be recorded immediately as direct costs of work-in-progress. The asset of cash decreases and the asset of work-in-progress increases.

Asset ↑↓	– Liability	= Ownership interest

It is further assumed that the manager of the business knows that all indirect labour costs will become production overheads (ξ) and hence added to the value of work-in-progress.

Asset ↑↓	– Liability	= Ownership interest

‡ ξ 6.3.5 Production overhead costs

‡ ξ Rent, rates and electricity costs (‡) paid from cash in respect of printing are production overhead costs (ξ). For management accounting purposes they are regarded as part of the cost of the asset of work-in-progress.

Asset ↑↓ – Liability = Ownership interest

For financial reporting purposes the overhead costs paid are regarded immediately as reducing the ownership claim because they are part of the expense of production overhead. Figure 6.1 shows that in both financial reporting and management accounting the production overhead costs eventually emerge as a component of the expense of cost of goods sold.

6.3.6 Transferring work-in-progress to finished goods

When the asset of work-in-progress is completed, it changes into another asset, the stock of finished goods. In the accounting records the asset is removed from work-in-progress and enjoys a new description as the asset of finished goods.

Asset ↑↓ – Liability = Ownership interest

≈ 6.3.7 Sale of goods

≈ When a sale is made to a customer, that part of the asset of finished goods stock is transformed into the expense of cost of goods sold. Any finished goods remaining unsold continue to be reported as an asset.

Asset ↓ – Liability = **Ownership interest** ↓ **(expense)**

Activity 6.3

Go back to the start of section 6.3 and check that you understand the effect of each transaction on the accounting equation. When you are happy that you understand them all, work through the next section which records the transactions on a spreadsheet.

6.3.8 Spreadsheet analysis

The transactions are brought together in spreadsheet form in Table 6.3. The entries on each line correspond to the detailed analyses provided in this section. The totals at the foot of each column represent the amounts of the various assets, liabilities and ownership interest resulting from the transactions of the month. Cash has decreased overall by £55,500. The asset of stock of materials (paper, inks, glues and dyes) has increased by £70,000 and the asset of work-in-progress has increased by £3,000. The asset of finished goods has increased by £8,000. The liability to the creditor stands at £177,500. Overall the transactions of the month, as recorded here, have decreased the ownership interest by £152,000, the amount which is recorded as the cost of goods sold.

	£
Overall increase in assets	25,500
Overall increase in liabilities	177,500
Difference	(152,000)
Decrease in ownership interest	(152,000)

Table 6.3

Spreadsheet to show analysis of transactions for the month of June, using the accounting equation

Date	*Transaction*	*Symbol*	*Assets*				*Liability*	*Ownership interest*
			Cash	*Stock of materials*	*Work-in-progress*	*Finished goods*	*Creditor*	*Cost of goods sold*
			£	£	£	£	£	£
June 1	Bought 60 rolls of paper on credit from supplier, invoiced price being £180,000.	☝		180,000			180,000	
June 1	Bought inks, glue and dyes, cost £25,000 paid in cash.	♣	(25,000)	25,000				
June 2	Returned to supplier one roll, damaged in transit, £2,500.	⊗		(2,500)			(2,500)	
June 3	Rolls of paper issued to printing department, cost £120,000.	†		(120,000)	120,000			
June 4	Issued half of inks, glues and dyes to printing department, £12,500.	ø		(12,500)	12,500			
June 14	Paid printing employees' wages £8,000.	Ψ	(8,000)		8,000			
June 14	Paid maintenance wages £250.	λ	(250)		250			
June 16	Paid rent, rates and electricity in respect of printing, £14,000, in cash.	‡	(14,000)		14,000			
June 28	Paid printing employees' wages £8,000.	ϖ	(8,000)		8,000			
June 28	Paid maintenance wages £250.	φ	(250)		250			
June 30	Transferred printed stationery to finished goods stock, valued at cost of £160,000.	#			(160,000)	160,000		
June 30	Sold stationery to customer on credit, cost of goods sold being £152,000.	≈				(152,000)		(152,000)
	Totals		*(55,500)*	*70,000*	*3,000*	*8,000*	*177,500*	*(152,000)*

6.4 Moving forward

Fiona McTaggart has participated in a number of consultancy projects where the traditional job-costing approach has been modified to reflect changing circumstances. Here she talks about three of them.

