ACC512
Management Accounting for Costs & Control
FACULTY OF COMMERCE

Section 2 Study Guide

Management Accounting for Costs & Control

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Faculty of Commerce

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Contents

Module1:

Management accounting functions
Product costing: Terms and cost flows

References

The references for this module are:

FBW (Fatseas, Bisman, Williams) (2001) Management accounting for costing and control: Chapters 1 and 2.

Introduction

In this module we begin by attempting to identify the field of management accounting. Management accounting is primarily concerned with providing information to assist managers in running a business. Management accounting work is driven by three demands:

- the need for **compliance** (with external regulatory and reporting requirements)
- the need for **control** (of operations and people to achieve objectives)
- the need for **competitive support** (to the management team to enhance organisational competitiveness).

Also in this module we identify the purposes of product costing and learn which costs incurred in a business are treated as product costs. We distinguish between the cost flows of retailers and manufacturers, and learn how to construct a **Manufacturing Statement** to determine the **Cost of Goods Manufactured**.

> Note that the term product is used broadly to encompass both goods and services.

Objectives

At the end of this module you should

- have an appreciation for the scope of management accounting and what drives the work of management accountants;
- know the purposes of **product costing**;
- understand and remember the terminology associated with concepts of cost, and what cost elements constitute product cost;
- understand the general ledger flows of manufacturing costs, and be able to construct a manufacturing statement both manually and using a spreadsheet.

Self-test questions

When you have studied the references for this module you should attempt the following questions, the solutions to which are provided in the Answers to Self-test Questions booklet.

i. True/False

For each of the following statements write T or F:

1 Management accountants consider shareholders to be the primary users of accounting information.

2 The value chain includes the following functions: research and development; design of products, services and processes; production; marketing; distribution; customer service; management satisfaction.

3 Managers receive reports on cost planning and controls. These reports are considered to be for internal use only.

4 Cost accumulation to determine the cost of goods sold and the cost of unsold inventories is an example of the compliance function of management accounting work.

5 Cost is defined by accountants as the value of resources consumed to achieve an objective.

6 Indirect costs cannot be economically traced to the cost object.

7 Judicious selection of particular cost drivers results in decreases in overall costs.

8 Prime cost is equal to the sum of the costs of direct materials and direct labour.

9 Factory rent is regarded as a period cost.

10 Cost of goods sold is equal to cost of goods manufactured plus closing inventory of finished goods minus opening inventory of finished goods.

ii: Multiple choice

For each of the following questions identify the correct alternative:

1. The value of an asset given up to acquire other assets is

A an expense
B a cost
C a loss
D an investment
E a prepayment

2. The value of assets given up to generate revenue is

   A an expense
   B a cost
   C a loss
   D an investment
   E a prepayment

3. Direct labour cost plus direct materials cost is referred to as

   A prime cost
   B conversion cost
   C overhead cost
   D product cost
   E period cost

Use the following information to answer questions 4 and 5:

A firm's quarterly income statement is as follows:

Sales		
Less Variable Expenses:		$1600
Direct material	$280	
Direct labour	300	
Overhead	60	
Administrative expenses	30	
Selling expenses	70	740
Contribution Margin		860
Less Fixed Expenses:		
Overhead	180	
Administrative expenses	440	
Selling expenses	100	720
Profit before Tax		$140

4. The total **period cost** is

   A $60
   B $600
   C $640
   D $720
   E $880

5. Conversion costs are

   A $240
   B $380
   C $540
   D $580
   E $620

6. Sales commissions are an example of

   A variable manufacturing costs
   B fixed manufacturing costs
   C direct costs
   D period costs
   E none of the above

7. Which of the following items is not a manufacturing cost?

   A direct labour
   B overhead
   C direct materials
   D indirect materials
   E office manager's salary

Use the following information for questions 8, 9 and 10:

Direct materials were 30% of the year's manufacturing costs incurred. Opening work in process was 125% of closing work in process. Conversion costs were $56 000. The cost of direct labour was $30 000 and the cost of goods manufactured was $90 000.

8. Direct materials cost was

   A $16 800
   B $24 000
   C $27 000
   D $63 000
   E none of the above

9. The cost of overhead was

   A $40 000
   B $32 000
   C $26 000
   D the same as the cost of direct materials
   E none of the above

10. The cost of closing work in process was

    A $50 000
    B $40 000
    C $32 000
    D $26 000
    E none of the above

iii. Textbook questions

Now attempt the following questions from FBW: Chapter 2: 2-1, 2-2, 2-3, 2-9.

For further explanation of these concepts refer, as appropriate, to the relevant pages of Hilton's text and/or the readings. Refer to the Hilton pages listed in the Study Schedule and use the index at the back of the text. Also note that this text has a web site with supplementary materials including Powerpoint presentations and supplementary quizzes. The Subject Outline gives the URL for the web site.

Module 2:

Product costing: Materials, labour and overhead

References

The reference for this module is:

FBW: Chapter 3, pages 36-48

Introduction

In Module 1 we learned that product costs represent the costs of resources consumed in production, and that these may be classified into three main cost elements: direct materials, direct labour, and overhead. In Module 2 we are concerned with how a product costing system traces and/or allocates the costs of resources consumed in the production process to arrive at the cost of a single unit of production (or the cost of a service rendered by a service organisation). As well as attaching costs to products or services, we are also concerned with control processes to ensure that materials purchased by firms are fully accounted for, that labour is productive and economical, and that overhead costs are kept under control.

Objectives

At the end of this module you should be able to

- appreciate general control procedures used in respect of materials, labour and overhead;
- record in the general ledger the flow of materials through the stages of acquisition, storage and usage;
- record in the general ledger payments to employees for time worked or leave taken, and to segregate that portion of these expenses which represent direct labour costs and charge them to products or services;
- record in the general ledger the incurrence of overhead costs and to allocate them to products or services;
- appreciate the difference between using actual overhead rates and predetermined overhead rates for product costing;
- understand why the use of different capacity measures leads to different predetermined overhead rates and hence different product costs.

Self-test questions

When you have studied the references for this module you should attempt the following questions, the solutions to which are provided in the Answers to Self-test Questions booklet.

i. Completion statements

Complete the following statements by filling in the blanks:

1. The three main elements of product cost are _____, _____ and _____.

2. A product costing system traces the flow of materials through three stages: _____, _____ and _____.

3. Control of materials is exercised through the use of _____ _____ _____ which form a subsidiary ledger for the _____ _____ account.

4. The document authorising the issue of materials is a _____ _____.

5. The balance of the Accrued Payroll account should equal wages _____ but _____.

6. The activity base used for allocating overhead is also referred to as a cost _____.

7. Overhead costs incurred are debited to an _____ _____ account.

8. Overhead costs allocated to work in process are credited to an _____ _____ account.

9. The difference between overhead cost incurred and overhead allocated is called a _____.

10. Overhead variances are usually disposed of either by being transferred to _____ _____ _____ _____ account, or by being prorated to _____ _____ _____ account, _____ _____ account and _____ _____ _____ _____ account.

ii. Multiple choice

For each of the following questions identify the correct alternative:

1. A correct journal entry for the return to the store of direct materials previously issued to production would be

   A Dr Materials Control; Cr Overhead
   B Dr Materials Control; Cr Work in Process
   C Dr Purchases Returns; Cr Work in Process
   D Dr Work in Process; Cr Materials Control
   E none of the above

2. On 1 September the Materials Control account balance was $25 000. The balance on 30 September was $15 000. Raw materials purchased in September were $100 000.

   The journal entry to record the raw (direct) materials placed in production during September is

   A Dr Materials Control $110 000; Cr A/cs Payable $110 000
   B Dr Materials Control $100 000; Cr A/cs Payable $100 000
   C Dr Work in Process $100 000; Cr A/cs Payable $100 000
   D Dr Materials Control $110 000; Cr Work in Process $110 000
   E none of the above

3. The issue of indirect materials would usually be recorded in the general ledger as an increase in

   A Materials Control
   B Work in Process
   C Overhead Control
   D Overhead Allocated
   E none of the above

4. Salaries and wages payable to production employees amounted to $7000 on 1 June and $5000 on 30 June. Salaries and wages paid to production employees during June totalled $23 000. June's direct labour totalled $17 000.

   The journal entry recording wages earned by production employees during June is

A	Work in Process	$15 000		
	Overhead Control	8 000		
	Accrued Payroll			$23 000
B	Work in Process	$17 000		
	Overhead Control	4 000		
	Accrued Payroll			$21 000
C	Work in Process	$15 000		
	Overhead Control	10 000		
	Accrued Payroll			$25 000
D	Bank	$5 000		
	Work in Process	17 000		
	Overhead Control	1 000		
	Accrued Payroll			$23 000
E	none of the above			

Questions 5 and 6 relate to the following data.

The Stable Company operates the year-round with a gross payroll of $12 000 per day. The firm works five days per week, Monday to Friday inclusive. The payroll period covers Wednesday to Tuesday inclusive and the payroll for the week is paid on the Friday immediately following the last day of the pay week. Withholdings for PAYE Taxes amount to $18 000 per week. There are no other deductions from employees' earnings.

