

## Cost Accounting– (Al Jamia Arts and Science College, Poopalam)

### Module I (Introduction)

Cost Accounting is a branch of accounting and has been developed due to limitations of financial accounting. The limitations of Financial Accounting which led to the development of cost accounting are as follows.

#### Limitations of financial accounting

- It provides only past data
- It does not show profit of each job or process
- It fails to measure control over resources
- It does not measure organizational efficiency
- It fails to provide adequate data for price fixation
- It does not provide data for comparison of costs
- It fails to take into account the price level changes
- It cannot disclose controllable & uncontrollable costs
- It provide only limited information for management for decision making

#### Costing and Cost Accounting

The costing terminology of C.I.M.A., London defines costing as the “the techniques and processes of ascertaining costs”. These techniques consist of principles and rules which govern the procedure of ascertaining cost of products or services. The important objective of costing are cost control and cost reduction. Cost Accounting may be regarded as “a specialized branch of accounting which involves classification, accumulation, assignment and control of costs.”

#### General Principles of Cost Accounting

**1. A cost should be related to its causes:** Cost should be related as closely as possible to their causes so that cost will be shared only among the cost units that pass thorough the department of which the expenses are related.

**2. A cost should be charged only after it has been incurred:** While determining the cost of individual units those costs which have actually been incurred should be considered.

**3. The convention of prudence should be ignored:** Usually accountants believe in historical costs and while determining cost, they always attach importance to historical cost. In Cost Accounting this convention must be ignored, otherwise, the management appraisal of the profitability of the projects may be vitiated. According to W.M. Harper, “a cost statement should, as far as possible, give facts with no known bias. If a contingency needs to be taken into consideration it should be shown separately and distinctly”.

**4. Abnormal costs should be excluded from cost accounts:** Costs which are of abnormal nature (eg. Accident, negligence etc.) should be ignored while computing the cost, otherwise, it will distort costs figures and mislead management as to working results of their undertaking under normal conditions.

**5. Past costs not to be charged to future period:** Costs which could not be recovered or charged in full during the concerned period should not be taken to a future period, for recovery. If past costs are included in the future period, they are likely to influence the future period and future results are likely to be distorted.

**6. Principles of double entry should be applied wherever necessary:** Costing requires a greater use of cost sheets and cost statements for the purpose of cost ascertainment and cost control, but cost ledger and cost control accounts should be kept on double entry principle as far as possible.

#### Objectives of Cost Accounting

1.To analyze and classify all expenditure with reference to the cost of products and operations.

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2. To arrive at the cost of production of every unit, job, operation, process, department or service and to develop cost standard.
3. To indicate to the management any inefficiencies and the extent of various forms of wastages.
4. To provide data for periodical profit and loss accounts and balance sheets
5. To reveal sources of economies in production having regard to methods, types of equipment, design, output and layout.
6. To provide actual figures of costs for comparison with estimates and to serve as a guide for future estimates or quotations and to assist the management in their price fixing policy.
7. To show, where Standard Costs are prepared, what the cost of production ought to be and with which the actual costs which are eventually recorded may be compared.
8. To present comparative cost data for different periods and various volume of output and to provide guidance in the development of business. This is also helpful in budgetary control.
9. To record the relative production results of each unit of plant and machinery in use as a basis for examining its efficiency. A comparison with the performance of other types of machines may suggest the necessity for replacement.
10. To provide a perpetual inventory of stores and other materials so that interim Profit and Loss Account and Balance Sheet can be prepared without stock taking and checks on stores and adjustments are made at frequent intervals

### **Importance of Cost Accounting**

a) **Costing as an aid to management:-** Cost accounting provides valuable aid to management. It provides detailed costing information to the management to enable them to maintain effective control over stores and inventory, to increase efficiency

of the organization and to check wastage and losses. The various advantages derived by the management from a good system of costing are as follows:

1. **Cost accounting helps in periods of trade depression and trade competition.**
2. **Cost accounting aids price fixation**
3. **Cost accounting helps in making estimates**
4. **Cost accounting helps in channelizing production on right lines**
5. **Cost accounting eliminates wastages**
6. **Cost accounting makes comparisons possible**
7. **Cost accounting provides data for periodical Profit and Loss Account.**
8. **Cost accounting helps in determining and enhancing efficiency**
9. **Cost accounting helps in inventory control.**

b) **Costing as an aid to Creditors:** Investors, banks and other money lending institutions have a stake in the success of the business concern are therefore benefitted immensely by the installation of an efficient system of costing. They can base their judgment about the profitability and future prospects of the enterprise on the costing records.

c) **Costing as an aid to employees.:** Employees have a vital interest in their employer's enterprise in which they are employed. They are benefitted by a number of ways by the installation of an efficient system of costing. They are benefitted, through continuous employment and higher remuneration by way of incentives, bonus plans, etc.

d) **Costing as an aid to National Economy:** An efficient system of costing brings prosperity to the business enterprise which in turn brings prosperity to the business enterprise which in turn results in stepping up of the government revenue. The overall economic development of a country takes

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place as a consequence of increase in efficiency of production. Control of costs, elimination of wastages and inefficiencies led to the progress of the industry and, in consequence of the nation as a whole.

### Cost Accounting and Financial Accounting-

<u>Financial Accounting</u>	<u>Cost Accounting</u>
aims at safeguarding the interest of the business & parties.	renders information for the guidance of the management
meets the requirements of the Companies Act, Income Tax Act and other statues.	generally kept voluntarily to meet the requirements of the management
emphasizes the measurement of profitability	aims at ascertainment of costs
disclose the net profit and loss of the business as a whole	disclose profit or loss of each product, job or service.
provides operating results and financial position	gives information through cost reports to the management
deal mainly with actual facts and figures	deal partly with facts and figures
stress is on the ascertainment and exhibition of profits earned or losses incurred in the business	emphasis is more on aspects of planning and control
concerned with external transactions	concerned with internal transactions
reported in aggregate in financial accounts	broken into unit basis in cost accounts

do not provide information on the relative efficiencies of various workers

provide valuable information on the relative efficiencies of various workers.

stocks are valued at cost or market price whichever is less

stocks are valued at cost price

### Cost units-

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”. The forms of measurement used as cost units are usually the units of physical measurements like number, weight, area, length, value, time etc.

### Cost centre -

According to Chartered Institute of Management Accountants, London, cost centre 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”. Cost centre is the smallest organizational subunit for which separate cost collection is attempted.

### Profit centre -

A profit centre is that segment of activity of a business which is responsible for both revenue and expenses and discloses the profit of a particular segment of activity. Profit centres are created to delegate responsibility to individuals and measure their performance.

### Cost classification

1. **By Nature or Elements.** According to this classification the costs are classified into three categories i.e., Materials, Labour and Expenses.

2. **By Functions:** This classification is on the basis of costs incurred in various functions of an organization ie. Production, administration, selling and distribution. According to this classification, costs are divided into Manufacturing and Production

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Costs and Commercial costs.