FIONA: *I recall learning job costing at college and thinking that there must be more to life than this. Since then I have found much more excitement in management accounting but I still have to return to some of the basic principles – seeking where possible to identify costs with products and making sensible allocations where such identification is not possible.*

One of my clients was a production engineering business. I was working with the plant controller, a qualified engineer with a good head for figures. The controller was looking for a new management system which escaped from the traditional role of a financial system. What was wanted was management in terms of the activities of the unit, but with one eye on the consequences in dollars. The controller wanted the production and engineering personnel to feel that they were in ownership of the management system. So I found myself working in a team which drew on several specialisms, including engineering and human resource management. We had to ask the financial accounting department, very politely, to keep away while we developed our ideas because they kept quoting financial accounting guidelines which were cramping our style. At the end of the day we did work out the cost of a job undertaken by the business, but it was a cost which the engineers understood and could relate to.

Another client was a telecommunications division of a major conglomerate. Their problem was again related to engineers but with a different slant. The engineers were not sufficiently aware of how their choice of operating methods could significantly alter total costs. Traditional overhead costs were too blunt an instrument so we identified the actions which drove costs and effectively turned indirect costs into direct costs. Every time an engineer initiated a process, there was a cost reported. They soon began to concentrate on cost-effective solutions. The end result was to identify the cost of a job but the engineers knew how their choices had affected that cost.

My third client was a major hospital. In the area of healthcare, relations between medical specialists and the accountants are always somewhat strained and have to be dealt with carefully. The project in this case was to measure the cost of a treatment which involved balancing length of stay, costs and patient welfare. There is a widely held belief that the accountants merely calculate the cost of one overnight stay and then suggest reducing overnight stays for all patients. In reality we worked closely with the clinical specialists so that an element of mutual respect was built up. We helped them to understand our approach to determining the cost of a 'job' (not really the best term for treating a patient – the experts prefer a 'treatment protocol'). The treatment protocol is the standard method for treating a specific condition. That method is developed by the medical experts. The actual treatment does not necessarily follow the standard – if the patient needs extra care then it is given. However, knowing the cost of the standard protocol allows comparative evaluation of the actual treatment. Management accountants develop the cost systems which are used as information by the case managers. The relationship is a partnership – the accountants don't dictate the medical treatment, but it remains necessary for the medical experts to know what each treatment of each patient has cost.

The common feature of all these cases which I have described is that the management accounting system produced a report which included a cost for each 'job'. However, it was by no means a mechanical process carried out in isolation. It involved the management accountant becoming part of the operational team. The days of a separate management accounting department in some remote part of an administrative office are gone. The management accountant has to be alongside those who are delivering the product.

Real world case 6.3

This is an extract from a case study provided by Best Software, a company in the Sage group. It provides an example of a job cost system in a service business.

Fulcrum Lighting Ltd specialises in the creative design and implementation of lighting and power systems for applications ranging from live events, exhibitions and themed environments to retail outlets, bars, restaurants, leisure developments and private homes.

It is a client-focused company, which strives to exceed clients' expectations in the quality of service that it provides. The aim is to build a long-term relationship with customers, to offer personal service, and to develop and extend the effective use of lighting and power within client projects.

The typical job cycle at Fulcrum starts with a request for quotation, which the engineers develop using Exordia Job Costing; in many cases deploying previously designed templates (which are simply edited) to speed the job planning and estimating process. When the customer accepts the quotation, it is converted to a job and purchase orders are raised within the program for the procurement of bought in materials and services. Costs are collected, mainly from supplier invoices, and logged against the job. Finally, Exordia Job Costing is used to invoice the work to the customer and the details are automatically transferred to the customer files in the Sage accounting program.

Source: http://www.exordia.co.uk/company_case_studies_fulcrum_lighting.htm.

