Cost and Management Accounting

DEACC205

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LOVELY PROFESSIONAL UNIVERSITY

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Unit 01: Introduction of Cost Accounting

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Objectives

After studying this unit, you will be able to:

- Understand the nature, scope and utility of cost accounting.
- Familiarize with costing terminology.
- Understand how cost accounting arises out of the need to make business decisions.
- Difference between cost accounting and financial accounting.
- Classify the components of cost.

Introduction

Accounting is an ancient science that seeks to keep track of various transactions. Accounting is thought to be necessary for keeping track of all receipts and payments, as well as revenue and expenditures. Accounting is usually classified into three types; viz; financial accounting, cost accounting and management accounting.

Financial accounting seeks to determine an accounting year's profit or loss, as well as the assets and liabilities position, by recording various transactions in a methodical manner.

Cost accounting assists businesses in determining the cost of production/services provided by the firm, as well as providing essential information for various decisions, cost control, and cost reduction.

Cost accounting is an important discipline of accounting that provides correct information to management in order to properly discharge its tasks such as planning, organising, controlling, directing, coordinating, and decision making. In this sense, Financial Accounting is concerned with record keeping for the purpose of preparing Profit and Loss Accounts and Balance Sheets. It gives general information about the company. As a result, Financial Accounts are prepared in accordance with the requirements of the Companies Act and the Income Tax Act. The primary goal of financial accounting is to determine a company's overall profit or loss for a given time. Thus, financial accounting does not meet management's needs for effective control, pricing setting, establishing effective plans for future operations, and devising various policy judgments.

To address the limits of financial accounting, cost accounting is a recent concept that was formed in response to management's demand for specific information about the cost of a product or a unit of services. Every business is expected to produce a profit in the long run while keeping expenditures under control. The company Act has made the maintaining of expense records in some manufacturing companies mandatory. As a result, large manufacturing and nonmanufacturing operations are increasingly utilizing Cost Accounting at large.

Concept of Cost

The amount of resource given up in exchange for particular goods or services is referred to as the cost. Money or money's equivalent expressed in monetary units is given up as a resource.

The Chartered Institute of Management Accountants, London defines cost as "the amount of expenditure (actual or notional) incurred on, or attributable to a specified thing or activity".

This activity of a firm may be the production of a product or the provision of a service, both of which include expenditures under numerous headings, such as materials, labour, miscellaneous expenses, and so on. A manufacturing organisation is interested in determining the cost per unit of the product created, whereas a service organisation, such as a transportation undertaking, canteen, electrical company, municipality, and so on, is interested in determining the expenses of the service it provides. In its most basic form, the cost per unit is calculated by dividing the total expenditure by the total number of units produced or the amount of service delivered. However, this strategy is only effective if the manufacturer only manufactures one product. If the company produces more than one product, the total expenditure must be divided across the numerous items so that the cost of each product may be determined independently. Even if just one product is produced, it may be required to examine the cost per unit of each item of expenditure that contributes to the total cost. When a large number of products are created, the situation gets more complicated, and it is important to break down the cost per unit of each product into several components of expenditure that make up the entire cost.

For a customer, cost equals price. For management, cost refers to the 'expenditure incurred' for producing a specific product or providing a specific service. Costing is the process of determining the cost. It is made up of concepts and rules that control the process of determining the costs of goods and services. Its goal is to determine the total cost as well as the cost per unit. For example, in transportation businesses, the entire cost for the period is calculated and used to calculate the cost per passenger/mile. i.e. the cost of transporting one passenger one mile. It allows for spending analysis in such a way that management has a thorough understanding of even the smallest cost item.

It is vital to define the term "cost" precisely. When used precisely, the phrase is amended with terminology such as prime cost, fixed cost, sunk cost, and so on. Each description suggests a certain quality that aids in cost analysis. It aids cost accounting in attaining its three primary goals: cost ascertainment, cost control, and cost presentation.

A cost must always be considered in connection to its purpose and circumstances. Different costs can be calculated for various purposes and under various conditions. Work-in-progress is valued at the factory cost, whereas finished goods stock may be valued at the cost of production. Even if the goal of the cost research is the same, different factors may cause cost difference. The cost per unit of a product is bound to vary as the volume of output increases, because the amount of fixed expenses absorbed by each unit of output reduces.

It is also vital to remember that there is no such thing as an exact or genuine cost because no cost figure is correct in all circumstances and for all reasons. The majority of the costing information is estimated; for example, the amount of overheads is often estimated in advance; it is divided over cost units, again on an estimated basis using various ways. Many aspects of production cost are handled in an optional manner, which may result in varying costs for the same product without violating any established standards. Depreciation is one such factor, the amount of which varies depending on the form of depreciation utilised. As a result, arriving at an exactly correct cost may be impossible unless one waits a lengthy time, during which time the costing information may lose all of its usefulness.

