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PERFORMANCE MANAGEMENT (PM)

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INTRODUCTION

What is the purpose of costing? In Management Accounting (MA), we learnt how to determine the cost per unit for a product. We might need to know this cost in order to:

- Value inventory – the cost per unit can be used to value inventory in the statement of financial position (balance sheet).
- Record costs – the costs associated with the product need to be recorded in the statement of profit or loss.
- Price products – the business will use the cost per unit to assist in pricing the product. For example, if the cost per unit is \$0.30, the business may decide to price the product at \$0.50 per unit in order to make the required profit of \$0.20 per unit.
- Make decisions – the business will use the cost information to make important decisions regarding which products should be made and in what quantities.

How can we calculate the cost per unit? There are a number of costing methods available, most of them based on standard costing.

Flexible budgeting Before introducing the concept of flexible budgeting it is important to understand the following terms:

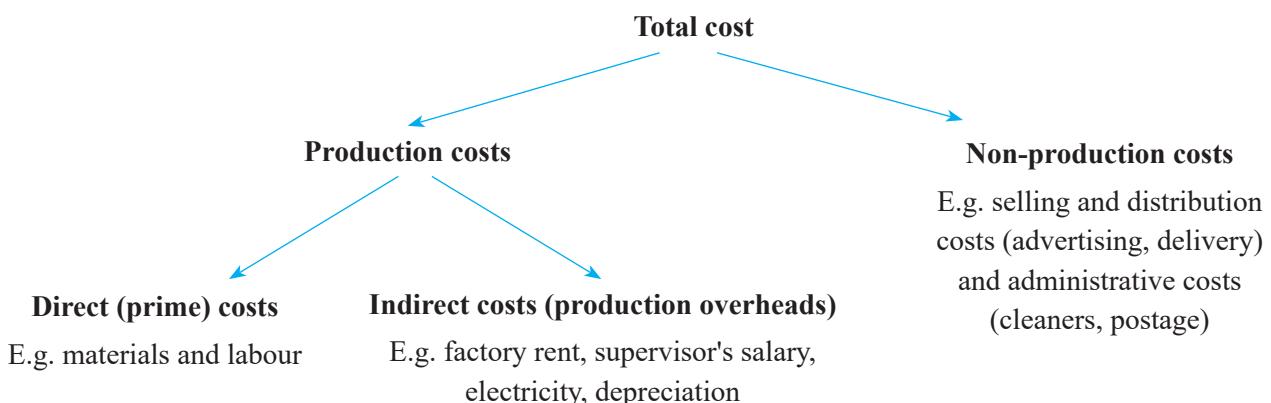
- Fixed budget: this is prepared before the beginning of a budget period for a single level of activity.
- Flexible budget: this is also prepared before the beginning of a budget period. It is prepared for a number of levels of activity and requires the analysis of costs between fixed and variable elements.
- Flexed budget: this is prepared at the end of the budget period. It provides a more meaningful estimate of costs and revenues and is based on the actual level of output.

Traditional costing methods: AC and MC

Chapter 4, focuses on one of the modern costing techniques: Activity Based Costing (ABC). However, in order to understand ABC and the benefits that it can bring, it is useful to start by reminding ourselves of the two main traditional costing methods: Absorption Costing (AC) and Marginal Costing (MC).

ABSORPTION COSTING

The aim of traditional absorption costing is to determine the full production cost per unit.



Standard Cost Card			
Product Widget, Ref. ABG56A			
	Cost	Requirement	\$
Direct materials			
Material A	\$2.00 per kg	6 kgs p.u.	12.00
Material B	\$3.00 per kg	2 kgs p.u.	6.00
Material C	\$4.00 per litre	1 litre	4.00
			22.00
Direct labour			
Grade I labour	\$4.00	3 hours p.u.	12.00
Grade II labour	\$5.40	5 hours p.u.	27.00
			61.00
PRIME COST			
Variable production overhead	\$1.00	8 hours	8.00
Fixed production overhead	\$3.00	8 hours	24.00
			93.00
Standard full production cost			

It is relatively easy to estimate the cost per unit for direct materials and labour. In doing so we can complete the first two lines of the cost card. Prime cost is the total of all direct costs.