**Manufacturing and Production Costs** are costs involved in manufacture, construction and fabrication of products.

**Commercial Costs** are (a) administration costs (b) selling and distribution costs.

**3. By Degree of Traceability to the Product :** According to this, costs are divided direct costs and indirect costs.

**Direct Costs** are those costs which are incurred for a particular product and can be identified with a particular cost centre or cost unit. Eg:- Materials, Labour. **Indirect Costs** are those costs which are incurred for the benefit of a number of cost centre or cost units and cannot be conveniently identified with a particular cost centre or cost unit. Eg:- Rent of Building, electricity charges, salary of staff etc.

**4. By Changes in Activity or Volume:** According to this costs are classified into fixed, variable and semi-variable. **Fixed Costs** are those costs which remain fixed in total amount with increase or decrease in the volume of the output or productive activity for a given period of time. **Variable Costs** are those costs which vary in direct proportion to the volume of output. **Semi-variable Costs** are those costs which are partly fixed and partly variable.

**5. Association with the Product:** Cost can be classified as product costs and period costs. Product costs are those which are traceable to the product and included in inventory cost, thus product cost is full factory cost. Period costs are incurred on the basis of time such as rent, salaries etc. thus it includes all selling and administration costs. These costs are incurred for a period and are treated as expenses.

**6. By Controllability:** The **CIMA** defines controllable cost as “a cost which can be influenced by the action of a specified member of an undertaking” and a non-controllable cost as “a cost which cannot be

influenced by the action of a specified member of an undertaking”.

**7. By Normality:** There are normal costs and abnormal costs. Normal costs are the costs which are normally incurred at a given level of output under normal conditions. Abnormal costs are costs incurred under abnormal conditions which are not normally incurred in the normal course of production. Eg:- damaged goods due to machine break down

**8. By Relationship with Accounting Period:** There are capital and revenue expenses depending on the length of the period for which it is incurred. The cost which is incurred in purchasing an asset either to earn income or increasing the earning capacity of the business is called capital cost,

The cost which is incurred for maintaining an asset or running a business is revenue expenditure.

**9. By Time..** Costs can be classified as 1) Historical cost and 2) Predetermined Costs. The costs which are ascertained and recorded after it has been incurred is called historical costs. Predetermined costs are also known as estimated costs as they are computed in advance of production taking into consideration the previous periods' costs and the factors affecting such costs.

### Types, Methods and Techniques of Costing

Basically, there are two principal methods of costing, namely (i) Job Costing, and (ii) Process costing.

1. **Job costing:** It refers to a system of costing in which costs are ascertained in terms of specific jobs or orders which are not comparable with each other. Job Costing includes the following methods of costing:

(a) **Contract Costing:** The term is usually applied to the costing method adopted where large scale contracts at different sites are carried out, as in the

case of building construction.

(b) **Bach Costing:** A batch of similar products is regarded as one job and the cost of this complete batch is ascertained. It is then used to determine the unit cost of the articles produced.

(c) **Terminal Costing:** This method is also a type of job costing. This method emphasizes the essential nature of job costing, ie, the cost can be properly terminated at some point and related to a particular job.

(d) **Operation Costing:** This method is adopted when it is desired to ascertain the cost of carrying out an operation in a department, for example, welding

2. **Process Costing:** Where a product passes through distinct stages or processes, the output of one process being the input of the subsequent process, it is frequently desired to ascertain the cost of each stage or process of production. This is known as process costing.

3. **Unit or single or output or single output costing:** This method is used where a single article is produced or service is rendered by continuous manufacturing activity.

4. **Operating Costing:** This method is applicable where services are rendered rather than goods produced. The procedure is same as in the case of single output costing.

5. **Multiple or Complete Costing:** Some products are so complex that no single system of costing is applicable. It is used where there are a variety of components separately produced and subsequently assembled in a complex production.

6. **Uniform Costing:** It is not a distinct method of costing by itself. It is the name given to a common system of costing followed by a number of firms in the same industry. This helps in comparing performance of one firm with that of another.

7. **Departmental Costing:** When costs are ascertained department by department, the method is called “Departmental Costing”.

#### Elements of Cost-

The elements of costs are three and they are materials, labour and other expenses. These can be further analyzed as follows.

By grouping the above elements of cost, the following divisions of cost are obtained.

1. Prime cost = Direct Materials + Direct Labour + Direct Expenses

2. Works or Factory Cost = Prime Cost + Works or Factory Overheads

3. Cost of Production = Works Cost + Administration Overheads

4. Total Cost or Cost of Sales = Cost of Production + Selling and Distribution Overheads

The difference between the cost of sales and selling price represents profit or loss..

These terms can be explained as follows

1. **Direct Materials** are those materials which can be identified in the product and can be conveniently measured and directly charged to the product.

2. **Indirect Materials** are those materials which cannot be classified as direct materials.

3. **Direct Labour** is all labour expended in altering the construction, composition, confirmation or condition of the product. Thus direct wages means the wages of labour which can be conveniently identified or attributed wholly to a particular job, product or process

4. **Direct Expenses** are expenses directly identified to a particular cost centre. Hence expenses incurred for a particular product, job, department etc are direct expenses.

5. **Overheads** may be defined as the aggregate of the cost of indirect materials, indirect labour and such other expenses including services as cannot conveniently be charged direct to specific cost units.

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Overheads may be sub-divided into (i) Manufacturing Overheads; (ii) Administration Overheads; (iii) Selling Overheads; (iv) Distribution Overheads; (v) Research and Development Overheads.

**Cost sheet or Statement of Cost:** When costing information is set out in the form of a statement, it is called "Cost Sheet".

### Module II (Materials)

#### Materials: -

The materials are a major part of the total cost of producing a product and are one of the most important assets in majority of the business enterprises. Hence the total cost of a product can be controlled and reduced by efficiently using materials. The materials are of two types, namely: (i) Direct materials and Indirect materials

#### Purchasing Control and Procedure:

Purchasing is an art. Wrong purchases increase the cost of materials, store equipment and the finished goods. Hence it is imperative that purchases should be effectively, efficiently and economically performed. So scientific purchasing should be done.

According to Alford and Beatty, "Purchasing is the procuring of materials, supplies, machines tools and services required for the equipment, maintenance and operation of a manufacturing plant".

**Methods of Purchasing** Purchasing can be broadly classified as centralized and localized purchasing.

(a) **Centralized Purchasing:** In a large organization, manufacturing units are many. In such cases centralized purchasing is beneficial. It is the process of purchasing from few dealers.

(b) **Decentralization of Purchases:** The advantages of decentralization of purchases

1. Each plant may have its own particular need. This can be given special attention.
2. Direct contact can be established with suppliers.

3. The time lag between indenting and receiving materials can be reduced.

4. Technical requirements of each plant can be ascertained.

#### Purchase Procedure:

1. **Indenting for materials :** The stores department prepares indents for the purchase of materials for replenishment of stocks (regular indents) or for a special job(special indents) and sends it to the purchase department.

