



SYLLABUS

Class – M.Com I Sem.

Subject: Cost Analysis and Control

UNIT – I	Various cost concepts, Cost centre and cost unit, Methods and techniques of Costing. Installation of costing system, Methods of inventory control, Overheads Accounting.
UNIT – II	Process Accounting Joint product and Bye product, Equivalent Production and Inter Process Profit, Operating Cost.
UNIT – III	Marginal Costing : Concepts, Break Even Analysis, Uniform costing and Inter firm comparison. Use of Managerial Costing in business Decision.
UNIT – IV	Budgetary Control : Basic concepts, Preparation of functional budget: Cost Audit : Objectives and Advantages.
UNIT – V	Standard Costing and Variance Analysis.



UNIT-I

Introduction

Costing - terminology

Costing relates to the determination of cost of a product manufactured or service rendered. In order to ascertain cost, it involves system, methods and techniques of accumulation, classification and analysis of cost.

Cost Accounting: - "The process of accounting for cost from the point at which expenditure is incurred or committed to the establishment of its ultimate relationship with cost centres and cost units.

The term 'cost Accountancy' includes (i) Costing and (ii) Cost Accounting. Its purposes are (i) cost-control, and (ii) profitability-ascertainment and serves as an essential tool of the management for decision-making.

Cost Centre

Cost Centre is defined as "a location or person or place or machine or item of equipment or thing for which cost can be ascertained and used for the purpose of cost control." Cost centre can be classified as:

1. Process cost centre is one in which a specific process or a continuous sequence of operations is carried out on a regular basis.
2. Production cost centre is one in which production activity is carried where the shape of raw material is converted into a finished product.
3. Service cost centre are those which render services to the other cost centres. For examples a maintenance & repair department, store department etc.
4. Impersonal cost centre is one which consists of a location or item of equipment (or group of these).
5. Personal cost centre is one which consists of a person or group of persons.
6. Operation cost centre is one which consists of those machines and/or persons carrying out similar operations.

Profit Centre

It means a centre responsible for adopting ways and avenues to earn maximum possible profit on a product or any other activity of business, by making market surveys, suggests localities for publicity, helps to formulate sales policies and suggests to add more values to the product at the same or cheaper costs.

Cost Unit

Cost unit may be defined as "a quantitative unit of product or service in relation to which costs are ascertained."

NATURE AND CHARACTERISTICS OF COST ACCOUNTING

1. Cost accounting is a special branch of accounting having its own specific significance based on double entry system.
2. It ascertains cost of products and services through the process of accumulation, classification, analysis and recording.
3. It determines the cost of incomplete work or job.
4. The extensive use of this system involves application of statistical data, control methods & techniques and determining profitability.
5. This system provides measures for control and guidance for various levels of management.
6. Helpful in decision making process.

SCOPE OF COST ACCOUNTING



1. Analysis of the profitability of product, service, job or activities.
2. Analysis of profitability of various departments of segments of the organization.
3. Analysis of the type and nature of cost.
4. Explanation of the causes of variances between actual cost and standard cost.
5. Helpful in determination of selling price.
6. Analysis of the change in profit as per the change in level of production.
7. Analysis of the profit or loss of the organization.
8. Assist in management information system.
9. Provides basis for the application of techniques of management accounting.
10. Helpful for manufacturing and service rendering organization.

Difference between cost accounting and financial accounting

S.No.	Cost Accounting	Financial Accounting
1.	Kept by business engaged either in manufacturing either in manufacturing or in rendering services where the cost per unit is to be ascertained.	Kept by all types of business houses, big or small, whether engaged in trading, manufacturing or non-profit making associations.
2.	Maintain full and detailed records pertaining to all the three elements of cost, viz., materials, labour and expenses.	Records all types of expenses and incomes and also items of profit appropriation. However, they do not keep detailed records of elements of cost.
3.	Provide data and reports to management for cost-ascertainment, planning, control and decision-making.	Provide general information to management and outside parties in the form of Profit & Loss A/c and
4.	Ascertain the cost of each product, job or order and then show profit/loss made on each.	Balance Sheet of the business as a whole.
5.	Provide information to management as and when desired, daily, weekly, monthly, quarterly, etc.	Do not show profit/loss on each product, job or order individually.
6.	To calculate the cost, the indirect expenses include there in are based on estimates.	Provide operating net result and financial position at the end of financial year.
7.	Greater control is exercised on materials and stores, labour and overhead costs by budgetary control and standard costing. No emphasis is given to cash-in-hand and Bank transactions.	Show historical costs, i.e., they include expenses having actually been incurred in the financial year.
8.	As the cost is available, it is easier to fix selling price and quote for tenders	Greater emphasis is laid on cash and financial position. They do not attach that importance to control of materials, labor and overheads.
9.	The production costs of a period can be compared with previous corresponding period and the difference analysed.	No correct tender prices can be quoted.
10.	Provide information on the relative efficiencies of plant, machinery, labour and departments.	Such comparison of costs of individual production is not easy.
11.	Stocks are valued at costs.	The relative efficiency of workmen, plants, etc., cannot be easily judged.
12.		Stocks are valued at cost price or market price, whichever is lower.
13.	These accounts are for internal transactions and do not form the basis of receipts and payments to outside parties. The companies Act has made it obligatory for certain industries to maintain Cost	They form basis for external transactions also, and record receipts, payments and credit transactions.
		It is almost necessary to maintain this accounting to run business. To meet the requirements of



14	Accounting, otherwise it is voluntary to maintain cost them. Charts, graphs, diagrams, statements, etc. are much used in this system for informatory reports to management.	Companies Act, and Income-tax Act, it is obligatory to keep them. Not much use is made of such presentation in this system.
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FUNDAMENTAL PRINCIPLES OF COSTING

1. Cost is related to its cause.
2. Cost is charged after it is incurred.
3. Abnormal costs are excluded from costing.
4. Past costs are not charged to future periods.
5. The concept of conservatism has no place in costing.
6. Accounting for cost is based on Double-entry Principle.

OBJECTS AND FUNCTIONS OF COST ACCOUNTING

- i. To ascertain the cost per unit of the different products manufactured by a business concern.
- ii. To advise management on future expansion policies and proposed capital projects.
- iii. To organize the internal audit system to ensure effective working of different departments.
- iv. To help in supervising the working of punched card accounting or data processing through computers.
- v. Provide useful data to the management for taking decisions.
- vi. To find out costing profit or loss by identifying with revenues the cost of those products or services To provide specialized services of cost audit in order to prevent the errors and frauds and to facilitate prompt and reliable information to the management.
- vii. To organize cost reduction programmes with the help of different departmental managers.
- viii. To provide requisite data and serves as a guide to price fixing of products manufactured or services rendered.
- ix. To help in the preparation of budgets and implementation of budgetary control.
- x. To guide management in the formulation and implementation of incentive bonus plans based on productivity and cost savings.
- xi. To supply useful data to the management to take various financial decisions such as introduction of new products, replacement of labour by machine etc.
- xii. To organize an effective information system so that different levels of management may get required information at the right time in right form for carrying out their individual responsibilities in an efficient manner.

TECHNIQUES AND METHODS OF COSTING

1. Historical Costing. "The ascertainment of costs after they have been incurred." Under this method all the expenses incurred on the production are first incurred and then the costs are ascertained.
2. Standard costing. "The preparation and use of standard costs, their comparison with actual costs and the analysis of variances to their causes and points of incidence."
3. Marginal Costing. "The ascertainment of marginal costs and of the effect on profit of changes in volume or type of output by differentiating between fixed costs and variable costs."
4. Direct Costing. "The practice of charging all direct costs to operations, processes or products, leaving all the indirect costs to be written off against profits in the period in which they arise."
5. Absorption Costing. "The practice of charging all costs, both variable and fixed, to operations, processes or products."
6. Uniform Costing. "The use by several undertakings of the same costing principles and/or practices."

Methods of Costing



1. Job costing. 2. Contract Costing. 3. Batch Costing. 4. Target Costing. 5. Process Costing. 6. Single or Output Costing. 7. Operation Costing. 8. Departmental Costing. 9. Composite or Multiple Costing.

ANALYSIS AND CLASSIFICATION OF COST

MATERIALS COST

Material cost is of two types, viz., (i) Direct Materials Cost, and (ii) Indirect Material cost.

- i. Direct Materials Cost. Is one which can be identified with and allocated to cost centres or cost units." E.g., timber in furniture-making; clay in brick-making; cement, stones, etc., in building.
- ii. Indirect Materials Cost. Which cannot be allocated but which can be apportioned to or absorbed by, cost centres or cost units. For example, power, fuel, repair and maintenance etc.

LABOUR COST

"The Labour Cost is the cost of remuneration (wages, salaries, commissions, bonus, etc.) of the employees of an undertaking."

- i. Direct Labour Cost. Direct Labour Cost are the cost which can be identified with and allocated to cost centres or cost units.
- ii. Indirect Labour Cost. is one which cannot be allocated but which can be apportioned to, or absorbed by, cost centres or cost units." e.g. Wages of indirect labour; Wages of idle time.

OVERHEADS

Overheads are the aggregate of the cost of indirect material, indirect labour and such other expenses, which cannot be conveniently charged direct to specific cost centre or cost units.

ANALYSIS OF TOTAL COST

1. Prime Cost.- The aggregate of Direct material Cost, direct Labour Cost and Variable Direct expenses (or chargeable expenses) is the prime Cost.
2. Factory Cost.- Factory Cost is the total of Prime Cost + Factory Overheads,
3. Cost of Production.- The total Factory Cost and Office and Administration Overheads is the office Cost or Cost of Production.
4. Total Cost.= Cost of Production + Selling & Distribution Overheads.

CLASSIFICATION OF COST AND COST CONCEPT

The cost-classification is the process of grouping costs according to their characteristics.

1. **According to Elements.** The cost is classified into (i) Direct cost, and (ii) Indirect cost according to elements, viz., materials, Labour and Expenses.
2. **According to Functions.** The cost is classified into the following:
 - i. Production Cost, or Manufacturing Cost, or Factory Cost,
 - ii. Administration Cost,
 - iii. Selling Cost, and
 - iv. Distribution Cost.
3. **According to Nature.** The cost is classified into the following:
 - i. Fixed Cost is "a cost which tends to be unaffected by variations in volume of output.
 - ii. Variable Cost is "a cost which tends to vary directly with volume of output.
 - iii. Semi-fixed or Semi-variable Cost is 'a cost which is partly variable.'
4. **According to Controllability.**
 - i. Controllable cost. This is a cost which can be influenced by the action of a specified member of an undertaking.
 - ii. Uncontrollable Cost. It is the cost which cannot be influenced by the action of a specified member of an undertaking, such as fixed costs.
5. **According to Normality.** The cost is classified into (i) Normal cost, and (ii) Abnormal cost.
 - i. Normal cost. It is the cost at a given level of output in the condition at which that level of output is normally attained.



- ii. Abnormal cost. It is a cost which is beyond normal cost.
- 6. **According to Relevance to Decision-making and Control.**
 - i. Shut-down Cost. A cost which will be required to be incurred even though a plant is closed or shut-down for a temporary period, e.g., the cost of rent, rates, depreciation, maintenance expenses etc.
 - ii. Sunk cost. A cost which has been incurred in the past or sunk in the past and is not relevant to the particular decision-making. E.g. written down book value of the plant.
 - iii. Opportunity Cost. The costs which are related to the sacrifice made or the benefits foregone are opportunity costs.
 - iv. Imputed Cost. It is a hypothetical cost required to be considered to make costs comparable. Interest on one's own capital.
 - v. Out-of-Pocket cost. A cost which will have to be paid to outsiders as against costs such as depreciation, which do not require any cash payment.
 - vi. Replacement Cost. It is the cost of replacing a material or assets, by purchase from the current market.
 - vii. Marginal Cost. Marginal cost refers to the increase or decrease in total cost caused due to increase or decrease in output by one single unit.
 - viii. Differential Cost. The change in total cost due to the change in method or technique of production or change in level of production is called differential cost.
 - ix. Standard Cost. Standard cost is a predetermined cost or estimate which is compared with the actual cost in order to determine variance and carry out an analysis of variance for cost control.
 - x. Relevant Cost. The relevant costs are those costs which aid in making specific management decisions.
- 7. **Product Cost & Period Cost**

The product cost is the total of cost that is associated with a unit of product. The cost in forming the product viz., direct material, direct labor, factory overhead constitute the product cost.

Period cost, on the other hand, are costs that tend to be unaffected by changes in level of activity during a given specific time period. E.g., Selling & distribution cost

SIGNIFICANCE OF COST ACCOUNTING

- i. It discloses the profitable and unprofitable activities in a concern and hence necessary adjustments are done.
- ii. It enables the concern to measure its efficiency and then maintain or improve.
- iii. It is helpful to the consumer by ensuring lower prices.
- iv. It is useful to the government in the form of duties paid.
- v. It discloses the relative efficiency of different workers in a concern.
- vi. Through it the exact causes of decrease or an increase in profit or loss can be detected.
- vii. It provides information upon which estimates and tenders are based.
- viii. It guides future production policies.
- ix. It helps in increasing profits by disclosing the sources of loss or waste and by suggesting such controls so that the same may not be repeated.
- x. It enables a periodical determination of profits or losses without resorting to stock taking.

ADVANTAGES OF COST ACCOUNTING

To the Management

1. Action against unprofitable Activities
2. Facilitates Decision Making
3. Inventory Control
4. Budgetary Control
5. Facilitates cost control
6. Prevents Fraud
7. Tool of Management Control
8. Measuring trends
9. Future Prospects



- B. To the Employees
 - 1. Sound Wage Policy
 - 2. Security of Job
 - 3. Distinction between Efficient and Inefficient Workers
- C. To the Creditors

Bankers, creditors, investors etc., can have a better understanding of the firm as regard the process and prosperity, before they offer financial leading.
- D. To the Government
 - 1. For government wage tribunals, for deciding the state subsidy to industry.
 - 2. In the preparation of national plans, economic development etc.
 - 3. Cost audit is important and industries have to keep books of accounts to show the utilization of materials, labour and other costs.
- E. To the Public
 - 1. Removes all types of wastages and inefficiencies.
 - 2. Facilities the customers to pay fair price.
 - 3. Development and prosperity of industries will create employment opportunities.