However, it is much more difficult to estimate the production overhead per unit. This is an indirect cost and so, by its very nature, we do not know how much is contained in each unit.

Therefore, we need a method of attributing the production overheads to each unit. All production overheads must be absorbed into units of production, using a suitable basis, e.g. units produced, labour hours or machine hours. The assumption underlying this method of absorption is that overhead expenditure is connected to the volume produced.

UNDER- AND OVER-ABSORPTION

A predetermined overhead absorption rate is used to smooth out seasonal fluctuations in overhead costs, and to enable unit costs to be calculated quickly throughout the year.

$$\text{Pre-determined overhead absorption rate} = \frac{\text{Budgeted overhead}}{\text{Budgeted volume}}$$

'Budgeted volume' may relate to total units, direct labour hours, machine hours, etc. If either or both of the actual overhead cost or activity volume differ from budget, the use of this rate is likely to lead to what is known as under-absorption or over-absorption of overheads.

- (a) Over absorption occurs if absorbed > actual
- (b) Under absorption occurs if absorbed < actual

To calculate over or under absorption, follow 3 steps:

$$1 \quad \text{OAR} = \frac{\text{Budgeted overhead cost}}{\text{Budgeted level of activity}}$$

- 2 Overhead absorbed = actual activity \times OAR
- 3 Overhead absorbed (in Step 2) - Actual overhead = Over/(Under) absorbed overheads

MARGINAL COSTING

Marginal costing is the accounting system in which variable costs are charged to cost units, and fixed costs of the period are written off in full against the aggregate contribution. Its special value is in recognising cost behaviour, and hence assisting in decision making.

The marginal cost is the extra cost arising as a result of making and selling one more unit of a product or service, or is the saving in cost as a result of making and selling one less unit.

Contribution is the difference between sales value and the variable cost of sales. It may be expressed per unit or in total. It is short for 'Contribution to fixed costs and profits'. Contribution is a key concept we will come back to time and time again in management accounting.

With marginal costing, contribution varies in direct proportion to the volume of the units sold. Profits will increase as sales volume rises, by the amount of extra contribution earned. Since fixed cost expenditure does not alter, marginal costing gives an accurate picture of how a firm's cash flows and profits are affected by changes in sales volumes.

ADVANTAGES AND DISADVANTAGES OF AC AND MC

Absorption costing presents the following advantages:

- It includes an element of fixed overheads in inventory values, in accordance with IAS 2.
- Analysing under/over absorption of overheads is a useful exercise in controlling costs of an organisation.
- In small organisations, absorbing overheads into the cost of products is the best way of estimating job costs and profits on jobs.

The main disadvantage of absorption costing is that it is more complex to operate than marginal costing, and it does not provide any useful information for decision making, like marginal costing does.

Marginal costing presents the following advantages:

- Contribution per unit is constant, unlike profit per unit which varies with changes in sales volumes.
- There is no under or over absorption of overheads (and hence no adjustment is required in the statement of profit or loss).
- Fixed costs are a period cost and are charged in full to the period under consideration.
- Marginal costing is useful in the decision-making process.
- It is simple to operate.

The main disadvantage of marginal costing is that closing inventory is not valued in accordance with IAS 2 principles, and that fixed production overheads are not shared out between units of production, but written off in full instead.

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1. What is a basic standard?

- (a) A standard set at an ideal level, which makes no allowance for normal losses, waste and machine downtime
- (b) A standard which assumes an efficient level of operation, but which includes allowances for factors such as normal loss, waste and machine downtime
- (c) A standard which is kept unchanged over a period of time
- (d) A standard which is based on current price levels

2. Which of the following best describes “management by exception”?

- (a) Using management reports to highlight exceptionally good performance, so that favourable results can be built upon to improve future outcomes
- (b) Sending management reports only to those managers who are able to act on the information contained within the reports
- (c) Focusing management reports on areas which require attention and ignoring those which appear to be performing within acceptable limits
- (d) Appointing and promoting only exceptional managers to areas of responsibility within the organization

3. Identify, whether the following statements regarding flexed budgets are true or false.

1. The flexed budget is prepared at the same level of activity as actual output
2. The difference between the flexed budget profit and the actual profit shows the effect on profit of operating at a level of activity that differs from the expected level

4. The following statements have been made about different types of standards in standard costing systems:

1. Basic standards provide the best basis for budgeting because they represent an achievable level of productivity
2. Ideal standards are short-term targets and useful for day-to-day control purposes

Which of the above statements is/are true?

