

Lesson-12

Basic Cost Concepts

Learning Objectives

- To understand the meaning of different costing terms
- To understand different costing methods
- To have a basic idea of different costing techniques
- To understand the meaning of cost sheet

In order to determine and take a dispassionate view about what lies beneath the surface of accounting figures, a financial analyst has to make use of different management accounting techniques. Cost techniques have a precedence over the other techniques since accounting treatment of cost is often both complex and financially significant. For example, if a firm proposes to increase its output by 10%, is it reasonable to expect total cost to increase by less than 10%, exactly 10% or more than 10%? Such questions are concerned with the cost behavior, i.e. the way costs change with the levels of activity. The answers to these questions are very much pertinent for a management accountant or a financial analyst since they are basic for a firm's projections and profits which ultimately become the basis of all financial decisions. It is, therefore, necessary for a financial analyst to have a reasonably good working knowledge about the basic cost concepts and patterns of cost behavior. All these come within the ambit of cost accounting.

Meaning of Cost Accounting

Previously, cost accounting was merely considered to be a technique for the ascertainment of costs of products or services on the basis of historical data. In course of time, due to competitive nature of the market, it was realized that ascertaining of cost is not so important as controlling costs. Hence, cost accounting started to be considered more as a technique for cost control as compared to cost ascertainment. Due to the technological developments in all fields, cost reduction has also come within the ambit of cost accounting. Cost accounting is, thus, concerned with recording, classifying and summarizing costs for determination of costs of products or services, planning, controlling and reducing such costs and furnishing of information to management for decision making.

According to Charles T. Horngren, cost accounting is a quantitative method that accumulates, classifies, summarizes and interprets information for the following three major purposes:

- Operational planning and control
- Special decisions
- Product decisions

According to the Chartered Institute of Management Accountants, London, cost accounting is the process of accounting for costs from the point at which its expenditure is incurred or committed to the establishment of the ultimate relationship with cost units. In its widest sense, it embraces the preparation of statistical data, the application of cost control methods and the ascertainment of the profitability of the activities carried out or planned.

Cost accounting, thus, provides various information to management for all sorts of decisions. It serves multiple purposes on account of which it is generally indistinguishable from management accounting or so-called internal accounting. Wilmot has summarized the nature of cost accounting as “the analyzing, recording, standardizing, forecasting, comparing, reporting and recommending” and the role of a cost accountant as “a historian, news agent and prophet.” As a historian, he should be meticulously accurate and sedulously impartial. As a news agent, he should be up to date, selective and pithy. As a prophet, he should combine knowledge and experience with foresight and courage.

Objectives of Cost Accounting

The main objectives of cost accounting can be summarized as follows:

1. Determining Selling Price

Business enterprises run on a profit-making basis. It is, thus, necessary that revenue should be greater than expenditure incurred in producing goods and services from which the revenue is to be derived. Cost accounting provides various information regarding the cost to make and sell such products or services. Ofcourse, many other factors such as the condition of market, the area of distribution, the quantity which can be supplied etc. are also given due consideration by management before deciding upon the price but the cost plays a dominating role.

2. Determining and Controlling Efficiency

Cost accounting involves a study of various operations used in manufacturing a product or providing a service. The study facilitates measuring the efficiency of an organization as a whole or department-wise as well as devising means of increasing efficiency.

Cost accounting also uses a number of methods, e.g., budgetary control, standard costing etc. for controlling costs. Each item viz. materials, labor and expenses is budgeted at the commencement of a period and actual expenses incurred are compared with budget. This greatly increases the operating efficiency of an enterprise.

3. Facilitating Preparation of Financial and Other Statements

The third objective of cost accounting is to produce statements whenever is required by management. The financial statements are prepared under financial accounting generally once a year or half-year and are spaced too far with respect to time to meet the needs of management. In order to operate a business at a high level of efficiency, it is essential for management to have a frequent review of production, sales and operating results. Cost accounting provides daily, weekly or monthly volumes of units produced and accumulated costs with appropriate analysis. A developed cost accounting system provides immediate information regarding stock of raw materials, work-in-progress and finished goods. This helps in speedy preparation of financial statements.

4. Providing Basis for Operating Policy

Cost accounting helps management to formulate operating policies. These policies may relate to any of the following matters:

- Determination of a cost-volume-profit relationship
- Shutting down or operating at a loss
- Making for or buying from outside suppliers
- Continuing with the existing plant and machinery or replacing them by improved and economic ones

Concept of Cost

Cost accounting is concerned with cost and therefore is necessary to understand the meaning of term cost in a proper perspective.

In general, cost means the amount of expenditure (actual or notional) incurred on, or attributable to a given thing.

However, the term cost cannot be exactly defined. Its interpretation depends upon the following factors:

- The nature of business or industry
- The context in which it is used

In a business where selling and distribution expenses are quite nominal the cost of an article may be calculated without considering the selling and distribution overheads. At the same time, in a business where the nature of a product requires heavy selling and distribution expenses, the calculation of cost without taking into account the selling and distribution expenses may prove very costly to a business. The cost may be factory cost, office cost, cost of sales and even an item of expense. For example, prime cost includes expenditure on direct materials, direct labor and direct expenses. Money spent on materials is termed as cost of materials just like money spent on labor is called cost of labor and so on. Thus, the use of term cost without understanding the circumstances can be misleading.

Different costs are found for different purposes. The work-in-progress is valued at factory cost while stock of finished goods is valued at office cost. Numerous other examples can be given to show that the term “cost” does not mean the same thing under all circumstances and for all purposes. Many items of cost of production are handled in an optional manner which may give different costs for the same product or job without going against the accepted principles of cost accounting. Depreciation is one of such items. Its amount varies in accordance with the method of depreciation being used. However, endeavor should be, as far as possible, to obtain an accurate cost of a product or service.

Elements of Cost

Following are the three broad elements of cost (refer to figure 12.1):

1. Material

The substance from which a product is made is known as material. It may be in a raw or a manufactured state. It can be direct as well as indirect.

a. Direct Material

The material which becomes an integral part of a finished product and which can be conveniently assigned to specific physical unit is termed as direct material. Following are some of the examples of direct material:

- All material or components specifically purchased, produced or requisitioned from stores
- Primary packing material (e.g., carton, wrapping, cardboard, boxes etc.)
- Purchased or partly produced components

Direct material is also described as process material, prime cost material, production material, stores material, constructional material etc.

b. Indirect Material

The material which is used for purposes ancillary to the business and which cannot be conveniently assigned to specific physical units is termed as indirect material. Consumable stores, oil and waste, printing and stationery material etc. are some of the examples of indirect material.