Gross payroll consists of $5500 direct labour, $3500 indirect factory labour, $2000 selling expenses and $1000 general and administrative expenses each day. The general-journal entry to record the total of the payroll cost incurred each month is made on the last day of the month.

Use the following calendar as a guide to answer the following two questions:

AUGUST						
Sun	**M**	**Tu**	**W**	**Th**	**F**	**Sa**
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	31

5. What is the balance in the Accrued Payroll account as at the end of the month of August?

   A Nil
   B $24 000
   C $36 000
   D $48 000
   E $12 000

6. What is the total amount credited to the accrued payroll account during the month of August?

   A $260 400
   B $372 000
   C $240 000
   D $264 000
   E $312 000

7. Dave is a stainless steel welder in a small engineering shop. His hourly rate is $8.00 for a 35 hour week. Overtime is paid at time and a half. During the first week of March Dave worked a total of 40 hours. His time sheet indicates the hours spent on a number of jobs and a total of 3 hours idle time. It also reveals that 2 hours of overtime were spent on Job 93, for which the customer had specifically requested completion within two days of placing the order.

   The amount of Dave's wages charged as direct labour to jobs during the week was:

   A $296
   B $340
   C $328
   D $304
   E $280

Questions 8 and 9 relate to the following data:

The Hooyoo Company uses a predetermined rate based on normal capacity for allocating factory overhead to production. The normal capacity of the company's manufacturing operations is 200 000 direct labour hours per annum. The behaviour of factory overhead costs has been studied and is estimated to be $360 000 of fixed factory overhead per annum and $5.40 of variable overhead per direct labour hour worked.

During the year ended 31 December production consumed 190 000 direct labour hours and total factory overhead costs incurred were $1 375 000.

8. What was the predetermined total overhead rate per direct labour hour for the year ended 31 December (correct to four decimal places)?

   A $7.2947
   B $5.4000
   C $7.2000
   D $7.2368
   E $6.8750

9. What was the amount of under- or over-allocated factory overhead for the year ended 31 December?

   A $11 000 underallocated
   B $11 000 overallocated
   C $7 000 underallocated
   D $7 000 overallocated
   E none of the above

10. Mr. C. Bloggs runs a small business which manufactures gadgets for a famous cartoon character. He is attempting to calculate his total manufacturing overhead for the month of August, but is unsure exactly what it is. He maintains an inventory of manufacturing supplies which he valued at $600 at the start of August, and he estimates that he has $400 left at the end of August. (All manufacturing supplies are purchased from the Manufacturing Supply Co. and are paid for at the time of purchase.) The factory occupies approximately 25% of the floorspace of his premises, the rest being office space. Bloggs estimates that the machine in his factory uses 50% of his total power bill, and he remembers that, at the beginning of August, he still owed Southern Mitchell Electricity $150 from July. Nothing is owing to SME at the end of August. The factory is fully automated, but he does employ one person (Joe) to clean the machine, sweep the floors and generally do odd jobs around the factory. Joe was owed $50 at the end of July, and $75 at the end of August. The machine is depreciated at the rate of $600 per annum.

Payments for August:	Cheque No.	Amount	Payee
	200	$1000	Manufacturing Supply Co.
	201	$ 600	Rent - August
	202	$ 450	SME - Electricity
	203	$ 450	Wages - Joe

The actual manufacturing overhead for August was:

A $2025
B $1975
C $2400
D $2625
E $2550

iii. Textbook questions

Now attempt the following questions from your textbook:

FBW : Chapter 3: 3-1, 3-2, 3-5, 3-8, 3-13, 3-16, 3-22, 3-26.

For further explanation of these concepts refer, as appropriate, to the relevant pages of Hilton's text and/or the readings. Refer to the Hilton pages listed in the Study Schedule and use the index at the back of the text. Also note that this text has a web site with supplementary materials including Powerpoint presentations and supplementary quizzes. The Subject Outline gives the URL for the web site.

Module 3:

Product costing: Overhead cost pools, cost drivers and allocation rates
Activity based costing

References

The reference for this module is:

FBW: Chapter 3, pages 49-63

Introduction

In Module 2 we looked at how a product costing system traces the cost of direct materials and direct labour to units of product. You also were introduced to the allocation to products of indirect costs, that is overhead costs. We compared the use of actual overhead rates (called actual costing) with that of predetermined overhead rates (called normal costing).

In this module we extend our study of the complex topic of overhead allocation, using predetermined rates. We begin by comparing the simple case of one cost pool and one allocation rate (called a plantwide rate) with multiple cost pools and allocation rates. Such multiple rates are called departmental rates when costs are pooled by departments. You will learn that multiple cost drivers and cost pools may be simplified under certain circumstances when cost driver consumption by products is correlated.

Overhead allocation is further complicated by the need to allocate support centre costs (which by definition are overhead costs) to production centres before further allocating to products. Three common methods are illustrated: the direct method, the step (down) method and the reciprocal services method.

Finally, activity based costing (ABC) is introduced as a further refinement to the topic of overhead allocation. The aim of ABC is to try to more directly trace overhead costs to products. You will see how the use of ABC overcomes the problem of product cost subsidisation resulting from traditional allocation methods, and thus produces product costs which are more relevant for strategic decisions such as product pricing, product mix etc.

Objectives

At the end of this module you should be able to

- calculate and use plantwide and departmental overhead allocation rates;
- recognise correlation in cost driver consumption and hence be able to simplify allocation procedures;
- allocate support service centre costs to production cost centres using the direct, step and reciprocal services methods;
- employ the techniques of ABC to cost products or services.

Self-test questions

When you have studied the references for this module you should attempt the following questions, the solutions to which are provided in the Answers to Self-test Questions booklet.

i. Multiple choice

For each of the following questions identify the correct alternative:

1. A firm has two service departments S1 and S2 and two production departments P1 and P2. The primary allocation of expenses and the proportions to be used for calculations are shown below:-

	S1	S2	P1	P2
Primary allocation of expenses	$8 000	$12 000	$30 000	$50 000
Allocation percentages:	S1	TO S2	P1	P2
FROM S1	-	40%	30%	30%
S2	20%	-	50%	30%

What is the total cost of the production departments P1 and P2 respectively, using the step method of service department allocation? Assume S1 is allocated first.

A $41 200; $58 800
B $40 800; $59 200
C $41 900; $58 100
D $41 600; $59 400
E $59 200; $40 800

Questions 2 and 3 relate to the following information:

The Complex Company has 5 departments in its factory of which P1 and P2 are the only producing departments. Department P1 produces a single product P1 and department P2 produces a single product P2. The current costs of each department are:

Service Department	A	$20 000
	B	$40 000
	C	$20 000
Production Department	P1	$70 000
	P2	$70 000

The distribution and consumption of services is given in the following table:

	Service provided to:				
	A	B	C	P1	P2
Service provided by					
A	-	30%	-	35%	35%
B	40%	-	-	40%	20%
C	10%	10%	-	50%	30%

2. Assuming management decides to allocate service department costs on the basis of the direct method, the total costs incurred by department P1 after allocation would be (to the nearest dollar):

   A $110 000
   B $117 523
   C $116 200
   D $103 800
   E $119 167

3. Assuming management decides to allocate service department costs on the basis of the reciprocal method, total cost of Service Department A after solving the simultaneous equations and before allocation would be (to the nearest dollar):

   A $37 431
   B $20 000
   C $38 800
   D $44 091
   E $50 000

4. Horncusker Products has two production departments, P1 and P2, and no service departments. The amount of time a production job spends in P1 and P2 depends on the size of the job and its technical specifications.

   The following information is available about the overhead and direct labour costs in P1 and P2 for the year ended 31 December:

	P1	P2	Total
Departmental overhead cost	$24 000	$75 000	$99 000
Direct labour cost	20 000	30 000	50 000

   There was no opening inventory of finished goods or work in process at the beginning of the year (1 January). During the year the following jobs were started and completed, incurring direct labour costs as follows:

	Job			
	906	907	908	Total
Direct labour cost:	$10 000	$10 000	$ 0	$20 000
P2	0	15 000	15 000	30 000
Total	$10 000	$25 000	$15 000	$50 000

   Jobs 906 and 907 were sold during the year. Job 908 was still in finished goods inventory at 31 December. There was no inventory of partly finished jobs in work in process at 31 December.

   Overhead is allocated to production on the basis of direct labour cost.

   The cost of goods sold for the year using an actual plant-wide rate per direct labour dollar for applying overhead would be higher (or lower) than that using actual departmental rates for P1 and P2 for applying overhead as follows:

   A $7 800 higher
   B $7 800 lower
   C $29 700 higher
   D $29 700 lower
   E Nil i.e. the same for both methods

Questions 5 and 6 refer to the following information.

Greenies Ltd. has built a successful business manufacturing artificial flowers and trees. The firm has two production departments, Component Manufacture and Assembly, and two service departments, the Staff Cafeteria and the Materials Handling Department. The current costs of these departments are:

	Component Manufacture $	Assembly $	Cafeteria $	Material Handling $
Direct labour and materials	400 000	300 000	2 000	6 000
Indirect costs	200 000	160 000	1 000	2 700
Total	600 000	460 000	3 000	8 700

The services of the Cafeteria are distributed according to the number of employees in the other departments - Materials Handling has 6 employees, Component Manufacture 30 employees and Assembly 24 employees. The services of the Materials Handling Department are distributed as follows: 20% to the Cafeteria and the remainder evenly between Component Manufacture and Assembly.

