OVERHEAD COST

Chapter 4

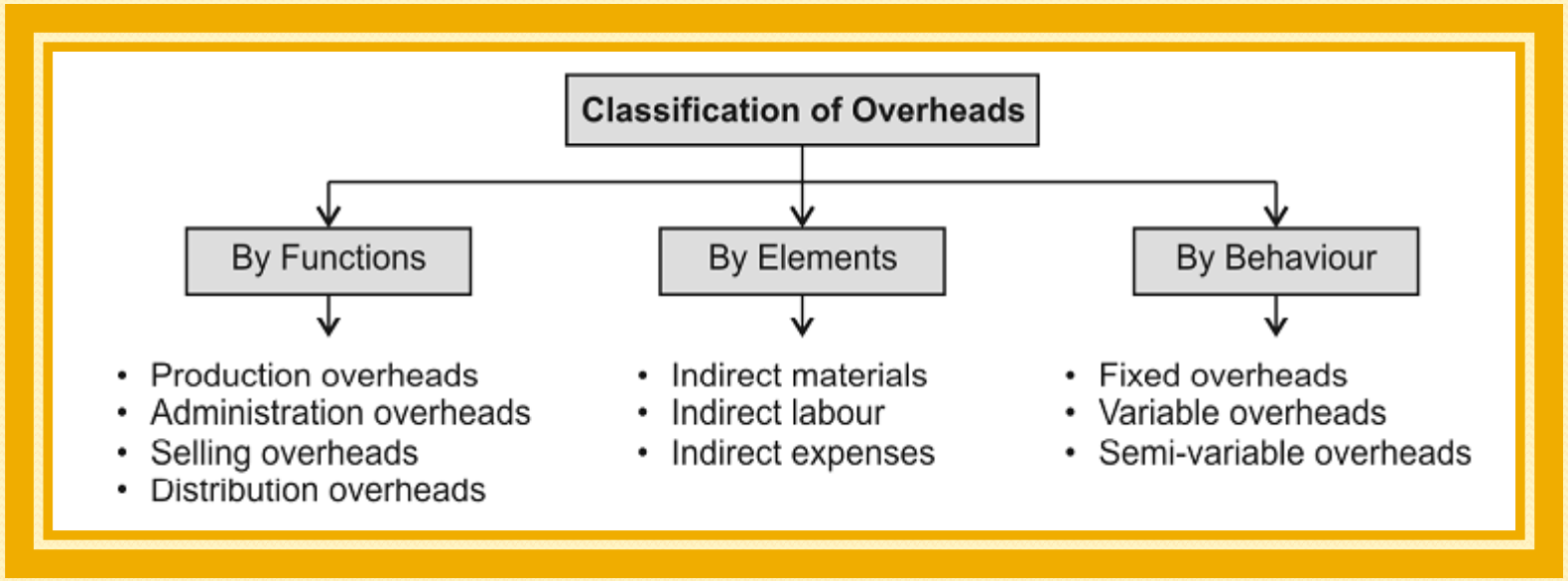
MEANING OF OVERHEAD COST

'Overhead is the aggregate of indirect materials, indirect wages and indirect expenses.' (CIMA, London)

Overhead is also known as

- Oncost
- Supplementary cost
- Burden
- Non-productive cost

CLASSIFICATIONS OF OVERHEAD COSTS



CLASSIFICATIONS OF OVERHEAD COSTS

Classifiation according to Functions

- **Production overheads** They are indirect expenditures incurred in connection with production operations.
- **Administration overheads** Costs incurred in administration of an undertaking, not related directly to production or distribution function.
- **Selling and distribution overheads** Selling Costs are costs to stimulate demand. Distribution overheads are expenditures from the time product is manufactured till it is sold.

Element - wise Classification

- **Indirect materials** They are material costs, which cannot be allocated but which are to be apportioned to or absorbed by cost centres or cost units.
- **Indirect wages** They are those which cannot be allocated but which are to be apportioned to or absorbed by cost centres or cost units.
- **Indirect expenses** Expenses which cannot be allocated but which are to be apportioned to or absorbed by cost centres or cost units are indirect expenses.