CHARACTERISTICS OF A GOOD COSTING SYSTEM

- 1. Accuracy
- 2. Equity
- 3. Simplicity
- 4. Elasticity
- 5. Comparability
- 6. Promptness
- 7. Observation and Resulting
- 8. Periodical Result
- 9. Reconciliation with Financial Accounts

Material Costing

Material or inventory cost control is defined as a systematic control and regulation of purchase, storage and usage of materials in such a way as to maintain an even flow of production at proper times and valued at right prices at the same time avoiding excessive investment in inventories.

Objectives of Material control

- i. No under stocking or over stocking
- ii. Economy in purchasing
- iii. Proper Quality
- iv. Minimum wastage
- v. Information about material availability

Principles or Essentials of Material Control

- i. Proper co-ordination and Co-operation between various departments- Purchase, Stores, Inspection, Accounting etc.
- ii. Proper classification and codification of materials
- iii. Proper scheduling of material requirements.
- iv. Perpetual inventory system should be operated
- v. Various stock levels to be fixed
- vi. Proper system of internal check to be introduced for adequate safeguards and supervision
- vii. Regular reporting to management regarding purchase, issues and stock of materials.
- viii. Proper storage and usage of materials to avoid theft and wastages.

Functions of purchasing department:

- i. Determination of quality to be purchased
- ii. Determination of ordering point.
- iii. Determination of price at which to be purchased.



Purchase Procedure: -

- i. Initiating the purchase
- ii. Receiving of the purchase requisitions.
- iii. Deciding important factors relating to purchase.
- iv. Inviting tenders and selecting suppliers.
- v. Preparation and execution of purchase orders
- vi. Receipt of materials
- vii. Inspection and testing of materials received
- viii. Debit note upon the supplier in respect of rejected materials.
- ix. Passing invoices for payment.

Stores Organization and control

Objectives

- i. Receive materials, check them and place them properly
- ii. To issue the materials to jobs on the basis of store requisitions
- iii. To enter all the receipts and issues in the bin card and show the balance
- iv. Avoiding overstocking and under stocking by checking the ordering points of different materials.
- v. Maintain, preserve and protect the materials during storage
- vi. Maintain up-to-date stores records
- vii. To report on obsolete and slow moving materials, waste, scrap, etc.
- viii. Requisitioning further supplies from purchasing department.

Stores Records

- i. Perpetual Inventory Records are those which show movement of stores, i.e. receipt and issues. Eg. Bin Card and stores ledger
- ii. Documents are those which authorize movement of materials into or out of stores e.g. Goods received Note, Bill of materials, material requisition note, materials return note, etc.

Techniques of Inventory Control

1. **ABC Technique:** - It is a value based system of material control where materials are classified according to their value, A, B and C, so that costly and valuable materials are given greater attention and care.
 - 'A' items are high value items which consist of only a small percentage of total items handled and hence require tight control.
 - 'B' items are medium value materials which should be under normal control procedures
 - 'C' items are low value materials which represent a large number of items and require economical control procedures, and least attention.
2. **Stock Levels:** - To avoid under stocking and overstocking, maximum, minimum and reorder levels are fixed.

Factors which influence stock levels are

- a. Anticipated rate of consumption
- b. Account of capital available
- c. Availability of storage space
- d. Storage/ warehousing cost
- e. Procurement cost
- f. Reliability of suppliers
- g. Minimum order quantities imposed by suppliers
- h. Risk of loss due to obsolescence, deterioration, evaporation and fall in market prices
 - i. **Maximum Level:** - It indicates the maximum quantity of inventory item which can be stored at any given time

$$\text{Maximum Level} = \text{Minimum Stock} + \text{Economic Order quantity}$$



Or

$$= \text{Reorder Point} + \text{Reorder quantity} - [\text{Minimum Consumption} \times \text{Minimum reorder Period}]$$

- ii. Minimum Level: - It indicates the minimum quantity of stock that should always be maintained so that there is no risk of stoppage of production.

$$\text{Minimum Level} = \text{Reorder Point} - [\text{Average Consumption} \times \text{Average re-order period}]$$

- iii. Re-order Level or Re-order Point: - This is that level of material at which purchase requisition is initiated for fresh supplies.

$$\text{Re-order Level} = \text{Maximum consumption} \times \text{Maximum Re-order period}$$

- iv. Danger Level: - It is that level at which normal issued are stopped and materials are issued for important jobs only.

$$\text{Danger Level} = \text{Normal consumption} \times \text{Maximum re-order period under emergency condition}$$

- v. Average stock Level: $\frac{2}{3} \times [\text{Minimum Level} + \text{Maximum Level}]$

Or

$$\text{Minimum Level} + \frac{1}{2} \times [\text{EOQ or re-order quantity}]$$

3. EOQ [Economic or order quantity] or Re-order quantity: - EOCs is that size of the order which gives maximum economy in purchasing any material and ultimately contributes towards maintaining the material at optimum level and at minimum cost. While setting EOQ, two types of costs are considered

- i. Ordering cost: - Cost of placing orders.

- ii. Carrying Cost: - Cost of holding stock in storage

$$\text{EOQ} = \sqrt{\frac{2AO}{C}}, \text{ where } A = \text{annual consumption in units, } O = \text{ordering cost per order,}$$

C = storage or carrying cost as a percentage of inventory.

Control Ratios

4. Inventory turnover Ratios: - This tells us how many times in a year is are used up and replaced. The greater the stock turnover, the more efficient is the stock policy. It indicates the rate of consumption, i.e. whether materials are moving fast or slowly. A high stock turnover ratio indicates fast moving materials and a low ratio indicates slow moving materials.

- i. Stock Turnover Ratio = $\frac{\text{Cost of Materials consumed during the period}}{\text{Average stock of materials during the period}}$

- ii. Finished Stock Turnover Ratio = $\frac{\text{Value of Finished Stock sold in the period}}{\text{Value of Average stock held during the period}}$

- iii. Inventory Turnover in terms of days = $\frac{\text{Days of the period}}{\text{Stock Turnover Rate}}$

Or

$$\frac{\text{Value of Average} \times \text{Days of the period}}{\text{Material consumed}}$$

- iv. Input - Output Ratio: - This is the ratio of raw material put into manufacture and standard raw material content of the actual output. The formula is

$$\frac{\text{Input Units}}{\text{Output units}} \times 100$$

5. **Perpetual Inventory system and system of store verification:** - Perpetual Inventory aims at devising the system of records by which the receipts and issues of material stores may be



recorded immediately at the time of each transaction and the balance may be brought out so as to show the up-to-date position. This system is operated by: -

- i. Reconciliation of stock bin cards and stores ledger accounts
- ii. Physical stock verification which is of two types: -
 - a) Periodic stock verification & (b) continuous stock verification

Advantages of Perpetual Inventory System

- i. Records are updated
 - ii. Materials are within Minimum and Maximum Limits
 - iii. Purchases are requisitioned at appropriate time
 - iv. Facilitates preparation of interim P & L Account and Balance Sheet.
 - v. Acts as moral check on staff of stores Department.
 - vi. A system of internal check remains in operation all the time.
 - vii. Discrepancies are readily discovered and rectified.
 - viii. Slow moving, dormant and obsolete materials are readily notified to purchase department
 - ix. A detailed and reliable check on stores is obtained.
6. Budgetary Techniques for Inventory standards:-
- i. Fixation of material cost planning
 - ii. Preparation of material budget

Pricing of Materials Issued

1. Cost Price Methods: -
 - i. First-in-First-Out Methods – FIFO
 - ii. Last in first Out Method – LIFO
 - iii. Highest in First Out Method – HIFO
 - iv. Base stock Method
 - v. Specific Price Method.
2. Average rate Method: -
 - i. Simple Average Method
 - ii. Weighted Average Method
3. Market Price Method: -
 - i. Replacement Price Method.
 - ii. Realizable Price Method.
4. National Price Method: -
 - i. Standard Price Method.
 - ii. Inflated Price Method.

Treatment of material Wastage/ Losses

1. Material Losses may be normal as well as Abnormal.
Normal Loss: - Which has to be incurred and is unavoidable e.g., evaporation in case of liquid materials, loss due to loading and unloading of materials, etc.
Abnormal Loss: - which arises due to inefficiency in operations or mischief, e.g., theft, pilferage, breakage, fire etc.
Accounting Treatment: - In order to absorb normal material losses in cost, the rates of usable materials in stock are inflated so that such losses are covered. Normal material loss is transferred to factory overhead.
Abnormal material losses are charged to Costing profit and loss account.
2. **Waste:** - It is that part of basic raw material which is lost in processing and has no recovery value
Accounting: - If it is normal, the cost will be absorbed by the good production and if it is abnormal, then it is transferred to Costing profit and loss account.



ACCOUNTING FOR LABOUR

Labour cost, representing the human contribution to production is an important factor of cost which requires constant control, measurement and analysis.

Classification of Labour Cost

- i. Direct Labour: - It is the cost of that labour that is directly engaged in production work and can be conveniently identified or attributed wholly to a particular job, process or cost unit.
- ii. Indirect Labour: - It is the cost paid to those workers who are not directly engaged in converting raw materials into finished product and cannot be conveniently identified with a particular job, product or cost unit. E.g. supervisors, cleaners' instructors, peons etc.

Labour Cost Control Factors

- i. Production Planning
- ii. Setting up of standards
- iii. Use of Labour Budgets
- iv. Study of the effectiveness of wage policy
- v. Labour performance Reports.

Organization for Accounting and control of Labour cost

- i. Personnel Department
- ii. Engineering and work study Department
- iii. Time Keeping Department
- iv. Payroll Department
- v. Cost Accounting Department

Labour turnover

The rate of change in the composition of the labour force in an organization during a specified period is called Labour turnover.

Causes of Labour Turnover

- i. Low wages and allowances
- ii. Ill health and bad working conditions
- iii. Lack of safety measures, medical facilities, transport facility, etc.
- iv. Dissatisfaction due to various causes like working hours, improper placement, unfair method of promotion, bad relationship with fellow workers, bad training facilities etc.
- v. Inadequate job security and retirement benefits
- vi. Marriage in case of female workers
- vii. Change of job for better opportunities
- viii. Death or retirement.
- ix. Seasonal character of the Industry

Reduction and Control of Labour turnover

1. Devising a suitable and satisfactory wage policy.
2. Providing working conditions conducive to health and efficiency.
3. Impartial and sympathetic attitude of personnel management
4. Introducing financial and non financial incentive plans
5. Providing promotional opportunities.
6. Encouraging labour participation in management
7. Introduction of effective grievance procedure



8. Strengthening the welfare measures

Methods of Measurement of labour turnover: -

- i. Separation Method: -
Labour Turnover rate = $\frac{\text{No. of Workers left during a period}}{\text{Average No. of workers during the period}} \times 100$
- ii. Replacement Method:
Labour Turnover Rate = $\frac{\text{No. of workers replaced during the period}}{\text{Average No. of Workers during the period}} \times 100$
- iii. Flux Method: -
Labour Turnover Rate = $\frac{\text{No. of workers left} + \text{No. of workers replaced}}{\text{Average No. of workers}} \times 100$

Idle Time:

Idle time is time lost by workers who are paid on time basis. Idle time represents the time for which they are paid but no production is obtained. For example time lost between factory gate and the department, time when production is interrupted due to break down, tea breaks etc.

Causes - Idle time may occur owing to productive, administrative or economic causes.

Over Time - the time worked over and above the normal hour is termed as overtime. The remuneration usually paid for the overtime work is at double the normal rate.

Need of overtime

1. Increase in demand for the products where the production during the normal hours falls short to meet it;
2. Shortage of workers due to absence or non-availability and so it is decided to give overtime work to the existing staff;
3. Utilization of perishable raw material by working overtime;
4. Execution of urgent orders, to complete the work on the same day.
5. Shortage of equipments, machines, or space for the completion of jobs.
6. Lack of administrative control on workers, on account of which the production during normal hours remains less than the standard output and overtime work has to be done by the workers.

Disadvantages of overtime working:-

1. Work efficiency is reduced. It is too much to expect of a tired worker to work as efficiently during overtime as in normal hours;
2. Worker's health is adversely affected;
3. The quality of the output is affected; and
4. The cost of production rises due to increased labour cost.

Methods of Remuneration

- I. **Time Rate system:** - Under this system workers are paid according to the time for which they work. Payment may be on hourly basis, daily basis, weekly or monthly.

Suitability of this method

- a. Where quality of work is more important than quantity
- b. Where output cannot be measured in quantitative terms
- c. Where output is beyond the control of the worker
- d. Where work is done on a small scale so that close supervision is possible
- e. Where the worker is a learner or an apprentice.

- II. **Piece Rate system:** - Here wages = Rate per unit x No. of units produced.



Suitability of this method: -

- a. Where production is standardized and repetitive in nature
b. When the aim is continuous maximum production
c. Where output can be measured
d. Where workers continue at the same job for long periods
e. Where standard time required completing a job can be measured accurately.

Various Incentive Schemes

- 1. Halsey Premium Plan: - In this system, a standard time is fixed for each job. Wages are paid for actual time spent on the job and bonus or premium is paid in a fixed proportion to time saved, i.e. 50% or 40%
Total earnings = Time Rate x Time Taken + 50% of [time saved x Time Rate]
2. Halsey Weir Plan: - Same as above except that the bonus is equal to 30% the time saved.
3. Rowan Plan: -
Total earnings = [Time Rate x Time Taken] + Bonus
Bonus = [Time Rate x Time Taken x Time saved / Time Allowed]
4. Taylor's different Piece Rate Plan: - In this system
i. Day wages are not guaranteed
ii. Standard time is set for each job
iii. Two piece rates are fixed for each job - Higher and Lower rate
The lower piece rate is payable where a worker takes longer time than the standard time and higher rate is payable where a worker completed the work within the standards time.

Merricks differential Piece Rate system: - This plan lays down three rates

Table with 2 columns: Percentage of standard Output, Piece rate. Rows include Up to 83%, 83% to 100%, and Above 100%.

