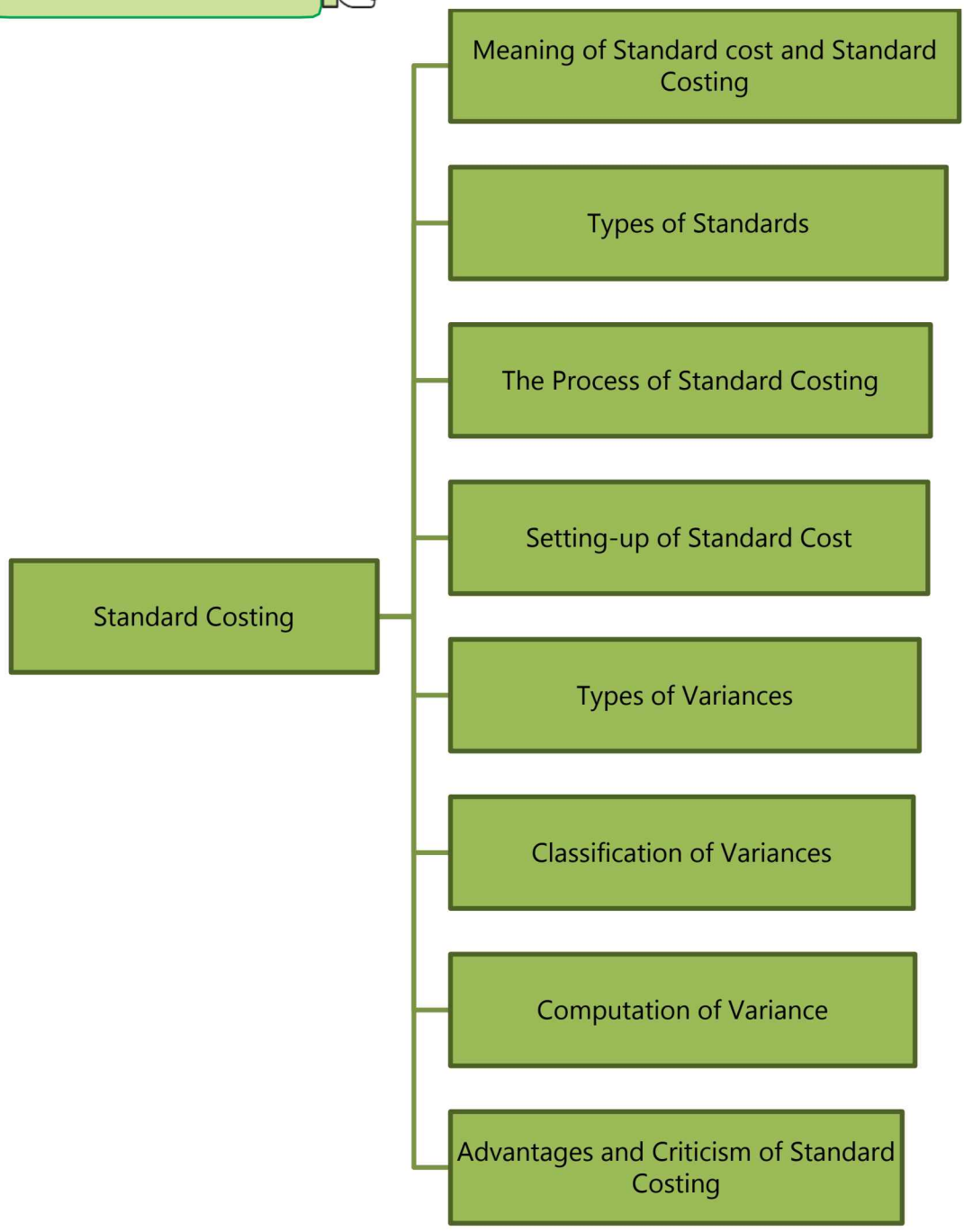
CHAPTER 13

STANDARD COSTING

LEARNING OUTCOMES

- Discuss the meaning of standard cost and variances.
- Differentiate between controllable and uncontrollable variances.
- Analyse and compute variances related to material, labour and overheads.

CHAPTER OVERVIEW



13.1 INTRODUCTION

Cost control is one of the objectives of cost management. Management of an organisation setups predetermined cost to compare the actual cost with the predetermined cost. Predetermined costs are standard costs used for cost control and performance evaluation. Standard costing is a method of cost and management accounting which starts with setting of standards to reporting of variances to management for taking corrective actions. The Official Terminology of CIMA, London defines standard costing as "Control technique that reports variances by comparing actual costs to pre-set standards so facilitating action through management by exception."

