

Learning Note 3.1: Other allocation bases used by traditional costing systems

In the main body of the book it was pointed out that traditional costing systems tend to rely on using two second stage allocation bases – namely, direct labour hours and machine hours. Example 3.1 was used to illustrate the application of these allocation bases. With traditional systems it is generally assumed that overhead expenditure is related to output measured by either direct labour hours or machine hours required for a given volume. Products with a high direct labour or machine hour content are therefore assumed to consume a greater proportion of overheads. In addition, to direct labour and machine hours, the following allocation bases are also sometimes used by traditional costing systems:

- 1 direct wages percentage method;
- 2 units of output method;
- 3 direct materials percentage method;
- 4 prime cost percentage method.

Each of these methods is illustrated using the information given in Example LN3.1.

1. Direct wages percentage method

The direct wages percentage overhead rate is calculated as follows:

$$\frac{\text{estimated departmental overheads} \times 100}{\text{estimated direct wages}}$$

Using information given in Example LN3.1,

$$\frac{£200\,000}{£250\,000} \times 100 = 80\% \text{ of direct wages}$$

If we assume that the direct wages cost for a product is £20 then overheads of £16 ($80\% \times £20$) will be allocated to the product.

The direct wages percentage method is suitable only where uniform wage rates apply within a cost centre or department. In such a situation this method will yield exactly the same results as the direct labour hour method. However, consider a situation where wage rates are not uniform. Products X and Y spend 20 hours in the same production department, but product X requires skilled labour and product Y requires unskilled labour, with direct wages costs respectively of £200 and £100. If we apply the direct wages percentage overhead rate of 80% we should allocate overheads of £160 to product X and £80 to product Y. If both products spend the same amount of time in the department, are such apportioned amounts fair? The answer would appear to be negative, and the direct wages percentage method should therefore only be recommended when similar wage rates are paid to direct employees in a production department.

EXAMPLE LN3.1

The budgeted overheads for a department for the next accounting period are £200 000. In addition, the following information is available for the period:

Estimated direct wages	£250 000
Estimated direct materials	£100 000
Estimated output	10 000 units

2. Units of output method

If this method is used, the overhead rate is calculated as follows:

$$\frac{\text{estimated departmental overhead}}{\text{estimated output}}$$

Using the information given in Example LN3.1, this would give an overhead rate of £20 per unit produced. The units of output method is only suitable where all units produced within a department are identical. In other words, it is best suited to a process costing system, and it is not recommended for a job costing system where all jobs or products spend a different amount of time in each production department. If, for example, two of the units produced in Example LN3.1 required 100 hours and 2 hours respectively then they would both be allocated £20. Such an allocation would not be logical.

3. Direct materials percentage method

The direct materials percentage overhead rate is calculated as follows:

$$\frac{\text{estimated departmental overhead}}{\text{estimated direct materials}}$$

Using the information given in Example LN3.1,

$$\frac{£200\,000}{£100\,000} = 200\% \text{ of direct materials}$$

If we assume that the direct material cost incurred by a product in the department is £50 then the product will be allocated with £100 for a share of the overheads of the department.

If the direct materials percentage overhead rate is used, the overheads allocated to products will bear little relationship to the amount of time that products spend in each department. Consequently, this method of recovery cannot normally be recommended, unless the majority of overheads incurred in a department are related to materials rather than time. In particular, the method is appropriate for allocating materials handling expenses to products. With this approach, a cost centre is created for material handling expenses and the expenses are allocated to products using a materials handling overhead rate (normally the direct materials percentage allocation method). Companies that use a materials handling overhead rate allocate the remaining factory overheads to products using one or more of the allocation bases described in this chapter.

4. Prime cost percentage method

The prime cost percentage overhead rate is calculated as follows:

$$\frac{\text{estimated departmental overheads}}{\text{estimated prime cost}} \times 100$$

Using the information given in Example LN3.1, you will see that the estimated prime cost is £350 000, which consists of direct wages of £250 000 plus direct materials of £100 000. The calculation of the overhead rate is

$$\frac{£200\,000}{£350\,000} \times 100 = 57.14\%$$

A product that incurs £100 prime cost in the department will be allocated £57.14 for the departmental overheads.

As prime cost consists of direct wages and direct materials, the disadvantages that apply to the direct materials and direct wages percentage methods also apply to the prime cost percentage method of overhead recovery. Consequently, the prime cost method is not recommended.