- 5. Emerson's Efficiency Plan: - Here the standard of efficiency is start 66 2/3%. A worker gets guaranteed time wages for efficiency up to the standard. Bonus is payable as follows: -
Efficiency Bonus
Below 66 2/3% Time wages (No bonus)
66 2/3% to 100% Bonus increases in steps and rises to 20% at 100% efficiency
Over 100% 20% bonus plus 1% bonus for each increase of 1% inefficiency
6. Gantt's Task and bonus Plan: - In this plan,
a. Day wages on time basis are guaranteed
b. A standard is set and remuneration is calculated as follows: -
i. When output is below standard - payment at time rate
ii. When output is at standard - payment at time rate plus 20% bonus
iii. When output is above standard: - payment at higher piece rate
8. Bedeaux Point Premium Plan: - In this plan standard time of each job is determined in minutes known as Bedeaux points or B's. One B unit represents the amount of work which an average worker can do in one minute.

Total Earnings = Time rate x Time Taken + [No. of B's Saved / 60 x Hourly rate x 75 / 100]



Group bonus Plans

These may be adopted in the following circumstances:-

- a. Where it is not possible to measure the performance of each individual worker
- b. Where the workers constituting a group possess the same or equal efficiency and skill.
- c. Where the number of workers constituting a group is not very large
- d. Where production is dependent on collective effort of a group of workers as a whole.

Types of group Bonus Plans

1. Priestman's Output Bonus Plan
2. Cost Bonus Scheme
 - i. Nunn-Bush Scheme
 - ii. Scanlan Scheme
 - iii. Rucker Acheme
 - iv. Towne Gain Scheme

Co-Partnership and Profit sharing

Co-Partnership is a scheme whereby employees are given an opportunity to share in the capital of the business and to receive a part of the profit that accrues to their share of ownership.

Under the profit sharing schemes, the workers are paid in addition to wages a predetermined share of the profits of the undertaking.

OVERHEAD COSTING

Accounting for overheads

Overheads are those indirect, operating costs of a business enterprise which cannot be traced directly to any specific product, job, or process because they cannot be directly attached or marked to any specific activity or cost centre.

Overhead Accounting involves: -

- A. Classification, Codification & Collection of overheads
- B. Allocation, Appointment and absorption of overheads.

A. Classification of Overheads

1. Elements wise Overheads
 - i. Indirect Material – e.g. Consumable stores, loose tools, etc.
 - ii. Indirect Labour – e.g. Salary of foremen, store-keeper, supervisors, etc.
 - iii. Indirect Expenses – e.g. Factory rent lighting, heating, insurance, administration, and selling & distribution expenses.
2. Function-wise Classification
 - i. Production or Manufacturing Overheads: - E.g. Indirect material Indirect labour & indirect expenses
 - ii. Administration overheads: - Audit fees, postage and telephone
 - iii. Selling & distribution overheads: e.g. Advertising, showroom expenses, traveling expenses, etc.
3. Classification According to Behaviour or Variability
 - i. Fixed Overheads are those which tends to be unaffected by variation in the volume of output.
E.g. rent and rates, managerial salaries.
 - ii. Variable Overheads are those which tends to vary in direct proportion to changes in the volume of output. E.g. indirect material, indirect labour.
 - iii. Semi Variable overheads are those which are partly fixed and partly variable? E.g. depreciation, repairs & maintenance, telephone etc.
4. Classification According to controllability



- i. Controllable Cost: - Which Can be controlled by the action of a specified members of the department e.g. variable cost
- ii. Uncontrollable Costs: - Which cannot be controlled by the action of specified members of the undertaking. E.g. fixed cost.

Departmentalization of overheads: - This is the problem of (allocation and apportionment of overheads to production and service department)

Cost allocation: - The allotment of whole items of cost to cost centers or cost units is called cost allocation.

Apportionment of cost: - Where the expense is common and related to various cost centers or units, then it is to be allotted to different cost centers on an appropriate basis. This process is called Apportionment.

Primary distribution of overheads: - This is the process of allocation and apportionment of different items of overheads to all the departments.

Secondary distribution of overheads: - This is the process of re-distribution of the overheads cost of service department among the production department.

Methods: -

- i. Direct Redistribution
- ii. Simultaneous equation method
- iii. Step ladder method
- iv. Repeated Distribution method

Objectives of Departmentalization

1. Ensures greater accuracy in cost ascertainment.
2. Control of overhead cost
3. Use of different methods of absorption
4. Valuation of work-in-progress
5. Cost of service departments can be ascertained
6. Accurate forecasting and estimation and decision making.

Common Bases of Apportionment of Overheads

Direct Allocation	Consumable stores, specific expenses
Floor Area of Department	Rent and other building expenses, lighting & heating,
Direct Labour hours or Direct wages or No. of workers	Supervision, Administration Compensation to workers, Holiday Pay, ESI & PF contribution, fringe Benefits. Labour welfare expenses, Time Keeping, canteen Expenses.
Capital values of building or plant:-	Depreciation, insurance charges, rent, repairs & maintenance etc.
Light Points	Lightning expenses
Kilowatt hours/ Machine hours	Electric power
Wight or volume of material or value of materials	Material handling, stores overheads
Technical estimates	Power, light, internal transport, managerial salaries etc.

Absorption of overheads

Absorption means distribution of overhead expenses allotted to a particular department over the units produced in that department. So charging of overheads to cost units is called absorption of overheads.

Determination of overhead rates



1. Actual Rate – $\frac{\text{Actual overhead}}{\text{Actual Base}}$

2. Predetermined Rate – $\frac{\text{Budgeted Overheads}}{\text{Budgeted Base}}$

3. Standard Rate – $\frac{\text{Standard Overhead}}{\text{Standard Base}}$

4. Blanket Rate – $\frac{\text{Total overheads for the factory}}{\text{Total quantity of the entire factory}}$

Under Absorption and over Absorption of overheads

Under Absorption: - If the amount absorbed on predetermined rates is less than the overheads actually incurred, it is called under absorption or under recovery.

Over Absorption: - If the amount absorbed is more than the actual overheads, it is known as over absorption or over-recovery.

Causes of Under/Over Absorption of overheads

- i. Error in estimating overheads
- ii. Error in estimating quantum of production
- iii. Actual hours worked may be more or less than those anticipated.
- iv. The basis upon which factory overheads are recovered from production may no longer be correct on account of changes in prices of materials or wage rates.
- v. WIP may not have been charged with its share of overhead cost accounts.
- vi. Seasonal fluctuations in overheads from time to time.
- vii. Unanticipated changes in methods of production and production capacity.

Accordinging Treatment of Under/Over Absorption

- i. **Writing off to costing P & L A/c:** - This is used when account of under or over absorption is quite negligible or when under absorption is due to abnormal factors like idle capacity, defective planning, etc.
- ii. **Absorption in the subsequent year:** - Here the under or over absorption amount is transferred to Overhead Reserve Account or Suspense Account for carry over to the next accounting year.
- iii. **Application of supplementary Rates:** - Where the amount of under or over absorption is significant, a supplementary overhead absorption rate is calculated by dividing the under or over absorbed amount by the actual base. Adjustment is made in the cost of :
 - a. Work in progress
 - b. Finished stock
 - c. Cost of sales

In case of under absorption, the over head is adjusted by a positive rate, since the amount is to be added. Over absorption is adjusted by a negative rate, since the amount is to be deducted.

Methods of Absorption of overheads

- i. Direct Material Cost Method
- ii. Direct Labour Cost Method
- iii. Direct Labour Hour Method
- iv. Prime Cost Method
- v. Machine Hour Rate Method
- vi. Production Units Method or Rate Per Unit of Output.

MACHINE HOUR RATE

Machine hour rate is cost of running a machine for one hour. It is different for different types of machine.

An actual or pre-determined rate of cost apportionment or overhead absorption which is calculated by dividing the cost to be apportioned or absorbed by the number of hours for which a machine or machines are operated or expected to be operated.

Comprehensive machine hour rate – when the direct wages of machine operators are included in machine hour rate, it is known as comprehensive machine hour rate.

**Bases of apportionment of different overhead to machines**

Items of overhead	Basis of apportionment
Rent and rates	Ratio of floor area occupied by each machine.
Insurance	Insured value of each machine
Supervision	Estimated time devoted by the supervisors to each machine.
Lighting	No. of light points used for each machine, or floor area occupied by each machine.
Depreciation	Capital values/ machine hours or multiple of both.
Lubrication oil and other consumable stores.	Capital values/machine hour
Repair and maintenance	Capital values/machine hour



UNIT-II PROCESS COSTING

Definition:

Some important definitions of process costing are as under –

“Process cost accounts are applied to concerns which produce a commodity that has to go through several processes and which require to know the cost of each process”.

– **Charles.**

“Process costing is used to ascertain the cost of each stage of manufacture where material is passed through various operations to obtain a final product to result, with by products in many cases at different stages.

- **Lunt and Ripley**

Application of process costing –

Process costing is employed in the following types of industries –

- 1) Food processes industries, e.g., flour mills, meat products, milk dairy, confectionaries, fruits and vegetables processing etc.
- 2) Other industries involving a sequence of processes, e.g., paper mills, cement works, coke works, canning factory, textile manufacture, cartoon making, etc.
- 3) Metallurgical industries, e.g., iron and steel, aluminum, wire drawing and netting and polishing, alloy production etc.
- 4) Chemical industries, e.g., drugs and pharmaceuticals, paints soap making, production of sugar, molasses and alcohol, breweries, distilleries, oil refining, etc.

Salient features/essential characteristics of process costing –

- 1) The cost per unit produced is the average cost which is calculate by dividing the total process cost by the number of units produced.
- 2) Some loss of materials in processes (due to chemical reaction, evaporation, etc.) is unavoidable.
- 3) The production is continuous and the final product is the result of a sequence of processes.
- 4) Processing of a raw materials may give rise to the production of several products. These several products produced from the same raw material may be termed as joint products or by-products.
- 5) The products are standardized and homogeneous.
- 6) Costs are accumulated process-wise.
- 7) The sequence of operations or processes is specific and pre-determined.
- 8) The finished product of each but last process becomes the raw material for the next process in sequence and that of the last process is transferred to the finished goods stock.

Advantages / uses/ need of process costing –

Main uses of process costing are as follows –

- 1) System of standard costing can be applied with ease in case of process accounts.
- 2) Valuation of inventory of work-in-process of different processes and finished products is facilitated by process accounts.
- 3) Cost of individual processes as well as of finished products can be ascertained at short intervals.
- 4) Make or buy decisions for different processes can be taken in the light of costs at different processes. For example, in case of textile manufacture if the cost at weaving process is higher than the price at which plain cloth can be purchased from outside, the company may decide to buy plain cloth from outside and perform the process of printing only. If weaving costs are lower, the weaving process is also performed.
- 5) Effectiveness at each process is determined on the basis of costs incurred at individual process.
- 6) Since output at each process is homogeneous, average cost per unit can be easily calculated.
- 7) Separate cost ascertainment for each process has motivational impact. Employees at the process resulting in cost economies can be rewarded, and those not performing up to the mark can be reprimanded.



- 8) Cost control is facilitated as it is ascertained as to where excessive cost has been incurred and where wastages and scraps are high.

Limitations of process costing –

Major limitations of process costing are –

- 1) Process costs throw light on efficiency level of entire group of people working at a process, not on the efficiency of individuals.
- 2) Determination of cost at processes is by itself not sufficient for cost control, make or buy decisions or for motivational measures.
- 3) In case production at a process is not homogeneous as in the case of foundries making casting of different sizes, shapes and of different qualities involving different alloys, the average per unit cost based on total output and total cost at a process will be misleading.
- 4) Process costs are historical costs and suffer from all weaknesses of such costs.
- 5) Valuation of inventories where there is work-in-progress at processes, involves lot of estimation.
- 6) Determination of cost of by-products and joint-products is also a mere estimation.

Principles of process costing –

The following principles should be followed for ascertaining costs at processes –

- 1) Output of one process is transferred to the next process and that of final process is transferred to finished goods account.
- 2) Cost per unit at processes is ascertained at the end of each specified period, e.g., on monthly or quarterly basis.
- 3) All normal losses should be charged to the output at the processes. However, cost per unit must never be influenced by abnormal gains and losses.
- 4) Each process is taken as a cost centre, i.e., all direct and indirect costs are assigned to processes on appropriate basis.
- 5) In case of by-products and joint-products, their share in joint costs should be carefully estimated and credited to the main process.
- 6) In case there are incomplete units at the process at the beginning and at the end of the period, equivalence of incomplete units is determined.

Joint and By Products.

Joint products : The term joint products is used for two or more products of almost equal economic value which are simultaneously produced from the same manufacturing process and the same raw material. Joint products thus represent two or more products separated in the course of processing each product being in such proportion as the main product.

Characteristics :

- (a) Joint products are produced from the same raw material by natural proportion.
- (b) They are produced simultaneously by a common process.
- (c) They are comparatively of almost equal value.
- (d) Joint products may be saleable after separations or may be further processed by incurring additional costs to make them stable or an improved product.

A classic example of joint products as given above is found in oil refining, where items like petrol, diesel, naphtha, kerosene etc. are produced from the crude oil. Other examples are in flour mill where joint products are hides, canned meat, fertilizers etc. The joint product is also used to describe various qualities of the same product, as for example many grades of coal which may be produced in coal mining.

Examples of Joint Products



Industry	Joint Products
1. Oil Refining	Petrol, Diesel, Kerosene, grease, lubricating oils.
2. Dairy	Skimmed Milk, butter
3. Meat processing	Meat, Hides
4. Mining	Several metals from the same or example copper, silver, zinc etc.

By Product :

By products are products of relatively small value which are incidentally and unavoidably produced in the course of manufacturing the main product. For example in sugar mills the main product is sugar. But bagasses and molasses of comparatively smaller value are incidentally produced and thus are by products, other examples of by products are oil cake produced in the extraction of edible oil, cotton seed produced in the cotton textile industry etc. These by products are unavoidably produced and are of secondary value. The sales value of these by products is much less as compared to the main product. For example sales value of by products bagasse and molasses is much less than that of the main product sugar.

By Products may be :

- Those sold in their original form without further processing.
- Those which require further processing

Distinctions between Joint Products & By Products.

A product may be treated as a joint product in one business & the same product may be treated as a by product in another business. However the following factors should be considered to determine if a product is a joint product or a by product.