5. Assuming management uses the step method to distribute service department costs to the production departments and allocates the Cafeteria first, the total indirect cost in Assembly is:

   A $165 550
   B $171 350
   C $165 700
   D $186 000
   E $176 500

6. Assuming management uses the direct method to distribute service department costs to production departments, allocated service department costs to Component Manufacture and Assembly are respectively (to the nearest dollar):

   A $5050; $5650
   B $1906; $1794
   C $4461; $4239
   D $6017; $5683
   E none of the above

Questions 7 and 8 refer to the following information.

K-tel manufactures knife sharpeners. Traditionally, a plantwide rate of $200 per direct labour hour has been used to allocate overhead to its products. The accountant believes it is time to find a better method of cost allocation and has established the following relationships between activities and overhead:

Activity	Cost Driver	Allocation Rate
Material handling	Number of parts	$2 per part
Assembly	Labour hours	$20 per hour
Inspection	Inspection time	$3 per minute

7. What is the overhead cost per unit from a batch of 1000 sharpeners using the traditional method? The batch requires 2000 parts, 20 direct labour hours and 30 minutes of inspection time.

   A $4.00
   B $4.90
   C $4000.00
   D $4490.00
   E none of the above

8. What is the overhead cost per unit from a batch of 100 sharpeners using the ABC method? The batch requires 200 parts, 12 direct labour hours and 5 minutes of inspection time.

   A $4.00
   B $6.55
   C $24.00
   D $655.00
   E none of the above

9. The use of separate overhead cost rates for activities within departments generally may be more effective when

   A different activities have different cost drivers

   B different products have different cost pools

   C different activities have different cost drivers and products differ in their consumption of activities

   D products do not differ in their consumption of activities

   E none of the above

10. Inaccurate cost allocation systems primarily tend to result in

A the correct product profit analysis
B the correct allocation of budgeted costs
C proper allocation of direct and indirect costs
D large company losses
E product cross-subsidisation

ii. Textbook questions

Now attempt the following questions from your textbook:

FBW : Chapter 3: 3-9, 3-10, 3-11, 3-19, 3-24, 3-28, 3-35, 3-37.

For further explanation of these concepts refer, as appropriate, to the relevant pages of Hilton's text and/or the readings. Refer to the Hilton pages listed in the Study Schedule and use the index at the back of the text. Also note that this text has a web site with supplementary materials including Powerpoint presentations and supplementary quizzes. The Subject Outline gives the URL for the web site.

Module 4:

Product costing: Job costing

References

The reference for this module is:

FBW : Chapter 4, pages 78-86

Introduction

In Module 1 you learned how to prepare a manufacturing statement to summarise the flow of production costs and to calculate the cost of goods manufactured. This technique, however, has limited application for product costing, being useful only for summary information.

In Modules 2 and 3 you learned how a product costing system accumulates the costs of resources consumed in the production process in a Work-in-Process account. As production is completed the cost of completed goods is transferred to a Finished Goods account, and any remaining Work-in-Process balance represents the cost of unfinished work. The basic problem is to be able to determine the cost of completed production.

The choice of method of costing completed products or services revolves around the type of production technology employed. When each unit of output, or a batch of identical units, is separately identifiable and is different from other units or batches, its cost can be identified and measured. Each unit, or batch, is called a **job**, and the detailed tracing of costs to jobs is called **job costing**. Industries in which job costing is appropriate include construction, furniture manufacture, printing, car repairs, management consulting, and hospital cases.

This Module is devoted to job costing in which production costs are traced to each job. Subsequent modules look at other product costing systems which are more appropriate for alternative production technologies and/or product mixes.

Objectives

At the end of this module you should be able to

- recognise situations in which job costing is appropriate;
- design a job costing system;
- maintain subsidiary cost ledger records in which the detailed recording and tracing of costs to jobs is performed;
- periodically record in the general ledger summary entries based on transactions recorded in subsidiary cost ledger accounts;
- reconcile end-of-period subsidiary cost ledger balances with general ledger control account balances.

Self-test questions

When you have studied the references for this module you should attempt the following questions, the solutions to which are provided in the Answers to Self-test Questions booklet.

i. Multiple choice

For each of the following questions identify the correct alternative:

1. An example of an industry for which a job costing system would probably be suitable is

   A brick manufacturing
   B gold mining
   C cement manufacturing
   D chemical production
   E none of the above

2. An example of an industry for which a job costing system would probably be suitable is

   A toy manufacturing
   B shipbuilding
   C oil refining
   D chocolate manufacturing
   E none of the above

3. In a job costing system the entry to record completed jobs would be

   A Dr Work in Process; Cr Finished Goods
   B Dr Finished Goods; Cr Work in Process
   C Dr Cost of Goods Sold; Cr Finished Goods
   D Dr Sales; Cr Trading
   E none of the above

4. On 1 September the Work-in-Process account balance was $100 000. At the end of the month it was $90 000. During the month raw materials costing $50 000 were placed in production and employees working directly on production earned $60 000. Allocated factory overhead for the month was $35 000.

   The entry to record the cost of products completed and transferred to Finished Goods during September is

   A Dr Work in Process $145 000; Cr Finished Goods $145 000
   B Dr Finished Goods $110 000; Cr Work in Process $110 000
   C Dr Finished Goods $145 000; Cr Work in Process $145 000
   D Dr Finished Goods $155 000; Cr Work in Process $155 000
   E none of the above

5. The following data are taken from the books of Robert Company for the year:

	Materials Control	**WIP Control**	**Finished Goods**
Opening Balance	$10 000	$75 000	$10 000
Raw materials purchased	100 000		
Direct labour + Allocated O/H		100 000	
Closing Balance	10 000	100 000	10 000

   The cost of goods sold during the year was

   A $75 000
   B $100 000
   C $175 000
   D $185 000
   E none of the above

Questions 6, 7, 8, 9 & 10 refer to the following data:

The Pinetree Company produces pinewood furniture to order. On 1 January 19X5, work in process consisted of Job 875 with assigned costs totalling $8000. The following information is available regarding January activities:

- Raw materials costing $35 000 and factory supplies costing $6000 were purchased on account. A single inventory account is used for raw materials and supplies.

- Materials and supplies were requisitioned as follows:

Job	875	$ 2 000
	876	15 000
	877	12 000
Total raw materials		29 000
Factory supplies		3 000
Total		$32 000

- The following labour costs were incurred:

Job	875	$ 5 000
	876	10 000
	877	6 000
Total direct labour		21 000
Indirect labour & factory supervision		7 000
		$28 000

- Factory overhead costs, other than factory supplies, indirect labour and factory supervision, were:

Depreciation on plant & equipment	$1000
Utilities	5000
Miscellaneous	800
	$6800

- Jobs 875 and 876 were completed and sold at the contracted prices of 80% and 100% mark-up on costs respectively, while Job 877 is not yet completed.

- On an annual basis, estimated total overhead is equal to $80 000 + 0.5(direct labour dollars). Estimated 19X5 direct labour is $320 000. Overhead is allocated on a direct labour dollar basis.

6. The closing balance of the Work-in-Process account at 31 January is:

A $65 750
B $51 250
C $32 500
D $14 500
E $22 500

7. The total cost of Job 875 is:

   A $32 500
   B $15 000
   C $22 500
   D $18 750
   E $10 750

8. The gross profit/loss on Job 876 was:

   A $22 500
   B $32 500
   C $40 500
   D $33 750
   E $37 500

9. The fixed overhead allocated to Job 877 was:

   A Zero
   B $6000
   C $4500
   D $1500
   E $3000

10. The amount of overhead over- or under-allocated for January is:

    A $15 750 over-allocated
    B $1050 under-allocated
    C $1050 over-allocated
    D $15 750 under-allocated
    E $8950 over-allocated

ii. Textbook questions

Now attempt the following questions from your textbook:

FBW : Chapter 4: 4-3, 4-4, 4-7, 4-10
Chapter 3: 3-34

For further explanation of these concepts refer, as appropriate, to the relevant pages of Hilton's text and/or the readings. Refer to the Hilton pages listed in the Study Schedule and use the index at the back of the text. Also note that this text has a web site with supplementary materials including Powerpoint presentations and supplementary quizzes. The Subject Outline gives the URL for the web site.

Module 5:

Product costing: Process costing

References

The reference for this module is:

FBW : Chapter 4, pages 87-97

Introduction

In Module 4 we were concerned with job costing which is an appropriate product costing system in situations in which the costs of resources consumed in production can be traced to jobs which are unique and identifiable.

If the production technology is mass/continuous production of standard products or services, production costs incurred over a period of time are traced to the production process and then averaged over the like units produced during that period. Because costs are traced to processes, this product costing system is known as process costing. Industries in which process costing is appropriate include chemicals, petroleum, paint, food processing, banking and insurance.