In this chapter we will learn how standards are set for each cost component i.e. material, labour and overheads of a cost object.

13.1.1 What is a Standard or Standard Cost?

Standard cost is defined in the CIMA Official Terminology as "'the planned unit cost of the product, component or service produced in a period. The standard cost may be determined on a number of bases. The main use of standard costs is in performance measurement, control, stock valuation and in the establishment of selling prices." From the above definition Standard costs can be said as

- Planned cost
- Determined on a base or number of bases.

13.1.2 Why Standard Costing is Needed?

Standards or Standard costs are established to evaluate performance of a responsibility centre. Apart from performance evaluation and cost control, standard costs are also used to value inventory where actual figures are not reliably available and to determine selling prices particularly while preparing quotations.

Standard costing system is widely accepted as it serves different needs of an organisation. The standard costing is preferred for the following reasons:

(a) **Prediction of future cost for decision making:** Standard costs are set after taking all present conditions and future possibilities into consideration. Hence, standard cost is future cost for the purpose of cost estimation and profitability from a proposed project/ order/ activity.

(b) **Provide target to be achieved:** Standard costs are the target cost which

should not be crossed by the responsibility centres. Performance of a responsibility centre is continuously monitored and measured against the set standards. Any variance from the standard is noted and reported for appropriate action.

(c) **Used in budgeting and performance evaluation:** Standard costs are used to set budgets and based on these budgets managerial performance is evaluated. This is of two benefits, one managers of a responsibility centre will not compromise with the quality to fulfill the budgeted quantity and second, variances can be traced with the responsible department or person.

(d) **Interim profit measurement and inventory valuation:** Actual profit can only be known after the closure of the accounts. But an organisation may need to prepare profitability statement for interim periods for managerial reporting and decision making. To arrive at profit figure, standard costs are deducted from the revenue.

13.2 TYPES OF STANDARDS

Types of standards are as below:

(i) Ideal Standards: These represent **the level of performance attainable when prices for material and labour are most favourable**, when the highest output is achieved with the best equipment and layout and when the maximum efficiency in utilisation of resources results in maximum output with minimum cost.

These types of standards are criticised on three grounds:

(a) Since such standards would be unattainable, no one would take these seriously.

(b) The variances disclosed would be variances from the ideal standards. These would not, therefore, indicate the extent to which they could have been reasonably and practically avoided.

(c) There would be no logical method of disposing of these variances.

(ii) Normal Standards: These are **standards that may be achieved under normal operating conditions**. The normal activity has been defined as "the number of standard hours which will produce at normal efficiency sufficient good to meet the average sales demand over a term of years".

These standards are, however, difficult to set because they require a degree of forecasting. The variances thrown out under this system are deviations from

normal efficiency, normal sales volume, or normal production volume.

If the actual performance is found to be abnormal, large variances may result and necessitate revision of standards.

(iii) Basic or Bogey Standards: These standards are used only when they are likely to remain constant or unaltered over a long period. According to this standard, a base year is chosen for comparison purposes in the same way as statisticians use price indices. Since basic standards do not represent what should be attained in the present period, current standards should also be prepared if basic standards are used. Basic standards are, however, well suited to businesses having a small range of products and long production runs. Basic standards are set, on a long-term basis and are seldom revised. When basic standards are in use, variances are not calculated. Instead, the actual cost is expressed as a percentage of basic cost. The current cost is also similarly expressed and the two percentages are compared to find out how much the actual cost has deviated from the current standard. The percentages are next compared with those of the previous periods to establish the trend of actual and current standard from basic cost.

(iv) Current Standards: These standards reflect the management's anticipation of what actual costs will be for the current period. These are the costs which the business will incur if the anticipated prices are paid for the goods and services and the usage corresponds to that believed to be necessary to produce the planned output.

The variances arising from expected standards represent the degree of efficiency in usage of the factors of production, variation in prices paid for materials and services and difference in the volume of production.

13.3 THE PROCESS OF STANDARD COSTING

The process of standard cost is as below:

(i) Setting of Standards: The first step is to set standards which are to be achieved, the process of standard setting is explained below.

(ii) Ascertainment of actual costs: Actual cost for each component of cost is ascertained. Actual costs are ascertained from books of account, material invoices, wage sheet, charge slip etc.

(iii) Comparison of actual cost with standard cost: Actual costs are compared with the standards costs and variances are determined.

(iv) Investigate the reasons for variances: Variances arises are investigated for

further action. Based on this, performance is evaluated and appropriate actions are taken.