Classification according to Behaviour or Variability

- **Fixed overheads** These overheads remain unaffected or fixed in total amount by fluctuations in volume of output.
- **Variable overheads** This is the cost which, in aggregate, tends to vary in direct proportion to changes in the volume of output.
- **Semi-variable overheads** These overheads are partly fixed and partly variable.

SEGREGATION OF SEMI-VARIABLE COST

High and Low Points Method: Under this method, semi-variable costs at various level of output are considered The difference between the highest and the lowest volume of output and the difference between the corresponding costs are worked out.

$$\text{Variable element per unit} = \frac{\text{Difference in semi-variable costs (₹)}}{\text{Difference in output (units)}}$$

Method of Averages: Under this method, data given is divided into two parts. Then average of output and cost is separately computed for these two parts.

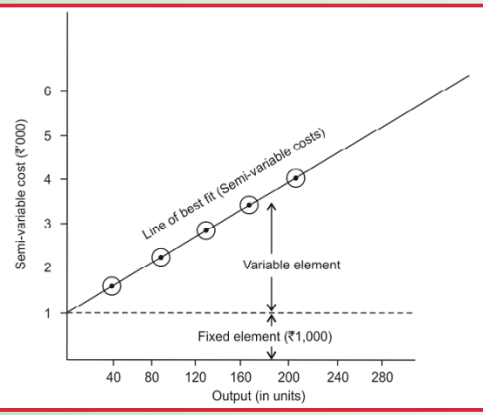
$$\text{Variable element per unit} = \frac{\text{Difference in the average costs}}{\text{Difference in average output}}$$

Scatter Diagram Method: Semi-variable costs are plotted on a graph, the X-axis represents volume of production and Y-axis, the amount of expenditure. A straight line is drawn to represent an average of all those points. This is known as the line of best fit or line of regression. The point where this line of best fit intersects the X-axis, marks the fixed cost and a line from this point parallel to X-axis is known as fixed cost line. Difference between semi-variable cost line and fixed cost line represents variable component.

Simultaneous Equations Method: In this method, overhead costs are segregated by means of an equation.

$$Y = mX + c$$

where
Y = Total semi-variable cost
X = Volume of output
c = Fixed cost
m = Slope of variable cost line, *i.e.*, variable cost per unit of output.



STANDING ORDER NUMBERS (Codification of Overheads)

After overheads are classified, it is found useful to allot a number or symbol to each group of expenses so that each such group is easily distinguished from others. Such numbers or symbols are codes for overheads and are called standing order numbers.

Each standing order number denotes a particular type of expenditure so that items of expenses of similar nature, as and when they are incurred, are appropriately classified into one of these.

A schedule or manual is maintained enlisting all standing order numbers.

OVERHEADS DISTRIBUTION

Distribution of overhead costs to cost units is one of the most complex problems of cost accounting. This is because overhead costs cannot be identified with individual cost units and there are no accounting means of exact distribution.

Steps in Overheads Distribution

Classification and collection of overheads → Allocation and apportionment of overheads to production departments and service departments → Re-apportionment of service department costs to production departments → Absorption of overheads of each production department in cost units

Collection of Overheads

Invoice-for collection of indirect expenses, like rent, insurance, etc.

Stores Requisitions-for collection of indirect materials.

Wages Analysis Sheet-for collection of indirect wages.

Journal entries-for collection of those overhead items which do not result in current cash outlay and need some adjustment

ALLOCATION AND APPORTIONMENT OF OVERHEADS (Primary Distribution)

Departmentalization of Overheads: Departmentalization of overheads is the process of allocation and apportionment of overheads to different departments or cost centres. These departments are mainly of two types: (a) Production departments (b) Service departments.