Discussion points

1 What kinds of jobs are carried out in this business?

2 Why is it important to have accurate job costs?

6.5 What the researchers have found

6.5.1 Job costing: book production

Walker and Wu (2000) described a method of breaking down the tasks required in planning a job for production in the book manufacturing industry. They analysed the work of the book engineering department of a US book publisher by collecting data over a six-month period for more than 500 planning jobs. Production planning is a major overhead cost of any book. A typical planning sequence for any one book contained 29 jobs. Some were repetitive, such as 'pick up a job from the backlog shelf' or 'determine the page count', while others were non-repetitive and varied from one book to the next, such as 'go through covering materials for the book' or 'enter any items still to come from the customer into the items-to-come screen'. The researchers showed that activity-based costing (ABC) gave the benefit of accurate costing of the overheads contained in the book planning function.

Finally, the authors compared their ABC-based system with the previous method of estimating the job cost for planning by adding 2 per cent to production cost. Under

the previous system the proportion of planning overhead carried was related to the size of the book. Under the ABC system the planning overhead cost reflected the complexity of the work done on the book and the time taken to deal with the customer.

6.5.2 European perspective

Brierley *et al*. (2001) surveyed product costing practice in Europe. They reviewed a range of literature that had asked about the accounting systems used, the types of overhead costing used, the bases for calculating overhead cost rates, the use of product costs in pricing and the use of activity-based costing. Predictably, a wide range of methods was found with no clear pattern. One of the problems of relying on other literature is that the survey collects mainly works that have been written in English. It would be desirable to follow up such a literature review with a wide-ranging survey.

6.6 Summary

This chapter has drawn on the information and definitions contained in Chapters 4 and 5 to show the method of preparing job cost statements. Job costing will be found in service businesses as well as in manufacturing. The essential condition is that there is an identifiable job (item of output) for which costs may be collected with a view to determining the cost of the job.

Key themes in this chapter are:

- A **job-costing system** is a system of cost accumulation where there is an identifiable activity for which costs may be collected. The activity is usually specified in terms of a job of work or a group of tasks contributing to a stage in the production or service process.
- A **job cost record** shows the costs of materials, labour and overhead incurred on a particular job.
- The **prime cost of production** is equal to the total of direct materials, direct labour and other direct costs.
- The **production overhead cost** comprises indirect materials, indirect labour and other indirect costs of production.
- The **total product cost** comprises prime cost plus production overhead cost.

References and further reading

Brierley, J.A., Cowton, C. and Drury, C. (2001) 'Research into product costing practice: a European perspective', *The European Accounting Review*, 10(2): 215–56.

Walker, C. and Wu, N.L'a (2000) 'Systematic approach to activity based costing of the production planning activity in the book manufacturing industry', *International Journal of Operations and Production Management*, 20(1): 103–14.

QUESTIONS

The Questions section of each chapter has three types of question. '**Test your understanding**' questions to help you review your reading are in the 'A' series of questions. You will find the answer to these by reading and thinking about the material in the textbook. '**Application**' questions to test your ability to apply technical skills are in the 'B' series of questions. Questions requiring you to show skills in '**Problem solving and evaluation**' are in the 'C' series of questions. The symbol **[S]** indicates that a solution is available at the end of the book.

A Test your understanding

A6.1 What is a job-costing system (section 6.1)?

A6.2 What is a job cost record (section 6.1)?

A6.3 Define prime cost, production overhead cost and total product cost (section 6.1).

A6.4 List the items you would expect to find in a job cost record (section 6.1).

A6.5 What is the effect on the accounting equation of purchasing direct and indirect materials (section 6.3.1)?

A6.6 How does the accounting equation represent the conversion of raw materials into work-in-progress (section 6.3.2)?

A6.7 How does the accounting equation represent the issue of indirect materials to production (section 6.3.3)?

A6.8 How does the accounting equation represent the transfer of labour costs to work-in-progress (section 6.3.4)?

A6.9 How does the accounting equation represent the transfer of production overhead costs to work-in-progress (section 6.3.5)?

A6.10 How does the accounting equation represent the transfer of work-in-progress to finished goods (section 6.3.6)?