Objectives

At the end of this module you should be able to

- recognise situations in which process costing is appropriate;
- design a process costing system;
- maintain subsidiary cost ledger records in which the detailed recording and tracing of costs to processes is performed;
- periodically record in the general ledger summary entries based on transactions recorded in subsidiary cost ledger accounts;
- reconcile end-of-period subsidiary cost ledger balances with general ledger control account balances;
- use both the weighted average cost method and the FIFO method in process costing;
- build generalised spreadsheet models to perform process costing calculations under both methods.

Self-test questions

When you have studied the references for this module you should attempt the following questions, the solutions to which are provided in the Answers to Self-test Questions booklet.

i. Multiple choice

For each of the following questions identify the correct alternative:

1. For which of the following products should process costing be used?

   A 747 jet aircraft
   B 19 inch television sets
   C Custom-built houses
   D Designer original evening gowns
   E None of the above

2. In order for there to be a difference in results between the weighted average method and the FIFO method of process costing the following condition(s) must exist:

   A Opening inventory of work in process must be present.

   B Product costs must change from period to period.

   C The firm has opening inventory of work in process and product costs change from period to period.

   D The firm has closing inventory of work in process and product costs change from period to period.

   E The firm has opening inventory of work in process and closing inventory of work in process.

Questions 3, 4, 5, and 6 relate to the following data.

The following information has been gathered from the pen production department of the Ease All Right Company for April. The department mass produces an industrial marking pen, and uses a process costing system.

Units

Work-in-process at 1 April (90% complete)	2 000
Units started	24 000
Completed and transferred to finished goods	25 000

Cost	In WIP - 1 April	Current Month
Material - TM1	$4820	$60 960
Material - TM2	2170	25 000
Direct Labour	2000	20 622
Factory Overhead	2500	25 778

TM1 is introduced at the beginning of the process while TM2 is added at the stage when the product is 80% complete. Conversion costs are incurred at a uniform rate throughout the process. On April 30, Work-in-process is 45% complete. There were no losses nor spoilage during processing. (Take all workings to 4 decimal places)

3. Using the weighted average cost method, the unit cost of production with respect to TM2 for the month of April is:

   A $1.0450
   B $1.0868
   C $1.0676
   D $1.1321
   E none of the above.

4. The number of the equivalent units with respect to conversion costs of closing WIP is:

   A 1000
   B zero
   C 800
   D 450
   E none of the above.

5. The number of equivalent units of work done with respect to TM1 during the period was:

   A 25 000
   B 26 000
   C 24 000
   D 25 450
   E none of the above

6. Using the FIFO method, what was the cost of finished goods completed and transferred during April?

   A $128 545
   B $140 420
   C $140 427
   D $143 850
   E None of the above

Questions 7 and 8 relate to the following information.

Department B of Alphabet Co. Ltd. produces a line of sports bags for a large retail chain. The accounting records for May show the following:

	Physical Units
Opening Work-In-Process	10 000
Units started in May	70 000
Units completed in May	40 000

Opening W.I.P. was 40% complete for materials and 50% complete for conversion costs. Closing W.I.P. was 80% complete for both materials and conversion costs.

Department B's records show the following costs:

	Materials	Conversion Costs
Opening Work in Process	$20 000	$20 000
Current costs incurred	$204 000	$201 000

There is no spoilage or wastage in the production process.

7. The equivalent units of work done during May by Department B for materials and conversion costs respectively were:

   A 62 000; 62 000
   B 66 000; 67 000
   C 67 000; 66 000
   D 36 000; 35 000
   E 68 000; 67 000

8. The unit cost of work done this month (rounded to the nearest cent) was:

A $ 6.00
B $ 6.18
C $ 6.59
D $11.98
E $12.53

Questions 9 and 10 refer to the following data.

Petersen Peanut Co. manufactures one product which passes sequentially through two production departments, P1 and P2.

In P1, direct materials are added at the beginning of the process and conversion costs are incurred uniformly. In this department total conversion cost is computed as direct labour cost plus 50% for the allocation of overhead costs.

In P2, further direct materials are added at the stage of 75% completion. Conversion costs are incurred uniformly and total conversion cost is computed as direct labour cost plus 100%.

The following information is available for May.

	P1	P2
Opening WIP:	3000 units	4000 units
Degree of completion	40%	25%
Prior Dept. costs	-	$10 000
Material costs	$5 000	-
Conversion costs	$7 200	$9 075
Put into process this month	30 000 units	32 000 units
Completed and transferred out this month	32 000 units	30 000 units
Current costs:		
Materials	$65 000	$150 000
Labour	$40 000	$75 000
Closing WIP - degree of completion	80%	25%

NOTE: All calculations are to made using weighted average costing. When calculating components of unit costs, round each answer to the nearest whole cent. There is no spoilage or wastage in the production process.

9. The closing balance of WIP in Department P1 at the of May is:

A $3760
B $4170
C $3272
D $3584
E $4160

10. Conversion costs per equivalent unit in Department P2 in May are:

    A $2.05
    B $5.05
    C $4.76
    D $2.67
    E $5.00

ii. Textbook questions

Now attempt the following questions from your textbook:

FBW : Chapter 4: 4-2, 4-13, 4-16

For further explanation of these concepts refer, as appropriate, to the relevant pages of Hilton's text and/or the readings. Refer to the Hilton pages listed in the Study Schedule and use the index at the back of the text. Also note that this text has a web site with supplementary materials including Powerpoint presentations and supplementary quizzes. The Subject Outline gives the URL for the web site.

Module 6:

Product costing:
Operation costing
Joint costs

References

The reference for this module is:

FBW : Chapter 5

Introduction

In Modules 4 and 5 we considered two distinct costing systems which represent two extremes: the detailed cost tracing in job costing versus the broad averaging of cost in process costing. In practice, neither of these product costing systems may neatly fit a particular technological situation, and so there are many variants which reflect some of the characteristics of both job costing and process costing. We sometimes refer to these as hybrid systems.

Operation costing is one such hybrid system. Typically products may vary with respect to the type or quality of raw materials used but basically they pass in batches through the same operations. In such cases we would probably trace the cost of direct materials to units or batches as in job costing, but use the averaging procedures of process costing to attach conversion costs.

As well as operation costing, in this module we examine the problem of joint costs. So far we have been concerned with **synthetic** manufacturing processes in which several material inputs are combined into one or more products. **Analytic** manufacturing processes, however, convert a single raw material into a number of products, e.g. crude oil is refined into petrol, diesel, lubricating oil etc., or a cow is carved up into different joints and cuts. We refer to these products which are derived from a single raw material as joint products, and the cost of the original raw material as a joint cost.

Analytic processes present problems for product costing because no matter how the joint cost is allocated to the derivative products the allocation is arbitrary. How should a butcher who buys a whole cow allocate its cost to the different cuts of meat? There is simply no ‘correct’ way of doing so. So management accountants adopt an expedient, arbitrary rule to accomplish the task to satisfy external reporting requirements. But the resulting costs are not useful for any decision making purposes, such as product pricing, product mix, sell or process further, etc. Yet, despite the indefensibility of product costs based on joint cost allocations, we have seen oil companies trying to justify petrol prices on the basis of ‘production costs’ which you will realise at the end of this module are at best simply estimates.

Objectives

At the end of this module you should be able to

- recognise situations in which operation costing is appropriate;
- design an operation costing system;
- perform the allocation of joint costs to products using the usual methods;
- ignore joint costs in decision making;
- use some common methods of accounting for by-products.

Self-test questions

When you have studied the references for this module you should attempt the following questions, the solutions to which are provided in the Answers to Self-test Questions booklet.

i. Multiple choice

For each of the following questions identify the correct alternative:

1. An operation costing system would be more suitable than job costing or process costing systems for a company making several different styles of an attache case, where each style requires

   A identical conversion costs and identical material costs
   B identical conversion costs and different material costs
   C different conversion costs and identical material costs
   D different conversion costs and different material costs
   E None of the above is a correct response

2. Amway Products uses three operations in sequence to manufacture an assortment of cosmetics. In each operation, the same procedures, time and costs are used to perform that operation for a given quantity of cosmetics, regardless of the type of cosmetic being produced.

   During May, a batch of materials for 1400 units of Type A was put through the first operation. This was followed in turn by separate batches of materials for 500 of Type B and 1600 of Type C. All the materials for a batch are introduced at the beginning of the operation for that batch. The costs as shown below were incurred in May for the first operation.

Direct labour	$30 600
Factory overhead	14 802

   Materials:

Type A	$19 180
Type B	9 000
Type C	14 000

   All of the units started in May were completed during the month and transferred out to the next operation except 350 units of Type C, which were 40% completed as to conversion costs and 100% completed as to material cost at 31 May. There were no work-in- process inventories at the beginning of May.

   The total cost of production transferred from the first operation was:

   A $87 582.00
   B $82 785.50
   C $87 825.50
   D $82 587.50
   E none of the above

3. The XYZ company manufactures and publishes one management accounting textbook in three styles. The basic student's edition has a soft cover and grade E quality paper. The semi-deluxe manager's edition has a hard cover and grade C quality paper. The extra deluxe edition has a hard cover and grade A quality paper. The printing process is identical for all three styles of the book, except for the extra deluxe edition which passes through a second processing department (the finishing department) where the covers are buffed and the pages are carefully 'index colour-coded'. The following information is available for the month of July.