Objectives of Departmentalization

- Ensures greater accuracy in cost ascertainment
- Ensures control of overhead costs
- Use of different methods of absorption
- Ensure proper valuation of work-in-progress
- Helps in Estimation of cost of service of departments
- More accurate forecasting and estimating

ALLOCATION AND APPORTIONMENT OF OVERHEADS(Primary Distribution)

Allocation: 'The assignment of whole items of cost directly to a cost centre.'

Allocation of overheads should meet both of the following conditions:

- The cost centre must have caused the overhead cost to be incurred
- The exact amount incurred in a cost centre must be known.

Apportionment: Apportionment may be defined as 'the distribution of overheads to more than one cost centre, on some equitable basis.'

Principles of Apportionment

• It is based on the theory that greater the amount of service or benefit received by a department, the larger should be the share of the cost to be borne by that department.	• This method is used for those overhead costs that are not directly related to departments and whose remoteness necessitates an arbitrary distribution.	• This is based on the theory of taxation which holds that those who have the largest income should bear the highest proportion of the tax burden.
Service or use	Survey method	Ability-to-pay method

BASES OF APPORTIONMENT

	Overhead Cost	*Bases of Apportionment*
1.	(*i*) Rent and other building expenses (*ii*) Lighting and heating (*iii*) Fire precaution service (*iv*) Air-conditioning	Floor area, or volume of department
2.	(*i*) Fringe benefits (*ii*) Labour welfare expenses (*iii*) Time keeping (*iv*) Personnel office (*v*) Supervision	Number of workers
3.	(*i*) Compensation to workers (*ii*) Holiday pay (*iii*) ESI and PF contribution (*iv*) Fringe benefits	Direct wages
4.	General overheads	Direct labour hours, or Direct wages, or Machine hours
5.	(*i*) Depreciation of plant and machinery (*ii*) Repairs and maintenance of plant and machinery (*iii*) Insurance of stock	Capital values
6.	(*i*) Power/steam consumption (*ii*) Internal transport (*iii*) Managerial salaries	Technical estimates
7.	Lighting expenses	No. of light points, or Area
8.	Electric power	Horse power of machines, or Number of machine hours, or Value of machines
9.	(*i*) Material handling (*ii*) Stores overheads	Weight of materials, or Volume of materials, or Value of materials

RE-APPORTIONMENT OF SERVICE DEPARTMENT COST(Secondary Distribution)

Service department	*Bases of apportionment*
1. Store-keeping department	Number of material requisitions, or value/quantity of materials consumed in each department
2. Purchase department	Value of materials purchased for each department, or number of purchase orders placed
3. Time-keeping department and payroll department	Number of employees, or total labour or machine hours
4. Personnel department	Rate of labour turnover, or number of employees in each department
5. Canteen, welfare and recreation services	Number of employees, or total wages
6. Maintenance department	Number of hours worked in each department
7. Internal transport service	Value or weight of goods transported, or distance covered
8. Inspection department	Direct labour hours or machine operating hours
9. Drawing office	No. of drawings made or man hours worked