- (a) 1 only
- (b) 2 only
- (c) Neither 1 nor 2
- (d) Both 1 and 2

5. Hurst Co budgeted to produce 16,000 units of a product and sell 15,000 units. There was no opening inventory. The standard cost per unit of the product is as follows:

	\$
Direct materials	20
Direct labour	15
Variable production overheads	5
Fixed production overheads	10
	50
Standard selling price	80

Actual production was 18,500 units and 17,000 units were sold. Actual fixed production overheads were \$165,000.

What was the fixed overhead expenditure variance for the period?

- (a) \$15,000 adverse
- (b) \$5,000 adverse
- (c) \$5,000 favourable
- (d) \$20,000 favourable

6. Which of the following are consequences of using ideal standards?

- 1. Variance analysis is likely to produce adverse results
 - 2. Demotivation of staff usually becomes a problem
 - 3. Allowances for normal efficiency levels are made
 - 4. Standards can become more useful for long-term targets
- (a) 1 and 2 only
 - (b) 1, 2 and 3
 - (c) 1, 2 and 4
 - (d) 3 and 4

7. A company uses an overhead absorption rate of \$3.50 per machine hour, based on 32,000 budgeted machine hours for the period. During the same period, actual total overhead costs amounted to \$108,875 and 30,000 machine hours were recorded on actual production.

By how much was the total overhead under or over-absorbed for the period?

- (a) Under absorbed by \$3,875
- (b) Under absorbed by \$7,000
- (c) Over absorbed by \$3,875
- (d) Over absorbed by \$7,000

8. A cost centre has an overhead absorption rate of \$4.25 per machine hour, based on a budgeted activity level of 12,400 machine hours.

In the period covered by the budget, actual machine hours worked were 2% more than the budgeted hours and the actual overhead expenditure incurred in the cost centre was \$56,389.

What was the total over or under-absorption of overheads in the cost centre for the period?

- (a) \$1,054 over absorbed
- (b) \$2,635 under absorbed
- (c) \$3,689 over absorbed
- (d) \$3,689 under absorbed

9. A company manufactures and sells a single product. For this month the budgeted fixed production overheads are \$48,000, the budgeted production is 12,000 units and the budgeted sales are 11,720 units.

The company currently uses absorption costing.

If the company used marginal costing principles instead of absorption costing for this month, what would be the effect on the budgeted profit?

- (a) \$1,120 higher
- (b) \$1,120 lower
- (c) \$3,920 higher
- (d) \$3,920 lower

10. A company uses an absorption costing system. It has a variable cost of \$5 per unit and absorbs fixed production overhead at \$3 per unit. In a period when 1,800 units of product were sold and 2,000 units were produced, it recorded an operating profit of \$3,600.

What would its operating profit have been if it had used a marginal costing system?

- (a) \$2,600
- (b) \$3,000
- (c) \$4,200
- (d) \$4,600

11. Last month a manufacturing company reported a profit of \$2,000, calculated using absorption costing principles.

If marginal costing principles had been used, a loss of \$3,000 would have been reported. The company's standard fixed production overhead cost is \$2 per unit. Sales last month were 10,000 units.

What was last month's production (in units)?

- (a) 7,500
- (b) 9,500
- (c) 10,500
- (d) 12,500

12. A company uses absorption costing to value inventory. Its fixed production overhead absorption rate is \$12 per

labour hour and each unit of production should take four labour hours. In a recent period when there was no opening

inventory of finished goods, 20,000 units were produced using 100,000 labour hours. 18,000 units were sold and the

actual profit was \$464,000.