Indirect material may be used in the factory, office or the selling and distribution divisions.

2. Labor

For conversion of materials into finished goods, human effort is needed and such human effort is called labor. Labor can be direct as well as indirect.

a. Direct Labor

The labor which actively and directly takes part in the production of a particular commodity is called direct labor. Direct labor costs are, therefore, specifically and conveniently traceable to specific products.

Direct labor can also be described as process labor, productive labor, operating labor, etc.

b. Indirect Labor

The labor employed for the purpose of carrying out tasks incidental to goods produced or services provided, is indirect labor. Such labor does not alter the construction, composition or condition of the product. It cannot be practically traced to specific units of output. Wages of storekeepers, foremen, timekeepers, directors' fees, salaries of salesmen etc, are examples of indirect labor costs.

Indirect labor may relate to the factory, the office or the selling and distribution divisions.

3. Expenses

Expenses may be direct or indirect.

a. Direct Expenses

These are the expenses that can be directly, conveniently and wholly allocated to specific cost centers or cost units. Examples of such expenses are as follows:

- Hire of some special machinery required for a particular contract
- Cost of defective work incurred in connection with a particular job or contract etc.

Direct expenses are sometimes also described as chargeable expenses.

b. Indirect Expenses

These are the expenses that cannot be directly, conveniently and wholly allocated to cost centers or cost units. Examples of such expenses are rent, lighting, insurance charges etc.

4. Overhead

The term overhead includes indirect material, indirect labor and indirect expenses. Thus, all indirect costs are overheads.

A manufacturing organization can broadly be divided into the following three divisions:

- Factory or works, where production is done
- Office and administration, where routine as well as policy matters are decided
- Selling and distribution, where products are sold and finally dispatched to customers

Overheads may be incurred in a factory or office or selling and distribution divisions. Thus, overheads may be of three types:

a. Factory Overheads

They include the following things:

- Indirect material used in a factory such as lubricants, oil, consumable stores etc.
- Indirect labor such as gatekeeper, timekeeper, works manager's salary etc.
- Indirect expenses such as factory rent, factory insurance, factory lighting etc.

b. Office and Administration Overheads

They include the following things:

- Indirect materials used in an office such as printing and stationery material, brooms and dusters etc.

- Indirect labor such as salaries payable to office manager, office accountant, clerks, etc.
- Indirect expenses such as rent, insurance, lighting of the office

c. Selling and Distribution Overheads

They include the following things:

- Indirect materials used such as packing material, printing and stationery material etc.
- Indirect labor such as salaries of salesmen and sales manager etc.
- Indirect expenses such as rent, insurance, advertising expenses etc.

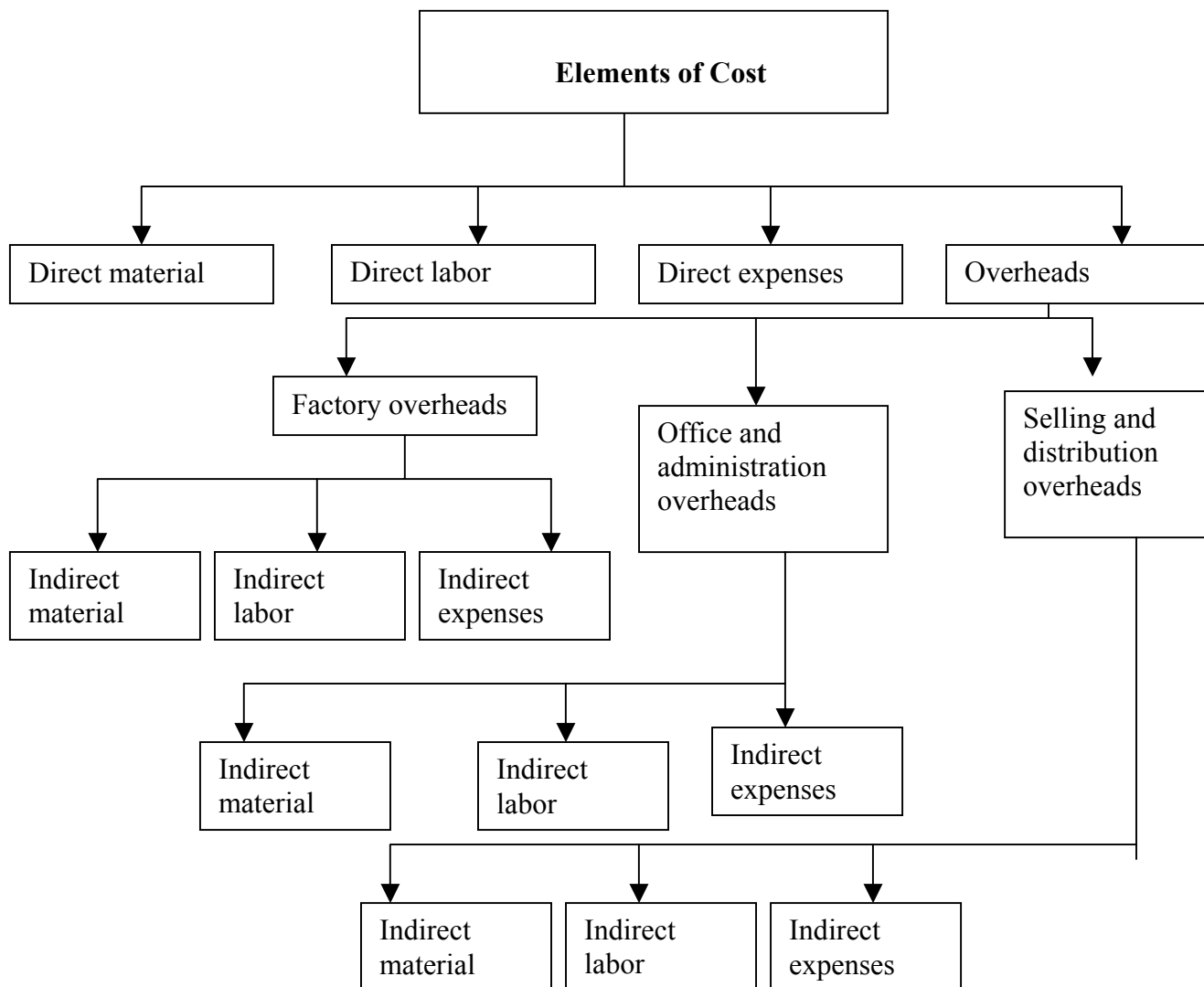


Figure 12.1-- Elements of cost

Components of Total Cost

1. Prime Cost

Prime cost consists of costs of direct materials, direct labors and direct expenses. It is also known as basic, first or flat cost.