2. **Issue of tenders to suppliers:** The purchase department issue tenders to suppliers or publish them in papers. The suppliers quote their terms of price and delivery/payment. After the last date for receipt of quotations is over, the tenders are opened and a comparative statement is prepared.

3. **Placing of purchase orders:** Normally six copies of purchase order are made. The supplier, stores, inspection department, store accounting section, purchase department and progress department are sent one copy each.

4. **Inspection:** The supplier delivers goods at the place specified. Two delivery challans are prepared by the supplier one of which is returned. It is a proof of delivery. After receiving the goods, the inspection department checks that the materials are in accordance with the quality required, standard expected, tolerances allowed etc.

5. **Receiving Stores:** The stores department prepares a Stores Receipt Note for the quantity of stock accepted in inspection. After issuing of the Stores Receipt, the Storekeeper is responsible for the stocks. The stores receipt is the document for the posting of receipts in Bin Card and the Stores Ledger.

6. **Checking and passing of bills for payment:** Bills received by the purchase department are forwarded to the stores accounting section to check the authenticity regarding quantity and price and the

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arithmetical accuracy

### **Storekeeping:**

Store keeping is a service function. The storekeeper is a custodian of all the items kept in the store. The stores should be maintained properly and cost minimized.

### **Requisitioning for Stores**

One of the duties of the storekeeper is to send requisitions for materials for replenishment in time so that the production is not held up due to shortage of materials. The storekeeper should also see that there is no unnecessary blocking of capital due to overstocking of materials. For this he keeps a check on the re-order level, economic ordering quantity, and the maximum and minimum quantity which he is authorized to store in respect of each kind of material.

### **Stock levels**

In order to avoid overstocking and under stocking inventory management should fix the levels of stocks such as maximum level, minimum levels, etc

- **Maximum level** - maximum stock is the upper level of inventory. It is the maximum quantity of items of material that can be held in stock at any time. This is the level above which stock should not be maintained.

Maximum Stock level = Reordering level + Re-ordering Quantity -

(Minimum consumption x Minimum re-ordering period)

- **Minimum level** - minimum stock level is the minimum quantity of stocks that should be held at all times. It is that level below which stock should not normally be allowed to fall.

Minimum Stock Level = Re-ordering level - (Normal consumption x Normal Re-order period)

**Reorder level** (ordering level): This is the level at which order is placed for further supply of materials. When stock of material reaches this level, the storekeeper should initiate action for the purchase of material.

Re-ordering Level = Maximum Level x Minimum re-order period.

- **Average stock level** - this is the average stock held by a business enterprise.

Average Stock Level = Minimum Stock Level +  $\frac{1}{2}$  of Re-order Quantity.

- **Danger level** - this is the level of stock below which the stock should never be allowed to fall. If the stock level falls below the minimum level is called the danger level.

Danger Level = Average consumption x Max.re-order period for emergency purchases.

- **Reorder period.**- the term reorder period refers to the time required to obtain new materials.

### **Economic Order Quantity (EOQ)**

The EOQ enables the firm to determine the optimum level of inventory. EOQ can be defined as the quantity which is most economical to order at a time. It is the ordering quantity which minimizes the total cost of inventory. The total inventory comprises ordering cost and carrying costs.

If the ordering quantity is less, then the ordering cost will be high and the carrying cost will be lesser and vice versa. It is because of more number of order to be placed. Therefore, the ordering quantity should be fixed at that level where the total cost of inventory is lowest. This is possible when the ordering cost is equal to carrying cost. Thus EOQ is that quantity at which the total inventory cost is minimum.

### **Assumptions of EOQ**

- The demand for material is known
- Consumption rate is constant

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- Purchase price of material is fixed
- Carrying or storage cost per unit is fixed
- Ordering cost per unit is fixed.
- The quantity of material ordered is received immediately. The lead time is zero

### **Costs of inventory**

- **Ordering cost** –

these are cost of placing an orders. This cost depends on number of orders. It includes preparation of purchase order, cost of receiving order, transport costs, etc.

- **Carrying cost** –

these are the cost incurred in keeping inventory. These includes storage costs(rent, lighting), handling costs, insurance, security cost, damage etc.

- **Stock out cost** –

a stock out is a situation when the firm is not having items in store but there is a demand for the same.

### **Stores (or Materials) records**

In the stores the most important two records kept are bin cards and stores ledger. (a) Bin Card. A bin card is a record of the receipt and issue of material and is prepared by the store keeper for each item of stores. In a bin card not only the receipt and issue of material is recorded, minimum quantity, maximum quantity and ordering quantity are stated on the card.

(b) Stores Ledger: This ledger is kept in the costing department and is identical with the bin card except that receipts, issues and balances are shown along with their money values.

### **Perpetual inventory system**

The system of material control on continuous basis while the material is in storage is called perpetual inventory system. Under this system the actual stock is taken continuously and is compared with the stock as shown by the material records. It is a method of recording stores

balance after every receipt and issue, to facilitate regular checking to avoid closing down of factory for stock taking.

### **ABC analysis**

In the case of large concerns large number of items are kept in the stores. Therefore, it is practically impossible to concentrate on each and every item. In such situations, ABC analysis is used with view to exercise better control over materials. Under ABC analysis all materials are classified into three categories. A, B and C according to value. Category A include high value of materials, category B includes medium value of materials and category C consist lower value materials. According to this technique a greater or strict control is exercised over category A, moderate control is exercised over category and relatively lesser degree of control over category C materials

### **Issue of materials**

Materials issued from stores are debited to the jobs or work orders which received them and credited to the materials account. There are many methods of pricing material issues. The most important being: FIFO, LIFO, simple and weighed average methods.

**1) First in First Out (FIFO)** :Under this method material is first issued from the earliest consignment on hand and priced at the cost at which that consignment was placed in the stores. In other words, materials received first are issued first. This method is most suitable in times of falling prices because the issue price of materials to jobs or work order will be high while the cost of replacement of materials will be low.

**2) Last in Last Out (LIFO)**:Under this method, issues are priced in the reverse order of purchase i.e., the prices of the latest available consignment is taken. This method is suitable in times of rising prices because material will be issued from the latest consignment at a price which is

closely related to the current price levels.

**3) Simple Average Method:** In this method, price is calculated by dividing the total of the prices of the materials in the stock from which the material to be priced could be drawn by the number of the prices used in that total.

**4) Weighted Average Methods:** In this method, price is calculated by dividing the total cost of materials in the stock from which the materials to be priced could be drawn by the total quantity of materials in that stock. In the periods of heavy fluctuations in the prices of materials, the average cost method gives better results because it tends to smooth out the fluctuations in prices by taking the average of prices of various lots in stock.

### **Module III(Labour)**

Labour cost is a second major element of cost. The control of labour cost and its accounting is very difficult as it deals with human element. Labour is the most perishable commodity and as such should be effectively utilized immediately. Labour is of two types **(a) direct labour, (b) indirect labour.**

### **Time keeping**

Time-keeping will serve the following purposes:

1. Preparation of Pay Rolls in case of time-paid workers.
2. Meeting the statutory requirements.
3. Ensuring discipline in attendance.
4. Recording of each worker's time 'in' and 'out' of the factory making distinction between normal time, overtime, late attendance, early leaving.
5. For overhead distribution when overheads are absorbed on the basis of labour hours.

