

## **ABSORPTION OF OVERHEADS**

The objective of overhead absorption process is to include an appropriate share of total overheads in the total cost of final output.

After allocation and apportionment of overheads to cost centres, it is then charged to cost units, thus, including overhead to the total cost of a product. Overhead absorption is defined as “the charging overheads to cost units by means of rates separately calculated for each cost centre. In most cases the rates are pre-determined”.

## **SELECTION OF BASE FOR ABSORPTION OF FACTORY OVERHEADS**

For absorption of overhead, a suitable base is to be selected based on the nature of the production process in the cost centre.

### **1. Direct labour hour:**

This method of absorbing overhead is most appropriate in a labour intensive cost centre. Moreover, it is easy to use. Nowadays, most production methods involve substantial use of machinery and so the labour hour method may become increasingly inappropriate.

### **2. Machine hour:**

This method is most appropriate, in a mechanised cost centre, i.e. where production is mainly carried on mechanically. In such a cost centre, many of the overheads are related to the machinery, this method of absorption of overheads reflects more accurately the incidence of overheads in the total cost.

So, where a large part of the overhead is incurred by the use of machinery, the use of machine hour rates can be suggested.

### **3. Direct Material:**

This method of overhead absorption is not commendable since its use leads to some absurd anomalies.

Though this method is simple and easy to understand and apply, it suffers from the following disadvantages:

(i) There is no logical relationship between direct materials cost of a product and factory overhead.

(ii) Nowadays, in every economy, material prices fluctuate substantially. This change in price leads to high or low overhead costs, even though overhead costs remain unchanged.

(iii) Most of the overhead expenses vary with time, they accrue on time basis and not on materials consumed. The use of direct materials cost as the basis of absorption totally ignores the time factor which is considered as an important factor in allocation of overhead.

(iv) This method is not rational when part of the materials passes through all processes and part through only some processes.

#### **4. Direct Wages:**

This method is simple to operate and understand. It considers the time factor and so it is a rational method for the absorption of factory overheads. Under this method, labour cost is computed by multiplying number of hours spent on work by an hourly labour rate. This signifies that the more hours worked, the higher the labour cost and greater the charge for factory overheads.

This method is beneficial where production is uniform. The following are the demerits of this method:

(i) It does not consider the share of other factors of production other than direct labour. In many concerns, machinery is considered the major factor of production but not the labour. In such case, machine hour is recommended as the base of absorption.

(ii) It does not take into account the variations in the rates of wages for different personnel. Where wage rates vary and different incentive schemes are in existence, correlation between wages paid and time elapsed does not exist.

If there is only one rate of wage per hour paid throughout a cost centre and no form of incentive scheme exists then the Direct Wages system would be more appropriate to use. But such a situation is a distant possibility.

#### **5. Prime Cost:**

This method combines the total of direct materials cost and direct labour cost.

Advantages:

This method is simple to operate as the prime cost data is easily available.

Disadvantages:

(i) It ignores time factor in absorbing factory overhead.

(ii) Since the method is a combination of direct materials and direct wages, it suffers from the shortcomings of both the methods.

(iii) Where the cost of materials forms a larger part of prime cost, the time factor will be ignored.

(iv) Additional costs which arise due to the use of costlier machines are ignored and thus, this method is likely to result in an inequitable allotment of overheads.

## **TYPES OF OVERHEAD ABSORPTION RATE**

For overhead absorption,

1. A single blanket rate for whole factory, or
2. Different rates for each cost centres within the factory can be used.

## **Methods of Absorption of factory overheads:**

### **1. Percentage Method**

$$\text{Absorption Rate} = \frac{\text{Total overhead in the cost centre}}{\text{Total Quantum of base}} * 100\%$$

(i) Direct wages

$$\text{Absorption Rate} = \text{Total overheads} \div \text{Direct wages} \times 100.$$

#### **Advantages of Direct Labour Cost Method**

1. This method is used where labour cost forms a major portion of the total cost.
2. If different grades of labourers are employed to produce a product, this method is fair.
3. It is simple to understand and easy to apply.
4. This method is better than percentage of direct material cost method since the labour cost is less flexible than material cost.
5. There is a direct relationship between time factor and direct wages. If more time is required to finish a product, there must be a payment of high amount of wages.
6. Comparison of direct wages from one period to another is more dependable.

#### **Disadvantages of Direct Labour Cost Method**

1. This method is not suitable if the workers are paid on piece rate basis. The reason is that overhead depends upon the time instead of output.

2. Sometimes, workers are employed with costly equipment and hand tools. If costly equipment is used, the overhead is high and vice versa in the case of using hand tools. But, overhead absorbed on direct wages basis is equal. This is not acceptable.

3. If skilled workers perform a job, the wages is high. If unskilled worker performs the same job, the wages is low. These practices lead to absorption of overhead in different rate. This is unfair.