Costs	Printing	Finishing
Factory overhead	$10 000	$13 000
Direct labour	$45 000	$75 000

Production	No. Produced	Direct Materials
Student edition	15 000	$15 000
Semi deluxe	20 000	$40 000
Extra deluxe	20 000	$80 000

The costs per unit of the Student, Semi deluxe and Extra deluxe editions for July respectively are:

A $1.00; $2.00; $4.00
B $3.60; $4.60; $5.60
C $1.60; $1.60; $5.40
D $2.00; $3.00; $9.40
E $3.60; $4.60; $9.40

4. What type of cost is the result of an event that results in more than one product or service simultaneously?

A By-product cost
B Joint cost
C Main cost
D Separable cost
E Net realisable cost

5. When a single manufacturing process yields two products, one of which has a relatively high sales value compared to the other, the two products are respectively known as

A joint products and by-products
B joint products and scrap
C main products and by-products
D main products and joint products
E none of the above.

6. Which of the following is not a reason to allocate joint costs?

   A Rate regulation requirements, if applicable.
   B Cost of goods sold computations.
   C Insurance settlement cost information requirements.
   D Inventory valuations.
   E Make or buy analysis.

Questions 7 and 8 relate to the following information:

Murray Ltd manufactures Products X, Y and Z from a joint process. Joint costs were $60 000. Additional information is as follows:

Product	Units Produced	Sales Value at Split-off	Sales Value	Additional Costs
X	6 000	$40 000	$55 000	$9 000
Y	4 000	35 000	45 000	7 000
Z	2 000	25 000	30 000	5 000
	12 000	100 000	130 000	21 000

7. Assuming that joint production costs are allocated using a physical measures approach, what were the total costs allocated to Product X?

   A $27 000
   B $29 000
   C $30 000
   D $33 000
   E $39 000

8. Assuming that joint production costs are allocated using the sales value at split-off method, what were the total costs allocated to Product Y?

   A $21 000
   B $27 000
   C $28 000
   D $28 350
   E $32 200

Questions 9 and 10 relate to the following information.

Zed Enterprises produces two automotive fuel additives, Swifto and Econo, from a joint manufacturing process. In August, Zed incurred joint costs of $48 000 in producing 16 000 litres of Swifto and 20 000 litres of Econo. Econo is ready for sale immediately upon completion of the joint processing without any additional costs being incurred. Swifto, however, requires further processing before it can be sold. In August, 16 000 litres of Swifto were subjected to further processing at a cost of $8000.

The selling prices were as follows:

Swifto ..... $3.00 per litre
Econo..... $1.00 per litre

9. Using the net realizable value method of allocating joint costs, the cost per litre of Swifto produced as finished product (correct to two decimal place) is:

A $1.30
B $1.33
C $1.83
D $2.00
E $2.50

10. Assuming that management chooses to treat Econo as a by-product and has a policy of crediting the net realizable value of by-products produced against the joint manufacturing costs incurred, the cost per litre of Swifto as a finished product (correct to two decimal places) is:

A $1.40
B $1.75
C $1.90
D $2.25
E $3.25

ii. Textbook questions

Now attempt the following questions from your textbook:

FBW : Chapter 5: 5-2, 5-4, 5-6, 5-7, 5-8, 5-9, 5-10, 5-12, 5-22

For further explanation of these concepts refer, as appropriate, to the relevant pages of Hilton's text and/or the readings. Refer to the Hilton pages listed in the Study Schedule and use the index at the back of the text. Also note that this text has a web site with supplementary materials including Powerpoint presentations and supplementary quizzes. The Subject Outline gives the URL for the web site.

Module 7:

Product costing: Standard cost systems

References

The reference for this module is:

FBW : Chapter 6

Introduction

In previous modules we have learned that there are variations in product costing systems depending upon the type of production technology employed. You have learned about job costing systems, process costing systems, and hybrid systems such as operation costing. In our coverage of these systems we basically recorded transactions at actual (or historical) cost, although we did use predetermined overhead rates. Thus these systems are often referred to as historical cost systems.

In this module we cover standard cost systems. A standard cost system is not yet another cost system. Standard costs may be used in conjunction with any of the product costing systems so far examined, e.g. we can have a standard process costing system. Standard costs are carefully predetermined costs that should be attained under efficient operating conditions. So in a standard cost system, instead of recording transactions and costing production at historical cost, records are maintained at standard cost (the costs which should have been incurred). This simplifies the recording process, but in addition, the use of standard costs serves other purposes. They also can be used for motivation purposes (people try to achieve the standard) and for performance evaluation (compare actual costs with standard costs). Standard costs also facilitate budgeting and product pricing activities.

Objectives

At the end of this module you should

- understand the purpose of using standard costs and be able to operate a standard cost system;
- be able to calculate material price and usage variances, labour rate and efficiency variances and total overhead variances;
- be able to perform the appropriate journal entries and ledger postings associated with standard cost systems;
- have rebuilt the spreadsheet designed to calculate standard cost variances.

Self-test questions

When you have studied the references for this module you should attempt the following questions, the solutions to which are provided in the Answers to Self-test Questions booklet.

i. Multiple choice

For each of the following questions identify the correct alternative:

1. When material price variances are recognised in the accounts at the time of purchase, the book value of inventory is recorded at:

   A Actual quantity x actual price
   B Standard quantity x standard price
   C Actual quantity x standard price
   D Standard quantity x actual price
   E none of the above

2. When material usage variances are recognised in the accounts at the time of requisition, the debit to the work in progress account is recorded as:

   A Actual quantity x actual price
   B Standard quantity x standard price
   C Actual quantity x standard price
   D Standard quantity x actual price
   E none of the above

3. The following data are available for ABC Ltd:

   - standard quantity of materials issued to production at standard prices 200 000
   - actual quantity of materials used at standard prices 220 000
   - actual quantity of materials used at actual price 270 000
   - labour efficiency variance (unfavourable) 70 000
   - direct material price variance (unfavourable) 50 000
   - direct material efficiency variance (unfavourable) 20 000

Which of the following journals entries is correct?

A	Labour Efficiency Variance	70 000	
	D-Material Prices Variance		50 000
	D-Material Efficiency Variance		20 000
B	WIP	200 000	
	D-Material Price Variance	50 000	
	Stores		270 000
C	D-Material Price Variance	50 000	
	D-Material Efficiency Variance	20 000	
	Labour Efficiency Variance		70 000
D	WIP	200 000	
	D-Material Price Variance	20 000	
	D-Material Efficiency Variance	50 000	
	Stores		270 000

E none of the above

Questions 4 to 6 refer to the following data.

A company expected to produce 2000 units in the next accounting period. Each unit requires 1 hour of labour @ $5 and 1kg of material @ $10 per kg. 5000 kg of material were purchased for $9.75 per kg. 1950 units were actually produced during the period requiring:

* 1900 hours of labour totalling $10 000
* 1875 kg of material.

4. The direct materials usage variance is:

A $ 487.50 F
B $ 731.25 F
C $ 750.00 F
D $1250.00 F
E $1500.00 F

5. The direct materials price variance is:

A $ 487.50 F
B $ 731.25 F
C $ 750.00 F
D $1250.00 F
E $1500.00 F

6. The labour efficiency variance is:

   A $500.00 U
   B $263.15 U
   C $0
   D $250.00 F
   E $263.15 F

7. The production manager of Winchester Ltd has estimated that 500kg. of deluxe raw material will be purchased for a total budgeted cost of $500 000 for a special batch of 1000 designer-label executive model widgets. It takes a skilled tradesman one hour and 20 minutes to convert one kg of deluxe raw material. It is also estimated that the total factory overheads to be charged to this batch will amount to $325 000. The standard chargeout rate for skilled labour is $8.50 per hour. What is the standard cost per unit (rounded to the nearest cent)?

   A $836.33
   B $1336.05
   C $830.67
   D $830.76
   E none of the above

Questions 8 to 10 relate to the following information:

Healthy Lifestyles Ltd manufactures joggers' aids and maintains a standard cost accounting system. The following standard costs have been developed for its No. 2 Footeze Comforter. All variances are calculated at the earliest opportunity.

STANDARD COST PER UNIT OF OUTPUT

Direct Materials (2 kilograms)	16.80
Direct Labour (3 hours)	9.60
Manufacturing Overheads:	
Fixed at $0.80/DLH	2.40
Variable at $1.60/DLH	4.80
	33.60

PRODUCTION INFORMATION FOR JULY

Budgeted Fixed Overhead	$24 000	
Actual Direct Materials Issued	1950	kilograms
Actual Output	950	units
Actual Material Cost	$15 288	
Actual Direct Labour Rate	$3.28	per hour
Actual Direct Labour Hours	2800	hours
Actual Manufacturing Overheads:		
Fixed	$2900	
Variable	$5750	

8. Given that the answer is $224 Unfavourable, the variance calculated is:

A Labour rate variance
B Overhead Underapplied
C Materials price variance
D Labour efficiency variance
E Overhead Overapplied

9. Given that the answer is $420 Unfavourable, the variance calculated is:

A Total materials variance
B Labour rate variance
C Overhead Overapplied
D Total labour variance
E Material usage variance

10. If the materials price variance is $1176 Favourable, the number of kilograms of direct materials purchased during July was:

A 1680 kg
B 980 kg
C 1960 kg
D 910 kg
E 840 kg

ii. Textbook questions

Now attempt the following questions from your textbook:

FBW: Chapter 6: 6-1, 6-3, 6-5, 6-9, 6-15, 6-19

For further explanation of these concepts refer, as appropriate, to the relevant pages of Hilton's text and/or the readings. Refer to the Hilton pages listed in the Study Schedule and use the index at the back of the text. Also note that this text has a web site with supplementary materials including Powerpoint presentations and supplementary quizzes. The Subject Outline gives the URL for the web site.