2. Factory Cost

Factory cost comprises prime cost and, in addition, works or factory overheads that include costs of indirect materials, indirect labors and indirect expenses incurred in a factory. It is also known as works cost, production or manufacturing cost.

3. Office Cost

Office cost is the sum of office and administration overheads and factory cost. This is also termed as administration cost or the total cost of production.

4. Total Cost

Selling and distribution overheads are added to the total cost of production to get total cost or the cost of sales.

Various components of total cost can be depicted with the help of table 12.1:

Components of Total Cost

| | |
|---|--|
| Direct material | |
| Direct labor | Prime cost or direct cost or first cost |
| Direct expenses | |
| Prime cost plus works overheads | Works or factory cost or production cost or manufacturing cost |
| Works cost plus office and administration overheads | Office cost or total cost of production |
| Office cost plus selling and distribution overheads | Cost of sales or total cost |

Table 12.1-- Components of total cost

Cost Sheet

Cost sheet is a document that provides for the assembly of an estimated detailed cost in respect of cost centers and cost units. It analyzes and classifies in a tabular form the expenses on different items for a particular period. Additional columns may also be provided to show the cost of a particular unit pertaining to each item of expenditure and the total per unit cost.

Cost sheet may be prepared on the basis of actual data (historical cost sheet) or on the basis of estimated data (estimated cost sheet), depending on the technique employed and the purpose to be achieved.

The techniques of preparing a cost sheet can be understood with the help of the following examples.

Example 1

Following information has been obtained from the records of left center corporation for the period from June 1 to June 30, 1998.

| | |
|--|----------|
| | Rs. |
| Cost of raw materials on June 1,1998 | 30,000 |
| Purchase of raw materials during the month | 4,50,000 |
| Wages paid | 2,30,000 |
| Factory overheads | 92,000 |
| Cost of work in progress on June 1, 1998 | 12,000 |
| Cost of raw materials on June 30, 1998 | 15,000 |
| Cost of stock of finished goods on June 1, 1998 | 60,000 |
| Cost of stock of finished goods on June 30, 1998 | 55,000 |
| Selling and distribution overheads | 20,000 |
| Sales | 9,00,000 |
| Administration overheads | 30,000 |

Prepare a statement of cost.

Solution

Statement of cost of production of goods manufactured for the period ending on June 30, 1998.

| | | |
|--|----------|----------|
| | Rs. | Rs. |
| Opening stock of raw materials | 30,000 | |
| Add-- purchase | 4,50,000 | |
| | ----- | |
| | 4,80,000 | |
| | 15,000 | |
| Less-- closing stock of raw material | | 4,65,000 |
| Value of raw materials consumed | | 2,30,000 |
| Wages | | 6,59,000 |
| Prime cost | | 92,000 |
| Factory overheads | | 7,87,000 |
| | | 12,000 |
| Add-- opening stock of work in progress | | 7,99,000 |
| | | --- |
| Less-- closing stock of work in progress | | 7,99,000 |
| Factory cost | | 30,000 |
| Add-- Administration overhead | | 8,29,000 |
| Cost of production of goods manufactured | | 60,000 |
| Add--opening stock of finished goods | | 8,89,000 |

| | | |
|--|--|----------|
| Less-- closing stock of finished goods | | 55,000 |
| Cost of production of goods sold | | 8,34,000 |
| Add-- selling and distribution overheads | | 20,000 |
| Cost of sales | | 8,54,000 |
| Profit | | 46,000 |
| Sales | | 9,00,000 |

Example 2

From the following information, prepare a cost sheet showing the total cost per ton for the period ended on December 31, 1998.

| | Rs. | | Rs. |
|-------------------------|--------|-----------------------------|-------|
| Raw materials | 33,000 | Rent and taxes (office) | 500 |
| Productive wages | 35,000 | Water supply | 1,200 |
| Direct expenses | 3,000 | Factory insurance | 1,100 |
| Unproductive wages | 10,500 | Office insurance | 500 |
| Factory rent and taxes | 2,200 | Legal expenses | 400 |
| Factory lighting | 1,500 | Rent of warehouse | 300 |
| Factory heating | 4,400 | Depreciation-- | |
| Motive power | 3,000 | Plant and machinery | 2,000 |
| Haulage | 1,000 | Office building | 1,000 |
| Director's fees (works) | 2,000 | Delivery vans | 200 |
| Directors fees (office) | 500 | Bad debt | 100 |
| Factory cleaning | 200 | Advertising | 300 |
| Sundry office expenses | 800 | Sales department salaries | 1,500 |
| Expenses | 750 | Up keeping of delivery vans | 700 |
| Factory stationery | 900 | Bank charges | 50 |
| Office stationery | 600 | Commission on sales | 1,500 |
| Loose tools written off | | | |

The total output for the period has been 10000 tons.

Solution

Cost sheet for the period ended on December 31, 1998

| | Rs. | |
|------------------------|--------|--------|
| Raw materials | 33,000 | |
| Production wages | 35,000 | |
| Direct expenses | 3,000 | |
| Prime cost | | 71,000 |
| Add--works overheads: | 10,500 | |
| Unproductive wages | 7,500 | |
| Factory rent and taxes | 2,200 | |
| Factory lighting | 1,500 | |
| Factory heating | 4,400 | |

| | | |
|--|-------|----------|
| Motive power | 3,000 | |
| Haulage | 1,000 | |
| Directors' fees (works) | 500 | |
| Factory cleaning | 800 | |
| Estimating expenses | 750 | |
| Factory stationery | 600 | |
| Loses tools written off | 1,200 | |
| Water supply | 1,100 | |
| Factory insurance | 2,000 | |
| Depreciation of plant and machinery | | 37,050 |
| | 2,000 | 1,08,050 |
| Works cost | 200 | |
| Add-- office overhead | 900 | |
| Directors' fees (office) | 500 | |
| Sundry office expenses | 500 | |
| Office stationery | 400 | |
| Rent and taxes (office) | 1,000 | |
| Office insurance | 50 | |
| Legal expenses | | 5,550 |
| Depreciation of office building | | 1,13,600 |
| Bank charges | 300 | |
| | 200 | |
| Office cost | 100 | |
| Add-- selling and distribution overheads | 300 | |
| Rent of warehouse | 1,500 | |
| Depreciation on delivery vans | 1,500 | |
| Bad debts | 700 | |
| Advertising | | 4,600 |
| Sales department salaries | | 1,18,200 |
| Commission on sales | | |
| Upkeep of delivery vans | | |
| Total cost | | |
| Cost per ton Rs. $1,18,200/10,000 = \text{Rs. } 11.82$ | | |

