



CHAPTER 1

NATURE OF COSTS

LEARNING OBJECTIVES:

After studying this chapter you should

- Understand and record material costs
- Understand and calculate the cost of material
- Understand the difference between material purchases and issues
- Value material using the different methods
- Understand the difference between direct and indirect material
- Distinguish between manufacturing costs, admin costs and selling costs
- Split overheads into fixed and variable components
- Understand and apply the concept of applied overheads



CHAPTER 1

NATURE OF COSTS AND COST BEHAVIOUR

Classification of costs

The management accountant must classify costs of individual periods to supply data to management that is helpful in the planning and control of the concern's activities. There are three important methods of cost classification.

Classification by organisation segment

Cost is allocated to the responsible division in the organisation. The cost is taken through to the lowest possible division in the organisation i.e. the salary of the production manager must partly be allocated to the workshop. **This classification indicates the place where the costs were incurred.**

Classification according to the nature of costs

Departments are split into cost centres. This implies that all the costs in the cost centre must be homogeneous. Costs are therefore split into categories like salaries, electricity etc. **This classification indicates what resources were used.**

Classification according to activity

Activity or the results of the activity are the reasons for incurring costs. For example, the obtaining of an order activity or production activity. This activity indicates the reason why the costs were incurred.

Costs can be further split into a fixed element and variable element.

Fixed costs

Fixed costs are those costs where the total remains constant while the cost per unit changes according to output.

Fixed costs can either be discretionary or committed. Committed costs are as a result of past management actions, eg depreciation. With discretionary costs management can use professional judgement.

Variable costs

Variable costs are those costs where the total cost changes directly with output, while the unit cost remains unchanged.

Semi variable costs

Unfortunately all costs cannot be easily classified into the above categories. For example, costs to maintain certain machinery. The cost will change according to the usage of the machinery, but certain maintenance is carried out irrespective of whether the machine is used or not. Hence, this has a variable as well as a fixed element.

Various methods exist in order to identify the elements within a particular cost, viz the high low method and the least squares method.

The high – low method

The basic principal is to select the highest and lowest volumes together with the appropriate costs and compare the changes in the volume and costs.

Example

The total cost of production is R25 000 for 6 000 units while the cost increases to R30 000 when producing 8 000 units.

The fixed and variable elements are calculated as follows:

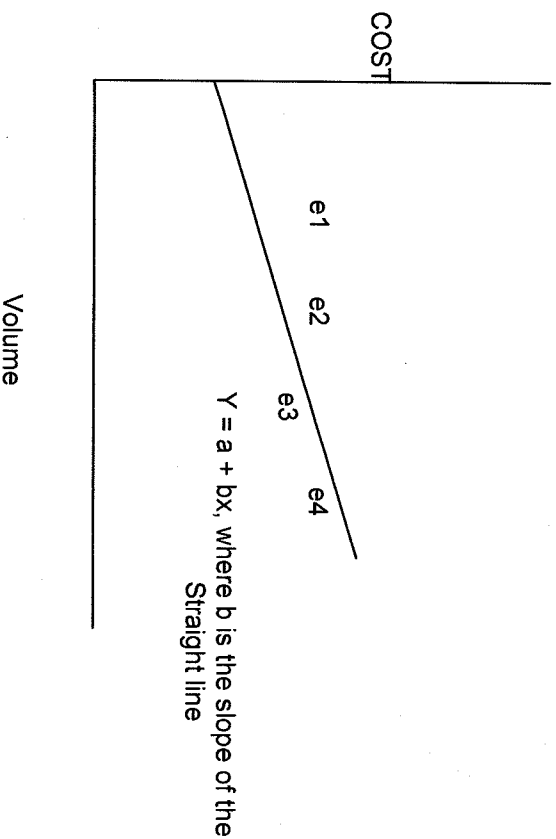
	Volume	Cost
High	8 000	30 000
Low	6 000	25 000
	<u>2 000</u>	<u>5 000</u>

The variable cost element is $5000 \div 2000 = R2,50$

The fixed cost is

Total cost	30 000
Variable cost (8000 x 2,50)	20 000
	<u>10 000</u>

The least squares method



In the case of the least squares method the straight line is fitted in such a way as to minimise the sum of the squares of the distance between the various points on the line.

The equation of the straight line is:

$$Y = a + bx$$

Where: y = the dependent variable

a = the intersection on the y axis (fixed cost element)

b = the slope of the line (variable cost element)

x = independent variable

Hence, from the general equation the summation of the above would be:

$$\Sigma Y = an + b\Sigma X$$

$$\Sigma XY = a\Sigma X + b\Sigma X^2$$

The above equations are solved simultaneously to find the values for a and b.

n	x	y	x ²	xy
1	7	247	49	1729
2	10	270	100	2700
3	11	278	121	3058
4	10	271	100	2710
5	8	257	64	2056
6	6	235	36	1410
7	11	280	121	3080
8	12	287	144	3444
9	11	277	121	3047
10	9	265	81	2385
	95	2667	937	25619
	$\Sigma X = 95$	$\Sigma Y = 2667$	$\Sigma X^2 = 937$	$\Sigma XY = 25619$

Hence, substitute the values from the above table in the equations:

$$\Sigma Y = an + b\Sigma X$$

$$\Sigma XY = a\Sigma X + b\Sigma X^2$$

$$2667 = 10a + 95b \dots\dots\dots (1)$$

$$25619 = 95a + 937b \dots\dots\dots (2)$$

$$(1) \times 9,5 \Rightarrow 25336,5 = 95a + 902,5b \dots\dots\dots (3)$$

$$(2) - (3) \Rightarrow 282,5 = 34,5b$$

$$b = 8,19$$

a = **188,90** by substituting b = 8,19 in (1)

Hence, **Y = 188,90 + 8,19x**



COST MANAGEMENT

Direct material

Direct material is any raw material that becomes an identifiable component of the finished product. For example, in manufacturing men's shirts, the fabric is the direct material. Direct material may be purchased in either a finished state or a raw state.