Module 8:

Alternative product costing systems: Variable costing and JIT costing

References

The reference for this module is:

FBW: Chapter 7

Introduction

In previous modules we have seen how direct material and direct labour costs are traced to products and how overhead costs are allocated to products. The systems so far examined have all been what is known as **absorption costing** systems, meaning that **all** factory costs have been absorbed by products. One of the idiosyncrasies of absorption costing is that reported income is a function, not only of sales, but also of production. Income will be partly influenced by the manufacturing costs which are attached to unsold inventory and which will not be released as a charge against revenue until later periods when sold. Variable costing (sometimes called direct costing) was developed as an alternative income concept to better reflect the relationship between sales and income.

In recent years there has been a drive to implement just-in-time (JIT) production and inventory systems. A feature of JIT production is that production will take place only in response to demand for the final product. Instead of producing for stock and holding inventories of finished goods, production is completed just in time for sale. Consequently there should be little or no inventory of work in process or finished goods. These changes allow us to simplify the cost recording system. Such a simplified system is known as JIT costing or backflush costing.

Objectives

At the end of this module you should be able to

- appreciate why the use of variable costing results in income measures which directly reflect movements in sales;
- prepare income statements on a variable costing basis as well as on an absorption costing basis;
- reconcile the different incomes reported under variable costing and absorption costing;

- understand why it is important to eliminate non-value-added activities and why this is an aim of JIT production;

- operate a JIT costing system using different trigger points for recording.

Self-test questions

When you have studied the references for this module you should attempt the following questions, the solutions to which are provided in the Answers to Self-test Questions booklet.

i. Multiple choice

For each of the following questions identify the correct alternative:

1. Fixed manufacturing costs per unit

   A increase with increased levels of production
   B decrease with increased levels of production
   C remain the same over all levels of production
   D first increase and then decrease as a result of the advantages of large scale production
   E none of the above.

Questions 2 to 5 are based on information from the records of XYZ Ltd for July.

Total costs were:

	$
Variable manufacturing costs	12 500
Fixed manufacturing costs	15 000
Variable selling costs	5 760
Fixed selling and administrative costs	6 000

During July 5000 units of the company's single product were produced while 4800 units were sold. Fixed manufacturing costs are allocated using a predetermined rate based on normal capacity of 5000 units/month. Any overhead variance is written off against cost of goods sold for the month. Neither variable costs/unit nor total fixed costs/month have changed over the last 3 months.

2. The cost per unit for inventory purposes under absorption costing is:

   A $5.625
   B $5.50
   C $4.50
   D $6.70
   E none of the above

3. If the net income under absorption costing were $5400 for July, the selling price per unit must have been:

   A $9.00
   B $9.43
   C $9.20
   D $9.05
   E none of the above

4. When compared with net income under direct costing, the net income under absorption costing for July was:

   A $600 lower
   B $800 higher
   C $600 higher
   D the same
   E Depends on the unit selling price for July

5. Assume that normal capacity is NOT 5000 units/month. If, after all adjustments, cost of goods sold under absorption costing were $26 500, then normal capacity must be:

   A 5300 units/month
   B 4818 units/month
   C 6000 units/month
   D 7500 units/month
   E none of the above

Questions 6 and 7 refer to the following data:

STANDARD COST PER UNIT	$
Direct materials (4kg)	12
Direct labour (1 hour)	5
Variable overhead	4
Fixed overhead	2
	$23

Actual overhead - fixed	$5000
- variable	$7000
Actual number of units produced	2000

There is no opening or closing work-in-process.

6. The amount of under- or over-allocated overhead, if standard variable costing is used, equals:

   A $1800 over
   B zero
   C $1800 under
   D $1000 over
   E $1000 under

7. The amount of under- or over-allocated overhead if standard absorption costing is used equals:

   A $1800 over
   B zero
   C $1200 over
   D $1000 under
   E $1000 over

The following information relates to Questions 8 to 10.

Sunshine Ltd manufactures umbrellas. For April there were no opening inventories of direct materials, and no opening or closing work in process. Only one indirect manufacturing cost category is currently in use, 'Conversion Costs'. Journal entries are recorded when materials are purchased and when units are sold. The following data are available for April:

Conversion costs	$ 45 000	
Direct materials purchased	125 000	
Units produced	40 000	
Units sold	37 500	
Selling price	$10.00	each

8. Which of the following journal entries properly reflects the first required entry?

A	Inventory	$125 000	
	Accounts Payable		$125 000
B	Accounts Payable	$125 000	
	Inventory		$125 000
C	Accounts Payable	$125 000	
	Conversion Costs		$125 000
D	Conversion Costs	$125 000	
	Inventory		$125 000

E none of the above

9. Which of the following journal entries properly records the sales for the month?

A	Cost of Goods Sold	$159 750	
	Inventory		$159 750
B	Cost of Goods Sold	$159 750	
	Inventory		$117 375
	Conversion Costs Allocated		$ 42 375
C	Inventory	$117 375	
	Conversion Costs Allocated	$ 42 375	
	Cost of Goods Sold		$159 750
D	Cost of Goods Sold	$159 750	
	Inventory		$114 750
	Conversion Costs Allocated		$ 45 000

E none of the above

10. If the only trigger point is the production of finished units, which of the following entries would occur?

A	Cost of Goods Sold	$159 750	
	Inventory		$114 750
	Conversion Costs Allocated		$ 45 000
B	Inventory	$117 375	
	Conversion Costs Allocated	$ 42 375	
	Cost of Goods Sold		$159 750
C	Finished Goods	$170 400	
	Accounts Payable		$125 200
	Conversion Costs Allocated		$ 45 200
D	Accounts Payable	$125 200	
	Conversion Costs Allocated	$ 45 200	
	Finished Goods		$170 400

ii Textbook questions

Now attempt the following questions from your textbook:

FBW : Chapter 7: 7-2, 7-17, 7-20

For further explanation of these concepts refer, as appropriate, to the relevant pages of Hilton's text and/or the readings. Refer to the Hilton pages listed in the Study Schedule and use the index at the back of the text. Also note that this text has a web site with supplementary materials including Powerpoint presentations and supplementary quizzes. The Subject Outline gives the URL for the web site.

Module 9:

Control systems: Budgeting and feedforward control

References

The reference for this module is:

FBW: Chapter 8

Introduction

In the first 8 modules we have extensively examined product costing systems. We now turn to a second function of management accounting, control. Control systems are concerned with the activities of planning and controlling operations. Plans are formulated for each subunit of an organisation and co-ordinated into a comprehensive plan aimed at achieving organisational objectives. Organisational plans are reflected in budgets which provide a quantitative measure of such plans and which enable accountants to project the expected financial consequences for the organisation.

In Module 9 we look closely at the technical process of comprehensive budgeting involving the preparation of budget schedules and their integration to produce budgeted financial reports which express expected results in financial terms. We also briefly review the budgeting process as a choice process of resource allocation in which the competing demands of organisational subunits are assessed to arrive at an appropriate sharing of resources.

Objectives

At the end of this module you should be able to

- view budgeting as a technical process of converting organisational plans into projected financial results which are co-ordinated for the organisation as a whole;
- appreciate the alternate view of budgeting as a process of bargaining and choice to arrive at an acceptable allocation of resources;
- prepare the necessary budget schedules and integrate them into a comprehensive budget to produce budgeted financial statements.

Self-test questions

When you have studied the references for this module you should attempt the following questions, the solutions to which are provided in the Answers to Self-test Questions booklet.

i. Multiple choice

For each of the following questions identify the correct alternative:

1. A production budget expressed in units is equal to

   A budgeted sales + opening finished goods inventory + budgeted closing finished goods inventory

   B budgeted sales - opening finished goods inventory - budgeted closing finished goods inventory

   C budgeted sales - opening finished goods inventory + budgeted closing finished goods inventory

   D budgeted sales + opening finished goods inventory - budgeted closing finished goods inventory

   E none of the above.

2. Which of the following is not a condition that must be satisfied in order to be able to control a process?

   A Actions to reduce deviations from objectives must be possible.
   B There must be objectives.
   C There must be a predictive model of the process.
   D Output of the process must be measurable in terms of the objectives.
   E The process must be a manufacturing one.

3. In comprehensive budgeting which of the following is false?

   A The sales budget is always prepared first.

   B The production budget is synchronised with the sales budget.

   C The production budget is usually prepared before the purchases budget.