- Relative sales value :** If the sales value of all the products are more or less equal they are all treated as joint products. If however there are wide differences in the relative sales values of products, the product with the greater sales value is treated as the main product & the products of lower value are treated as by products.
- Objective of manufacture :** If the objective of manufacturing is product A, then unwanted products B & C are treated as by products.
- Policy of Management :** The management may decide to treat a particular product as the main product & the other product as by products. Alternatively it may choose to treat all products as joint products.

Examples of By Products :

Industry	Joint Products
1. Sugar	Bagasse, Molasses
2. Butter textile	Cotton seed
3. Edible oil	Oil cake
4. Meat	Bones
5. Rice mills	Husk.

(C) Normal and Abnormal losses:

Normal Process Loss: That amount of loss which cannot be avoided because of the nature of material or process is normal process loss. Such a loss is quite expected under normal conditions. It is caused by factors like chemical change, evaporation, withdrawals for tests or sampling, unavoidable spoiled quantities etc.



Abnormal Process Loss: This type of loss consists of loss due to carelessness, machine break down, accident, use of defective material etc. Thus in cases due to abnormal factors it represents a loss which is over and above the normal loss.

Accounting Treatment of normal loss:

It is a fundamental costing principle that the cost of normal losses should be borne by the good production. Normal loss is generally determined as a percentage of input. Sometimes such a loss is due to cost of weight, say due to evaporation a chemical action. Since such a wastage is not physically present, obviously it cannot have any value.

However when normal loss is physically present in the form of scrap it may have some value, i.e. it may be sold at some price. Whenever scrapped material has any value, it is credited to the process account. This illustrated below.

Accounting Treatment of Abnormal Process Loss

It is been stated earlier that abnormal loss is due to carelessness, accidents, machine, breakdown and other abnormal reasons. Unlike normal loss, abnormal loss is not absorbed by good production, rather it is transferred to costing P & L a/c. This is because if the cost of abnormal loss were to fall upon the good production the cost there will fluctuate and the information provided would be misleading. In order to overcome this and also to disclose the cost of abnormal loss, the following procedure may be adopted :

- Allow for normal loss in the manner described earlier.
- After considering normal loss, find out the cost per unit that process. This is done by the following formula process.

$$\text{Cost per unit} = \frac{\text{Total cost} - \text{value of normal loss}}{\text{Units introduced} - \text{normal loss units}}$$

- Multiply the cost per unit (calculated as above) by the number of units of abnormal loss. This gives the total value of abnormal loss.
- Credit the relevant process account with the quantity and value of abnormal loss.
- The balance figure in the process account is the cost of good units produced in the process. This can also be found by multiplying cost per unit with the number of good units produced.
- Open Abnormal loss account and debit it with the quantity and value of abnormal loss shown in the process account sale proceed from abnormal loss are credited to abnormal loss account. Any balance left in this account is net loss and transferred costing P & L a/c.

Fifty units are introduced into a process at a cost of rupee one each. The total additional expenditure incurred by the process is Rs. 30 of the units introduced 10% are normally spoiled in the spoiled in the course of manufactures these possess a scrap value of Rs. 0.25 each. Owing to an accident, only 40 units are produced. You are required to propose (i) Process a/c and (ii) abnormal loss a/c.

Abnormal Gain or Effectiveness -

The normal process loss represents the loss that would be expected under normal conditions. It is an estimated figure. The actual loss may be greater or less than the normal loss. If the actual loss is greater than normal loss, it is known as abnormal loss. But if actual loss is less than normal loss, a gain is obtained which is termed as abnormal gain or effectiveness. The value of abnormal gain is calculated in a manner similar to abnormal loss. It is shown on the debit side of the Process Account and credit side of the Abnormal Gain Account. Like abnormal loss, it is ultimately transferred to Costing Profit and Loss Account.

Inter-Process Profit -

Generally, the output of one process is transferred to another on cost basis. Similarly, goods manufactured in the final process is also transferred at cost to Finished Stock A/c. But sometimes it is



desirable by a manufacturing concern to value goods processed by each process at a price corresponding to the market price of comparable goods. Thus profit or loss made by each process is revealed and the efficiency of a process is not affected by the efficiency or inefficiency of a previous process. The market price of the goods processed being generally higher than the cost of the process, each process account will show some profit. This profit is termed as inter-process profit.

Computation of Inter-Process Profit -

Under this method, the output of first process after charging certain profit is transferred to second process and the output of second process after charging certain profit is again transferred to third process. But in every process there remains certain stock which includes the part of profit of previous process. Thus profit included in the stock by previous process, is known as unrealized profit. Therefore, at the end of year the amount of profit included in the closing stock should be computed and the provision for unrealized profit should be made from the amount of total profit.



UNIT-III

MARGINAL COSTING

Profit Volume Ratio, Break Even Point & Margin of Safety

Cost-volume-Profit analysis is an important tool in the process of managerial decisions and it is extremely helpful to management in a variety of problems involving planning and control. The main objectives of such analysis are as follows:

1. **Setting up Flexible Budget:** This analysis is helpful in setting up flexible budget which indicates that what trend of amount of sales and cost of production at different levels of activity will be.
2. **Determination of B.E.P.:** The most important objective of Cost-volume-Profit analysis is to find out break-even point, i.e., the point of no profit no loss.
3. **Profit Planning:** This analysis is useful in profit planning also because whereas, on the one hand, we can determine the amount of profits at different levels of activity we can also determine the volume of sales or production to earn desired profit on the other hand.
4. **Performance Evaluation for Control:** This analysis assists in evaluation of performance for the purpose of control. On the basis of profits achieved costs incurred it can be analyzed that what the role of volume of production and other factors was in effecting the amount of profit?
5. **Allocation of Overloaded Costs:** This analysis in finding out the amount of overhead costs to be rates is related to a selected volume of production.

Meaning of Break-Even Point (B.E.P)

Break-even point is that point of production or sales at which firm neither earns any profit nor incurs any loss. It is also known as 'No Profit Point' or Zero Loss Point'. Some of its definitions are as follows:

"The Break-even Point of a company or a unit of a company is that level of sales income which will equal the sum of its fixed cost and its variable costs."

- Keller and Ferrara

Assumption of Break Even Analysis

The break-even analysis is based upon the following assumptions:

1. **Fixed and Variable Costs:** The basic assumption of Break-even analysis is that all elements of cost (i.e., production, administration, selling and distribution) can be divided into two parts, i.e., fixed cost and variable cost.
2. **Proportionate Variable Cost:** It is assumed that variable cost remains constant per unit at all levels of production. In other words, variable cost fluctuates directly in proportion to changes in volume of production.
3. **Certain and Constant Fixed Cost:** Fixed cost remains certain and constant at any level of activity from zero production to full capacity.
4. **Unchanged Selling Price:** Selling price per unit remains constant or unchanged at all levels of production, i.e., there is no change in selling price despite increase or decrease in supply or demand of goods.
5. **Linear Behaviour:** Behaviour of different costs is linear, i.e., a straight line will be drawn if cost data are represented on a graph paper.
6. **Technological Stability:** It is assumed that during the period, for which break-even analysis is being made, there will be no change in production system, efficiency of machines or technology of production.
7. **No Role of Stock:** Production and sales both are taken as equal. In other words, whatever will be produced, all will be sold and there will be no role of stock of finished goods.
8. **No change in general Price Level:** It is assumed that during a specific period there will be no change in general price level, i.e., cost of material, labour and other overheads.



9. **Unchanged Sales-mix:** There is only one product. If several products are being produced and sold, the sales-mix will remain constant.
10. **Relationship between Volume and cost:** An important assumption of break-even analysis is that volume of production is the only factor which does affect the cost of production.

Calculation of Break-Even Point

Break-even point can be calculated in terms of amount (Rs.) as well as in terms of units. Hence, as per direction or information given in the question it is decided that in what term this point is to be calculated. In this context following guidelines may be helpful:

1. If there is clear-cut direction in the question, then amount or units should be calculated accordingly.
 2. If per unit information's are available in the question and there is no specific direction, then B.E.P. should be calculated in both terms i.e., in Rs. And in units.
 3. If per unit information's are not available, then B.E.P. will be calculated only in terms of Rs.
 4. If the technique of P/V ratio is to be used, then also B.E.P. will be obtained in terms of Rs.
- a. B.E.P. (Rs.): It is also known as B.E.P. Sales
- i.
$$\text{B.E.P. (Rs.)} = \frac{\text{fixed Cost} \times \text{Sales}}{\text{Contribution}} \text{ or } \frac{\text{FC} \times \text{S}}{\text{C}}$$
 - ii.
$$\text{B.E.P. (Rs.)} = \frac{\text{fixed Cost}}{\text{P/V Ratio}}$$
 - iii.
$$\text{B.E.P. (Rs.)} = \text{Sales} - \text{Margin of Safety}$$
- b. B.E.P. (In units): It is also known as 'Break-even Point in Quantity' or Output B.E.P.'
- i.
$$\text{B.E.P. (Units)} = \frac{\text{fixed Cost}}{\text{Contribution per unit}} \text{ or } \frac{\text{FC}}{\text{Cpu}} \text{ or } \frac{\text{FC} \times \text{Spu}}{\text{Cpu}}$$
 - ii.
$$\text{B.E.P. (Units)} = \frac{\text{B.E.P. (Rs.)}}{\text{Spu}}$$

Margin of Safety

Margin of safety is the difference between actual total sales and B.E.P sales and may be calculated in rupees, unit or even in percentage form as explained below:

1. M.O.S. in Rupees:
 - i.
$$\text{M.O.S. (Rs.)} = \text{Sales (Rs.)} - \text{B.E.P. (Rs.)}$$
 - ii.
$$\text{M.O.S. (Rs.)} = \frac{\text{Profit}}{\text{P/V Ratio}}$$
2. M.O.S. in units:
 - i.
$$\text{M.O.S. (units)} = \text{Sales (Units)} - \text{B.E.P. (Units)}$$
 - ii.
$$\text{M.O.S. (units)} = \frac{\text{Profit}}{\text{Contribution per unit}}$$
3. M.O.S. in Percentage:
It is also called as M.O.S. Ratio.
$$\% \text{ of margin of safety to sales (M.O.S. Ratio)} = \frac{\text{Margin of Safety}}{\text{Total Actual Sales}} \times 100$$

Importance of Margin of Safety

Margin of safety is an indicator of the strength of the business. If the margin of safety is large, the position of the business will be sound and it can easily resist the situation of reduction in sales. Moreover, it will have more opportunities to earn profit. If the margin of safety is small, a small reduction in sales can be serious matter and may result even in loss. Thus, margin of safety serves as a cushion in between profit position and loss position.

Calculation of Sales for Desired Profit



Generally, it is considered in managerial decisions that what should be the target of sales in a particular period? In this context profit target is fixed and then attempt are made to attain that volume of sales which may yield the target of desired profit. A similar position may arise when a businessman is interested in maintaining the existing level of profit, even when the selling price is being reduced due to market situations. The following formulae may be applied for this purpose:

1. When total amount of desired profit is given in the question:

i. Sales (Rs.) = $\frac{\text{fixed Cost + D.Profit}}{S-V \text{ or } C\text{ontribution}}$ x Sales **OR** $\frac{FC + Pt}{C} \times S$

ii. Sales (Rs.) = $\frac{\text{fixed Cost + D.Profit}}{P/v \text{ Ratio}}$ **OR** $\frac{FC + Pt}{P/v \text{ Ratio}}$

iii. Sales (Unit) = $\frac{\text{fixed Cost + D.Profit}}{C \text{ per unit}}$ **OR** $\frac{FC + Pt}{C_{pu}}$

2. When desired profit per unit is given in the question:

i. Sales (Rs.) = $\frac{\text{Fixed Cost x Selling Price per unit}}{\text{Contribution per unit} - \text{Profit per unit}}$

$$= \frac{FC \times Spu}{C_{pu} - P_{pu}}$$

ii. Sales (Unit) = $\frac{\text{Fixed Cost}}{C_{pu} - P_{pu}}$

MARGINAL COSTING FOR DECISION MAKING TOOLS

Marginal costing is a specific technique of cost analysis in which cost information's are presented in such a manner so that it may help the management in cost control and various managerial decisions.

Marginal Cost = Prime Cost + All Variable Overheads

"The ascertainment of marginal cost and the effect on profit of changes in volume or type of output by differentiating between fixed costs and variable costs is known as marginal costing."

Basic Characteristics of Marginal Costing

1. Technique of Cost Analysis and Presentation
2. Division of Costs into Fixed and Variable
3. Period Cost and Product Cost
4. Valuation of Stock
5. Determination of Price
6. Calculation of Profit
7. Recovery of Costs
8. Break-even Analysis

Assumptions of Marginal Costing

The technique of marginal costing is based on following assumptions:

1. All the elements of cost, i.e., manufacturing, administrative and selling and distribution expenses can be divided into fixed and variable components.
2. Per unit variable cost of a product remains constant at all levels of output. In other words, total variable cost price varies in proportion to the volume of output.
3. Per unit selling price remains constant at all levels of operating activity.
4. Total fixed cost remains unchanged at all levels of output.
5. In case of production in addition to present level, only marginal or variable cost is incurred as additional cost.



Advantages of Marginal Costing

1. **Easiness:** This method makes the process of cost accounting simple and easily understandable. In fact, it is very simple to understand and easy to operate because income statement is prepared allocating variable and fixed expenses separately.
2. **Proper Valuation of Closing Stock:** Under marginal costing the valuation of closing stock is done at marginal cost. This is considered proper and logical because fixed cost of one period is not carried over to the next period in the form of valuation of stock.
3. **Helpful in Profit Planning:** This technique helps in profit planning, particularly of short term nature. In short-term profit increases or decreases on account of changes in selling price and variable cost because fixed cost does not change during this period. Hence, planning of earning desired profit can be designed easily by making necessary adjustments in sales volume, price and variable cost. Moreover, knowledge of cost behaviour under various operational conditions is also necessary for profit planning. Marginal costing technique studies cost behaviour by segregating fixed and variable costs and helps profit planning on the basis of contribution and cost-volume relationship.
4. **Meaningful Managerial Reporting:** Marginal costing serves as a good basis for meaningful managerial reporting. In this method reporting is based on sales and not on production so as change in stock does not influence the comparison of efficiency. Moreover, treating all fixed expenses as period costs, their effect on profit is precisely and clearly reflects by this technique.
5. **Profitability Appraisal:** This technique also serves as a tool of profitability appraisal. Whenever there is problem relating to the comparative profitability of various lines, departments or divisions or profitability of various sales areas and channels, etc., this technique helps significantly.
6. **Useful to standard and Budgetary Costing:** This technique is very useful in adopting and implementing the system of standard and budgetary costing.
7. **Convenience in Computing Fixed Overheads:** Since fixed overheads are charged against the contribution in marginal costing, there is no problem of computing fixed overhead recovery rates and their under or over-recovery.