**Methods of Time-keeping:** There are two methods of time-keeping. They are the **manual methods** and the **mechanical methods**. Whichever method is

used it should make a correct record of the time and the method should be cost effective and minimize the risk of fraud.

The **manual methods** of time keeping are as follows:

- a) Attendance Register Method, and
- b) Metal Disc Method

**Attendance Register Method:** This is the traditional method where an attendance register or muster roll is kept at the time office near the factory gate or in each department. The timekeeper records the name of the worker, the worker's number, the department in which he is working, the rate of wages, the time of arrival and departure, normal time and overtime.

**Metal Disc Method:** Under this method, each worker is allotted a metal disc or a token with a hole bearing his identification number. A board is kept at the gate with pegs on it and all tokens are hung on this board. These boards can be maintained separately for each department so that the workers can remove the token without delay and put it in a tray or box kept near the board. Immediately after the scheduled time for entering the factory, the box is removed and the latecomers will have to give their tokens to the timekeeper and their exact time of arrival is recorded. The tokens or disc left on the board will represent the absentee workers.

**Mechanical Methods:** The mechanical methods that are generally used for the recording of time of workers may be as follows:

- (a) Time Recording Clocks
- (b) Dial Time Records

**Time Recording Clocks:** The time recording clock is a mechanical device which automatically records the time of the workers. Under this method, each worker is given a *Time Card* which is kept in a tray near the factory gate and as the worker enters the gate, he picks up his card from the tray, puts it in the time recording clock

which prints the exact time of arrival in the proper space against the particular day

**Dial Time Records:** Under this method, a dial time recorder machine is used. It has a dial with number of holes (usually about 150) and each hole bears a number corresponding to the identification number of the worker concerned. There is one radial arm at the centre of the dial. As a worker enters the factory gate, he is to press the radial arm after placing it at the hole of his number and his time will automatically be recorded on roll of a paper inside the dial time recorder against the number.

### **Time Booking**

Time booking is the recording of time spent by the worker on different jobs or work orders carried out by him during his period of attendance in the factory.

### **Idle Time**

There is always a difference between the time booked to different jobs or work orders and the time recorded at the factory gate. This difference is known as idle time. Idle time is of two types.

(a) Normal Idle Time (b) Abnormal Idle Time

**Normal Idle Time:** This represents the time, the wastage of which cannot be avoided and, therefore, the employer must bear the labour cost of this time. But every effort should be made to reduce it to the lowest possible level.

**Abnormal Idle Time:** It is that time the wastage of which can be avoided if proper precautions are taken. Example: time wasted due:- to breakdown of machinery

### **Over Time: -**

It is the work done beyond the normal working period in a day or week. For overtime done, the workers are given double the wages for the overtime done. The additional amount paid on account of overtime is known as overtime premium.

### **System of Wage Payment**

- Time wage system and
- piece rate wage system

**Time Wage System:** Under this method of wage payment, the worker is paid at an hourly, daily, weekly or monthly rate. This payment is made according to the time worked irrespective of the work done

### **Merits**

- Simple to understand
- Helps to maintain quality of product
- Job safety
- Trade union accept this
- good relation with management
- Save machines from overload
- Guarantee fixed wages

### **Demerits**

- No distinction between efficient & inefficient workers
- Continuous supervision is required
- Difficult to measure labour cost

### **Piece Rate System (payment by result):**

Under this system of wage payment, a fixed rate is paid for each unit produced, job completed or an operation performed. Thus, payment is made according to the quantity of work done no consideration is given to the time taken by the workers to perform the work.

### **Merits**

- Simple to understand
- More quantity
- Strict supervision is not required
- Cost per unit can easily be calculated
- Reduce cost of production
- Management can distinguish between efficient & inefficient workers

### **Demerits**

- Reduce quality
- Minimum wage are not guaranteed
- Chance for machine breakdown
- Promotes jealousy or suspicion

**Methods of piece rate wage system.**

- a) Straight piece rate system
- b) Taylor's differential piece rate system
- c) Merrick's multiple piece rate system
- d) Gant's task and bonus plan

**(a) Straight piece rate system:** Payment is made as per the number of units produced at a fixed rate per unit. Another method is piece rate with guaranteed time rate in which the worker is given time rate wages if his piece rate wages is less than the time rate.

**(b) Taylor's Differential Piece Rate system:** This system was introduced by Taylor, the father of scientific management to encourage the workers to complete the work within or less than the standard time. Taylor advocated two piece rates, so that if a worker performs the work within or less than the standard time, he is paid a higher piece rate and if he does not complete the work within the standard time, he is given a lower piece rate.

**c) Merrick's Multiple Piece Rate System:** This method seeks to make an improvement in the Taylor's differential piece rate system. Under this method, three piece rates are applied for workers with different levels of performance. Wages are paid at ordinary piece rate to those workers whose performance is less than 83% of the standard output, 110% of the ordinary piece rate is given to workers whose level of performance is between 83% and 100% of the standard and 120% of the ordinary piece rate is given to workers who produce more than 100% of the standard output.

**Premium and Bonus Plan**

Under a premium plan, a standard time is fixed for the completion of a specific job or operation at an hourly rate plus wages for a certain fraction of the time saved by way of a bonus. The plan is also known as incentive plans.

The following are some of the important premium plans.

(i) **Halsey Premium Plan:** Under this method, the worker is given wages for the actual time taken and a bonus equal to half of wages for time saved. The standard time for doing each job or operation is fixed. In practice the bonus may vary from  $33\frac{1}{3}\%$  to  $66\frac{2}{3}\%$  of the wages of the time saved. Thus if S is the standard time, T the time taken, R the labour rate per hour, and % the percentage of the wages of time saved to be given as bonus, total earnings of the worker will be:  $T \times R + \% (S-T) R$ . Under Halsey-Weir plan, the premium is set at 30% of the time saved.

**The advantages of Halsey Premium Plan**

- 1. It is simple to understand and relatively simple to calculate.
- 2. It guarantees time wages to workers.
- 3. It is helpful in reducing labour cost per unit.
- 4. It motivates efficient workers
- 5. Fixed overhead cost per unit is reduced with increase in production.
- 6. The employer is able to reduce cost of production

**Disadvantages**

- 1. Quality of work suffers
- 2. Workers criticize this method on the ground that the employer gets a share of wages of the time saved.

(ii) **Rowan Plan:** The difference between Halsey plan and Rowan Plan is the calculation of the bonus. Under this method also the workers are guaranteed the time wages but the bonus is that proportion of the wages of the time taken which the time saved bears to the standard time allowed

$$\text{Total Earnings} = T \times R + S - T \times T \times R$$

**Advantages**

- 1. It guarantees time wages to workers
- 2. The quality of work does not suffer
- 3. Labour cost per unit is reduced
- 4. Fixed overhead cost is reduced with increase in production.