#### (ii) Direct Materials

Absorption Rate = Total overheads ÷ Direct Materials used.

#### Advantages of Direct Material Cost Method

1. This method is very simple to understand and easy to apply.
2. This method is suitable to the cost unit or cost centre where materials are formed as major part of the finished product.
3. This method is useful if grades of materials and prices of materials do not widely fluctuate.

#### Disadvantages of Material Cost Method

1. There is no logical relationship between the items of overhead and material cost.
2. Time factor item of overhead is not considered under this method. For example: Rent.
3. This method is not suitable if some materials passes through all processes and some materials passes through few processes.
4. The price fluctuation of material will not be accompanied by similar fluctuations in overhead.
5. Time spent on the completion of product is ignored in this method. For example cheap raw materials or inferior quality material requires more time than quality raw material. If so, cheap raw materials absorb high overhead and quality raw material absorb less overhead. This is undesirable.

#### (iii) Prime Cost

Absorption Rate = Total overheads ÷ Prime Cost x 100

#### Advantages of Percentage of Prime Cost Method

1. This method is very simple to understand and easy to apply.

2. It gives equal importance to direct material and direct labour.
3. It recognizes time factor.

#### Disadvantages of Percentage of Prime Cost Method

1. This method suffers from the limitation of both percentage of direct material cost method and percentage of direct labour cost method.
2. If the portion of direct material cost is more than direct labour cost, giving equal importance is not acceptable.
3. If the portion of direct labour cost is more than direct material cost, insufficient allowance is given for the time factor.

#### Suitability of Percentage of Prime Cost Method

This method is suitable if the following conditions are satisfied.

1. A standard product is produced.
2. A standard quantity of materials at standard rate is consumed.
3. A standard number of labour hours at standard rate is required for production.

## **2. Hour Rate Method**

$$\text{Absorption Rate} = \frac{\text{Total overhead in the cost centre}}{\text{Total Hours worked}}$$

(i) Direct labour hour

$$\text{Absorption Rate} = \text{Total overheads} \div \text{Direct labour hours}$$

#### Advantages of Direct Labour Hour Rate Method

1. If the production units are heterogeneous, the time spent by the labour is considered in the calculation of overhead rate.
2. This method can be easily adopted if proper records of time booking are maintained.

#### Disadvantages of Direct Labour Hour Rate Method

1. If mechanical production is followed, this method is not suitable.

2. The maintenance of direct labor hours are required for overhead rate calculation. This is very difficult.

3. There is no difference between the time spent by the skilled labour and unskilled labour.

#### Suitability of Direct Labour Hour Rate Method

This method is highly suitable if the following conditions are satisfied.

1. Labour is very important in production process.
2. Output is not uniform.
3. Any percentage method fails to suit the condition.

#### (ii) Machine hour

Absorption Rate = Total overheads ÷ Total Machine Hours

#### Advantages of Machine Hour Rate

The followings are the advantages of machine hour rate.

1. If machine work is predominant in any production, the machine hour rate ensures equitable charge.
2. An operator operates many machines or many operators operate single machine, machine hour rate becomes the best method of recovery.
3. Only productive time is taken into consideration for the calculation of machine hour rate. Hence, it is a logical method.
4. It is very easy to calculate machine hour rate well in advance.
5. The idle time of the machine is disclosed through analyzing under absorption of overhead.
6. It helps the allocation of indirect expenses to each job.
7. The share of expense of a job is determined with high degree of accuracy by using job specification sheets and route sheets.
8. If this method is followed, the price for the job is accurately fixed.

#### Disadvantages of Machine Hour Rate

The followings are the disadvantages of machine hour rate.

1. The calculation requires more clerical work.
2. Indirect expenses are apportioned on suitable basis. If suitable basis is not followed, the calculation of machine from rate is misleading.
3. This method is not useful if one single rate for the factory is to be used.
4. If most of the work is done manually, this method has limited application.

### **3. Unit of production Method**

$$\text{Absorption Rate} = \frac{\text{Total overhead in the cost centre}}{\text{Total units produced}}$$

#### Advantages of Production Unit or Cost Unit Method

1. This method is suitable for the department which produces only one product or homogeneous products or products measured in terms of a common yardstick.
2. It is applicable to the company where the manufacturing methods are simple.

#### **Thus, choice of Method:**

1. If the cost centre is labour intensive and the workers are paid at the same rate of wages = Direct labour hour method
2. If the cost centre is labour intensive and the workers are paid at different rates of wages = Direct wages percentage rate
3. If the cost centre is machine intensive = Machine hour rate
4. If the cost of materials is predominant = Direct materials cost percentage
5. If the prime cost is predominant = Prime cost percentage rate
6. If output is identical = Unit of production Method