(v) Disposition of variances: Variances arise are disposed-off by transferring it the relevant accounts (costing profit and loss account) as per the accounting method (plan) adopted.

13.4 SETTING UP OF STANDARD COST

Standard cost is set on the basis of management's estimation. Cost is estimated on the basis of technical specification provided by the engineering department or other expert such as production engineer. Generally, while setting standards, consideration is given to historical data, current production plan and expected conditions of future. For the sake of detailed analysis and control standard cost is set for each element of cost i.e. material, labour, variable overheads and fixed overheads. Standard are also set for the sales quantity and sales value; this is generally known as budgeted sales.

Standards are set in both quantity (units or hours) and in cost (price or rate). It is thus measure in quantities, hours and value of the factors of production.

Standard costs are divided into three main cost components, such as

(a) Direct Material Cost

(b) Direct Employee (Labour) Cost and

(c) Overheads

Standards are set in both physical and monetary terms for each cost components. Details are as follows:

13.4.1 Physical Standards

Physical standards refer to expression of standards in units or hours. At this stage standard quantity and standard hours are determined for a particular product or service. The purpose of setting standards is to secure economies in scale of production and to set selling price for quotation purpose.

In manufacturing organisations, the task of setting physical standards is assigned to the industrial engineering department. While setting standards consideration is given to the

- Company's operating plan i.e. budgets
- Final output to be produced
- Material specification, in both quantity and quality provided by the

engineering department.

- Proportion of material to be used in case of multiple inputs.
- Method of production i.e. fully automated, semi-automated or manual.
- Skill set of workers and availability of workers.
- Working conditions and internal factors.
- External factors (such as Labour Law, Factories Act, Govt. policy etc.).

PROCEDURE OF SETTING MATERIAL QUANTITY STANDARDS

The following procedure is usually followed for setting material quantity standards.

(a) **Standardisation of products:** At this phase, products to be produced are decided based on production plan and customer's order. Generally following questions are answered at this stage: (i) What to be produced? (ii) Which type to be produced and (iii) How much to be produced?

(b) **Product study:** Product to be produced is analysed and studied for developments and production. Product study is carried out by the engineering department or product consultants. At this phase answers to the following questions are satisfied: (i) How can it be produced? (ii) What are the pre-requisites? (iii) Which type of materials to be used? (iv) How products can be accepted in the market? etc.

(c) **Preparation of specification list:** After the product study a list of material is prepared. It specifies types (quality) and quantity of materials to be used, substitute of the materials, quantity and proportion of materials to be used, process to be followed, pre-requisites and condition required etc. While preparing specification list consideration to expected amount of wastage is given. It must be customised to adopt changes in the product.

(d) **Test runs:** Sample or test runs under specified conditions are carried out and sample products are tested for the desired quality and quantity. Any deviation from the specification is noted down and specification list is updated.

PROCEDURE OF SETTING LABOUR TIME STANDARDS

The following are the steps involved in setting labour standards:

(a) Standardisation of product and product study is carried out as explained above.

(b) Labour specification: Types of labour and labour time is specified. Labour time specification is based on past records and it takes into account normal wastage of time.

(c) Standardisation of methods: Selection of proper machines to use proper sequence and method of operations.

(d) Manufacturing layout: A plan of operation for each product listing the operations to be performed is prepared.

(e) Time and motion study: It is conducted for selecting the best way of completing the job or motions to be performed by workers and the standard time which an average worker will take for each job. This also takes into account the learning efficiency and learning effect.

(f) Training and trial: Workers are trained to do the work and time spent at the time of trial run is noted down.

PROCEDURE OF SETTING OVERHEADS TIME/ QUANTITY STANDARDS

Variable overhead time/ quantity is estimated based on specification made by the engineering departments. Variable overheads may either be based on direct material quantity or labour hour. Generally, it is based on labour time worked.

Fixed overhead time is based on budgeted production volume.

13.4.1.1 Problems faced while setting physical standards

The problems involved while setting physical standards will vary from industry to industry and may be illustrated as under:

(a) A situation may arise where the company is introducing the manufacture of a new line of product. In such case, it may be necessary to employ workers who have no experience in the job. This creates a problem of setting standard time because it is necessary to make adjustment for the inexperience of workers.

(b) Changes in technology may necessitate installation of sophisticated machines. When such machines are installed, the precise estimation of output and standard of efficiency achievable will pose a problem until after a long time when the working conditions are settled. Thus, setting standards for these machines and estimating the standard costs will need considerable amount of work.