An important role of cost accounting is to assist in the process of managerial decisions. In this context profitability of two or more alternative options is compared and such option is selected which offers maximum profitability along with fulfillment of objectives of the enterprise.

Main Areas of Decision-Making and Applications of Marginal and Differential Costing

Marginal costing is a very useful technique in solving various managerial problems and contributing to various areas of decisions. In this chapter, the use of marginal costing in following important areas have been discusses:

1. Make or Buy Decision
2. Change in Product Mix
3. Pricing Decisions
4. Exploring a New Market
5. Shut-down Decisions

Make Or Buy Decision

'Make or Buy Decision' is a problem in respect of which management has to take decisions continuously. In this context, the management has to decide whether a certain product or a component should be made in the factory itself or bought from outside suppliers.

The nature of decision regarding make or buy may be of the following types:

- a. Stopping the production of the part and buying it from the market: A business concern is already making a part or component which is used in the business. Now due to some reasons, a decision has to take whether this part or component should be bought from the market or additional



requirement due to increase in production of main factory should be made in the factory or should be bought from the market.

- b. Stopping the purchase of a component and to produce it in own factory: Another aspect of the problem of 'make' or 'buy' may be that a component or part thus far being purchased from the market should be produced or made in the factory or not. In this case, normally some extra arrangements regarding space, labour, machines, etc. will be required. This may involve capital investments too. Some special overheads may also be necessary. If the decision for making requires the setting up of a new and separate factory, separate supervisory staff may also be needed. All these arrangements will require additional costs. As such, the price being paid to outsiders (suppliers of the component) should be compared with additional costs which will have to be incurred in the form of raw materials, wages, salaries of additional supervisors, interest on capital investments, depreciation on new machines, rent of premises, etc. If such additional costs are less than the buying price, the component should be manufactured and vice-versa.

Change In Product Mix

Introducing a New Line or Department: The problem of introducing a new product or line involves decision in two respects – (i) whether a new product or line should be added to the existing production or not, and (ii) If it should be introduced, then what should be the model or design or shape of the new product. In other words, if new product can be produced in more than one model, which model should be introduced?

A decision like above should not be based on contribution but other relevant factors should also be considered. The marginal cost of new product in all its possible models should be considered. The marginal cost of new product in all its possible models should be considered. It is also possible that a portion of the cost of facilities relating to the original production may be used for the purpose of producing new product. Some additional investments in the form of additional plant and machinery may be desired. This will likely increase the fixed overheads, which should also be considered along with marginal costs.

Pricing Decision

It is generally contended that price, in the long-run should be such as to cover total cost (Marginal Costs + Fixed Costs) as well as desired profit. In such a case, marginal costing will not play any significant role. Again, in a competitive market, price is not determined by the individual concern but is governed by the market forces. Thus, costing (particularly Marginal Costing) is helpful in price determination only in short-term and monopoly conditions. Here we shall confine our discussion only to the short-term price policy. The various aspects of price policy may be enumerated as under:

- (1) Normal Price
- (2) Minimum Price
- (3) Depression Price
- (4) Special Price including dumping
- (5) Price-changes.

Exploring a New Market

Schemes of sales promotion as discussed earlier would aim at increasing the sales volume within the usual sales territories. Sales volume can also be increased by tapping new territories. This can be done either by extending its own marketing organization (such as opening a Branch/ Depot/ Shop) or through local distributors. It is also significant to note that some initial expenses will have to be incurred in organizing sales-channels in the new territories. A sort of competition may also be there due to the attachment of customers of that area to some other brand, removal of which will involve higher selling and distribution costs. Again, Marginal Costing will be helpful in providing adequate and relevant data for taking a decision in this regard.

If the firm finds opportunity to receive an export order the following additional points should also be considered:



- (i) Export order may result in some additional costs like special packing cost, freight and insurance charges, export duty etc. These costs should be deducted from contribution to determine profit from export order.
- (ii) There may be some additional benefits like export subsidy from government concession in excise duty etc. Such items should also be deducted from cost or added in contribution.

Shut-Down Decisions

Shut-down decisions may be of two types- (a) Closure of entire business, (b) Dropping a Line or product or Department.

- a. Closure of entire Business' (Suspension of Activities): Sometimes, a business concern may not be in a position to carry out its trading activities (i.e., production and selling) in an adequate volume due to trade recession/ depression or cut-throat competition. As such, the management of such business concern may be faced with a problem of suspending the trading activities. Such suspension may be of the following nature:
 - i. Temporary closure or shut-down for a short period.
 - ii. Permanent closure.

Temporary Closure: When trading activity particularly plant operation is suspended for a short period; it is known as temporary closure. Such closure is necessitated either due to depression/ recession or due to ensuing off-season. In the former case, the period of closure will run over the period of recession/ depression, while in the latter case, it will cover the period of off-season.

Permanent Closure: Sometimes, management may have a problem, the solution of which will be the permanent closure of the factory or plant or liquidation of the whole show. If a business concern may not run profitably and reasonable or minimum return is not forthcoming on capital employed in the business in spite of possible efforts being taken to improve it, it may be wise as well as profitable to close the factory permanently. If it is not done immediately and time is allowed to pass on, there will be a number of financial problems due to erosion in capital day after day. Here the management of the concern should adopt the military rule followed by the General of Army, i.e., to retreat timely and gracefully, if it cannot be avoided.

- b. Dropping a Line or Product or Department: Basically this problem is very much related to the profitability of a product or department. The best possible and maximum profitable utilization of limited resources of a business concern clearly demands the continuance of the production of that product/ line/ department, which will ensure the maximization of profit. This requires on the part of management to fix priorities for various products/ lines. Management will also have to decide whether the production of one or more product/ line should be dropped or curtailed. Such decision may be effective and judicious only, when it is based on the comparative study of contributions made by each product/ line or department. Here comes the role of marginal costing with the help of which Marginal cost and Contribution Statement is prepared and decision data are made available.

Earning of maximum profit in the ultimate goal of almost all business enterprises. The amount of profit on the sales of a product depends upon volume of production and its costs.

Cost-Volume-Profit Analysis is a logical extension of the concept of marginal costing, in which cost of production is divided into two parts, i.e. fixed cost and variable cost. Total amount of fixed cost remains constant upto a certain level of activity and change in production volume is associated with the change in variable (marginal) cost only.



UNIT-IV

BUDGETARY CONTROL

Budget: A budget is a financial and/ or quantitative statement prepared prior to a defined period of time, of the policy to be pursued during that period for the purpose of attaining a given objective.

A budget is a plan of action to achieve stated objective based on a pre-determined series of related assumption.

Budgetary control: - Budgetary control is the planning in advance of the various functions of a business, so that business as whole can be controlled.

Objective of budgetary control: - (a) A blue print (b) means of co-ordination (c) Efficiency in production work (d) control of cost (e) Economy.

Budgetary control as a management tool: - Budgetary control has become an essential tools of management for controlling costs and maximizing profits. Following are the main advantages of a budgetary control system in an organization:

1. Profit maximization
2. Co-ordination
3. Communication
4. Tools for measuring performance
5. Corrective action
6. Motivation
7. Brings Economy
8. Measurement of success

Functions of Budget: the Basic functions of budgets are

1. Encourage top management to make a co-ordination plan
2. Helps in improving co-ordination
3. Keeps a control on all departments
4. Cost reduction

Difference between forecast and budget:-

Forecasting and budgeting are two important concept of budgetary control. A forecast is prediction of what will happen as a result of given set of circumstances. It is an assessment of probable future events. On the other hand "A budget is a planned result that an enterprise aims to attain. It is based on the implications of a forecast. Forecasting they proceeds is the preparation of budget.

Flexible budget:- Flexible budget (also known as variable or sliding scale budget is a budget which is designed to furnish budgeted cost for any level of activity actually attained. The easy way to prepare flexible budget is prepare budgets only for one level of activity and express each item of expenditure as a ratio or rate per unit of the volume of output. The allowance for an item of expenditure at any desired level of activity may be computed by means of simple multiplication.

Stages in budget process:

The following steps may be taken for installation of an effective system of budgetary control in an organization:

1. Defining the objectives: A system of budgetary control requires clearly defined set of objective that is to be achieved.
2. Organization for budgeting: A budgetary committee is formed which comprises the department heads of various departments. The responsibility of each executive must be clearly defined so that there should not be any uncertainty about the point where the jurisdiction of one executive ends and that of another begins.
3. Budget centers: budget centers are that part of the organization for which the budget is prepared. The budget centers are essential for cost control purpose.

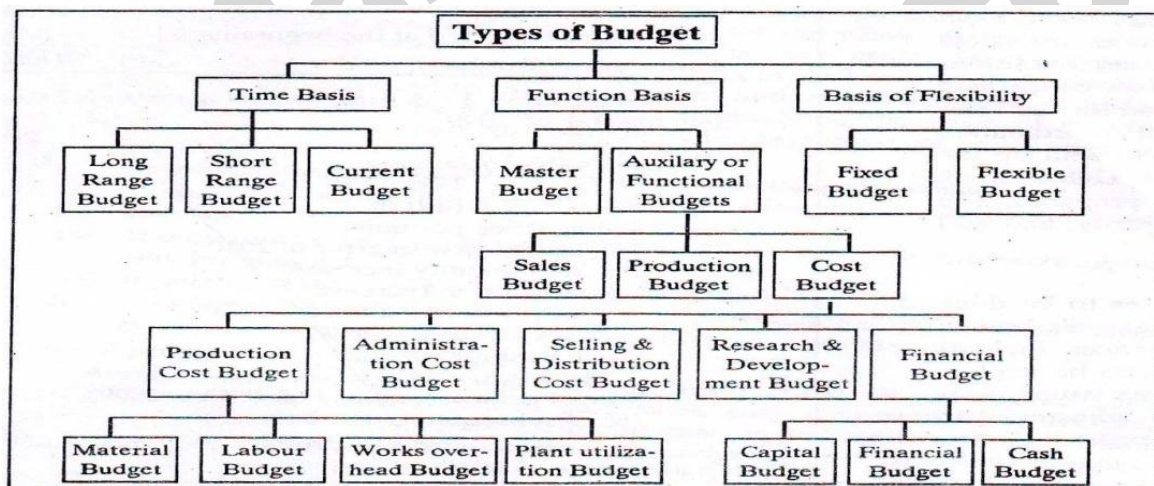


4. Budget manual: A budget manual is a written document which defines the objectives of budgeting as well as the roles and responsibilities of person engaged in the routine work.
5. Budget controller: The actual performance of different department is communicated to the budget controller. He also informs to the top management about the performance of different departments.
6. Budget committee
7. Fixation of budget period
8. Determination of key factors
9. Making forecast
10. Preparation of budget.

Types of Budgets

Budgets can be classified according to various bases. However, practically they are classified according to following three bases:

(i) On the basis of time; (ii) On the basis of functions or activities; and (iii) On the basis of flexibility
Different types of budgets can easily be understood with the help of the following chart. All the aforesaid budgets are being discussed in the following pages.



Different types of budgets have been developed keeping in view the different purposes they serve. Some of the important classifications of the budgets are discussed below.

Classification according to time:

1. Long term budgets: the budgets are prepared to show the long term planning of the organization. This budget is prepared normally for a period of 5 to 10 years.
2. Short term budgets: short term budgets are those which have to be prepared for a period of one or two years.
3. Current budget: current budget is one which has to be prepared for a very short period say a month or a quarter year and is related to the current conditions.

Classification according to function:

1. Sales budget: Sales budget is a forecast of total sales during the budget period.
2. Material budget: material budget is an estimate of quantities of raw material to be purchased for production during the budget period.
3. Labour budget: labour budget is a budget which is prepared by the personal department of the organization. It show the total hours required to complete the production target.
4. Factory overhead budget: this budget indicates the estimated costs of indirect material, indirect labour and indirect factory expenses incurred during the budget period.



5. Administrative expenses budget: in order to estimate the amount required to meet the administrative and operational activities of the organization, the administrative expenses budget is prepared.
6. Selling and distribution overhead budget: this budget is prepared by the sales manager of each territory.
7. Master budget: master budget is a budget which has to incorporate all functional budgets. The summary budget, incorporating its component functional budgets and which is finally approved adopted and employed.
8. Zero base budgeting: a planning and budgeting process which requires each manager to justify his entire budget request in detail from scratch (hence zero base) and shifts the burden of proof to each manager to justify why he should spend money at all. The approach requires that all activities be analysed in decision package which are evaluated by systematic analysis and ranked in the order of importance.
9. **Production budget** : This is the most important amongst all functional budgets. After preparing the sales budget the production budget is prepared stating physical units to be purchased during the budget period. It is intended to give in detail the production programme to be followed during twelve months of the year. In fact it specifies the number of units of each product that must be produced to satisfies the sales forecast and to achieve the desired level of closing the finished goods inventory. Essentially in production budget units to be produced are calculated as under.

Budgeted sales + desired closing stock of finished good – opening stock of finished goods.

Thus, the production budget is purely a quantitative budget. Like other budgets it is prepared by months or fortnights or quarters along with an annual budget depending upon the nature of manufacture therefore the production budget becomes the foundation for factory planning in general.

10. **Cash budget** : A cash budget is the budget of anticipated receipt and payments of cash during the budget period and is practically the main key of the whole budgetary control system. In fact, planning about the cash flows is very useful for all types of organizations since it reveals potential cash shortages as well as potential periods of excess cash. It is closely related to the sales budget and operating expenses budget. The period of time covered by a cash budget depends on the types of business, management planning needs and cash positions. The preparation of cash budget has the following objectives:
 - i. It indicated the availability of cash for taking advantages of discount.
 - ii. It shows the availability of excess funds for short term or long term investments.
 - iii. It indicates the cash requirements needed for a plant or equipments, for expansion program
 - iv. It point out the need for additional funds and,
 - v. It indicates the effect on the cash position of seasonal requirements, large inventories, unusual receipts and collection of receivables etc.

