
OVERHEADS

# OVERHEADS /OVERHEAD COSTS

- Costs or expenses incurred over and above the prime cost
- Sum total of indirect material, indirect labor and other indirect expenses
- Any cost which is not directly attributable to a cost centre or cost unit
- "The aggregate of indirect material cost, indirect labor cost and indirect expenses" ICMA
- Since benefits of such expenses cannot be attached to a particular cost centre /cost unit, such expenses cannot directly allocated
- Are apportioned on equitable base
- Also known as ***burden, on cost***

## Steps in Overhead Accounting

- Overheads cannot be directly charged, but are apportioned equitable on some base.
- Stages or steps involved in the allocation of overheads to different cost centers -

1. Classification of overheads
2. Codification and collection of overheads
3. Allocation and apportionment of overheads (departmentalization of overheads)
4. Re-apportionment of overheads
5. Absorption of overheads

# Classification of Overheads

- Process of grouping
- Divided into groups and sub groups

## Bases for Classification

I. Function or Functional classification
II. Elements or Element-wise classification
III. Nature or Behavior or Behavioral classification
IV. Controllability

I. Function or functional classification

a. Factory or manufacturing overheads
b. Office or administration overheads
c. Selling overheads
d. Distribution overheads
e. Research and development overheads

II. Elements or element-wise classification

a. Indirect material
b. Indirect labor
c. Indirect expense

## III. Nature or behavior or behavioral classification

a. Variable
b. Fixed
c. Semi-variable or semi-fixed

## IV. Controllability

a. Controllable
b. Non-controllable

## 2. Codification and Collection of Overheads

- For easy identification, dealing and accounting the overheads, the classified overheads are given different codes
- Is the process of allotting number or symbols to each group or sub groups of overheads for easy identification

**FURTHER,** Expenses are incurred at different periods for different purposes, by different persons responsible

These scattered expenses are to be collected under suitable headings – known as collection

Can be collected form various vouchers and documents such as (a) invoice, (b) cash book (c) subsidiary records, journals etc

## 3. Allocation and apportionment of expenses (departmentalization)

- For ease of management and administration, an organization will be divided into different units or divisions, known as departments
- Three types of departments
  i. Production department : Engaged in the conversion of raw material into finished products
  ii. Service department: Auxiliary departments, not directly engaged in the production; but helps the production departments by rendering services required. Eg Office, Personnel department etc
  iii. Partly producing departments

## A. Allocation of Overheads

- The process of identification of overheads with cost centers
- An expense which is directly identifiable is with a specific cost centre is allocated to that cost centre
- "is the allotment of whole item of cost to a cost centre or cost unit" or
- "charging of expenses which can be identified wholly with a particular department"

Eg:- 1. Overtime wages paid to workers in the production dept., can be fully allocated to the production department.

2. Repair charges for a particular machinery used in a particular department

## B. Apportionment of Overheads

- Certain costs or expenses are commonly incurred to different departments, thus, cannot be identified with a particular cost centre or department
- Costs which cannot be identified with a particular cost centre or department need be divided or apportioned among the beneficiary departments equitably
- Apportionment - the allotment of expenses which cannot be identified wholly with a particular department
- "As the allotment to two or more cost centers of proportions of the common items of cost on the estimated basis of benefit received.

Eg: Rent, rates, taxes, works manager's salary etc

# Differences Between Allocation and Apportionment

| Allocation | Apportionment |
|---|---|
| Means the allotment of whole item of cost to cost centers or cost units | Means allotments of proportion of items of cost to cost centre or cost units |
| Deals with whole item of cost | Deals with only proportions of items of cost |
| Cost is directly allocated to cost centre or cost unit | Not directly allocated, but are divided or apportioned to different departments on suitable basis |
| Allocated when the cost centre uses whole of the benefits of the expense | Apportioned when cost centers use only a proportion of the benefits of the whole expenses |
| No bases are required for allocation | Need a suitable base |

# BASES OF APPORTIONMENT

- Allotment?
  - Whole item of cost
- Apportionment?
  - Allotment of proportions of items
- THUS, Apportionment need proper (equitable) base for allotment of overhead expenses to different departments and service department costs to production departments
- Allotment and apportionment of overhead expenses to different departments including service department is known as PRIMARY DISTRIBUTION

## Bases for apportionment (contd.)

### 1. Direct Allocation

- Directly allocated to different departments on the basis of expenses incurred, if identifiable

  eg:- Overtime wages paid to the workers in a particular dept.