Classification of Cost

Cost may be classified into different categories depending upon the purpose of classification. Some of the important categories in which the costs are classified are as follows:

1. Fixed, Variable and Semi-Variable Costs

The cost which varies directly in proportion with every increase or decrease in the volume of output or production is known as variable cost. Some of its examples are as follows:

- Wages of laborers
- Cost of direct material
- Power

The cost which does not vary but remains constant within a given period of time and a range of activity inspite of the fluctuations in production is known as fixed cost. Some of its examples are as follows:

- Rent or rates
- Insurance charges
- Management salary

The cost which does not vary proportionately but simultaneously does not remain stationary at all times is known as semi-variable cost. It can also be named as semi-fixed cost. Some of its examples are as follows:

- Depreciation
- Repairs

Fixed costs are sometimes referred to as “period costs” and variable costs as “direct costs” in system of direct costing. Fixed costs can be further classified into:

- Committed fixed costs
- Discretionary fixed costs

Committed fixed costs consist largely of those fixed costs that arise from the possession of plant, equipment and a basic organization structure. For example, once a building is erected and a plant is installed, nothing much can be done to reduce the costs such as depreciation, property taxes, insurance and salaries of the key personnel etc. without impairing an organization’s competence to meet the long-term goals.

Discretionary fixed costs are those which are set at fixed amount for specific time periods by the management in budgeting process. These costs directly reflect the top management policies and have no particular relationship with volume of output. These costs can, therefore, be reduced or entirely eliminated as demanded by the circumstances. Examples of such costs are research and development costs, advertising and sales promotion costs, donations, management consulting fees etc. These costs are also termed as managed or programmed costs.

In some circumstances, variable costs are classified into the following:

- Discretionary cost
- Engineered cost

The term discretionary costs is generally linked with the class of fixed cost. However, in the circumstances where management has predetermined that the organization would spend a certain percentage of its sales for the items like research, donations, sales promotion etc., discretionary costs will be of a variable character.

Engineered variable costs are those variable costs which are directly related to the production or sales level. These costs exist in those circumstances where specific relationship exists between input and output. For example, in an automobile

industry there may be exact specifications as one radiator, two fan belts, one battery etc. would be required for one car. In a case where more than one car is to be produced, various inputs will have to be increased in the direct proportion of the output.

Thus, an increase in discretionary variable costs is due to the authorization of management whereas an increase in engineered variable costs is due to the volume of output or sales.

2. Product Costs and Period Costs

The costs which are a part of the cost of a product rather than an expense of the period in which they are incurred are called as “product costs.” They are included in inventory values. In financial statements, such costs are treated as assets until the goods they are assigned to are sold. They become an expense at that time. These costs may be fixed as well as variable, e.g., cost of raw materials and direct wages, depreciation on plant and equipment etc.

The costs which are not associated with production are called period costs. They are treated as an expense of the period in which they are incurred. They may also be fixed as well as variable. Such costs include general administration costs, salaries salesmen and commission, depreciation on office facilities etc. They are charged against the revenue of the relevant period. Differences between opinions exist regarding whether certain costs should be considered as product or period costs. Some accountants feel that fixed manufacturing costs are more closely related to the passage of time than to the manufacturing of a product. Thus, according to them variable manufacturing costs are product costs whereas fixed manufacturing and other costs are period costs. However, their view does not seem to have been yet widely accepted.

3. Direct and Indirect Costs

The expenses incurred on material and labor which are economically and easily traceable for a product, service or job are considered as direct costs. In the process of manufacturing of production of articles, materials are purchased, laborers are employed and the wages are paid to them. Certain other expenses are also incurred directly. All of these take an active and direct part in the manufacture of a particular commodity and hence are called direct costs.

The expenses incurred on those items which are not directly chargeable to production are known as indirect costs. For example, salaries of timekeepers, storekeepers and foremen. Also certain expenses incurred for running the administration are the indirect costs. All of these cannot be conveniently allocated to production and hence are called indirect costs.

4. Decision-Making Costs and Accounting Costs

Decision-making costs are special purpose costs that are applicable only in the situation in which they are compiled. They have no universal application. They need not tie into routine-financial accounts. They do not and should not conform the accounting rules. Accounting costs are compiled primarily from financial statements. They have to be altered before they can be used for decision-making. Moreover, they are historical costs

and show what has happened under an existing set of circumstances. Decision-making costs are future costs. They represent what is expected to happen under an assumed set of conditions. For example, accounting costs may show the cost of a product when the operations are manual whereas decision-making cost might be calculated to show the costs when the operations are mechanized.

5. Relevant and Irrelevant Costs

Relevant costs are those which change by managerial decision. Irrelevant costs are those which do not get affected by the decision. For example, if a manufacturer is planning to close down an unprofitable retail sales shop, this will affect the wages payable to the workers of a shop. This is relevant in this connection since they will disappear on closing down of a shop. But prepaid rent of a shop or unrecovered costs of any equipment which will have to be scrapped are irrelevant costs which should be ignored.

6. Shutdown and Sunk Costs

A manufacturer or an organization may have to suspend its operations for a period on account of some temporary difficulties, e.g., shortage of raw material, non-availability of requisite labor etc. During this period, though no work is done yet certain fixed costs, such as rent and insurance of buildings, depreciation, maintenance etc., for the entire plant will have to be incurred. Such costs of the idle plant are known as shutdown costs.

Sunk costs are historical or past costs. These are the costs which have been created by a decision that was made in the past and cannot be changed by any decision that will be made in the future. Investments in plant and machinery, buildings etc. are prime examples of such costs. Since sunk costs cannot be altered by decisions made at the later stage, they are irrelevant for decision-making.