A6.11 How does the accounting equation represent the sale of goods (section 6.3.7)?

A6.12 **[S]** Explain how each of the following transactions is dealt with in a job-costing system:

(a) The production department orders 16 components from store at a cost of £3 each, to be used on job 59.

(b) An employee (A. Jones) receives a weekly wage of £600. In week 29 this employee's time has been spent two-thirds on job 61 and one-third on job 62.

(c) On 16 June, job 94 is finished at a total cost of £3,500. The job consisted of printing brochures for a supermarket advertising campaign.

A6.13 What have researchers found about the use of job costing to record the cost of hand-producing a bound book (section 6.5)?

B Application

B6.1 **[S]**

The following transactions relate to a dairy, converting milk to cheese, for the month of May:

1 May	Bought 600 drums of milk from supplier, invoiced price being £90,000.
1 May	Bought cartons, cost £6,000 paid in cash.
2 May	Returned to supplier one drum damaged in transit, £150.
3 May	500 drums of milk issued to cheesemaking department, cost £75,000.
4 May	Issued two-thirds of cartons to cheesemaking department, £4,000.

14 May Paid cheesemakers' wages, £3,000.
14 May Paid wages for cleaning and hygiene, £600.
16 May Paid rent, rates and electricity in respect of dairy, £8,000, in cash.
28 May Paid cheesemakers' wages, £3,000.
28 May Paid wages for cleaning and hygiene, £600.
30 May Transferred all production of cheese in cartons to finished goods stock. No work-in-progress at end of month.

Required
Prepare a calculation of the cost of production transferred to finished goods at the end of May.

B6.2 [S]
Restoration Ltd buys basic furniture units and creates period layouts in clients' homes. The following transactions relate to jobs 801, 802 and 803 in the month of May. Prepare job cost records for each job.

1 May	☝	Bought 70 furniture units on credit from supplier, invoiced price being £204,000. The furniture units acquired consisted of two different grades. 50 units were of standard size at a total cost of £140,000 and 20 units were of king size at a total cost of £64,000.
1 May	♣	Bought stain, varnish and paint at a cost of £30,000 paid in cash. The stain cost £12,000 while the varnish cost £14,000 and the paint £4,000.
2 May	⊗	Returned to supplier one furniture unit damaged in transit, £2,800. The furniture unit returned was of standard size.
3 May	†	Furniture units issued to Finishing department. 40 standard-size units were issued, together with 14 king-size units. There were three separate jobs: references 801, 802 and 803. The standard-size units were all for job 801 (Riverside Hotel); 10 king-size units were for job 802 (Mountain Lodge); and the remaining 4 king-size units were for job 803 (Hydeaway House).
4 May	ø	Issued stain, varnish and paint to Finishing department, £22,500.
14 May	Ψ	Paid Finishing department employees' wages £10,000. Wages were paid to 8 printing employees, each earning the same amount.
14 May	λ	Paid security wages £350. Security wages were paid to one part-time security officer.
16 May	‡	Paid rent, rates and electricity in respect of Finishing department, £18,000 in cash. Payment for rent was £9,000, rates £5,000 and electricity £4,000.
28 May	ϖ	Paid Finishing department employees' wages £10,000. Wages were paid to the same 8 employees as on 14 May.
28 May	φ	Paid security wages £350. Security wages were paid to the same security officer as on 14 May.
30 May	♥	Employee records show that: 4 Finishing department employees worked all month on job 801; 2 Finishing department employees worked on job 802; and 2 Finishing department employees worked on job 803.
30 May	ξ	It is company policy to allocate production overheads in proportion to labour costs of each job.
30 May	#	Transferred all finished goods to finished goods stock. There remained no unfinished work-in-progress.
30 May	≈	Riverside Hotel and Mountain Lodge took delivery of their goods. Hydeaway House will take delivery on 10 June.

B6.3
Resistor Ltd manufactures electrical units. All units are identical. The following information relates to June and July Year 5.