- Repair charges incurred for a machine used in a particular dept.

### 2. Direct Labor / Machine Hours

- Apportioned on the basis (ratio) of direct labor / machine hours
- Majority of general overhead items are apportioned on this basis

**3. Value of Material Used**

Eg: material handling expenses

**4. Direct Wages**

Overheads which are incurred on the basis of labor costs

**5. Number of Workers**

Overheads varies on the basis of number of workers (canteen expenses, , medical expenses, time keeping, supervisions etc)

**6. Floor Area**

rent, rates, taxes, maintenance on building etc

## Bases of apportionment contd.

**7. Capital values**

repairs, maintenance, insurance, taxes et

**8. Light Points**

**9. Kilowatt hours**

**10. Technical estimates**

Eg:- Modern Ltd., has four departments – three production depts namely, X, Y and Z and one service dept. called A. Actual costs of the firm for the year are as follows:-

| Costs | Rs. | Costs | Rs. |
|---|---|---|---|
| Rent | 1000 | Supervision | 1500 |
| Repairs to plant | 600 | Fire insurance (stock) | 500 |
| Depreciation (plant) | 450 | Power | 900 |
| Employer's Liability for insurance | | | 150 |
| Lighting | | | 120 |

Following information is available

| | X | Y | Z | A |
|---|---|---|---|---|
| Area (sq.mts) | 1500 | 1100 | 900 | 500 |
| Number of employees | 20 | 15 | 10 | 5 |
| Total wages (Rs.) | 6000 | 4000 | 3000 | 2000 |
| Value of plant (Rs.) | 24000 | 18000 | 12000 | 6000 |
| Value of stock (Rs.) | 15000 | 9000 | 6000 | - |
| Horse power of plant | 24 | 18 | 12 | 2 |

**Apportion the costs to the various depts., on the most equitable base**

# OVERHEAD DISTRIBUTION SUMMARY

| item | Bases of apportionment | TOTAL | Production Departments | | | Service Dept. |
|---|---|---|---|---|---|---|
| | | | X | Y | Z | A |
| Rent | Floor area | 1000 | 375 | 275 | 225 | 125 |
| Repairs to plant | Plant value | 600 | 240 | 180 | 120 | 60 |
| Depreciation | Plant value | 450 | 180 | 135 | 90 | 45 |
| Light | Floor area | 120 | 45 | 33 | 27 | 15 |
| Power | Horse power | 900 | 360 | 270 | 180 | 90 |
| Supervision | No. of employees | 1500 | 600 | 450 | 300 | 150 |
| Fire insurance | Stock value | 500 | 250 | 150 | 100 | - |
| Employer' liability to | No of employees | 150 | 60 | 45 | 30 | 15 |
| Total | | 5220 | 2110 | 1538 | 1072 | 500 |