**Disadvantages**

- 1. workers do not get the full benefit of the time saved
- 2. does not differentiate efficient and inefficient workers

**Overheads: -**

Cost related to a cost center or cost unit may be divided into two ie. Direct and Indirect cost. The Indirect cost is the overhead cost and is the total of indirect material cost, indirect labour cost, indirect expenses. It is also called 'burden', 'supplementary costs', 'on costs', 'indirect expenses'.

**Classification of Overheads**

Overheads can be classified on the following basis:

i) **Function-wise classification:** Overheads can be divided into the following categories on functional basis.

(a) Manufacturing or production overheads eg:- indirect materials like lubricants, cotton wastes, indirect labour like salaries and wages of supervisors etc.

(b) Administration overheads eg:- indirect materials like office stationery and printing, indirect labour salaries of office clerks etc.

(c) Selling and Distribution overheads eg:- indirect materials like catalogues, printing, stationery, price list, indirect salary of salesmen, agents, travellers, etc.

ii) **Behavior-wise classification:** Overheads can be classified into the following categories as per behavior pattern.

(a) Fixed overheads like managerial remuneration, rent of building, insurance of building, plant etc.

(b) Variable overheads like direct material and direct labour.

(c) Semi-variable overheads like depreciation, telephone charges, repair and maintenance of buildings, machines and equipment etc.

iii) **Element-wise classification:** Overheads can be classified into the following categories as per element.

(a) Indirect materials

(b) Indirect labour

(c) Indirect expenses

**Allocation and Apportionment of Overhead to Cost Centres (Departmentalisation of Overhead)**

When all the items are collected properly under suitable account headings, the next step is allocation and apportionment of such expenses to cost centres. This is also known as departmentalization or primary distribution of overhead.

**Allocation of Overhead Expenses**

Allocation is the process of identification of overheads with cost centres. An expense which is directly identifiable with a specific cost centre is allocated to that centre. Thus it is allotment of a whole item of cost to a cost centre or cost unit

**Apportionment of Overhead Expenses**

Cost apportionment is the allotment of proportions of cost to cost centres or cost units. If a cost is incurred for two or more divisions or departments then it is to be apportioned to the different departments on the basis of benefit received by them.

**Basis of Apportionment**

Suitable bases have to be found out for apportioning the items of overhead cost to production and service departments and then for reapportionment of service departments costs to other service and production departments. The basis selected should be correlated to the expenses and the expense should be measurable by the basis. This process of distribution of common expenses over the departments on some equitable basis is known as 'Primary Distribution'. The following are the main bases of overhead apportionment utilized in manufacturing concerns:

**1).Direct Allocation.** Under direct

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allocation, overheads are directly allocated to the department for which it is incurred.

(i) **Direct Labour/Machine Hours.** Under this basis, overhead expenses are distributed to various departments in the ratio of total number of labour or machine hours worked in each department.

(ii) **Value of materials passing through cost centres.** This basis is adopted for expenses associated with material such as material handling expenses.

(iii) **Direct wages.** Expenses which are booked with the amounts of wages

### 2) Re-apportionment of Service Department Costs to Production Departments

Service department costs are to be re-apportioned to the production departments or the cost centres where production is going on. This process of re-apportionment of overhead expenses is known as 'Service Distribution'. The following is a list of the bases of apportionment which may be accepted for the service departments.

The following are the various **methods** of re-distribution of service department costs to production departments.

1. Direct re-distribution method
2. Step distribution method
3. Reciprocal Services method

**1) Direct re-distribution method:** Under this method, the costs of service departments are directly apportioned to production departments without taking into consideration any service from one service department to another service department.

**2) Step Distribution Method:** Under this method, the cost of most serviceable department is first apportioned to other service departments and production departments.

**3) Reciprocal Services Method:** This method recognizes the fact that if a given

department receives service from another department, the department receiving such service should be charged. If two departments provide service to each other, each department should be charged for the cost of services rendered by the other. There are three methods available for dealing with inter-service departmental transfer:

- a. Simultaneous Equation Method
- b. Repeated Distribution Method
- c. Trial and Error Method

**(a) Simultaneous Equation method:** Under this method, the true cost of the service departments are ascertained first with the help of simultaneous equations; these are then redistributed to production departments on the basis of given percentage.

**(b) Repeated Distribution Method:** Under this method, the totals are shown in the departmental distribution summary, are put out in a line, and then the service department totals are exhausted in turn repeatedly according to the agreed percentages until the figures become too small to matter.

**(c) Trial and Error Method:** Under this method, the cost of one service department is apportioned to another centre. The cost of another centre plus the share received from the first centre is again apportioned to the first cost centre and this process is repeated till the balancing figure becomes negligible.

### ABSORPTION OF OVERHEAD

Absorption means the distribution of the overhead expenses allotted to a particular department over the units produced in that department. Overhead absorption is accomplished by overhead rates.

### Methods of Absorption of Manufacturing Overhead

The following are the main methods of absorption of manufacturing or factory overheads.

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(a) **Direct Material Cost Method.** Under this method percentage of factory expenses to value of direct materials consumed in production is calculated to absorb manufacturing overheads.

The formula is  $\text{Overhead Rate} = \frac{\text{Production Overhead Expenses (Budgeted)}}{\text{Anticipated Direct Material Cost}}$

(b) **Direct Labour Cost (or Direct Wages) Method.** This is a simple and easy method and widely used in most of the concerns. The overhead rate is calculated as under:  
 $\text{Overhead Rate} = \frac{\text{Production Overhead Expenses}}{\text{Direct Labour Cost}}$

(c) **Prime Cost Method.** Under this method the recovery rate is calculated dividing the budgeted overhead expenses by the aggregate of direct materials and direct labour cost of all the products of a cost centre. The formula is

$\text{Overhead Recovery Rate} = \frac{\text{Production Budgeted Overhead Expenses}}{\text{Anticipated Direct Materials and Direct Labour Cost}}$

(d) **Direct Labour (or Production) Hour Method.** This rate is obtained by dividing the overhead expenses by the aggregate of the productive hours of direct workers. The formula is  $\text{Overhead rate} = \frac{\text{Production Overhead Expenses}}{\text{direct labour hours}}$ .

(e) **Machine Hour Rate.** Machine hour rate is the cost of running a machine per hour. It is one of the methods of absorbing factory expenses to production. What is needed for computing the machine hour rate is to divide overhead expenses for a specific machine or group of machines for a period by the operating hours of the machine or the group of machines for the period. It is calculated as follows:  $\text{Machine hour rate} = \frac{\text{Amount of overheads}}{\text{Machine hours during a given period}}$

(f) **Rate Per Unit of Production.** This method is simple, direct and easy. It is suitable for mining and other extractive industries, foundries and brick laying industries, where the output is measured in

convenient physical units like number, weight, volume etc. the rate is calculated as under:

$\text{Overhead Rate} = \frac{\text{Overhead expenses (budgeted)}}{\text{Budgeted production}}$

(g) **Sale Price Method:** Under this method, budgeted overhead expenses are divided by the sale price of units of production in order to calculate the overhead recovery rate., the formula is

$\text{Overhead Recovery Rate} = \frac{\text{Budgeted overhead expenses}}{\text{Sale value of units of production}}$

### Module IV (Methods of Costing)

#### UNIT COSTING

It is an important method of costing. It is also known as output costing or single costing. It is used to ascertain the cost of producing a unit of output.. This method is called 'unit' costing since every unit of production is identical in all respects and the cost unit is a standard product.