   D The cash budget will indicate any likely liquidity problems.

   E The capital budget is an essential component.

Questions 4 and 5 relate to the following:

Fly Catcher Ltd makes screens to exclude flies. The estimated unit sales of screens for the next four months are:

Month	Sales
1	40 000
2	50 000
3	60 000
4	30 000

Opening inventory of finished goods should equal 30% of each month's sales for the first three months and 10% of each month's sales in other months.

4. What is the budgeted production for month 2?

   A 68 000
   B 65 000
   C 53 000
   D 50 000
   E none of the above

5. If screens cost $2.00 each to produce, what will be the cost of goods manufactured in month 3?

   A $126 000
   B $120 000
   C $90 000
   D $84 000
   E none of the above

Questions 6 and 7 refer to the following information.

The pro-forma schedule produced below relates to the forecasted production for the coming quarter for the Leroy Company. Only a portion of the entries for the quarter have been entered. Leroy has developed a policy of maintaining its finished goods inventory at a level equal to 20% of the estimated sales of the following month.

Leroy Company
Production Budget for Coming Quarter (in units)

	Month 1	Month 2	Month 3	Total
Sales	10 000	12 000		35 000
Diresired Ending Inventory				
Available for Sale				
–Opening Inventory	2 000			
Current Month's Production			12 800	

6. The amount of Desired Ending Inventory in Month 2 is:

   A 2300 units
   B 2600 units
   C 2400 units
   D 2000 units
   E 2100 units

7. Total budgeted production for the period is:

   A 35 400 units
   B 39 400 units
   C 34 600 units
   D cannot be calculated
   E none of the above

8. The Cottontail Shirt Company, a merchandising firm, has prepared the following sales budget for the first four months of the next year.

Month	Sales Revenue
January	$105 000
February	120 000
March	111 000
April	145 000

The purchase price of the goods sold by Cottontail is marked up by 66.67 percent to set the selling price (for example, if the purchase price of a particular item is $3.00, then the selling price of that item is $5.00). One half of the estimated sales (at cost) is to be maintained in merchandise inventory at the end of each month. The estimated cost of merchandise inventory on January 1 is $30 000.

The budgeted purchases for January and February respectively are:

A $127 500; $127 500
B $105 000; $120 000
C $69 000; $69 300
D $64 500; $76 500
E none of the above

Questions 9 and 10 refer to the following data:

ABC Company, a wholesaler of oats, has a sales budget for next month of $300 000. Cost of oats sold are expected to be 40% of sales. All purchases are paid for in the month following purchase. The opening inventory of oats is $10 000, and a closing inventory of $12 000 is desired. Opening accounts payable is $76 000.

9. The cost of oats sold for the next month is expected to be

A $180 000
B $132 000
C $122 000
D $120 000
E $118 000

10. Cash used to pay accounts payable next month would be

A $122 000
B $120 000
C $78 000
D $76 000
E none of the above

ii. Textbook questions

Now attempt the following questions from your textbook:

FBW: Chapter 8: 8-2, 8-7, 8-10, 8-12, 8-15, 8-20

For further explanation of these concepts refer, as appropriate, to the relevant pages of Hilton's text and/or the readings. Refer to the Hilton pages listed in the Study Schedule and use the index at the back of the text. Also note that this text has a web site with supplementary materials including Powerpoint presentations and supplementary quizzes. The Subject Outline gives the URL for the web site.

Module 10:

Control systems: Flexible budgets and standard cost variances

References

The reference for this module is:

FBW: Chapter 9

Introduction

In Module 9 we examined the role of budgets in the planning process, as part of the control system cycle. Once these plans have been established and co-ordinated in the comprehensive budget the next step is to implement them. Implementation involves motivation of employees and managers to ensure that the plans are achieved. In this module we will begin by examining ways of motivating people to work.

The implementation of budget plans is further reinforced by the use of administrative controls. An important administrative control is the use of a formal performance evaluation system to assess performance achieved against budget targets, and is an essential feature of the feedback control cycle.

Feedback control involves comparisons of actual results with budget, measurement and reporting of variances, and the use of corrective action where appropriate. The use of flexible budgets allows such comparisons to take into account changed circumstances since the budget was formed or production levels which are at variance with budget forecasts. Flexible budgets are used in calculating standard cost variances and in isolating efficiency variances.

Objectives

At the end of this module you should be able to

- understand different theories of motivation and their applicability to management control;
- prepare flexible budgets;
- use flexible budgets in the calculation of standard cost variances;
- calculate and analyse fixed and variable overhead variances.

Self-test questions

When you have studied the references for this module you should attempt the following questions, the solutions to which are provided in the Answers to Self-test Questions booklet.

i. Multiple choice

For each of the following questions identify the correct alternative:

1. A budget that is often changed at the end of a reporting period is called

   A a balanced budget
   B a cost budget
   C a trial balance budget
   D a flexible budget
   E none of the above

2. Two of the primary ways to manage variable overhead costs include

   A eliminating non-value-added costs and reducing the consumption of cost drivers

   B eliminating non-value-added costs and increasing fixed overhead expenses

   C reducing the consumption of cost drivers and increasing variable costs

   D using more energy-efficient equipment and planning for appropriate capacity levels

   E none of the above

3. Which of the following statements is false?

   A A management control system is a means of gathering information to aid and co- ordinate the process of making planning and control decisions throughout the organisation.

   B The chief financial officer is responsible for monitoring financial/external information for decision making purposes.

   C Sturt Manufacturing Company diversified management responsibility and therefore a successful management control system is critical to the company's success.

   D Motivation is often reinforced by goal congruence and exertion towards a goal.

   E A good incentive plan should be influential in determining an organisation's goals.

Questions 4 and 5 refer to the following data:

Std Cost Per Unit:

Direct Materials (2 kg)	$ 5
Direct Labour (1 hr)	10
Variable Overhead	3
Fixed Overhead	2
Total	$20

*Actual number of units produced		1100
*Actual number of direct labour hours worked		900
*Standard number of direct labour hours for 1100 units		1100
*Actual overhead - variable	4000	
- fixed	1500	5500

4. The amount of under- or over-allocated overhead if standard variable costing is used is

   A Zero
   B $ 700 under
   C $1300 under
   D $ 700 over
   E $1300 over

5. The amount of under- or over-allocated overhead if standard absorption costing is used is

   A Zero
   B $1000 under
   C $ 300 over
   D $ 700 over
   E $1000 over

6. Which of the following statements is false?

   A Process theories of motivation are concerned with how the variables identified in content theories affect motivation, effort and performance.

   B Expectancy theory holds that difficult and specific goals assigned by managers will result in high performance.

   C Expectancy theory holds that motivation is positively influenced by valued outcomes flowing from individual performance and the likelihood that these outcomes will be realised.

   D Expectancy theory can be used to explain why an assigned goal will often be chosen as a personal goal.

   E None of the above is false.

7. Which of the following is a form of social control?

   A Hierarchical arrangements which create formal superior/subordinate relationships.

   B Recruitment policies which determine the quality of new employees.

   C A willingness to work hard to get higher pay, praise or promotion.

   D The way in which superiors monitor, evaluate and reward their subordinates.

   E None of the above.

Questions 8, 9 and 10 refer to the following:

Standard Company, which produces a single product, has developed predetermined overhead rates for 19X0, based on a denominator capacity level of 180 000 standard direct labour hours:

Variable overhead rate:	2 standard DLH @ $3 =	$6
Fixed overhead rate:	2 standard DLH @ $5 =	10
		$16

The following data relate to 19X0:

80 000 units were actually produced
Actual direct labour cost incurred was $644 000 for 165 000 hours of work
Actual overhead incurred totalled $1 378 000, being $518 000 variable and $860 000 fixed

8. The variable overhead spending variance for 19X0 was

A $15 000 Unfavourable
B $23 000 Unfavourable
C $38 000 Favourable
D $38 000 Unfavourable
E none of the above

9. The variable overhead efficiency variance for 19X0 was

A $38 000 Unfavourable
B $23 000 Unfavourable
C $15 000 Unfavourable
D $38 000 Favourable
E none of the above

10. The fixed overhead volume variance and the fixed overhead spending variance for 19X0 were, respectively

A $60 000 Unfavourable; $40 000 Unfavourable
B $100 000 Favourable; $40 000 Favourable
C $100 000 Favourable; $60 000 Favourable
D $40 000 Favourable; $60 000 Unfavourable
E $100 000 Unfavourable; $40 000 Favourable

ii. Textbook questions

Now attempt the following questions from your textbook:

FBW: Chapter 9: 9-1, 9-5, 9-7, 9-11, 9-14, 9-21

For further explanation of these concepts refer, as appropriate, to the relevant pages of Hilton's text and/or the readings. Refer to the Hilton pages listed in the Study Schedule and use the index at the back of the text. Also note that this text has a web site with supplementary materials including Powerpoint presentations and supplementary quizzes. The Subject Outline gives the URL for the web site.