An individual may regret for purchasing or constructing an asset but this action could not be avoided by taking any subsequent action. Ofcourse, an asset can be sold and the cost of the asset will be matched against the proceeds from sale of the asset for the purpose of determining gain or loss. The person may decide to continue to own the asset. In this case, the cost of asset will be matched against the revenue realized over its effective life. However, he/she cannot avoid the cost which has already been incurred by him/her for the acquisition of the asset. It is, as a matter of fact, sunk cost for all present and future decisions.

Example

Jolly Ltd. purchased a machine for Rs. 30,000. The machine has an operating life of five years without any scrap value. Soon after making the purchase, management feels that the machine should not have been purchased since it is not yielding the operating advantage originally contemplated. It is expected to result in savings in operating costs of Rs. 18,000 over a period of five years. The machine can be sold immediately for Rs. 22,000.

To take the decision whether the machine should be sold or be used, the relevant amounts to be compared are Rs. 18,000 in cost savings over five years and Rs. 22,000 that can be realized in case it is immediately disposed. Rs. 30,000 invested in the asset is not relevant since it is same in both the cases. The amount is the sunk cost. Jolly Ltd., therefore, sold

the machinery for Rs. 22,000 since it would result in an extra profit of Rs. 4,000 as compared to keeping and using it.

7. Controllable and Uncontrollable Costs

Controllable costs are those costs which can be influenced by the ratio or a specified member of the undertaking. The costs that cannot be influenced like this are termed as uncontrollable costs.

A factory is usually divided into a number of responsibility centers, each of which is in charge of a specific level of management. The officer incharge of a particular department can control costs only of those matters which come directly under his control, not of other matters. For example, the expenditure incurred by tool room is controlled by the foreman incharge of that section but the share of the tool room expenditure which is apportioned to a machine shop cannot be controlled by the foreman of that shop. Thus, the difference between controllable and uncontrollable costs is only in relation to a particular individual or level of management. The expenditure which is controllable by an individual may be uncontrollable by another individual.

8. Avoidable or Escapable Costs and Unavoidable or Inescapable Costs

Avoidable costs are those which will be eliminated if a segment of a business (e.g., a product or department) with which they are directly related is discontinued. Unavoidable costs are those which will not be eliminated with the segment. Such costs are merely reallocated if the segment is discontinued. For example, in case a product is discontinued, the salary of a factory manager or factory rent cannot be eliminated. It will simply mean that certain other products will have to absorb a large amount of such overheads. However, the salary of people attached to a product or the bad debts traceable to a product would be eliminated. Certain costs are partly avoidable and partly unavoidable. For example, closing of one department of a store might result in decrease in delivery expenses but not in their altogether elimination.

It is to be noted that only avoidable costs are relevant for deciding whether to continue or eliminate a segment of a business.

9. Imputed or Hypothetical Costs

These are the costs which do not involve cash outlay. They are not included in cost accounts but are important for taking into consideration while making management decisions. For example, interest on capital is ignored in cost accounts though it is considered in financial accounts. In case two projects require unequal outlays of cash, the management should take into consideration the capital to judge the relative profitability of the projects.

10. Differentials, Incremental or Decrement Cost

The difference in total cost between two alternatives is termed as differential cost. In case the choice of an alternative results in an increase in total cost, such increased costs are known as incremental costs. While assessing the profitability of a proposed change, the

incremental costs are matched with incremental revenue. This is explained with the following example:

Example

A company is manufacturing 1,000 units of a product. The present costs and sales data are as follows:

| | |
|------------------------|-----------|
| Selling price per unit | Rs. 10 |
| Variable cost per unit | Rs. 5 |
| Fixed costs | Rs. 4,000 |

The management is considering the following two alternatives:

- (i) To accept an export order for another 200 units at Rs. 8 per unit. The expenditure of the export order will increase the fixed costs by Rs. 500.
- (ii) To reduce the production from present 1,000 units to 600 units and buy another 400 units from the market at Rs. 6 per unit. This will result in reducing the present fixed costs from Rs. 4,000 to Rs. 3,000.

Which alternative the management should accept?

Solution

Statement showing profitability under different alternatives is as follows:

| Particulars | Present situation | | | Proposed situations | | |
|--------------|-------------------|--------------|-------|---------------------|-------|--------------|
| | Rs. | Rs. | | | | |
| Sales. | | 10,000 | | 11,600 | | 10,000 |
| Less: | | | | | | |
| Variable | 5,000 | 9,000 | 6,000 | | 5,400 | |
| purchase | 4,000 | <u>1,000</u> | 4,500 | 10,500 | 3,000 | 8,400 |
| costs Fixed | | | | <u>1,100</u> | | <u>1,600</u> |
| costs Profit | | | | | | |

Observations

- (i) In the present situation, the company is making a profit of Rs. 1,000.
- (ii) In the proposed situation (i), the company will make a profit of Rs. 1,100. The incremental costs will be Rs. 1,500 (i.e. Rs. 10,500 - Rs. 9,000) and the incremental revenue (sales) will be Rs. 1,600. Hence, there is a net gain of Rs. 100 under the proposed situation as compared to the existing situation.
- (iii) In the proposed situation (ii), the detrimental costs are Rs. 600 (i.e. Rs. 9,000 to Rs. 8,400) as there is no decrease in sales revenue as compared to the present situation. Hence, there is a net gain of Rs. 600 as compared to the present situation.

Thus, under proposal (ii), the company makes the maximum profit and therefore it should adopt alternative (ii).

The technique of differential costing which is based on differential cost is useful in planning and decision-making and helps in selecting the best alternative.

In case the choice results in decrease in total costs, this decreased costs will be known as detrimental costs.

11. Out-of-Pocket Costs

Out-of-pocket cost means the present or future cash expenditure regarding a certain decision that will vary depending upon the nature of the decision made. For example, a company has its own trucks for transporting raw materials and finished products from one place to another. It seeks to replace these trucks by keeping public carriers. In making this decision, ofcourse, the depreciation of the trucks is not to be considered but the management should take into account the present expenditure on fuel, salary to drivers and maintenance. Such costs are termed as out-of-pocket costs.

12. Opportunity Cost

Opportunity cost refers to an advantage in measurable terms that have foregone on account of not using the facilities in the manner originally planned. For example, if a building is proposed to be utilized for housing a new project plant, the likely revenue which the building could fetch, if rented out, is the opportunity cost which should be taken into account while evaluating the profitability of the project. Suppose, a manufacturer is confronted with the problem of selecting anyone of the following alternatives:

- a. Selling a semi-finished product at Rs. 2 per unit
- b. Introducing it into a further process to make it more refined and valuable

Alternative (b) will prove to be remunerative only when after paying the cost of further processing, the amount realized by the sale of the product is more than Rs. 2 per unit. Also, the revenue of Rs. 2 per unit is foregone in case alternative (b) is adopted. The term “opportunity cost” refers to this alternative revenue foregone.