(a) Budgeted costs and selling prices were:

	June £	*July* £
Variable manufacturing cost per unit	2.00	2.20
Total fixed manufacturing costs (based on budgeted output of 25,000 units per month)	40,000	44,000
Total fixed marketing cost (based on budgeted sales of 25,000 units per month)	14,000	15,400
Selling price per unit	5.00	5.50

(b) Actual production and sales recorded were:

	Units	*Units*
Production	24,000	24,000
Sales	21,000	26,500

(c) There was no stock of finished goods at the start of June Year 5. There was no wastage or loss of finished goods during either June or July Year 5.
(d) Actual costs incurred corresponded to those budgeted for each month.

Required
Calculate the relative effects on the monthly operating profits of applying the undernoted techniques:

(a) absorption costing;
(b) variable costing.

C Problem solving and evaluation

C6.1 [S]
Frames Ltd produces wooden window frames to order for the building industry. The size of frame depends on the specification in the contract. For the purposes of providing job cost estimates the size of frame is ignored and the job cost estimate is based on the type of frame produced, being either single-glazing or double-glazing.

The standard specification is as follows:

	Single-glazing £	*Double-glazing* £
Direct materials per unit	90.00	130.00
Direct labour per unit		
6.5 hours at £5.00 per hour	32.50	
8.0 hours at £5.00 per hour		40.00
Variable production overhead charged at £6 per hour	39.00	48.00

Fixed overhead is estimated at £160,000 per month for single-glazing and £100,000 per month for double-glazing. Estimated production per month for single-glazing is 4,000 units and for double-glazing is 2,000 units per month.

Required
Prepare a job cost estimate for a customer who intends to order 500 single-glazed and 200 double-glazed units.

C6.2 [S]

Insulation Ltd has been established to manufacture insulation material for use in houses. At present, one machine is installed for production of insulation material. A further similar machine can be purchased if required.

The first customer is willing to place orders in three different sizes at the following selling prices:

Order size	*Selling price per package* £
430 packages per day	25.20
880 packages per day	25.00
1,350 packages per day	24.80

The customer will enter into an initial contract of 30 days' duration and will uplift completed packages on a daily basis from the premises of Insulation Ltd.

The following assumptions have been made in respect of Insulation Ltd:

(a) In view of the competitive market the selling prices are not negotiable.
(b) Direct materials will cost £23.75 per package irrespective of the order size.
(c) The output of one machine will be 350 packages per shift.
(d) A maximum of three shifts will be available on a machine within one day. The depreciation charge for a machine will be £100 per day, irrespective of the number of shifts worked.
(e) Labour costs to operate a machine will be £100 for the first shift, £120 for the second shift and £160 for the third shift of the day. If labour is required for a shift, then the full shift must be paid for regardless of the number of packages produced.
(f) The total cost of supervising the employees for each of the first two shifts in any day will be £20 per machine. The supervision cost of the third shift will be £40 per machine.
(g) Other fixed overhead costs will be £280 per day if one machine is used. Buying and using an additional machine would result in a further £100 of fixed costs per day.
(h) Production and sales volume will be equal regardless of order size.
(i) The company does not expect to obtain other work during the term of the initial contract.

Required

Prepare a report for the production director of Insulation Ltd giving:

(1) For each order size, details of the overall profitability per day and net profit per package.
(2) An explanation of the differing amounts of profit per package.

Case studies

Real world cases

Prepare short answers to case studies 6.1, 6.2 and 6.3.

Case 6.4 (group case study)

As a group, you are planning to establish a partnership supplying examination advice and tuition to school pupils in their homes. Each course of lessons will be regarded as a single 'job'. Courses may vary in length and in target ability level, depending on the requirements of the pupil to be tutored. Divide the group to take on three different roles. One role is that of a tutor who is also a member of the partnership, sharing equally the profits of the business. The second role is that of the accountancy adviser to the partnership. The third role is that of a parent making enquiries about the price charged and the justification for that price.

Each member of the group should take on one of the three roles and separately make a note of:

(a) the expected costs of a job (in terms of types of cost);
(b) how you would justify the costs (if supplying the service); and
(c) how you would question the costs (if receiving the service).

Then all members of the group should come together, compare answers and finally prepare a joint report on the problems of job costing in a service business.