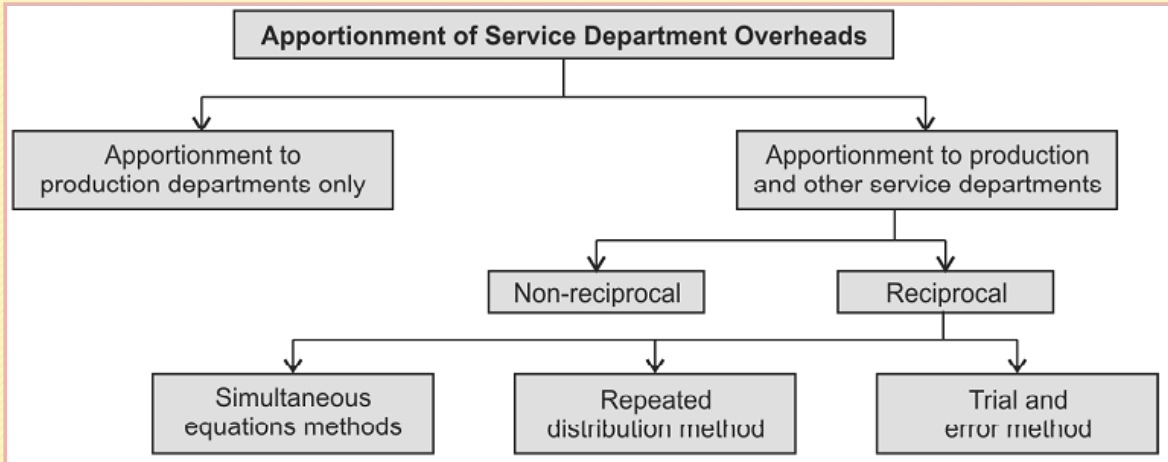


Fig. 4.3: *Distribution of Service Department Overheads*

ABSORPTION OF OVERHEADS

There are two steps in the absorption of overheads:

Computation of Overheads Absorption Rate

Absorption rates are computed for the purpose of absorption of overheads in costs of the cost units. There are mainly six methods for determining absorption rates.

Overheads absorption rate =Total overheads of cost centre/Total units in base

Application of rates to cost units

In order to arrive at the overhead cost of each cost unit, the overhead rate is multiplied by the number of units of base in the cost unit. Thus:

Overhead absorbed = No. of units of base in the cost unit × Overhead rate

METHODS OF ABSORPTION OF PRODUCTION OVERHEADS

Direct Materials Cost Percentage Rate: Under this method, the amount of overheads to be absorbed by a cost unit is determined by the cost of direct materials consumed in producing it.

$$\text{Overhead rate} = \frac{\text{Production overheads}}{\text{Direct materials}} \times 100$$

Direct Labour Cost Percentage Rate: The overhead rate under this method is computed by dividing the production overheads by the direct labour cost.

$$\text{Overhead rate} = \frac{\text{Production overheads}}{\text{Direct labour cost}} \times 100$$

Prime Cost Percentage Rate: This method is based on the premise that both materials and labour give rise to factory overheads and thus the total of the two, i.e., prime cost should be taken as the base for absorption of factory overheads. In a way, this is a combination of the material cost and labour cost methods.

$$\text{Overhead rate} = \frac{\text{Production overheads}}{\text{Prime cost}} \times 100$$

METHODS OF ABSORPTION OF PRODUCTION OVERHEADS(CONTD.)

Direct Labour Hour Rate: This is a rate per hour and not a percentage rate. It is obtained by dividing the total production overheads by the total number of direct labour hours for the period.

$$\text{Overhead rate} = \frac{\text{Production overheads}}{\text{Direct labour hours}}$$

Machine Hour Rate: Machine hour rate is the overhead cost of running a machine for one hour. This rate is obtained by dividing the amount of factory overheads apportioned to a machine by the number of machine hours for the period under consideration.

Rate per Unit of Output: It is the simplest of all the methods. This rate is determined by dividing the total overheads of a department by the number of units produced.

TYPES OF OVERHEAD RATES

Actual and Predetermined Rates

Actual Rate: It is calculated by dividing the actual overheads by actual base.

$$\text{Actual overhead rate} = \frac{\text{Actual amount of overheads}}{\text{Actual base}}$$

Predetermined Rate: This rate is determined in advance of the period in which it is to be used. It is computed by dividing the estimated or budgeted amount of overheads by the budgeted base. Thus:

$$\text{Predetermined rate} = \frac{\text{Budgeted amount of overheads}}{\text{Budgeted base}}$$

A blanket overhead rate is a single overhead rate for the entire factory. It is computed as follows.

$$\text{Blanket rate} = \frac{\text{Total overheads for the factory}}{\text{Total number of units of base for the factory}}$$

Multiple rates means a number of separate rates for each department, cost centre, etc.

$$\text{Overhead rate} = \frac{\text{Overheads of department or cost centre}}{\text{Corresponding base}}$$

CAPACITY UTILIZATION AND OVERHEADS

Capacity of a factory refers to its ability to produce with the resources and facilities available at its disposal.