Module 11:

Organisation structure, responsibility accounting and accounting controls

References

The reference for this module is:

FBW: Chapter 10

Introduction

In Modules 9 and 10 we saw that organisational plans are co-ordinated in the comprehensive budget and operational targets are set. Feedback control employs performance reports in which comparisons are made of actual financial results with budget plans, to highlight variances. In these comparisons flexible budgets should be used to adjust original planning budgets when the actual level of operations varies from original plans. In Module 11 we focus on what should be shown in these performance reports (i.e. what are the relevant performance measures) and who should get the reports.

Each centre to which a manager has been appointed is known as a responsibility centre. Each manager of a responsibility centre is held accountable for the results shown in the performance report. This system of performance evaluation is called a responsibility accounting system, and is also referred to as a management accounting, or simply an accounting, control system.

Responsibility centres may be cost centres, or profit or investment centres. In cost centres performance is evaluated by comparing actual costs with budget. Profit or investment centres are usually associated with decentralised organisations. In decentralised organisations the performance of the divisional managers is frequently evaluated by reference to accounting performance measures such as profit or return on investment. Although return on investment sounds to be a simple, comprehensive measure of performance, it is not without criticism.

Objectives

At the end of this module you should

- understand what is meant by organisation structure and know the common ways in which organisations are structured;
- know that a responsibility accounting system is an accounting performance evaluation system designed to report performance using measures which are appropriate to the type of responsibility centre;
- be able to construct appropriate performance reports and be familiar with the arguments advanced for particular ways of constructing them;
- understand why organisations decentralise, be able to calculate and interpret common accounting performance measures for investment centres, and be aware of the limitations of such measures;
- be aware of the criticisms of responsibility accounting.

Self-test questions

When you have studied the references for this module you should attempt the following questions, the solutions to which are provided in the Answers to Self-test Questions booklet.

i. Multiple choice

For each of the following questions identify the correct alternative:

1. The major types of responsibility centres are

   A profit, nonprofit, and governmental
   B profit, sales, and cost
   C revenue, profit, income, and cost
   D profit, sales, revenue, and investment
   E revenue, profit, cost and investment

2. Controllability and variable costs are different in that

   A managers have more influence over variable costs than over controllable costs

   B variable costs may be with production or administration whereas controllable costs are only production-related costs

   C managers have controllability over more than just variable costs

   D variable costs are only short-run costs

   E none of the above is correct

3. When the units within an organisation are independent, decentralisation is likely to be

   A least beneficial and least costly
   B most beneficial and most costly
   C most beneficial and least costly
   D least beneficial and most costly
   E none of the above

4. McLean Company uses a 15% rate for computing imputed interest on its invested capital. In 19X4 the company had income of $750 000 and a residual income of $330 000. Its invested capital was

   A $3 000 000
   B $5 000 000
   C $450 000
   D $2 800 000
   E none of the above

5. Holding all other factors constant, ROI would necessarily be increased by

   A increasing revenue
   B decreasing revenue
   C increasing invested capital
   D both A and C
   E none of the above

6. King Company reported revenue of $20 000 000, income of $1 200 000 and a capital turnover of 4. What is ROI?

   A 5%
   B 20%
   C 10%
   D 67%
   E none of the above

7. Delta Company has an invested capital of $8 000 000, an income percentage of revenues of 6%, and ROI of 15%. Revenues were

   A $20 000 000
   B $3 200 000
   C $12 000 000
   D $4 000 000
   E none of the above

8. Which of the following is decentralisation least likely to accomplish?

   A Provide a pool of managerial talent
   B Shorten decision making time
   C Make optimal decisions more likely
   D Heighten goal congruence
   E None of the above

The following information refers to questions 9 and 10:

Murray Corporation manufactures home cleaning products. The company has two divisions, Washing and Alma. Because of different accounting methods and inflation rates the company is considering multiple performance evaluation measures. The following information is provided for 19X7:

	Assets		Income	
	Book value	**Current value**	**Book value**	**Current value**
Washing	$450 000	$600 000	$300 000	$310 000
Alma	900 000	500 000	200 000	210 000

The company is currently using a required rate of return of 15 percent.

9. What are Washing's and Alma's residual incomes respectively, based on book values?

   A $232 500; $65 000
   B $220 000; $135 000
   C $135 000; $220 000
   D $65 000; $232 500
   E none of the above

10. What are Washing's and Alma's residual incomes respectively, based on current values?

   A $232 500; $65 000
   B $220 000; $135 000
   C $135 000; $220 000
   D $65 000; $232 500
   E none of the above

ii. Textbook questions

Now attempt the following questions from your textbook:

FBW: Chapter 10: 10-1, 10-3, 10-6, 10-8, 10-11, 10-16, 10-18, 10-19

For further explanation of these concepts refer, as appropriate, to the relevant pages of Hilton's text and/or the readings. Refer to the Hilton pages listed in the Study Schedule and use the index at the back of the text. Also note that this text has a web site with supplementary materials including Powerpoint presentations and supplementary quizzes. The Subject Outline gives the URL for the web site.

Module 12:

Performance measurement: Accounting controls and nonfinancial measures

References

The reference for this module is:

FBW : Chapter 11

Introduction

In Module 11 we saw that responsibility accounting relies on accounting performance measures. One of the problems with using only accounting measures of performance is that they may fail to capture all the important dimensions of responsible performance. A consequence of this is that managers may focus only on the things that are measured, and engage in activities to improve the incomplete measures rather than to improve organisational performance.

In Module 12 we examine the important and desirable characteristics of performance measures as well as the dysfunctional behaviours which can result from inappropriate or incomplete measures. We also learn about the way in which accounting performance measures are used by managers. Then we look at contemporary management practices engaged in by world-class organisations: the use of multiple, financial and nonfinancial performance measures and contemporary interventions such as total quality management, continuous improvement initiatives and benchmarking.

Objectives

At the end of this module you should

- be familiar with important characteristics of performance measures and the types of dysfunctional behaviour which can result from inappropriate measures;
- know about Hopwood's three styles of evaluation used by managers and be aware of the associated research;
- understand the advantages of business process re-engineering for large improvements in performance;

- be aware of the importance of total quality management, including continuous improvement and benchmarking;

- know the common indicators of world class performance, including quality, time, productivity, flexibility and innovation;

- be aware that current trends in performance evaluation are towards multiple performance measures of both a financial and nonfinancial nature, measures which concentrate on key (or critical) success factors.

Self-test questions

When you have studied the references for this module you should attempt the following questions, the solutions to which are provided in the Answers to Self-test Questions booklet.

i. Multiple choice

For each of the following questions identify the correct alternative:

1. The Sturt Manufacturing Company produced 5% of the month's output in the first third of the month, 25% in the second third, and 70% in the remaining third. This is an example of

   A rigid bureaucratic behaviour
   B strategic behaviour
   C invalid data reporting
   D resistance
   E objectivity

Questions 2, 3 and 4 refer to the following:

A manager was evaluated by his superior as a poor performer because he overspent on his repairs and maintenance budget. The manager responded by arguing that he wanted to ensure that the machine was in good working order for a long production run lasting 4 months. His superior refused to accept his explanation.

2. The superior's style of evaluation may be described as

   A innovative
   B flexible
   C profit-conscious
   D non-accounting
   E budget constrained

3. Suppose that the superior had accepted the manager's explanation but pointed out that he would be closely monitoring such expenditure over the next 4 months. This style of evaluation may be best described as

   A innovative
   B flexible
   C profit-conscious
   D non-accounting
   E budget constrained

4. The performance measure used is

   A complete
   B complete and objective
   C controllable and subjective
   D incomplete and subjective
   E incomplete and objective

5. Costs of quality include all of the following except

   A external failure costs
   B correction costs
   C appraisal costs
   D internal failure costs
   E prevention costs

6. Which of the following is not a characteristic of total quality management?

   A pursuit of continuous improvement
   B everyone in the organisation is responsible for quality
   C a focus primarily on external customers
   D incorporation of statistical process control
   E none of the above

7. Flexibility may be achieved by

   A providing excess capacity
   B holding buffer inventories
   C increasing the number of components used in products
   D investing in duplicate materials-handling equipment
   E multi-skilling the workforce

8. Which of the following is not a measure of innovation?

   A average development cost per new product
   B ratio of actual to standard number of units at practical capacity
   C number of new products developed per year
   D time from concept to launch of new products
   E percentage of successful services of those launched

9. In a processing department there were 20 working days last month and the production goal for the month was 4000 units of a single product. During the month the pattern of actual production was as follows:

Production units	Number of days
250	1
225	2
200	7
175	4
150	4
125	2
	20

The measure of linearity of production achieved is:

A 91%
B 65%
C 50%
D 35%
E none of the above

10. Which of the following is not one of the four perspectives in Kaplan and Norton's balanced scorecard?

A financial perspective
B customer perspective
C time perspective
D internal business perspective
E none of the above

ii. Textbook questions

Now attempt the following questions from your textbook:

FBW: Chapter 11: 11-2, 11-3, 11-5, 11-12, 11-13, 11-17, 11-19, 11-21

For further explanation of these concepts refer, as appropriate, to the relevant pages of Hilton's text and/or the readings. Refer to the Hilton pages listed in the Study Schedule and use the index at the back of the text. Also note that this text has a web site with supplementary materials including Powerpoint presentations and supplementary quizzes. The Subject Outline gives the URL for the web site.