#### Cost sheet:

Cost sheet is a device used to determine and present the cost under unit costing. It is a statement of costs incurred at each level of manufacturing a product or service. In a Cost sheet all the elements of cost is taken into consideration. It includes Prime cost, Factory/manufacturing cost, cost of production, cost of sale Profit/loss etc.

#### Items excluded from Cost Sheet:

1. Pure financial expenses like interest on capital, interest on loan, discount on debentures, loss on sale of fixed asset provision for bad debts and doubtful debts, writing off goodwill, copyright, preliminary expenses etc.
2. Pure financial incomes like interest received, profit on sale of investment, dividend received, rent received, commission received, discount received etc. In addition to the above, no appropriation items will include in cost sheet

**Tenders or Quotations:**

A tender or quotation is an offer made by a person to supply certain goods at a specified price. It is an estimated price which is determined in advance of production.

**Computation of Tender price**

**I. Calculation of Tender price on the basis of Percentages of Overheads**

In this case a cost sheet is prepared for the past period with the total amount of different elements of cost. Here Indirect or overhead costs are charged on a percentage basis. The percentage is calculated on the basis of the past year's cost sheet.

**II. Computation of Tender price on the basis of Previous year's per unit cost:**

Under this situation , previous periods cost and output figures are available. Tender price is fixed by multiplying the quantity with previous periods per unit cost and adding the required percentage of profit. There are three different situations under this method.

**a. When there is no change in past cost and past percentage of profit.** In this case a detailed probable cost sheet is prepared by multiplying previous period's cost of each unit with the quantity of tender. Profit is added at the same percentage of profits of the past period.

**b. When there is change in past cost, but no change in past percentage of profit:** - Here the cost of the tender is calculated by making necessary adjustments in the elements of cost. Same percentage of cost is added as profit to get tender price.

**c. When there is change in past cost and past percentage of profit:** - Here the total cost tender is calculated by making necessary adjustments in the cost and the tender price is then calculated by adding the required percentage of profit.

**III Calculation of Tender price based on fixed and variable costs:** Here, costs are classified according to variability into three

types,, fixed, variable and semi variable. Tender price is calculated on the basis of degree of variability

**JOB COSTING**

It means ascertaining costs of an individual job, work order or project separately. According to ICMA London, "job costing is that form of specific order costing which applies where work is undertaken to customer's specific requirements and each order is of comparatively of short duration." Under this method of costing, each job is considered to be a distinct cost unit. As such, each job is separately identifiable.

**Advantages of Job costing:**

1. It helps to distinguish profitable jobs from unprofitable jobs
2. It helps to identify defective work and spoilage with a department or person
3. Selling price of special orders can easily be fixed.
4. It helps to prepare estimates of cost for submitting quotations and tender for similar jobs
5. It helps to control future cost.

**CONTRACT COSTING**

it is a form of specific order costing which applies where the work is undertaken to customer's requirements and each order of long duration as compared to job costing. It is also known as terminal costing.

**Contract Account**

A contract account is a nominal account in nature. It is prepared to find out the cost of contract and to know profit or loss made on the contract. A contractor may undertake a number of contracts at a time. For each contract a separate account is opened. In the contract account all direct cost such as material, labour and other direct expenses incurred during an accounting period are debited and the indirect expenses are apportioned on an equitable basis. The differences between the two sides are

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known as Notional profit or notional loss.

### Special terms in contract account

1. **Work in Progress:** It is the unfinished contract at the end of the accounting period and it includes amount of work certified and amount of work uncertified.
2. **Work certified:** The sales value of work completed as certified by the architect is known as 'work certified'.
3. **Work Uncertified:** It means work which has been carried out by the contractor but has not been certified by the architect.
4. **Retention money:** - Regardless of the amount of work certified, the contractor is paid a specified percentage of the same and the balance is held or retained by the contractee. The unpaid balance of work certified or the amount held back or retained by the contractee is known as 'retention money'.
5. **Sub contract:** Sometimes the contractor enters into contracts with another contractor to give a portion of work undertaken by him.
6. **Escalation clause:** This is clause which is provided in the contract to cover up any increase in the price of the contract due to increase in the prices of raw material or labour or in the utilization of any other factors of production.

### PROCESS COSTING

Process costing is the method of costing applied in the industries engaged in continuous or mass production. Process costing is a method of costing used to ascertain the cost of a product at each process or stage of manufacturing. Hence, this costing is also called as "Average Costing" or "Continuous Costing".

### Advantages of Process Costing

1. It is easy to compute average cost because the products are homogeneous in Process Costing.
2. It is possible to ascertain the process costs at short intervals.

3. Process Costing is simple and less expensive in relation to job costing.

4. By evaluating the performance of each process effective managerial control is possible.

### Disadvantages of Process Costing

1. Valuation of work in progress is difficult.
2. It is not easy to value losses, wastes, scraps etc.
3. The apportionment of total cost among joint products and by-products is difficult.
4. Process costs are not accurate, they are only average costs
5. Process costs are only historical.

### Difference between Process Costing and Job Costing

Process Costing	Job Costing
Production is continuous	Production is according to customers' orders
Production is for stock	Production is not for stock
All units produced are identical or Homogeneous	Each job is different from the other
There is regular transfer of cost of one process to subsequent processes	There is no regular transfer of cost from one job to another
Work in progress always exists	Work in progress may or may not exist

### Accounts

The preparation of Process Account depends upon the following situations

1. Simple Process Account
2. Process costing with normal process loss
3. Process costing with abnormal process loss
4. Process costing with abnormal process gains

**Simple Process Account:** Under this case it is very easy to prepare process account. A separate account is opened for each process. All costs are debited to the process account. The total cost of the process is transferred to the next process. At the end of each process the cost per unit is obtained by dividing the total cost by the number of units.

**Process losses:** The process loss is classified into two- normal process loss and abnormal process loss.

**Normal process loss:** This is the loss which is unavoidable on account of inherent nature of production process. It arises under normal conditions. It is usually calculated as a certain percentage of input. Normal process loss includes either waste or scrap or both.

**abnormal Process Loss:** Any loss caused by unexpected or abnormal conditions such as plant break down, substandard materials, carelessness, accident etc. or loss in excess of the margin anticipated for normal process loss can be called as abnormal process loss.