13. Traceable, Untraceable or Common Costs

The costs that can be easily identified with a department, process or product are termed as traceable costs. For example, the cost of direct material, direct labor etc. The costs that cannot be identified so are termed as untraceable or common costs. In other words, common costs are the costs incurred collectively for a number of cost centers and are to be suitably apportioned for determining the cost of individual cost centers. For example, overheads incurred for a factory as a whole, combined purchase cost for purchasing several materials in one consignment etc.

Joint cost is a kind of common cost. When two or more products are produced out of one material or process, the cost of such material or process is called joint cost. For example, when cottonseeds and cotton fibers are produced from the same material, the cost incurred till the split-off or separation point will be joint costs.

14. Production, Administration and Selling and Distribution Costs

A business organization performs a number of functions, e.g., production, illustration, selling and distribution, research and development. Costs are to be incurred for each of these functions. The Chartered Institute of Management accountants, London, has defined each of the above costs as follows:

(i) Production Cost

The cost of sequence of operations which begins with supplying materials, labor and services and ends with the primary packing of the product. Thus, it includes the cost of direct material, direct labor, direct expenses and factory overheads.

(ii) Administration Cost

The cost of formulating the policy, directing the organization and controlling the operations of an undertaking which is not related directly to a production, selling, distribution, research or development activity or function.

(iii) Selling Cost

It is the cost of selling to create and stimulate demand (sometimes termed as marketing) and of securing orders.

(iv) Distribution Cost

It is the cost of sequence of operations beginning with making the packed product available for dispatch and ending with making the reconditioned returned empty package, if any, available for reuse.

(v) Research Cost

It is the cost of searching for new or improved products, new application of materials, or new or improved methods.

(vi) Development Cost

The cost of process which begins with the implementation of the decision to produce a new or improved product or employ a new or improved method and ends with the commencement of formal production of that product or by the method.

(vii) Pre-Production Cost

The part of development cost incurred in making a trial production as preliminary to formal production is called pre-production cost.

15. Conversion Cost

The cost of transforming direct materials into finished products excluding direct material cost is known as conversion cost. It is usually taken as an aggregate of total cost of direct labor, direct expenses and factory overheads.

Cost Unit and Cost Center

The technique of costing involves the following:

- Collection and classification of expenditure according to cost elements
- Allocation and apportionment of the expenditure to the cost centers or cost units or both

Cost Unit

While preparing cost accounts, it becomes necessary to select a unit with which expenditure may be identified. The quantity upon which cost can be conveniently allocated is known as a unit of cost or cost unit. The Chartered Institute of Management Accountants, London defines a unit of cost as a unit of quantity of product, service or time in relation to which costs may be ascertained or expressed.

Unit selected should be unambiguous, simple and commonly used. Following are the examples of units of cost:

| | |
|---------------------------|--|
| (i) Brick works | per 1000 bricks made |
| (ii) Collieries | per ton of coal raised |
| (iii) Textile mills | per yard or per lb. of cloth manufactured or yarn spun |
| (iv) Electrical companies | per unit of electricity generated |
| (v) Transport companies | per passenger km. |
| (vi) Steel mills | per ton of steel made |

Cost Center

According to the Chartered Institute of Management Accountants, London, cost center means “a location, person or item of equipment (or group of these) for which costs may be ascertained and used for the purpose of cost control.” Thus, cost center refers to one of the convenient units into which the whole factory or an organization has been appropriately divided for costing purposes. Each such unit consists of a department, a sub-department or an item or equipment or machinery and a person or a group of persons. Sometimes, closely associated departments are combined together and considered as one unit for costing purposes. For example, in a laundry, activities such as collecting, sorting, marking and washing of clothes are performed. Each activity may be considered as a separate cost center and all costs relating to a particular cost center may be found out separately.

Cost centers may be classified as follows:

- Productive, unproductive and mixed cost centers
- Personal and impersonal cost centers
- Operation and process cost centers

Productive cost centers are those which are actually engaged in making products. Service or unproductive cost centers do not make the products but act as the essential aids for the productive centers. The examples of such service centers are as follows:

- Administration department
- Repairs and maintenance department
- Stores and drawing office department

Mixed costs centers are those which are engaged sometimes on productive and other times on service works. For example, a tool shop serves as a productive cost center when it manufactures dies and jigs to be charged to specific jobs or orders but serves as servicing cost center when it does repairs for the factory.

Impersonal cost center is one which consists of a department, a plant or an item of equipment whereas a personal cost center consists of a person or a group of persons. In case a cost center consists of those machines or persons which carry out the same operation, it is termed as operation cost center. If a cost center consists of a continuous sequence of operations, it is called process cost center.

In case of an operation cost center, cost is analyzed and related to a series of operations in sequence such as in chemical industries, oil refineries and other process industries. The objective of such an analysis is to ascertain the cost of each operation irrespective of its location inside the factory.

Cost Estimation and Cost Ascertainment

Cost estimation is the process of pre-determining the cost of a certain product job or order. Such pre-determination may be required for several purposes. Some of the purposes are as follows:

- Budgeting
- Measurement of performance efficiency
- Preparation of financial statements (valuation of stocks etc.)
- Make or buy decisions
- Fixation of the sale prices of products

Cost ascertainment is the process of determining costs on the basis of actual data. Hence, the computation of historical cost is cost ascertainment while the computation of future costs is cost estimation.

Both cost estimation and cost ascertainment are interrelated and are of immense use to the management. In case a concern has a sound costing system, the ascertained costs will greatly help the management in the process of estimation of rational accurate costs which are necessary for a variety of purposes stated above. Moreover, the ascertained cost may be compared with the pre-determined costs on a continuing basis and proper and timely steps be taken for controlling costs and maximizing profits.

Cost Allocation and Cost Apportionment

Cost allocation and cost apportionment are the two procedures which describe the identification and allotment of costs to cost centers or cost units. Cost allocation refers to the allotment of all the items of cost to cost centers or cost units whereas cost apportionment refers to the allotment of proportions of items of cost to cost centers or cost units. Thus, the former involves the process of charging direct expenditure to cost centers or cost units whereas the latter involves the process of charging indirect expenditure to cost centers or cost units.