Methods of preparation of cash budgets

- i. **Receipt and payment method:** Under this methods all anticipated cash receipts are carefully forecasted such as cash sales, cash collection from debtors, proceeds from sale of debtors, Bank loans, interest on investment, royalties and dividends etc. similarly, cash disbursements for purchase of materials and supplies, purchase of plant and equipments, repayment of loans, salaries expenses, taxes and dividends etc. This method is useful for short term cash projections and not appropriate for long term cash budgeting.
- ii. **Adjusted Profit & Loss Account Method:** This method is mainly based on non-cash transactions and the basic assumption behind it is that profits will be equal to cash or the earnings of profits bring equal amount of cash into the business, it is used while preparing the long term budgets and the following information is required in this regard: (i) Expected opening cash balance; (ii) Adjusted net profit; (iii) Change in Current assets & liabilities; (iv) Capital payments as plant &



Machinery, etc.; (v) Dividends, & (vi) Interest on Debentures, etc. The format of this budget is as under:

- iii. **Projected balance sheet or Balance sheet forecast method:** This method is useful for long-term forecasting of cash for a year, or for long periods. To the opening balance of cash, all anticipated changes in balance sheet items such as debtors, stock, work-in-progress, depreciation, receipts from capital assets, advance payments, net profit before taxes, dividends, capital expenditure, and decrease in the amount due to creditors are added or deducted, as the case may be. The balance shows the estimated cash in hand at the end of period. This method does not take items of expenses into account and assumes that there is a regular pattern of inflow and outflow of cash. Another disadvantage of the method is that as it shows only the cash requirements at the end of a period, any surplus or deficiency of cash occurring within the budget period is not revealed.

Budgets on the basis of flexibility

A budget may be established, either as a fixed budget or a flexible budget:

1. Fixed budget- is one which is designed for a specific planned output level and is not adjusted to the level of activity attained at the time of comparison between the budgeted and actual costs. Obviously, fixed budgets are established only for a small period of time when the actual output is not anticipated to differ much from the budgeted output.
2. Flexible budget- Flexible budget (also known as variable or sliding scale budget) is a budget which is designed to furnish budgeted costs for any level of activity actually attained. Flexible budget may also be used for adjusting budgets to current conditions arising out of seasonal variations or changes in the length of the working period. A flexible budget is more elastic, useful and practical. It takes into account the change in the actual circumstances and is useful for the purposes of control.

Distinction between fixed and flexible budgets

Following are the main differences between fixed and flexible budgets:

Point of distinction	Fixed budget	Flexible budget
1. Condition	It assumes that conditions would remain static	It is designed to change according to changed conditions.
2. Flexibility	It is not flexible and does not change with the actual volume of output achieved	It is flexible and can be recasted quickly according to level of activity attained.
3. Classification of costs	Under this budget, costs are not classified according to their variability i.e., fixed, semi-variable and variable	Under this budget, costs are classified according to their nature such as fixed, semi-variable and variable
4. Forecasting	Under this budget it is difficult to forecast the results accurately.	This budget clearly shows the impact of various expenses on the operational aspect of the business.
5. Comparison	Under this budget, comparison between actual costs and budget costs cannot be made if the volume of output differs.	Under this budget, actual costs and budgeted costs can be compared and corrective actions may be taken.
6. Ascertainment of cost	If there is a change in circumstances, it is not possible to ascertain costs accurately.	Under this budget, costs can be easily ascertained at different levels of activity.
7. Cost control	This budget is ineffective as a tool of cost control and it has a limited application.	This budget can be used as a tool for cost control and it is widely used.



COST AUDIT

With the growth and development of cost accounting system, it becomes necessary to maintain cost records and cost books to record costs and the related transaction correctly. It is necessary that either in financial accounting or in cost accounting or in management accounting system, wherever books and records are kept, they must be examined independently to ensure that they have been kept and recorded fairly and correctly and that there are no errors of commission and there are no defalcation, so once the cost accounts are prepared, they should be audited in all fairness.

Definitions and Concept of Cost Audit

Definition: "Cost audit is the verification of cost accounts and check on the adherence to the cost accounting plan."

I.C.M.A., London

"By the term 'Cost audit' is meant the detailed checking of the costing system, technique and accounts to verify their correctness and to ensure adherence to the objective of cost accounting." **-Smith & Day**

Day

"Cost audit would apparently mean an examination of cost books, cost accounts, cost statements and subsidiary and prime documents with a view to satisfying the auditor that these represent a fair and true view of the cost accounting system adopted by the business and effectiveness of its implementation."

Objects or Functions of Cost Audit

The objects or functions of cost audit are the following:

I. Protective Objects

1. Accuracy of Cost Accounting: To check accuracy of cost accounting records and to verify that they have been maintained in accordance and in conformity with the cost accounting principles.
2. Adherence of Principles and Procedure: To verify that the management to adhering to the accepted procedures and process of cost accounting.
3. Detection of Errors: To detect errors and fraud, if any.
4. Examining the adequacy of the system: To see how far the present practices of maintaining cost records, submission of reports and returns are helpful and adequate. Changes may be suggested where necessary to make them more meaningful and decision oriented.
5. Pinpointing Deficiencies: To pinpoint the deficiencies or the inefficiencies in the use of materials, labour and machines and to assist the management thereby.
6. Verification of Correctness: To verify that the cost has been ascertained correctly and rightly presented.
7. Enforcement of cost control: To see that the cost control and cost reduction programmes have been rightly enforced.
8. Comparison with the Budgets and Standards: To examine whether the expenditure incurred upto date is within the budget-estimates and standards determined.
9. Guidance to Management: To guide the management by giving positive suggestions to improve the working of cost accounting department.
10. Others:
 - i. To develop cost consciousness in the enterprise.
 - ii. To develop the process of moral check on staff from the view of cost control and cost reduction
 - iii. To promote efficiency in the methods, techniques and processes of cost accounting
 - iv. To develop an effective system of internal cost audit.

II. Constructive Objects

1. To provide useful information and data to management for regular production.
2. To assist in selection of economical methods of operation.
3. To present suggestions for reducing operational costs.



4. To give suggestions to resolve errors in cost accounts.
5. To provide suggestions and consultancy for cost control.

Classification of Cost Audit

Cost Audit can be classified as (1) Internal audit and (2) External or Statutory audit.

1. Internal Audit: Audit may be external, i.e., conducted by outside parties or it may be internal. Internal audit is done by the auditor who is in the employment of the business, with the help of his departmental staff. The objectives and scope of internal audit differ from concern to concern depending on the requirements of the management.

External or statutory Audit: The external audit is conducted with a particular object in view, by the outside auditors, and thus has a limited scope. It may be conducted by the Tribunal, Government, Contractee or Trade Association, but in each case the object is specific and limited. The external auditor is not an employee of the company but an outside [party and he is responsible not to the company but to his appointing authority to whom he submits his report. It may be mentioned that statutory cost audit was introduced with the objectives (a) to make management cost conscious, and (b) to help in improving industrial efficiency all round and to maximize production.



UNIT-V

STANDARD COSTING

MEANING OF STANDARD COST AND STANDARD COSTING:

The word 'standard' means a benchmark or gauge. The 'standard cost' is a predetermined cost which determines in advance what each product or service should cost under given circumstances. Backer and Jacobsen define "Standard cost is the amount the firm thinks a product or the operation of a process for a period of time should cost, based upon certain assumed conditions of efficiency, economic conditions and other factors". Chartered Institute of Management Accountants, London defines standard cost as "a predetermined cost which is calculated from management's standards of efficient operation and the relevant necessary expenditure". They are the predetermined costs based on technical estimate of material, labour and overhead for a selected period of time and for a prescribed set of working conditions.

The technique of using standard costs for the purposes of cost control is known as standard costing. Brown and Howard define "standard costing is a technique of cost accounting which compares the standard cost of each product or service with actual cost to determine the efficiency of the operation so that any remedial action may be taken immediately". The terminology of Cost Accountancy defines standard costing as "the preparation and use of standard costs, their comparison with actual costs, and the analysis of variance to their causes, and points of incidence". The London Institute of Cost and Works Accountants define it as "An estimate cost, prepared in advance of production or supply correlating a technical specification of material and labour to the price and wage rates estimated for a selected period of time, with an addition of the apportionment of overheads expenses estimated for the same period within a prescribed set of working conditions". Further, it is a system of cost accounting, which is designed to find out how much should be the cost of a product under the existing conditions. The actual cost can be ascertained only when production is undertaken. The predetermined cost is compared to the actual cost and a variance between the two enables the management to take necessary corrective measures.

STEPS INVOLVED IN STANDARD COSTING:

The technique of standard costing involves the determination of cost before occurring.

The standard cost is based on technical information after considering the impact of current conditions. With the change in condition, the cost also can be modified so as to make it more realistic. The standard cost is divided into standards for materials, labour and overheads. The actual cost is recorded when incurred. The standard cost is compared to the actual cost. The difference between the two costs is known as variance. The variances are calculated element wise. The management can take corrective measures to set the things right on the basis of different variances.

The basic purpose of standard costing is to determine efficiency or inefficiency in manufacturing a particular product. This will be possible only if both standard costs and actual costs are given side by side. Though standard costing system will be useful for all types of commercial and industrial undertakings but it will be more useful in those undertakings where production is standardized. It will be of less use in job costing system because every job has different specifications and it will be difficult to determine standard costs for every job.

STANDARD COSTING Vs. BUDGETARY CONTROL:

In budgetary control, budgets are used as a means of planning and control. The targets of various segments are set in advance and actual performance is compared with predetermined objects. In this way management can assess the performance of different departments. On the other hand, standard costing also set standards and enables to determine efficiency on the basis of standards and actual performance.

Budgetary control is essential to determine standard costs, whereas, the standard costing system is necessary for planning budgets. In budgetary control the budgets are prepared for the concern as a



whole whereas in standard costing the standards are set for producing a product or for providing a service. In standard costing, unit concept is used while in budgetary control total concept is used. The budgets are fixed on the basis of past records and future expectations. Standard costs are fixed on the basis of technical information. Standard costs are planned costs and these are expected in future. As far as scope is concerned, in case of budgetary control it is much wider than standard costing. Budgets are prepared for incomes, expenditures and other functions of the departments such as purchase, sale, production, finance and personnel department. In contrary, standards are set up for expenditures only and, therefore, for manufacturing departments standards are set for different elements of cost i.e., material, labour and overheads.

Further, in budgetary control, the targets of expenditure are set and these targets cannot be exceeded. In this system the emphasis is on keeping the expenditures within the budgeted figures. In standard costing the standards are set and an attempt is made to achieve these standards. The emphasis is on achieving the standards. Actual costs may be more than the standard costs and there can be no such thing in budgetary control. The budgetary control system can be applied partly or wholly. Budgets may be prepared for some departments and may not be prepared for all the departments. If a concern is interested in preparing production budget only, it is free to do so. Standard costing cannot be used partially; it will have to be used wholly. The standards will have to be set for all elements of cost. In fact, the systems operate in two different fields and both are complimentary in nature.

STANDARD COSTS AND ESTIMATED COSTS:

The standard costs and estimated costs both are used to determine price in advance. The purpose of both of them is to control cost. They follow the same accounting principles. Despite similarities, they differ in terms of objects and purpose. Estimated costs are based on historical accounting. It is an estimate of what the cost will be. It is a cost of guesswork or reasonable estimate for the costs in future. On the other hand standard costs are based on scientific analysis and engineering studies. Standard costing determines what the cost should be. Standard costs are used as a device for measuring efficiency. The standards are predetermined and a comparison of standards with actual costs enables to determine the efficiency of the concern. Estimated costs cannot be used to determine efficiency. It only determines the expected costs. An effort is made that estimated cost should almost be near to actual costs. The purpose of determining estimated costs is to find out selling price in advance to take a decision whether to produce or to make and also to prepare financial budgets. Estimated costs do not serve the purpose of cost control. On the other hand standard costs are helpful in cost control. The analysis of variance enables to take corrective measures, if necessary. Standard costs are not easily changed. The standards are set in such a way that small changes in conditions do not require a change in standards. Estimated costs are revised with the change in conditions. They are made more realistic by incorporating changes in prices. Standard costs are more static than estimated costs. Estimated costs are used by the concern using historical costing. Standard costing is used by those concerns which use standard costing system. Standard costing is a part of cost accounting process while estimated costs are statistical in nature and as such they may not become a part of accounting.

ADVANTAGES OF STANDARD COSTING:

Standard costing is not only helpful for cost control purposes but it is also useful in production planning and policy formulation. It derives following advantages:

1. Measurement of Efficiency: It is a tool for assessing the efficiency after comparing the actual costs with standard costs to enable the management to evaluate performance of various cost centres. By comparing actual costs with standard costs variances are determined and management is able to identify the place of inefficiencies. It can fix responsibility for deviation in performance. A regular check on various expenditures is also ensured by standard costing system. The standards are being constantly analyzed and an effort is made to improve efficiency. Whenever a variance occurs the reasons are studied and immediate corrective measures are undertaken.



2. Production and Price Policy Formulation: It becomes easy to formulate production plans by taking into account standard costs. It is also supportive for finding prices of various products. In case, tenders are to be submitted or prices are to be quoted in advance then standard costing produces necessary data for price fixation.

3. Reduction of Work: In this system, management is supplied with useful information and necessary information is recorded and redundant data are avoided. The report presentation is simplified and only required information is presented in such a form that management is able to interpret the information easily and usefully. Therefore, standard costing reduces clerical work to a considerable extent

4. Management by Exception: Management by exception means that everybody is given a target to be achieved and management need not supervise each and everything. The responsibilities are fixed and everybody tries to achieve his targets. If the things are going as per targets then the management needs not to bother. Management devotes its time to other important things. So, management by exception is possible only when targets of work can be fixed. Standard costing enables the determination of targets.