**Abnormal Gain (or Abnormal Effective):** Sometimes actual loss or wastage in a process is less than expected normal loss. In this case the difference between actual loss and expected loss is known as abnormal gain or abnormal effective. It is the excess of actual production over normal output..

### **Equivalent Production**

Equivalent production represents the production of a process in terms of completed units. In other words, it means converting the incomplete units into its equivalent of completed units. It is also known as effective production.

### **OPERATING COSTING (SERVICE COSTING)**

It is the costing procedure used for determining the cost of per unit of service rendered. It is a method of costing applied to undertaking which provides service

rather than production of commodities. The services may be in the form of transport, supply service, welfare service, etc.

### **Module V (Cost Control Techniques)** **BUDGET AND BUDGETORY CONTROL**

#### **Meaning and definition of budget:**

It simply means a financial plan expressed in terms of money. The budget pertaining to any of the activities of business is always forward looking. The term 'budget' has been derived from the French word, "bougette", which means a leather bag into which funds are appropriated to meet the anticipated expenses.

#### **Budgeting and Budgetary control:**

Budgeting simply means preparing budgets. It is a process of preparation, implementation and the operation of budget. Being a plan of action, a budget guides every manager in the decision making process.

In the words of Rowland Harr, "Budgeting is the process of building budgets"..

#### **Objectives of Budget and Budgetary control:**

The following points reveal the objectives of Budget and budgetary control:-

1. To aid the planning of annual operations
2. To co ordinate the activities of the various parts of the organization
3. To communicate plans to the various responsibility centre managers
4. To motivate managers to strive to achieve the organizational goals.
5. To control activities
6. To eliminates the wastes of all kinds
7. To provide a yard stick against which actual results can be compared
8. To evaluate the performance of managers.
9. To reduce the uncertainties

#### **Meaning of Estimate, forecast and Budget:**

An estimate is predetermination of future

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events either on the basis of simple guess work or following scientific principles. Forecast is an assessment of probable future events. Budget is based on the implication of a forecast and related to planned events.

### **Steps involved in Budgetary Control:**

The following steps may be considered necessary for a comprehensive budgetary control programme:-

1. Laying down organizational goals or objectives
2. Formulating the necessary plans to ensure that the desired objectives are achieved.
3. Translating plans into budget
4. Relating the responsibilities of executives to the requirements of a policy.
5. Recording and reporting actual performance
6. Continuous comparison of actual with budgeted results
7. Ascertainment of deviations, if any
8. Focusing attention on significant deviations
9. Investigation into deviations to establish causes
10. Presentation of information to management, relating the variations to individual responsibility.
11. Taking corrective action to prevent recurrence of variations.
12. Provide a basis for revision of budgets.

### **Essentials of a Budgetary Control system:**

1. **Support by top management:** The wholehearted support of all managerial persons is very necessary for the success of a budgetary control system.
2. **Formal organization:** The existence of a formal and sound organizational structure is of an absolute necessity for an effective system of budgetary control.
3. **Budget centers:** For budgetary control

purposes, the entire organization will be split into a number of departments, area or functions, known as 'centres', and budgets will be prepared for each such centers

### **4. Clear cut objectives and reasonably attainable goals**

5. **Participative budgeting:** Every executive responsible for the implementation of budgets should be given an opportunity to take part in the preparation of budgets.

6. **Budget committee:** The work of preparing a budget manual should be entrusted to a Budget committee.

7. **Comprehensive budgeting:** Budgeting should not be partial, it should cover all the functions.

### **8. Adequate accounting system:**

9. **Periodic reporting:** - There should be a prompt and timely communication and reporting system for the effective implementation of a budgetary control system.

### **Budget manual:**

It is a written document which guides the executives in preparing various budgets.

### **Budget period:**

This may be defined as the period for which a budget is prepared and employed. The budget period will depend on the type of business and the control aspects.

### **Classification of Budget**

1. Classification according to time factor
  2. Classification according to flexibility factor
  3. Classification according to function.
1. **Classification according to time factor:** On this basis, budgets can be of three types:
1. Long term budget – for a period of 5 to 10 years
  2. Short term budgets – Usually for a period of one to two years
  3. Current budgets - Usually covers a period of one month or so,

**II. Classification according to flexibility:**

It includes

1. Flexible budgets and
2. Fixed budgets

**Flexible budgets:** It is a dynamic budget. It gives different budgeted cost for different levels of activity. It is prepared after making an intelligent classification of all expenses between fixed, semi variable and variable because the usefulness of such a budget depends up on the accuracy with which the expenses can be classified.

**Fixed Budget:** It is a budget which is designed to remain unchanged irrespective of the level of activity attained. It does not change with the change in the level of activity.

**III. Classification according to function:  
It includes:**

1. Functional budgets and
2. Master budgets

**Functional budgets** are those which are prepared by heads of functional departments for their respective departments and are subsidiary to the master budget. Functional budget may be **Operating budgets or financial budget.** Operating budgets are those budgets which relate to the different activities or operations of a firm. Financial budgets are those which incorporate financial decisions of an organization. They show in detail the inflow and outflow of cash and the overall financial position.

**Master budget** is the summary of all functional budgets. It summarizes sales, production, purchase, labour, finance budgets etc. It is considered as the overall budget of the organization.

**Different types of functional budgets:**

**1. Sales budget:** It is forecast of total sales expressed in quantities and money. It is prepared by the sales manager. While preparing sales budget we have to consider the past sales data, market conditions, general trade and business conditions etc

**2. Production budget:** It is the forecast of the quantity of production for the budget period. It is usually expressed in physical quantity.

**3. Material budget:** It shows the estimated quantities as well as cost of raw material required for the production of different product during the budget period.

**4. Purchase budget:** It shows the quantity of different type of materials to be purchased during the budget period taking into consideration the level of activity and the inventory levels.

**5. Cash budget:** It is prepared only after all the other functional budgets are prepared. It is also known as financial budget. It is a statement showing estimated cash inflows and cash outflows over the budgeted period.

**Recent trends in budgeting:**

**1. Zero Base Budgeting (ZBB):** Under ZBB the programmes and activities get evaluated and ranked from zero base as if these were launched for first time. In this technique of budgeting the unwanted projects and activities get dropped and wanted and desirable activities and projects get included in the budget.

**Features:**

- a. It starts from zero
- b. All activities are identified in appropriate decision packages
- c. All programmes are considered totally afresh
- d. A detailed cost benefit analysis of each programme is undertaken
- e. There is an officer responsible for each decision packages
- f. Priorities are established and decision packages are ranked

**Advantages of ZBB**

1. It considers every time alternative ways of performing the same job. It helps the management to get a critical appraisal of its activities.

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2. It is helpful to the management in making optimum allocation of scarce resources
3. ZBB is particularly useful for service departments and Governments
4. It ensures active participation of managers in the budgeting process.
5. It promote high level of motivation at the level of unit managers
6. It focuses on output in relation to value for money.
7. It makes managers cost conscious and helps them in identifying priorities in the overall interest of the organization.