What profit would have been reported under a marginal costing system? (Answer in \$)

13. Identify whether the following advantages and disadvantages are relevant to Absorption Costing or Marginal Costing:

1. It is easy to use – Absorption Costing / Marginal Costing
2. It is useful for decision-making – Absorption Costing / Marginal Costing
3. It values inventory in line with International Accounting Standards – Absorption Costing / Marginal Costing

14. Which of the following statements is/are true?

1. Absorption costing will show a lower profit than marginal costing in Year 1
 2. Marginal costing will show a lower closing inventory valuation than absorption costing in Year 2
 3. Total profit over the three-year period will be the same under both methods
- (a) 1 only
 - (b) 2 only
 - (c) 3 only
 - (d) 2 and 3

15. A company has budgeted the following unit costs and revenue of a product:

Sales price \$50

Variable production cost \$18

Fixed production cost \$10

In the most recent period, 2,000 units were produced and 1,000 units were sold. Actual sales price, variable production cost per unit and total fixed production costs were all as budgeted. Fixed production costs were over-absorbed by \$4,000. There was no opening inventory for the period.

What would be the reduction in profit for the period if the company had used marginal costing rather than absorption costing? (Answer in \$)

16. A manufacturing company uses a machine hour rate to absorb production overheads, which were budgeted to be \$130,500 for 9,000 machine hours. Actual overheads incurred were \$128,480 and 8,800 machine hours were recorded.

What was the total underabsorption of production overheads?

17. A company uses an overhead absorption rate of \$4.50 per machine hour, based on 22,000 budgeted machine hours for the period. During the last period, the actual total overhead expenditure amounted to \$95,000 and 20,000 machine hours were recorded.

By how much was the total overhead under or over-absorbed for the last period?

18. A company uses absorption costing with a pre-determined hourly fixed overhead absorption rate. Last year, the following situations arose:

Actual overhead expenditure was less than the budgeted expenditure

Actual hours worked were less than the budgeted hours used to set the pre-determined overhead absorption rate

What would be the effect of each situation on the under/over absorption of fixed production overheads?

Situation (1) Under absorption / Over absorption

Situation (2) Under absorption / Over absorption

SOLUTION

1. (c)
 2. (c)
 3. 1. True
2. False
 4. (c)
 5. (b)
 6. (c)
 7. (a)

Actual overhead 108,875

Absorbed overhead $(30,000 \times 3.50)$ 105,000

Under absorption = 3,875 (108,875 – 105,000)

8. (b)

Actual expenditure 56,389

Absorbed cost $(12,400 \times 1.02 \times 4.25)$ 53,754

Total under absorption 2,635 (56,389-53,754)

9. (b)

Sales < production by 280 units

Marginal costing profit would be lower by $280 \times (48,000 \div 12,000) = \$1,120$

10. (b)

$$\$3,600 - (200 \text{ units} \times \$3) = \$3,000$$

11. (d)

12. \$368000

Profit under marginal costing is $464,000 - 96,000 = \$368000$.

Closing inventory = $20,000 - 18,000 = 2,000$ units

Absorption cost will include $\$96,000$ of the period's fixed production overhead ($2,000 \text{ units} \times 4 \text{ labour hours} \times \12 per hour) in the valuation of closing inventory. Under standard marginal costing this $\$96,000$ would be charged against the period's profit resulting in a profit $\$96,000$ lower than $\$464,000$.

13. It is easy to use - Marginal costing

It is useful for decision-making - Marginal costing

It values inventory in line with International Accounting Standards -absorption costing

It assists in controlling overhead costs- Absorption costing

Advantages of marginal costing include: ease of use and usefulness in decision making.

Advantages of absorption costing include: valuing inventory in line with IAS 2 and assistance in controlling.

14. (d)

15. \$10000

The reduction in profit if marginal costing had been used is $\$10000$.

Increase in finished goods inventory ($2,000 \text{ units produced less } 1,000 \text{ units sold}$) \times fixed production cost per unit
 $= 1,000 \times \$10 = \$10,000$

Tutorial note: Under or over-absorption adjustments do not cause a difference between marginal and absorption costing profits. They simply ensure that absorption costing charges the same amount of fixed overhead as marginal costing.