LIMITATIONS OF STANDARD COSTING:

Besides all the above benefits derived from this system, it has a number of limitations, which are discussed as follows:

1. Standard costing cannot be used in those concerns where non-standard products are produced.
2. The time and motion study is required to be undertaken for the process of setting up standards. These studies require a lot of time and money. Further, the process of setting up standards is a difficult task, as it requires technical skill.
3. There are no inset circumstances to be considered for fixing standards. With the change in circumstances the standards are also to be revised. The revision of standard is a costly process.
4. This system is expensive and small concerns may not afford to bear the cost. For small concerns the utility from this system may be less than the cost involved in it.
5. The fixing of responsibility is not an easy task. The variances are to be classified into controllable and uncontrollable variances. The responsibility can be fixed only for controllable variances not in the case of uncontrollable.
6. The industries liable for frequent technological changes will not be suitable for standard costing system. The change in production process will require a revision of standard. A frequent revision of standard will be costly. So this system will not be useful for industries where methods and techniques of production are fast changing.

PRELIMINARIES FOR ESTABLISHING STANDARD COSTING SYSTEM:

The establishment of a standard costing system involves the following steps:

1. Determination of Cost Centre: A cost centre may be a department or part of a department or item of equipment or machinery or a person or a group of persons in respect of which costs are accumulated and one where control can be exercised. Cost centres are necessary for determining the costs.

2. Classification of Accounts: Classification of accounts is necessary to meet a required purpose i.e., function, asset or revenue item. Codes can be used to have a speedy collection of accounts. A standard is a predetermined measure of material, labour and overheads. It may be expressed in quantity and its monetary measurements in standard costs.

3. Types of Standards: The standards are classified into three categories:

(i) Current Standard: A current standard is a standard which is established for use over a short period of time and is related to current condition. It reflects the performance which should be accomplished during the current period. The period for current standard is normally one year. It is supposed that the conditions of production will remain unchanged. In case there is any change in price or manufacturing condition, the standards are also revised. Current standard may be ideal standard and expected standard.



(a) Ideal Standard: The standard represents a high level of efficiency. It is fixed on the assumption that favourable conditions will prevail and management will be at its best. The price paid for materials will be lowest and wastages cost of labour and overhead expenses will be minimum possible.

(b) Expected Standard: This standard is based on expected conditions. It is the target which can be achieved if expected conditions prevail. All existing facilities and expected changes are taken into consideration while fixing these standards. An allowance is given for human error and normal deficiencies. It is realistic and attainable and it is used for fixing efficiency standard.

(ii) Basic Standard: A basic standard is established for use for an indefinite period or a long period. These standards are revised only on the changes in specification of material and technology production.

(iii) Normal Standard: Normal standard is a standard which is anticipated can be attained over a future period of time, preferably long enough to cover one trade cycle. This standard is based on the conditions which will cover a future period, say 5 years, concerning one trade cycle. If a normal cycle of ups and downs in sales and production is 10 years then standard will be set on average sales and production which will cover all the years.

4. Organisation for Standard Costing: In a business concern a standard costing committee is formed for the purpose of setting standards. The committee includes production manager, purchase manager, sales manager, personnel manager, chief engineer and cost accountant. The Cost Accountant acts as a coordinator of this committee. He supplies all information for determining the standard and later on coordinates the costs of different departments. He also informs the committee about the change in price level, etc. The committee may revise the standards in the light of the changed circumstances.

5. Setting of Standards: The standard for direct material, direct labour and overhead expenses are fixed. The standards for direct material, direct labour and overheads should be set up in a systematic way so that they can be used as a tool for cost control easily.

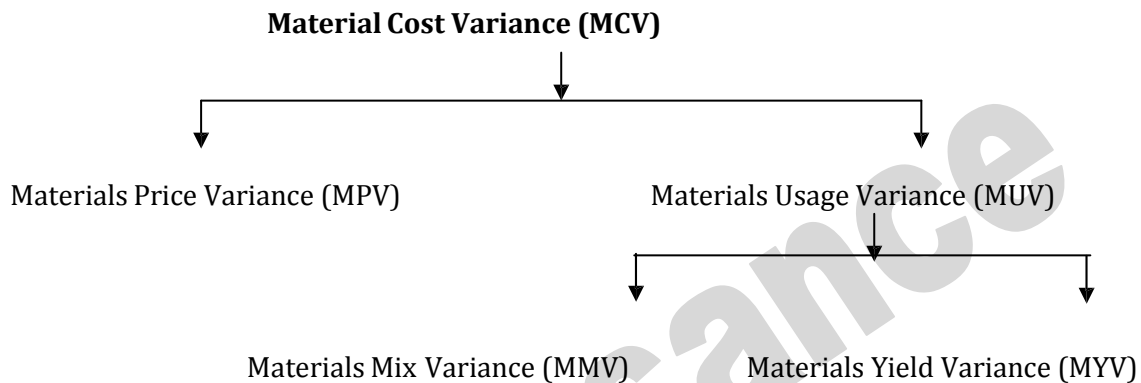
ANALYSIS OF VARIANCES:

The divergence between standard costs, profits or sales and actual costs, profits or sales respectively will be known as variances. The variances may be favourable and unfavourable. If actual cost is less than the standard cost and actual profit and sales are more than the standard profits and sales, the variances will be favourable. On the contrary if actual cost is more than the standard cost and actual profit and sales are less than the standard profits and sales, the variances will be unfavourable. The variances are related to efficiency. If variances are favourable, it will show efficiency and if variances are unfavourable it will show inefficiency. The variances may be classified into four categories such as Direct Materials Variances, Direct Labour Variances, Overheads Cost Variances and Sales or Profit Variances.

DIRECT MATERIAL VARIANCES:

Direct material variances are also known as material cost variances. The material cost variance is the difference between the standard cost of materials that should have been incurred for manufacturing the actual output and the cost of materials that has been actually incurred. Material Cost Variance comprises of: (i) Material Price Variance and (ii) Material Usage Variance: Material usage variance may further be subdivided into material Mix Variance and Material Yield Variance.

The Chart depicts the divisions and subdivisions of material variances.



The following equations may be used for verification of material cost variances.

- (i) $MCV = MPV + MUV$ or $MPV + MMV + MYV$
- (ii) $MUV = MMV + MYV$

(a) Materials Cost Variance: Material cost variance is the difference between standard materials cost and actual materials cost. Material cost variance arises due to change in price of materials and variations in use of quantity of materials. Material cost variance is ascertained as such:

Materials Cost Variance = Standard Material Cost – Actual Material Cost

Standard Material Cost = Standard Price per unit x Standard Quantity of materials

Actual Material Cost = Actual price per unit x Actual quantity of materials.

If the standard cost is more than the actual cost, the variance will be favourable and on the other hand, if the actual cost is more than the standard cost, the variance will be unfavourable or adverse.

(b) Materials Price Variance: Materials price variance arises due to the standard price specified and actual price paid. It may also arise due to: (i) Changes in basic prices of materials, (ii) failure to purchase the quantities anticipated at the time when standards were set, (iii) failure to secure discount on purchases, (iv) failure to make bulk purchases and incurring more on freight, etc., (v) failure to purchase materials at proper time, and (vi) Not taking cash discount when setting standards.

Materials Price Variance = Actual Quantity (Standard price – Actual price)

In this case actual quantity of materials used is taken. The price of materials is taken per unit. If the answer is in plus, the variance will be favourable and it will be unfavourable if the result is in negative.

(c) Material Usage Variance: Material usage (or quantity) variance arises due to the difference in standard quantity specified and actual quantity of materials used. This variance may also arise due to: (i) Negligence in use of materials, (ii) More wastage of materials by untrained workers or defective methods of production, (iii) Loss due to pilferage, (iv) Use of material mix other than the standard mix, (v) More or less yield from materials than the standard set, and (vi) Defective production necessitating the use of additional materials.

Materials usage variance = Standard Price (Standard Quantity – Actual Quantity)

The quantities of material specified and actually used are taken and standard price per unit is used. If the answer from the above mentioned formula is in plus, the variance will be a favourable variance but if the answer is in minus the variance will be unfavourable or adverse.

(d) Material Mix Variance: Materials mix variance is that part of material usage variance which arises due to changes in standard and actual composition of mix. Materials mix variance is the difference between standard price of standard mix and standard price of actual mix. The standard price is used in calculating this variance. The variance is calculated under two situations: (i) When actual weight of mix is equal to standard weight of mix, and (ii) When actual weight of mix is different from the standard mix.

(i) When Actual Weight and Standard Weight of Mix is Equal:

In this case the formula for calculating mix variance is:

Standard cost of standard mix – Standard cost of actual mix.



(Standard Price x Standard Quantity) - (Standard Price x Actual Quantity) Or Standard unit cost (Standard Quantity - Actual Quantity)

In case standard quantity is revised due to shortage of one material, the formula will be equal to Standard unit cost (Revised Standard Quantity - Actual Quantity).

(ii) When Actual Weight and Standard Weight of Mix are Different:

When quantities of actual material mix and standard material mix are different, the formula will be:

$$\left\{ \frac{\text{Total weight of Actual Mix}}{\text{Total weight of Standard Mix}} \times \text{Standard cost of Standard Mix} \right\} - (\text{Standard cost of Actual Mix})$$

In case the standard is revised due to the shortage of one material then revised standard will be used instead of standard, the formula will become:

$$\left\{ \frac{\text{Total Weight of Actual Mix}}{\text{Total Weight of Revised Standard Mix}} \times \text{Standard cost of Revised Standard Mix} \right\} - (\text{Standard cost of Actual Mix})$$

(e) Materials Yield Variance: This is the sub-variance of material usage variance. It results from the difference between actual yield and standard yield. It may be defined as that portion of the direct materials usage variance which is due to the standard yield specified and the actual yield obtained. It may arise due to low quality of materials, defective methods of production, carelessness in handling materials, etc.

Material yield variance is calculated with the following formula:

Standard Rate (Actual yield - Standard yield)

Standard Rate is calculated as follows:

$$\text{Std. Rate} = \frac{\text{Standard Cost of Standard mix}}{\text{Net standard output i.e., Gross output - Standard Loss}}$$

There may be a situation where standard mix may be different from the actual mix. In this case the standard is revised in relation to actual mix and the question is solved with the revised standard and not with the original standard. The standard rate will be Calculated as follows:

$$\text{Std. Rate} = \frac{\text{Standard Cost of revised Standard mix}}{\text{Net standard output}}$$

In the earlier variances if the standard was more than the actual, the variance was favourable. But, in case of material yield variance the case is different. When actual yield is more than the standard yield, the variance will be favourable.

DIRECT LABOUR VARIANCES

Labour Variances are discussed as follows:

(a) Labour Cost Variance:

Labour Cost Variance or Direct Wage Variance is the difference between the standard direct wages specified for the activity and the actual wages paid. It is the function of labour rate of pay and labour time variance. It arises due to a change in either a wage rate or in time or in both. It is calculated as follows:

$$\text{Labour Cost Variance} = \text{Standard Labour Cost} - \text{Actual Labour Cost}$$



Or (Standard time x Standard Wage Rate) – (Actual Time x Actual Wage Rate)

(b) Labour Rate of Pay or Wage Rate Variance:

It is that part of labour cost variance which arises due to a change in specified wage rate. Labour rate variance arises due to (i) change in basic wage rate or piece-work rate, (ii) employing persons of different grades than specified, (iii) payment of more overtime than fixed earlier, (iv) new workers being paid different rates than the standard rates, and (v) different rates being paid to workers employed for seasonal work or excessive work load.

The wage rates are determined by demand and supply conditions of labour conditions in labour market, wage board awards, etc. So, wage rate variance is generally uncontrollable except if it arises due to the development of wrong grade of labour for which production foreman will be responsible. This variance is calculated by the formula: Labour Rate of Pay Variance = Actual time (Standard Rate – Actual Rate) The variance will be favourable if actual rate is less than the standard rate and it will be unfavourable or adverse if actual rate is more than the standard rate.

(c) Labour Efficiency or Labour Time Variance:

It is that part of labour cost variance which arises due to the difference between standard labour hours specified and the actual labour hours spent. It helps in controlling efficiency of workers. The reasons for this variance are: (i) lack of proper supervision, (ii) defective machinery and equipment, (iii) insufficient training and incorrect instructions, (iv) increase in labour turnover, (v) bad working Conditions, (vi) discontentment along workers due to unsatisfactory personnel relations, and (vii) use of non-standard material requiring more time to complete work.

Labour efficiency variance is calculated as:

Labour efficiency variance = Standard Wage Rate (Standard Time–Actual Time).

If actual time taken for doing a work is more than the specified standard time, the variance will be unfavourable. On the other hand, if actual time taken for a job is less than the standard time, the variance will be favourable.

(d) Idle Time Variance:

This variance is the standard cost of actual time paid to workers for which they have not worked due to abnormal reasons. The Reasons for idle time may be power failure, defect in machinery, and non supply of materials, etc. Idle time variance should be segregated from the labour efficiency variance otherwise it will show inefficiency on the part of workers though they are not responsible for this. Idle time variance is always adverse and needs investigation for its causes. This variance is calculated as: Idle Time Variance-Idle Hours x Standard Rate

(e) Labour Mix or Gang Composition Variance:

This variance arises due to change in the actual gang composition than the standard gang composition. This variance shows to the management how much labour cost variance is due to the change in labour composition.

It may be calculated in two ways:

(i) When standard and actual times of the labour mix are same:

In this case the variance is calculated as follows:

Labour Mix Variance = Standard Cost of Standard Labour Mix – Standard Cost of Actual Labour Mix.

Due to the non-availability of one grade of labour, there may be a change in standard labour mix, and then revised standard will be used for standard mix. The formula will be: Labour Mix Variance = Standard cost of Revised Standard Labour Mix - Standard Cost of Actual Labour Mix.