For example, the cost of labor engaged in a service department can be charged wholly and directly but the canteen expenses of the factory cannot be charged directly and wholly. Its proportionate share will have to be found out. Charging of costs in the former case will be termed as “allocation of costs” whereas in the latter, it will be termed as “apportionment of costs.”

Cost Reduction and Cost Control

Cost reduction and cost control are two different concepts. Cost control is achieving the cost target as its objective whereas cost reduction is directed to explore the possibilities of improving the targets. Thus, cost control ends when targets are achieved whereas cost reduction has no visible end. It is a continuous process. The difference between the two can be summarized as follows:

- (i) Cost control aims at maintaining the costs in accordance with established standards whereas cost reduction is concerned with reducing costs. It changes all standards and endeavors to improve them continuously.
- (ii) Cost control seeks to attain the lowest possible cost under existing conditions whereas cost reduction does not recognize any condition as permanent since a change will result in lowering the cost.
- (iii) In case of cost control, emphasis is on past and present. In case of cost reduction, emphasis is on the present and future.
- (iv) Cost control is a preventive function whereas cost reduction is a correlative function. It operates even when an efficient cost control system exists.

Installation of Costing System

The installation of a costing system requires careful consideration of the following two interrelated aspects:

- Overcoming the practical difficulties while introducing a system
- Main considerations that should govern the installation of such a system

Practical Difficulties

The important difficulties in the installation of a costing system and the suggestions to overcome them are as follows:

a. Lack of Support from Top Management

Often, the costing system is introduced at the behest of the managing director or some other director without taking into confidence other members of the top management team. This results in opposition from various managers as they consider it interference as well as an uncalled check of their activities. They, therefore, resist the additional work involved in the cost accounting system.

This difficulty can be overcome by taking the top management into confidence before installing the system. A sense of cost consciousness has to be instilled in their minds.

b. Resistance from the Staff

The existing financial accounting staff may offer resistance to the system because of a feeling of their being declared redundant under the new system.

This fear can be overcome by explaining the staff that the costing system would not replace but strengthen the existing system. It will open new areas for development which will prove beneficial to them.

c. Non-Cooperation at Other Levels

The foreman and other supervisory staff may resent the additional paper work and may not cooperate in providing the basic data which is essential for the success of the system.

This needs re-orientation and education of employees. They have to be told of the advantages that will accrue to them and to the organization as a whole on account of efficient working of the system.

d. Shortage of Trained Staff

Costing is a specialized job in itself. In the beginning, a qualified staff may not be available. However, this difficulty can be overcome by giving the existing staff requisite training and recruiting additional staff if required.

e. Heavy Costs

The costing system will involve heavy costs unless it has been suitably designed to meet specific requirements. Unnecessary sophistication and formalities should be avoided. The costing office should serve as a useful service department.

Main Considerations

In view of the above difficulties and suggestions, following should be the main considerations while introducing a costing system in a manufacturing organization:

1. Product

The nature of a product determines to a great extent the type of costing system to be adopted. A product requiring high value of material content requires an elaborate system

of materials control. Similarly, a product requiring high value of labor content requires an efficient time keeping and wage systems. The same is true in case of overheads.

2. Organization

The existing organization structure should be distributed as little as possible. It becomes, therefore, necessary to ascertain the size and type of organization before introducing the costing system. The scope of authority of each executive, the sources from which a cost accountant has to derive information and reports to be submitted at various managerial levels should be carefully gone through.

3. Objective

The objectives and information which management wants to achieve and acquire should also be taken care of. For example, if a concern wants to expand its operations, the system of costing should be designed in a way so as to give maximum attention to production aspect. On the other hand, if a concern were not in a position to sell its products, the selling aspect would require greater attention.

4. Technical Details

The system should be introduced after a detailed study of the technical aspects of the business. Efforts should be made to secure the sympathetic assistance and support of the principal members of the supervisory staff and workmen.

5. Informative and Simple

The system should be informative and simple. In this connection, the following points may be noted:

- (i) It should be capable of furnishing the fullest information required regularly and systematically, so that continuous study or check-up of the progress of business is possible.
- (ii) Standard printed forms can be used so as to make the information detailed, clear and intelligible. Over-elaboration which will only complicate matters should be avoided.
- (iii) Full information about departmental outputs, processes and operations should be clearly presented and every item of expenditure should be properly classified.
- (iv) Data, complete and reliable in all respects should be provided in a lucid form so that the measurement of the variations between actual and standard costs is possible.

6. Method of Maintenance of Cost Records

A choice has to be made between integral and non-integral accounting systems. In case of integral accounting system, no separate sets of books are maintained for costing transactions but they are interlocked with financial transactions into one set of books.

In case of non-integral system, separate books are maintained for cost and financial transactions. At the end of the accounting period, the results shown by two sets of books are reconciled. In case of a big business, it will be appropriate to maintain a separate set of books for cost transactions.

7. Elasticity

The costing system should be elastic and capable of adapting to the changing requirements of a business.

It may, therefore, be concluded from the above discussion that costing system introduced in any business will not be a success in case of the following circumstances:

- If it is unduly complicated and expensive
- If a cost accountant does not get the cooperation of his/her staff
- If cost statements cannot be reconciled with financial statements
- If the results actually achieved are not compared with the expected ones

Methods of Costing

Costing can be defined as the technique and process of ascertaining costs. The principles in every method of costing are same but the methods of analyzing and presenting the costs differ with the nature of business. The methods of job costing are as follows:

1. Job Costing

The system of job costing is used where production is not highly repetitive and in addition consists of distinct jobs so that the material and labor costs can be identified by order number. This method of costing is very common in commercial foundries and drop forging shops and in plants making specialized industrial equipments. In all these cases, an account is opened for each job and all appropriate expenditure is charged thereto.

2. Contract Costing

Contract costing does not in principle differ from job costing. A contract is a big job whereas a job is a small contract. The term is usually applied where large-scale contracts are carried out. In case of ship-builders, printers, building contractors etc., this system of costing is used. Job or contract is also termed as terminal costing.

3. Cost Plus Costing

In contracts where in addition to cost, an agreed sum or percentage to cover overheads and fit is paid to a contractor, the system is termed as cost plus costing. The term cost here includes materials, labor and expenses incurred directly in the process of production. The system is used generally in cases where government happens to be the party to give contract.