# RE-APPORTIONMENT OF SERVICE DEPARTMENT COSTS TO PRODUCTION DEPARTMENTS

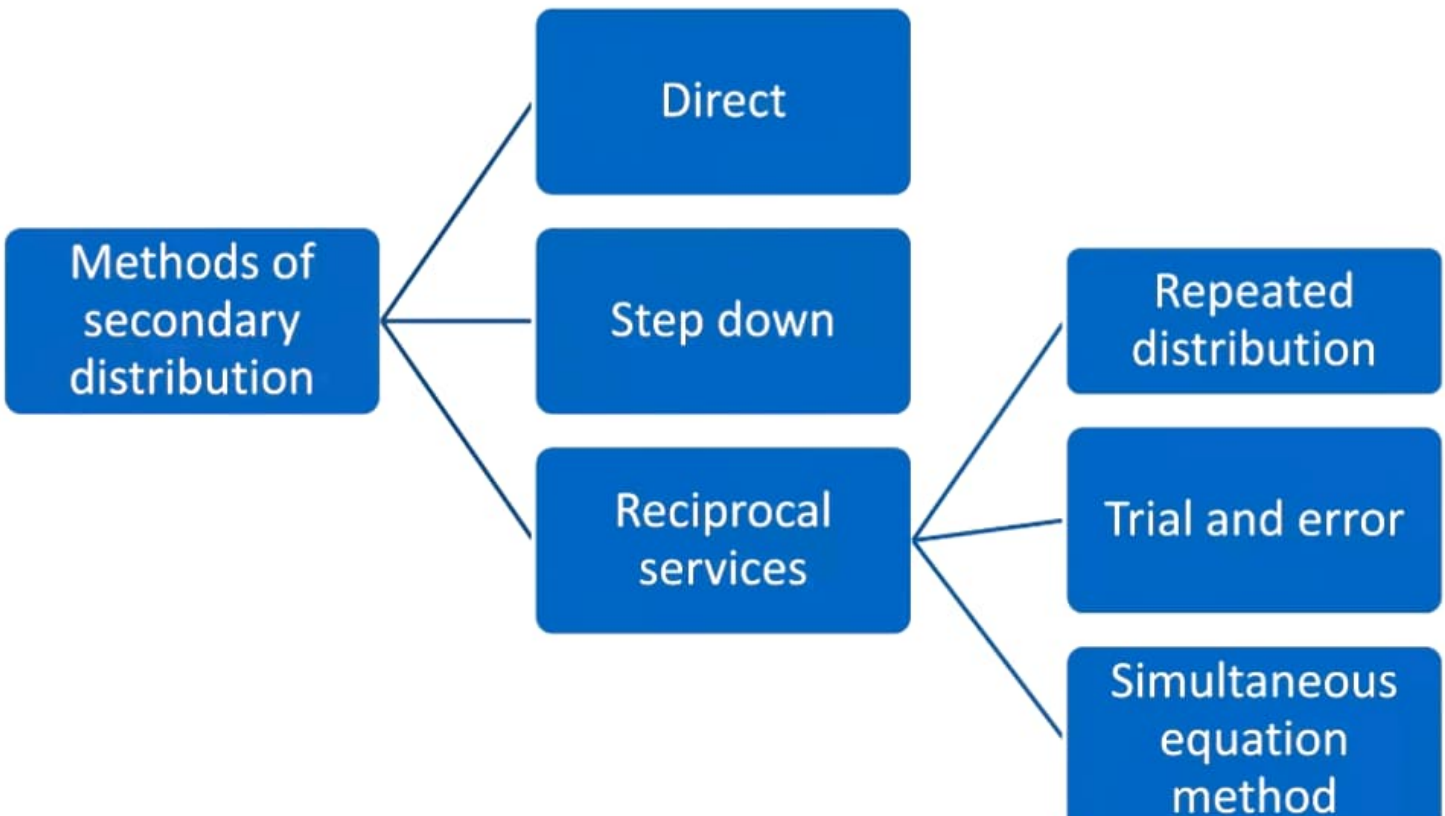
Three types of departments

- Actual production goes on in production department, service department help the production departments by rendering services required.
- Thus, service department costs are to be re-apportioned to production depts.
- The process of re-apportionment of service department costs to production departments is known as **Secondary Distribution**

| SERVICE DEPARTMENTS | BASIS OF APPORTIONMENT |
|---|---|
| Maintenance | Hours worked |
| Payroll – time keeping | Total labor or machine hours or number of employees |
| Employment – personnel | Labor turnover rate or number of employees |
| Store keeping | Number of requisitions or value of materials |
| Purchase | Number of orders or value of materials |
| Welfare, ambulance, canteen, recreation | Number of employees |
| Building service | area |

| SERVICE DEPARTMENT | BASIS OF APPORTIONMENT |
| --- | --- |
| Internal transport or overhead crane services | Weight, value of product handled, weight and distance travelled |
| Transport | Crane hours, truck hours, weights, distance, number of packages |
| Power house – electric power | Wattage, horse power, machine hours , number of electric points |
| Power house | Floor area, cubic content |

# Methods of re-apportionment (re-distribution)



## Repeated Distribution Method

Under this method, the totals of each department (both production and service) is shown separately in the first row of the table

Then, one service department cost is taken and is distributed to other departments (including service departments) in the given ratio

Then the next service department cost (total cost as per primary distribution + cost received as per the second step above) is taken and is distributed to other departments (including service department)