16. (a)

17. (a)

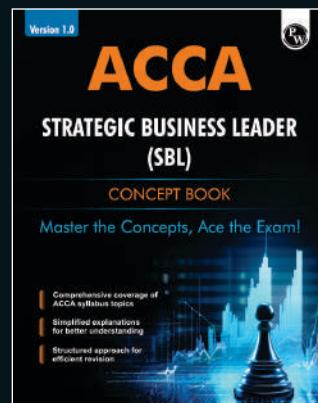
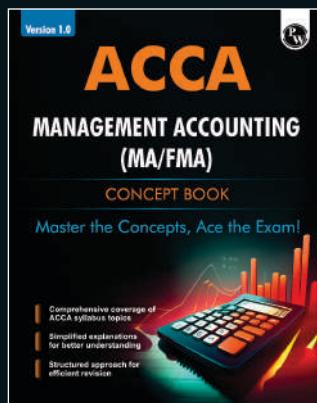
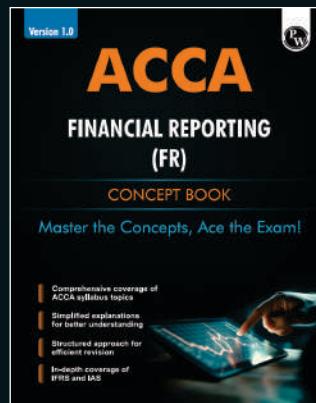
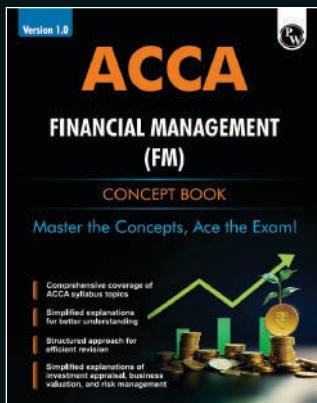
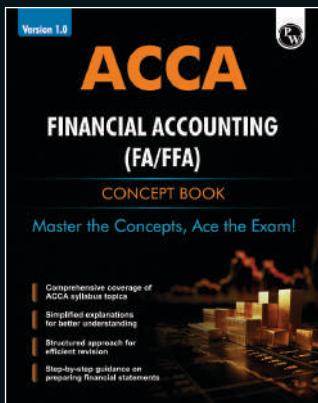
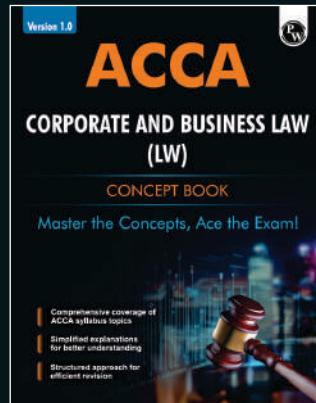
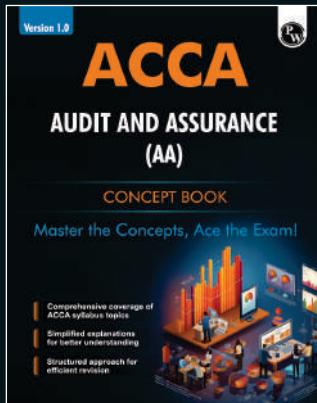
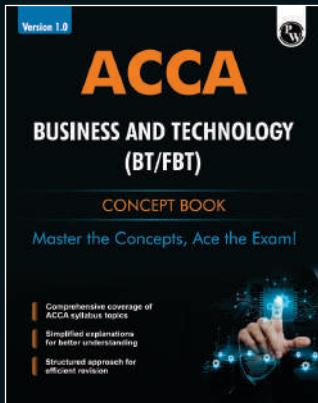
Actual cost $95,000$

Absorbed cost ($\$4.50 \times 20,000$) $90,000$

Under absorbed = $95,000 - 90,000 = 5,000$

18. Situation (1) leads to over-absorption as absorbed overheads would tend be higher than actual overheads incurred. In situation (2) applying the pre-determined absorption rate (which is based on budgeted hours) to the lower number of actual hours will lead to underabsorption.

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