4. Batch Costing

This method is employed where orders or jobs are arranged in different batches after taking into account the convenience of producing articles. The unit of cost is a batch or a group of identical products instead of a single job order or contract. This method is particularly suitable for general engineering factories which produce components in convenient economic batches and pharmaceutical industries.

5. Process Costing

If a product passes through different stages, each distinct and well defined, it is desired to know the cost of production at each stage. In order to ascertain the same, process costing is employed under which a separate account is opened for each process.

This system of costing is suitable for the extractive industries, e.g., chemical manufacture, paints, foods, explosives, soap making etc.

6. Operation Costing

Operation costing is a further refinement of process costing. The system is employed in the industries of the following types:

- a) The industry in which mass or repetitive production is carried out
- b) The industry in which articles or components have to be stocked in semi-finished stage to facilitate the execution of special orders, or for the convenience of issue for later operations

The procedure of costing is broadly the same as process costing except that in this case, cost unit is an operation instead of a process. For example, the manufacturing of handles for bicycles involves a number of operations such as those of cutting steel sheets into proper strips molding, machining and finally polishing. The cost to complete these operations may be found out separately.

7. Unit Costing (Output Costing or Single Costing)

In this method, cost per unit of output or production is ascertained and the amount of each element constituting such cost is determined. In case where the products can be expressed in identical quantitative units and where manufacture is continuous, this type of costing is applied. Cost statements or cost sheets are prepared in which various items of expense are classified and the total expenditure is divided by the total quantity produced in order to arrive at per unit cost of production. The method is suitable in industries like brick making, collieries, flour mills, paper mills, cement manufacturing etc.

8. Operating Costing

This system is employed where expenses are incurred for provision of services such as those tendered by bus companies, electricity companies, or railway companies. The total expenses regarding operation are divided by the appropriate units (e.g., in case of bus company, total number of passenger/kms.) and cost per unit of service is calculated.

9. Departmental Costing

The ascertainment of the cost of output of each department separately is the objective of departmental costing. In case where a factory is divided into a number of departments, this method is adopted.

10. Multiple Costing (Composite Costing)

Under this system, the costs of different sections of production are combined after finding out the cost of each and every part manufactured. The system of ascertaining cost in this way is applicable where a product comprises many assailable parts, e.g., motorcars, engines or machine tools, typewriters, radios, cycles etc.

As various components differ from each other in a variety of ways such as price, materials used and manufacturing processes, a separate method of costing is employed in respect of each component. The type of costing where more than one method of costing is employed is called multiple costing.

It is to be noted that basically there are only two methods of costing viz. job costing and process costing. Job costing is employed in cases where expenses are traceable to specific jobs or orders, e.g., house building, ship building etc. In case where it is impossible to trace the prime cost of the items for a particular order because of the reason that their identity gets lost while manufacturing operations, process costing is used. For example, in a refinery where several tons of oil is being produced at the same time, the prime cost of a specific order of 10 tons cannot be traced. The cost can be found out only by finding out the cost per ton of total oil produced and then multiplying it by ten.

It may, therefore, be concluded that the methods of batch contract and cost plus costing are only the variants of job costing whereas the methods of unit, operation and operating costing are the variants of process costing.

Techniques of Costing

Besides the above methods of costing, following are the types of costing techniques which are used by management only for controlling costs and making some important managerial decisions. As a matter of fact, they are not independent methods of cost finding such as job or process costing but are basically costing techniques which can be used as an advantage with any of the methods discussed above.

1. Marginal Costing

Marginal costing is a technique of costing in which allocation of expenditure to production is restricted to those expenses which arise as a result of production, e.g., materials, labor, direct expenses and variable overheads. Fixed overheads are excluded in cases where production varies because it may give misleading results. The technique is useful in manufacturing industries with varying levels of output.

2. Direct Costing

The practice of charging all direct costs to operations, processes or products and leaving all indirect costs to be written off against profits in the period in which they arise is termed as direct costing. The technique differs from marginal costing because some fixed costs can be considered as direct costs in appropriate circumstances.

3. Absorption or Full Costing

The practice of charging all costs both variable and fixed to operations, products or processes is termed as absorption costing.

4. Uniform Costing

A technique where standardized principles and methods of cost accounting are employed by a number of different companies and firms is termed as uniform costing. Standardization may extend to the methods of costing, accounting classification including codes, methods of defining costs and charging depreciation, methods of allocating or apportioning overheads to cost centers or cost units. The system, thus, facilitates inter-firm comparisons, establishment of realistic pricing policies, etc.

Systems of Costing

It has already been stated that there are two main methods used to determine costs. These are:

- Job cost method
- Process cost method

It is possible to ascertain the costs under each of the above methods by two different ways:

- Historical costing
- Standard costing

Historical Costing

Historical costing can be of the following two types in nature:

- Post costing
- Continuous costing

Post Costing

Post costing means ascertainment of cost after the production is completed. This is done by analyzing the financial accounts at the end of a period in such a way so as to disclose the cost of the units which have been produced.

For instance, if the cost of product A is to be calculated on this basis, one will have to wait till the materials are actually purchased and used, labor actually paid and overhead expenditure actually incurred. This system is used only for ascertaining the costs but not useful for exercising any control over costs, as one comes to know of things after they had taken place. It can serve as

guidance for future production only when conditions in future continue to be the same.

Continuous Costing

In case of this method, cost is ascertained as soon as a job is completed or even when a job is in progress. This is done usually before a job is over or product is made. In the process, actual expenditure on materials and wages and share of overheads are also estimated. Hence, the figure of cost ascertained in this case is not exact. But it has an advantage of providing cost information to the management promptly, thereby enabling it to take necessary corrective action on time. However, it neither provides any standard for judging current efficiency nor does it disclose what the cost of a job ought to have been.

Standard Costing

Standard costing is a system under which the cost of a product is determined in advance on certain pre-determined standards. With reference to the example given in post costing, the cost of product A can be calculated in advance if one is in a position to estimate in advance the material labor and overheads that should be incurred over the product. All this requires an efficient system of cost accounting. However, this system will not be useful if a vigorous system of controlling costs and standard costs are not in force. Standard costing is becoming more and more popular nowadays.

Summary

1. Cost accounting is a quantitative method that accumulates, classifies, summarizes and interprets information for operational planning and control, special decisions and product decisions.
2. Cost may be classified into different categories depending upon the purpose of classification viz. fixed cost, variable cost and semi variable cost.
3. Costing can be defined as the technique and process of ascertaining costs.