This process is repeated till the entire cost of the service department is exhausted

| SECONDARY DISTRIBUTION SUMMARY | | | | | |
|---|---|---|---|---|---|
| | P1 | P2 | P3 | S1 | S2 |
| As per Primary distribution | 800 | 700 | 500 | 234 | 300 |
| Service Dept. S1 | 47 | 94 | 70 | (234) | 23 |
| Service Dept. S2 | 129 | 65 | 65 | 64 | (323) |
| Service Dept. S1 | 14 | 25 | 19 | (64) | 6 |
| Service Dept. S2 | 2 | 2 | 2 | - | (6) |
| Total | 992 | 886 | 656 | | |

# Trial and Error Method

In this method, as a first stage, service dept costs are taken and apportioned as is done in the case of repeated distribution method

Then, all the positive figures in the column are added to ascertain the total cost of each service department

These totals are then distributed to production departments in the given percentage or ratio

| SECONDARY DISTRIBUTION (Trial and Error Method) | | |
|---|---|---|
| | S1 | S2 |
| Cost as per Primary distribution | 234 | 300 |
| Service Dept. cost S1 (10%) | (234) | 23 |
| Service Dept. cost S2 (20%) | 65 | (323) |
| Service Dept. cost S1 (10%) | (64) | 7 |
| Service Dept. cost S2 (20%) | 1 | (6) |
| Total | 300 | 330 |

**Production Department P1 (800 + 20% of S1 total + 40% of S2 total) = 992**

**Production Department P2 (700 + 40% of S1 total + 20% of S2 total) = 886**

**Production Department P3 (500 + 30% of S1 total + 20% of S2 total) = 656**

# ABSORPTION OF OVERHEAD

Next step in overhead accounting

Means – distribution of overhead expenses allotted to a particular department over the units produced in that department

" is the process of absorbing all overhead costs allocated or apportioned over particular cost centre or production department"

Apportionment of overhead expenses of cost centers to cost units

Also known as recovery of overheads from the cost of production

# Steps in Absorption of Overheads

Two steps

1. Computation of overhead rates and
2. Applying overhead rates to cost units

## Computation of overhead rates

What is rate? How to calculate rate?

- Overhead rate is the rate obtained by dividing overhead costs by the base.
- The base can be the direct material cost, direct wages, prime cost, labor hours, machine hours etc

## Applying overhead rates to cost units

- To calculate cost of each unit produced the overhead rate is multiplied with the units of the base contained in each individual product, job or process.

  (Overhead Rate X Units of base in the product)

Eg:-

Total overhead cost of Production dept X for June is Rs. 1,50,000 and total labor hours during the month is 25,000. If product A produced in X requires 100 hours – calculate the amount of overhead to be charged to Product A

Two steps

1. Determination of rate

$$Overhead\ Rate = \frac{Overhead\ cost}{Base\ (Labour\ Hours)}$$

$$Overhead\ Rate = \frac{150,000}{25000} = Rs.6$$

1. Application of rate (determination / charging of overhead cost to the product)

Overhead rate X Units of base in the product

Rs. 6 x 100 hours = Rs. 600

# Different Types of Overhead Rates

1. **Actual rate**

   The rate obtained by dividing actual overheads with actual quantity or value of the base

$$Actual\ Overhead\ Rate = \frac{Actual\ \ Overhead\ cost}{Actual\ Base}$$

2. **Predetermined (Budgeted)Overhead rate**

   The rate obtained by dividing predetermined or budgeted overhead expenses by the budgeted base of the period

$$Pre-determined\ overhead\ Rate = \frac{Budgeted\ Overhead\ cost}{Budgeted\ Base}$$

3. Blanket or Single rate

When a single overhead rate is calculated for the factory as a whole, it is known as Blanket or single rate- suitable

4. Multiple rates:

when different overhead rates are calculated for each production department, service dept. cost centers, product line, fixed overheads, variable overheads etc. it is known as multiple rates

## 5. Normal overhead rates

Refers to the overhead rates calculated with reference to normal capacity

$$Normal\ Overhead\ Rate = \frac{Normal\ \ Overhead\ cost}{Base\ at\ normal\ capacity}$$

## 6. Supplementary Rates

When pre-determined rates are used for absorption of overhead, there can be difference between actual overhead cost and overhead absorbed. To adjust this difference supplementary rates are used

$$Supplementary\ Overhead\ Rate = \frac{Actual\ overhead - overhead\ absorbed}{Base}$$

# Methods of Absorption of Overheads

1. Direct material cost method
2. Direct labor cost (wages) method
3. Prime cost method
4. Direct labor (production) hour method
5. Machine hour rate