Capacity Levels

Maximum Capacity	• This is the maximum production capability of a plant which can be achieved only under perfect conditions.
Practical Capacity	• This is the maximum capacity less output or time lost due to unavoidable factors like plant repairs and maintenance, setting up time, holidays, etc., and other normal losses.
Capacity Based on Sales Expectancy	• This is a capacity which is based on expected sales and is determined after a careful study of the market conditions.
Actual Capacity	• This is the capacity actually achieved during a particular period. This is known only after the period is over and may be below or above the capacity based on sales expectancy.
Normal Capacity	• This is the long-term average of the capacity based on sales expectancy

ADMINISTRATION OVERHEADS (Office or General Overheads)

They may be defined as the indirect expenditures incurred in formulating the policy, directing the organization and controlling the operations of an undertaking.

Absorption of Administration Overheads

Percentage of works cost Administration overhead cost is generally absorbed as a percentage of works cost.

Overhead rate = (Admn. Overheads/ works cost) × 100

Percentage of sales Sometimes office and administration overheads are absorbed as a percentage of sales.

Overhead rate = (Administration overheads/Sales) x 100)

As a percentage of conversion cost Conversion cost is the cost of converting raw material into finished goods.

Overhead rate =(Administration overheads/ Total conversion cost) x 100)

SELLING AND DISTRIBUTION OVERHEADS

Selling cost is the cost of seeking to create and stimulate demand (sometimes termed marketing) and of securing orders.

Distribution cost is the cost of the sequence of operations which begins with making the packed product available for dispatch and ends with making the reconditioned returned empty packages, if any, available for re-use.

Methods of Absorption

A rate per unit of sales The total selling and distribution overheads to be absorbed are divided by the number of units sold to arrive at a rate per unit.	**A percentage of selling price** This method is recommended when the concern is selling more than one type of product. Overhead rate =(Selling and distribution overheads/Sales)x100	**A percentage of works cost** In this method, a percentage of selling overheads to works cost is ascertained. Overhead rate =Selling and distribution overheads/Total works cost

UNDER-ABSORPTION AND OVER-ABSORPTION OF OVERHEADS

Under-absorption

- When the amount of overheads absorbed is less than the amount of overheads actually incurred, it is called under-absorption or under-recovery.

Over-absorption

- When the amount of overheads absorbed is more than the amount of actual overheads incurred, it is known as over-absorption or over-recovery.

Use of supplementary rates

- Where the amount of under or over-absorbed overheads is significant, a supplementary overhead absorption rate is calculated to adjust this amount in the cost. However, adjustment is made in the cost of: (i) work-in-progress; (ii) finished stock; and (iii) cost of sales.

Writing off to Costing Profit and Loss Account

- This method is used when the under or over-absorbed amount is quite negligible and it is not worthwhile to absorb it by supplementary rate.

Carry over to the next year

- Under this method the under or over-absorbed amount is transferred to Overhead Reserve Account or Suspense Account for carrying over to the next accounting year.

TREATMENT OF DEPRICIATION

Depreciation: 'Depreciation is the diminution in the value of a fixed asset due to use and/or lapse of time.'

Methods of Calculating Depreciation

Straight line method	• Also known as fixed instalment method or original cost method, this method provides for depreciation by means of equal periodic charge over the assumed life of the asset. **Depreciation = (Cost of asset Scrap value)/ Life of asset**
Diminishing balance method	• In this method, depreciation is charged at a constant rate on the balance value of the asset, i.e., after deducting the amounts provided in the previous years. **Depreciation per year = Written-down balance of asset × Fixed percentage**
Production unit method	• This is a method of charging depreciation by means of fixed rate per unit of output. **Depreciation charge per unit = (Cost of asset Residual value)/ Expected output during the life of the asset**
Machine hour method	• In this method, depreciation is charged at a rate per hour of machine operation. **Depreciation charge per hour = (Cost of asset -Residual value)/Estimated number of machine hours during life of machine**