Direct labour

Direct labour is the amount of wages earned by workers that actually worked on the product. In other words in transforming it into a finished product. Remember that overtime, holiday pay and bonuses also form part of direct labour.

Manufacturing overhead

Manufacturing or factory overhead is the third cost element. Factory overheads include all production costs other than direct material and direct labour. Factory overheads include indirect materials, indirect labour and all other factory overheads.

Indirect material

All direct materials items are recorded separately. Small insignificant items such as cotton and buttons for the shirt may be difficult to cost separately as one reel of cotton may be used on more than one shirt. Hence, such material is termed indirect material. Indirect materials are recorded in the factory overhead account.

Indirect labour

Plant supervisors do not actually work on the product, so their salaries are indirect. These are charged to factory overhead accounts.

Other factory overheads

In addition to the indirect material and labour, the company will also incur costs such as rental, electricity, depreciation, etc. These costs need to be allocated to the products in some acceptable manner. All factory overheads are accounted for in the factory overhead account.

The control account is no different from any other control account; except that it acts as a clearing account designed to accumulate costs and applied overheads.

Actual overheads are charged to this control account as incurred. At the end of the period and when a job is completed, overhead costs are applied to the work-in-progress account by means of a pre-determined overhead rate and the factory overhead account is credited.



Application of the factory overhead

When a product is completed, the accumulated costs in WIP are transferred to the finished goods account. The amount transferred is the sum of the three costs of production viz, direct material, direct labour and factory overheads. The factory overheads are difficult to determine as the product must first be completed before being costed. Thus an easier method had to be found.

In practice, all the factory overhead costs are estimated for budgetary purposes. In this way the cost accountant determines a factory overhead application rate. Assume that management budgets for R36 000 factory overhead costs and estimates that the total labour hours will be R6 000, the factory overhead rate is determined as follows:

$$\begin{aligned} &\underline{\text{Factory overheads}} \\ &\text{Labour hours} \\ &= \text{R}36000 \div 6000 \\ &= \underline{\text{R}6 \text{ per labour hour}} \end{aligned}$$

Machine hours is but one basis for determining the overhead rate. The company may use machine hours, units etc.

Assume that the actual labour hours amounted to 6 500. The applied overheads will be the 6 500 x R6 which is R39 000.

The journal entry to record applied overheads is:

DR – WORK IN PROGRESS	39 000	
CR - FACTORY OVERHEAD CONTROL		39 000

The factory overhead account must be closed off and the difference be taken to cost of sales.

COST DRIVERS

Management has to visualise the production process and determine which factors causes the cost pool to increase. For example, a product may require a lot of machine hours and not many direct labour hours. Hence, machine hours will be the cost driver. It is this cost driver that will be used to calculate the overhead rate.

EXAMPLE

Sack Ltd is a manufacturing company with two production departments and one service department. The following information is supplied to you.

	R
Material	50 000
Direct labour	30 000
Indirect labour	20 000
Electricity	5 000
Depreciation - machines	12 000
Rent - factory	23 000
	<u>140 000</u>



	Production 1	Production 2	Service 1
Number of supervisors	3	4	1
Number of non-supervisory staff	50	75	10
Area (m ²)	3 000	5 000	2 000
Direct labour hours	6 000	10 000	-
Machine hours	4 000	4 000	2 000
% time spent by service departments To production departments	40%	60%	-

Assume that direct labour hours is the driving cost.

The overhead recovery rate will be calculated as follows:

Cost	Allocation basis	Total	Production 1	Production 2	Service 1
Indirect labour	Supervisors	20 000	7 500	10 000	2 500
Electricity	m ²	5 000	1 500	2 500	1 000
Depreciation	Machine hours	12 000	4 800	4 800	2 400
Rent	m ²	23 000	6 900	11 500	4 600
Allocation of service dept		<u>60 000</u>	<u>20 700</u>	<u>28 800</u>	<u>10 500</u>
			4 200	6 300	10 500
			<u>24 900</u>	<u>35 100</u>	

Recovery rate:

Production dept 1:

$$\frac{R24\ 900}{6\ 000}$$

= R4,15 per hour

→

Production dept 2:

$$\frac{R35\ 100}{10\ 000}$$

= R3,51 per hour

→



PRODUCTION AND SERVICE DEPARTMENTS

Production departments are those actually engaged in manufacturing activities while service departments provide services to other departments. The cost of the service departments must be allocated to production to reflect the total cost of production.

Allocation methods for service costs

There are basically three methods to allocate such costs:

The direct method: Overheads of the service departments are allocated to production departments only.

The step-down method: Costs are allocated to the service departments and to the production departments which receive their services.

The reciprocal method: This method takes into account inter-service department services.

YOU ARE ONLY REQUIRED TO KNOW THE DIRECT METHOD

**RESTATEMENT LEARNING OBJECTIVES:**

You should now be at point where you

- Understand and are able to record material costs
- Understand and are able to calculate the cost of material
- Understand the difference between material purchases and issues
- Are able to value material using the different methods
- Understand the difference between direct and indirect material
- Distinguish between manufacturing costs, admin costs and selling costs
- Can successfully split overheads into fixed and variable components
- Understand and are able to apply the concept of applied overheads