(ii) When standard and actual time of labour mix are different:

In this case the variance will be calculated as follows:



$$\left\{ \frac{\text{Total Time of Actual Labour Mix} \times \text{Standard cost of Standard Labour Mix}}{\text{Total Time of Standard Labour Mix}} \right\} - (\text{Standard cost of Actual Labour Mix})$$

As in the earlier case, if labour composition is revised because of non-availability of one grade of labour then revised standard mix will be used instead of standard mix and the formula will become:

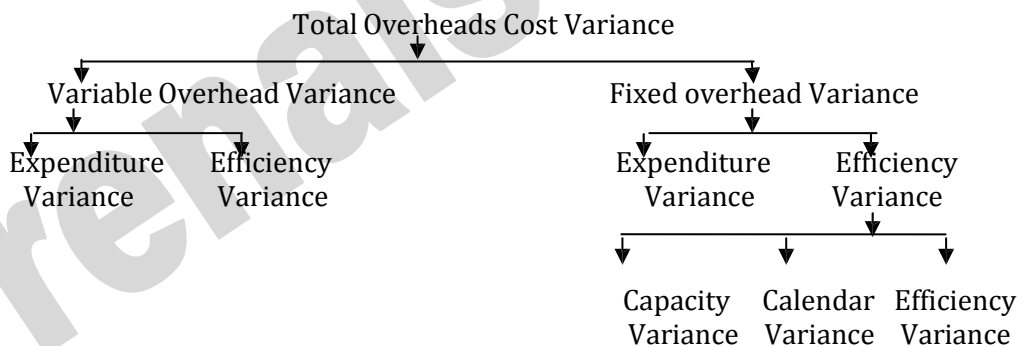
$$\left\{ \frac{\text{Total Time of Actual Labour Mix} \times \text{Standard cost of Revised Standard Labour Mix}}{\text{Total Time of Revised Standard Labour Mix}} \right\} - (\text{Standard cost of Actual Labour Mix})$$

OVERHEAD VARIANCES:

Overhead is the aggregate of indirect material cost, indirect wages (indirect labour cost) and indirect expenses. Thus, overhead costs are indirect costs and are important for the management for the purposes of cost control. Under cost accounting, overhead costs are absorbed by cost units on some suitable basis. Under standard costing, overhead rates are predetermined in terms of either labour hours (per hour) or production units (per unit of output). The formula for the calculation of overhead cost variance is given below:

Overhead Cost Variance = Actual Output x Standard Overhead Rate per unit Actual Overhead Cost
 or, = Standard Hours for Actual Output x Standard Overhead Rate per hour Actual Overhead Cost

An analytical study of the behaviour of overheads in relation to changes in volume of output reveals that there are some items of cost which tend to vary directly with the volume of Output whereas, there are others which remain unaffected by variations in the volume of output achieved or labour hours spent. The former costs represent the variable overhead and the latter fixed overheads. Therefore, overhead cost variances can be classified as:



(i) Variable overhead variance: Variable overheads vary directly with the volume of output and hence, the standard variable overheads vary directly with the volume of output and hence, the standard variable overhead rate remains uniform. Therefore, computation of variable overhead variance, also known as variable overhead cost variance parallels the material and labour cost variances. Thus, variable overhead cost variance (VOCV) is the difference between the standard variable overhead cost for actual output and the actual variable overhead cost. It can be calculated as follows:

$$\text{VOCV} = (\text{Actual Output} \times \text{Standard Variable Overhead Rate per unit}) - \text{Actual Variable Overheads}$$

or, = (Standard Hours for Actual Output X Standard Variable Overhead Rate per hour) – Actual Variable Overheads.

In case information relating to standard hours allowed, for actual output and the actual time (hours) taken is available, variable overhead cost variance can be further analysed into:



- (a) Variable Overhead Expenditure or Spending Variance, and
(b) Variable Overhead Efficiency Variance.

(a) Variable Overhead Expenditure or Spending Variance: It is the difference between the standard variable overheads for the actual hours and the actual variable overheads incurred and can be calculated as:

Variable Overhead Expenditure Variance = (Actual Hours x Standard Variable Overhead Rate per hour) – Actual Variable Overhead

or, = Actual Hours (Standard Variable Overhead Rate – Actual Variable Overhead Rate)

(b) Variable Overhead Efficiency Variance: It represents the difference between the standard hours allowed for actual production and the actual hours taken multiplied with the standard variable overhead rate. Symbolically:

Variable Overhead Efficiency Variance = Standard Variable Overhead Rate (Standard Hours) – Actual Hours for Actual Output.

(ii) FIXED OVERHEADS VARIANCE:

This variance is calculated as: Actual Output x Standard Fixed Overheads Rate – Actual Fixed Overheads. (The standard fixed overhead rate is calculated by dividing budgeted fixed overheads by standard output specified). It may be divided into expenditure and volume variances.

(a) Expenditure Variance = Budgeted Fixed Overheads – Actual fixed Overheads

(b) Volume Variance: This variance shows a variation in overhead recovery due to budgeted production being more or less than the actual production. When actual production is more than the standard production, it will show an over-recovery of fixed overheads and the variance will be favourable. On the other hand, if actual production is less than the standard production it will show an under recovery and the variance will be unfavourable. Volume variance may arise due to change in capacity, variation in efficiency or change in budgeted and actual number of working days. Volume variance is calculated as: Actual Output x Standard Rate – Budgeted Fixed Overheads
Volume variance is sub-divided into following variances:

(i) Capacity Variance: It is that part of volume variance which arises due to over- utilization or under-utilization of plant and equipment. The working in the factory is more or less than the standard capacity. This variance arises due to idle time caused by strikes, power failure, and non-supply of materials, break down of machinery, absenteeism etc. Capacity variance is calculated as: Standard Rate (Revised Budgeted Units – Budgeted Units) or, Standard Rate (Revised Budgeted Hrs – Budget Hrs).

(ii) Calendar Variance: This variance arises due to the difference between actual number of days and the budgeted days. It may arise due to more public holidays announced than anticipated or working for more days because of change in holidays schedule, etc. If actual working days are more than budgeted, the variance will be favourable and it will be unfavourable if actual working days are less than the budgeted number of days Calendar variance can be expressed as:

Decrease or Increase in number of units produced due to the difference of budgeted and actual days x Standard Rate per unit.

(iii) Efficiency Variance: This is that portion of the volume variance which arises due to increased or reduced output because of more or less efficiency than expected. It signifies deviation of standard quantity from the actual quantity produced. This variance is related to the efficiency variance of labour. Efficiency variance is calculated as: Standard Rate (Actual Quantity – Standard Quantity) or, Standard Rate per hour (Standard Hours Produced – Actual Hours). If Actual quantity is more than the budgeted quantity, the variance will be favourable and it will be vice versa if actual quantity is less than the budgeted quantity.



SALES VARIANCES:

A sales value variance exposes the difference between actual sales and budgeted sales. It may arise due to change in sales price, sales volume or sales mix. It is important to study profit variances. It may be classified as follows:

1. Sales Value Variance: A Sales Value Variance is the difference between budgeted sales and actual sales. It is calculated as:

Sales Value Variance = Actual Value of Sales – Budgeted Value of Sales.

If actual sales are more than the budgeted sales, the variance will be favourable and on the other hand, the variance will be unfavourable if actual sales are less than the budgeted sales.

2. Sales Price Variance: A sales price variance arises due to the difference between the standard price specified and the actual price charged. It is calculated as: Sales Price Variance = Actual Quantity (Actual Price– Standard Price).

3. Sales Volume Variance: It is the difference between actual quantity of sales and budgeted quantity of sales. It is calculated as:

Sales Volume Variance = Standard Price (Actual Quantity of Sales – Standard Quantity of Sales).

4. Sales Mix Variance: It is the difference of standard value of revised mix and standard value of actual mix.

PROFIT AND TURNOVER METHODS OF CALCULATING SALES VARIANCES:

A businessman may be interested more in knowing variations in profits and sales. The profit and turnover methods of calculating sales variances will be useful for this purpose. The variances are analysed as follows:

(a) Total Sales Margin Variance: Actual Profit – Budgeted Profit.

Actual Profit = Actual quantity sold x Actual profit per unit.

Budgeted Profit = Budgeted quantity of Sales x Budgeted profit per unit.

(b) Sales Margin Variance due to Selling Price: This variance arises due to the difference between actual selling price and standard selling price. This variance is calculated as:

Actual Quantity (Actual Price – Standard Price)

(c) Sales Margin Variance due to Volume: This Variance arises due to the difference between actual quantity of sales and budgeted quantity of sales. It is calculated as:

Standard Profit per Unit (Actual Quantity of Sales – Standard Quantity of Sales).

(d) Sale Value Variance= Budgeted sales value-Actual sales value.

(e) Sales Volume Variance= Standard selling price per Unit (Actual Quantity of Sales – Standard Quantity of Sales).

(f) Selling Price Variance= Actual Quantity (Budgeted selling Price – Actual Selling Price).

(g) Sales Quantity Variance= Budgeted sale value-Revised standard sales value.

Budgeted sale value=Budgeted quantity x budgeted selling price per Unit

Standard sales value= Actual Quantity x budgeted selling price per Unit

Actual sales value= Actual Quantity x Actual selling price per Unit

Revised Standard sales value= Total Standard sales value x budgeted proportion.

(h) Sales Mix Variance= Revised Standard sales value -Standard sales value

ACCOUNTING TREATMENT OF VARIANCES:

When the financial statements are prepared they contain actual cost figures there is no variances. But, at the time of implementation of standard costing system, the accounting records contain both standard costs and actual costs, by which we calculate variances. Then the next question arises that how to deal with the variances at the end of the accounting period? Which method should be followed



for treating them? The accountants suggest a number of methods for this purpose. Some of them are discussed, which may be adopted for the accounting treatment of variances:

1. Transfer to Profit and Loss Account: Under this method all variances are transferred to profit and loss account. In this method, the stock of finished goods, work-in-progress and cost of sales are shown at standard cost. It is considered that variances arise due to insufficiency or waste, so these should not become a part of normal cost of production.

2. Allocation of Variances to Finished Stock: In this method, variances are apportioned to finished goods, work-in-progress and cost of sales either on the basis of value of closing balances or on the basis of units. This method has the effect of recording actual costs in the financial statements. The adjustment of variances is made only in the general ledger and not in subsidiary books. The distribution of variances is not made to products. The variances not being actual losses should not be taken to profit and loss account.

3. Transfer of Variances to the Reserve Account: In this method cost variances are taken to next accounting period as deferred items. The variances whether favourable or adverse are transferred to a reserve account and are offset against future fluctuations. If the variances are favourable then they are taken to the liability side of the balance sheet and they are set off against adverse variances in future. On the other hand, if variances are adverse then these are taken to the balance sheet as a deferred charge and are written off against future favourable variances. This method is not in common use but it may be useful in cases where seasonal fluctuations occur so that favourable and adverse variances may be written off in the course of a business cycle concerning more than one accounting period.

Variance Analysis

The most important managerial use of standard costing is the analysis of variances. Variance may be defined as the difference between the 'standard cost' and comparable actual cost incurred during period. The 'variance analysis' is the process of analysing variances by sub-dividing the total variance in such a way that management can assign responsibility for off-standard performance, by identifying the persons responsible for its occurrence to take corrective action.

1. Variances of Cost Elements: the difference between the standard cost and the comparable actual cost is called cost variances and those various reasons because of which the cost variances arise are called variances of cost elements.

2. General Variances: there are certain variances which are applicable to all the elements of costs. These are known as general variances which may be as follows:

(i) Favorable and Unfavorable Variances : where the actual cost is less than standard cost, it is called 'favorable variance', on the other hand, where the actual cost is more than standard cost, the difference is referred to as 'unfavorable' or 'adverse' variance'.

(ii) Controllable and Uncontrollable Variances : a variance can be regarded as the responsibility of a particular person with the result that his degree of efficiency can be reflected in its size, it is called controllable variance, e.g. excess usage of material is usually the responsibility of the foreman concerned.

If a variance arises due to certain factors beyond the control of management, it is called uncontrollable variance e.g. change in the market prices of materials, general increase in the labour rates, increase in the rates of power of insurance premium, etc. are not within the control of the management of the company.

(iii) Sub-Variances and Revision Variance: the reasons because of which the variances arise in cost are called sub-variance. For example the change in mix of materials or because of yield obtained from actual input gives rise to sub-variances. On the other hand revision variances arise due to the difference between original standards and the revised standards.

(iv) Absolute and Relative Variances: the variances may be expressed in terms of amount or in percentages. If these are expressed in term of rupees, they are called absolute variances. In case the

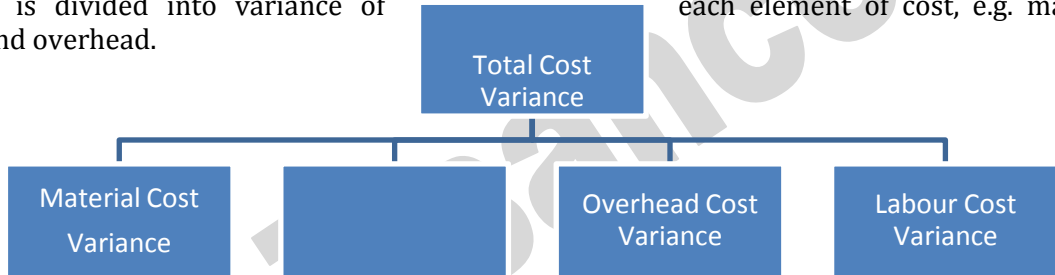


variances are expressed as percentage to the standards, such variances are called relative variances.

Classification of Variance

There may be any number of variances but those which are commonly in practice are as follows:

(1) Cost Variances, (2) Sales Variances
Total cost variance is divided into variance of each element of cost, e.g. material, labour and overhead.



(1) direct material cost variance- material cost variance is the difference between the standard cost of direct material specified for the output achieved and the actual cost of direct material used. It is calculated as under:

Material Cost Variance (MCV)	=	Total Standard Costs (TSC)	-	Total Actual Cost (TAC)
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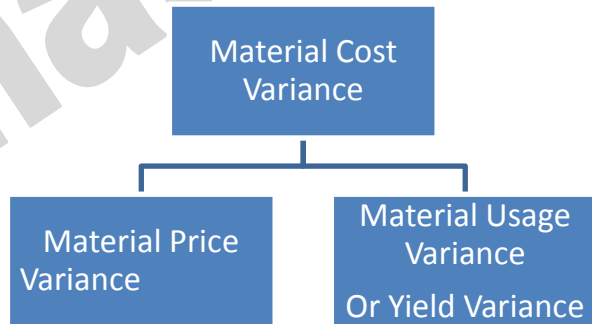
Total Std. Cost = Std. Quantity × Std. Price
Total Actual Cost = Actual Quantity × Actual Price

It Should Be Noted That Standard Quantity Must Relate To Actual Output.

Thus, MCV = TSC of Actual Output - TAC of Actual Output

The material cost variance may further be divided or sub-divided as follows:

I. When only one raw material is used in production:





When only one raw material is used in production :