(c) Often manufacturers prefer to product diversification to improve profitability. One of the most important problems that arise with the

proposed change in product is re-setting of production facilities. For example, when an old copper part is to be changed into one made of bronze to suit the new product, special care has to be taken to order new tools which in turn, pose the problem of setting up of standard time in respect of the new tools.

(d) Standards of material specifications are established and if the materials are not available as per specifications, the standards may not be achievable.

(e) Very often the cost accountant is confronted with the problem of choosing the type of standards to be adopted. For example, the industrial engineer has furnished the standard time for all direct labour operations as under:

1. Standard time attainable by the best operations is 2 hours per unit of product including allowances for personal fatigue and delay.
2. Attainable good performance for the average trained operator is 2.10 hours per unit of product.
3. Average past performance is 2.60 hours per unit.

The problem is, should direct labour standard hour be based on maximum efficiency or attainable good performance or average past performance? If costs are to represent maximum efficiency, the unit cost used in selling price will relatively be low but a high debit variance may arise if the standard efficiency is not achieved.

If, however, the standard cost is based on attainable good performance, the variances may tend to be nil. If efficiency is to be gauged, maximum efficiency standard will reflect the off standard performance, thereby enabling the departmental head to exercise control.

Similar problems as those mentioned above, may also arise in setting of waste standards. For example, the question may arise as to whether only absolutely unavoidable wastage should be provided or the past average level of wastage may be provided. This will again have different impact on the standard cost of production.

13.4.2 Price or Rate Standards

Broadly, the price or rate standards can be set on either of the following bases:

(a) Actual average or mean price expected to prevail during the coming

period, say one year; or

(b) Normal prices expected to prevail during a cycle of seasons which may be of a number of years.

PROCEDURES OF SETTING MATERIAL PRICE STANDARDS

Material prices are not altogether within the control of the manufacturer; but the purchasing department, on being apprised of production quantities required, should be able, from its knowledge of current market conditions and trends, to state with reasonable accuracy price for the constituent items. The standards for prices of materials should be based on the following factors, if price fluctuations are small and are not serious.

(a) Stock of materials on hand and the prices at which they are held;

(b) The prices at which orders for future deliveries of materials (agreement entered into) have already been placed,

(c) Minimum support price fixed by the appropriate authority and

(d) Anticipated fluctuation in price levels

In case there are unsystematic fluctuations in the market price, it may be difficult to determine standard costs of materials; fluctuations in the market price may be of different sorts; prices may be different from month to month, from one season to another or from one year to another. There may be a secular trend which, on the whole, is pushing price upwards or downwards. The nature of difficulties encountered in fixing standard costs of materials will naturally be different in each case. In addition, the purchasing policy of the company and the objective to be achieved (from cost accounting) will make a difference.

The difficulty in determining the standard cost of material in such a situation can be resolved as follows:

(a) In case prices fluctuate from month to month, the average of prices of a year corrected for the known secular changes and any other expected change can very well serve as the standard price for the next year.

(b) If the fluctuations are seasonal, but the whole year's requirements are purchased at one time, the weighted average of the likely prices to be paid should be treated as the standard price. But, if buying is also spread over the whole year, the weighted average of the prices for the whole year should be the standard price.

(c) If prices fluctuate from one year to another, a careful estimate of the price likely to prevail next year, based on a statistical study, should be adopted as the standard price.

PROCEDURES OF SETTING WAGE RATE STANDARD

The type of labour required for performing a specific job would be the most important factor for deciding the rate of wage to be paid to workers. Standard wage rate for skilled and unskilled workers are set based on the following basis:

- Time taken by the workers to complete a unit of production.
- Time or piece rate prevailing in the industry. It can be known from the peers.
- Wage agreement entered into between the management and workers' union.
- Law prevailing in the area of operation, law like Payment of minimum wages Act, Payment of bonus Act etc.

PROCEDURES OF SETTING OVERHEAD EXPENSE STANDARDS

In computing the overhead expense standards, consideration should be given to the level of output and the budgeted expenses. A budgeted output is fixed considering practical manufacturing capacity and anticipated sales demand. Expenditures can be budgeted under different heads for the level of output chosen. These expenditures are classified as fixed and variable. Thus, the overhead expense standards are set by computing the optimum level of output for a production departments followed by budgets for fixed and variable overheads. If production is seasonal or it fluctuates during the year, a flexible budget may be prepared to facilitate comparison between the set target and actual expenditure for the period.

13.5 TYPES OF VARIANCES

Controllable and un-controllable variances: For effective cost control it is necessary to investigate into the reasons for cost variances and to take corrective actions. For this purpose variances are classified as controllable and uncontrollable variances. **Controllable variances are those which can be controlled under the normal operating conditions** if a responsibility centre