### Difference between Traditional budgeting and ZBB

Traditional budgeting	ZBB
Begins with previous year's budget	Begins with zero
Focuses on money	Focuses on goals and objectives
Produces a single level of expenditure for an activity	Produces alternative level of expenditure and desired result
Resources are allocated not on the basis of cost benefit analysis	Resources are allocated on the basis of cost benefit analysis
Prepared annually	Prepared once in every five years

**2) Activity base budgeting:** In the case of activity based budgeting, however, the budget centres are activity based cost pools or cost centres in relation to which budgets are prepared. Separate cost pools are established for each type of activity.

**3. Performance budgeting:** - Performance oriented budgets are established in such a manner that each item of expenditure related to a specific responsibility centre is closely linked with the performance of that centre.

### Meaning of 'standard' and 'standard cost':

Standard cost is a pre determined operating cost calculated from management's standards of efficient operation and the relevant necessary expenditure.

### Definition of standard costing:

The CIMA official terminology defines it as "a control technique which compares standard costs and revenues with actual results to obtain variances which are used to stimulated improved performance."

In standard costing the actual costs incurred are compared with the standard costs. The difference between the two is called variance.

### Distinction between standard costing and budgetary control:

Budget	Standard costing
Based on performance	Based on technical estimates
Consider both income and expenditures	Consider only expenditures
It projects financial accounts	It project cost accounts
Variance is not possible	Variance are analyzed
Fix minimum limit	Fix targets
Used for the forecasting men, money and materials	It cannot used for forecasting
Applicable to all types of business	Useful only for manufacturing firms
Prepared for specific periods and expressed in total	Expressed in per unit
Does not require standardization of product	It requires standardization of product

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### **Objectives of standard costing:**

1. Performance measurement
2. Cost control
3. Stock valuation
4. Establishing selling prices
5. Profit planning and decision making
6. Basis of estimating
7. Assisting establishment of budgets

### **Steps involved in Standard Costing:-**

The procedure for establishing standard costing is summarized as follows:-

1. **Establishment of cost centres:** - A cost centre is a location, person or item of equipment for which costs may be ascertained and used for the purpose of cost control. Cost centres are set up for cost ascertainment and cost control.
2. **Classification and codification of accounts:** - It facilitates quick collection and analysis of cost information.
3. **Establishment of standards:** The success of the standard costing system depends up on the reliability and accuracy of standards. Standards are always established scientifically.
4. **Ascertainment of actual cost:** Measuring the actual cost which is incurred in the next step in the standard costing.
5. **Comparison of Standard cost and Actual cost.**
6. **Analysis of Variances**
7. **Reporting of variance**

### **Types of standards**

1. **Basic standards:** A standard established for use over a long period is known as the basic standard. It remains unaltered over a long period.
2. **Current standard:** A standard established for use over a short period of time and related to current conditions, is known as the 'current standard'.
3. **Ideal standards & Expected standards:-** Ideal standard is that which can be attained under the most favourable

conditions, while expected standard is that which is expected to be attained during a specified budget period.

**4. Normal standard:** This standard is defined as "the average standard which it is anticipated can be attained over a future period of time, preferably long enough to cover one trade cycle."

### **Analysis of Variances:**

Variance is the difference between a standard cost and the comparable actual cost incurred during a period. It is the deviation of actual cost from the standard cost. If the actual cost is less than the standard, the difference is known as favourable. If the actual cost is more than the standard cost, the difference is known as unfavorable variance.

### **Types of variances**

Analysis of variances may be done in respect of each element of cost and sales. It includes

1. Direct material variance
2. Direct labour variance
3. Overhead variance
4. Sales variance

### **MATERIAL VARIANCES**

It includes:

a. **Material Cost Variance (MCV):** It is the difference between the standard cost of materials allowed for the output achieved and the actual cost of materials used. It may be expressed as:

$MCV = \text{Standard cost of materials for actual output} - \text{Actual cost of materials used}$

$\text{Std. cost of material} = \text{std qty} \times \text{std price per unit}$

$\text{Actual cost of material} = \text{Actual qty} \times \text{actual price}$

b. **Material Price Variance (MPV):** It is that portion of the material cost variance which is due to the difference between the standard cost of materials used for the output achieved and the actual cost of materials used.

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MPV = Actual qty x (std price - Actual price)

c. **Material Usage Variance or Material Quantity Variance (MQV):** It is that portion of material cost variance which is due to the difference between the standard quantity of materials specified for the actual output and the actual quantity of materials used.

MUV = Std price per unit (Std qty - Actual qty)

d. **Material Mix Variance (MMV):** It is that portion of the material usage variance which is due to the difference between standard and actual composition of a mixture. In case of material mix variance, two situations may arise: Actual weight of mix and the A. Standard weight of mix do not differ: - In this case material mix variance is calculated by applying the following formula

MMV = Std price (Std qty x Actual qty)

If the standard is revised due to shortage of a particular type of material, the material mix variance is calculated as follows:

MMV = Std price (Revised std qty - Actual qty)

B. Actual weight of mix differ from standard weight weight of mix:- In such a case, material mix variance is calculated as follows:

$$\frac{\text{weight of actual mix}}{\text{weight of std mix}} \times \text{Std of std mix} - \text{Std of actual}$$

e. **Material Yield Variance :-** It is that portion of the material usage variance which is due to the difference between the standard yield specified and the actual yield obtained. This variance measures the abnormal loss or saving of material.

### **Labour Variance:**

When standard cost of labour differs from actual wage cost, the labour variance arises. The following are the important types of labour variances

1. **Labour cost variance:** It is the difference between standard cost of labour

allowed for actual output achieved and the actual cost of labour.

LCV = Std cost of labour - Actual cost labour

2. **Labour rate variance:** It is that part of labour cost variance, which arises due to the difference between standard rate specified and the actual rate paid.

LRV = Actual time x (Std rate - Actual rate)

3. **Labour Efficiency Variance:** It is that portion of labour cost variance which arises due to the difference between standard labour hours specified for the activity achieved and the actual labour hours expended.

LEV = Standard rate x (Standard time for actual output - Actual time)

### **Overhead Variances:**

The term overhead, which comprises indirect materials, indirect labour and indirect expenses, may relate to factory, office or selling and distribution. It is the sum of variable overhead variance and fixed overhead variance.

**Variable overhead Cost variance:** This represents the difference between the standard cost of variable overhead allowed for actual output and the actual variable overhead incurred during the period.

**Variable Over head Expenditure Variance:**

It is the difference between the standard variable OH rate per hour and the actual variable OH rate per hour, multiplied by the actual hours worked.

**Variable OH efficiency Variance:** It is the difference between the variable overhead allowed for production and the variable overhead absorbed through production.

**Fixed Over head variance:**

It is the difference between standard fixed overhead allowed for actual output and the actual fixed overhead incurred

**Fixed OH Expenditure variance:** It is the difference between budgeted fixed overhead and actual fixed overhead.

**Fixed OH volume Variance:** It is the difference between Std fixed OH allowed for actual output and the budgeted fixed overhead for the period.

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