Evolution of Cost Accounting

Accounting has existed from the dawn of time. It is the process of discovering, measuring, documenting, and disseminating economic data that can be expressed in monetary terms. Accounting information's utility stems from its capacity to eliminate ambiguity. The data must be meaningful, verifiable, quantitative, and free of bias.

Businesses were tiny and defined by basic market trades between individuals and groups prior to the industrial revolution. There was a need for proper bookkeeping back then, but not so much for cost accounting. However, the 18th-century industrial revolution produced large-scale process industries that performed single tasks (e.g. textiles, railways etc.).

Because there was a dearth of a market for intermediary items during this time period, cost information became important as a tool for analysing the efficiency of various processes. However, several industrialists exploited the concept of prime cost around 1875. The period 1880 AD-1925 AD saw the development of complicated product designs as well as the creation of multi-activity diversified organisations such as Du Pont, General Motors, and others. During this time, scientific management was developed, leading accountants to turn physical standards into cost standards, which were then used for variance analysis and control. In the year 1913, J.L. Nicholson's book "Cost Accounting Theory and Practice" was published in New York.

During World War I and II, the social value of cost accounting increased in tandem with the expansion of the teaching country's defence budget. In the lack of competitive marketplaces for the majority of the items required to fight a war, governments in various nations entered into cost-plus contracts in which the price to be paid was the cost of production plus an agreed-upon rate of profit. The parties to defence contracts continued to rely on cost information after World War II. Even today, the majority of government contracts are awarded on a cost-plus basis.

Definitions of Important Concepts

The definitions of the following important Cost Accounting concepts are provided below:

(a) Cost	(b) Costing	(c) Cost Accounting
(d) Cost Accountancy	(e) Cost Control	(f) Cost Reduction
(g) Cost Allocation	(h) Cost Absorption	(i) Cost Audit
(j) Cost Unit	(k) Cost Centre	

(a) Cost:The term "cost" is used in a variety of contexts. Cost can be defined as the sum of all expenses involved in the production of a certain item. A cost is defined as "the amount measured in money or cash expended or other property transferred, capital stock issued, services performed, or a liability incurred in consideration of goods or services received or to be received" by the AICPA.

W.M. defines the term 'cost.' Harper, in his own words "Cost is the monetary value of economic resources utilised as a result of the cost of creating or doing the thing"

(b) Costing: ICMA London defines costing as "the technique and process of ascertainingcosts." As a technique, it refers to costing as the body of principles and procedures concerned with appropriate expenditure allocation for the determination of the cost of products and services.

(c) Cost Accounting:Cost accounting is a way of accounting for cost. Cost accounting is defined by the ICWA as the technique and process of determining costs. Cost accounting starts with recording all income and expenses and finishes with the display of statistical data.

(d) Cost Accountancy: According to the Chartered Institute of Management Accountants London,cost accountancy means "the application of costing and cost accounting principles, methods andtechniques to the science, art and practice of cost control and the ascertainment of profitability. It includesthe presentation of information derived therefore for the purpose of managerial decision making. Thus,cost accountancy is the science, art and practice of a cost accountant."

(e) Cost Control:Cost control is the direction and regulation of an undertaking's operating costs through executive action. It entails determining the intended costs in beforehand, measuring the actual costs, investigating the causes of deviations, and implementing corrective action.

(f) Cost Reduction:The phrase "cost reduction" refers to the attainment of a true and permanent reduction in the unit cost of items manufactured or services supplied without compromising their appropriateness or product quality. Cost reduction entails a reduction in unit cost; such a reduction is permanent, and the utility and quality of the goods and services remain unaffected.

(g) Cost Allocation:Cost allocation is the assignment of entire cost items to cost centres. Cost Allocation refers to the practise of charging all overhead expenses to a cost centre.

(h) Cost Absorption:The process of absorbing all overhead costs is referred to as 'Cost Absorption.' The costs allotted to or apportioned across a specific cost centre or manufacturing department based on the units generated.

Cost Ascertainment: The word 'Cost Ascertainment' refers to the process of determining the cost of each product. process or operation and guarantee that all costs have been absorbed in the product cost One of the most important goals of cost accounting is cost determination.

(i) Cost Audit:According to I C M A, a 'Cost Audit' is a detailed review or verification of cost accounts and a check on conformity to the cost accounting plan. The goal of a cost audit is to determine whether or not the procedures established for determining costs and other decisions are being effectively executed, as well as whether or not the cost accounting plan is being followed. The goal could be

(i) Protective and

(ii) Constructive:The protective goal is to ensure that there is no unnecessary waste or loss, and that the cost accounting system accurately reflects the right and actual cost of production. Based on the findings of the cost audit, the constructive purpose intends to provide management with information useful in controlling production, selecting economic methods of operation, decreasing operational expenses, and so on.

(j) Cost Unit:A 'Cost Unit' is a unit of goods, service, or time against which costs can be calculated. It is a monetary unit that can be used to calculate costs. Cost Units can be chosen as (a) single, (b) composite, or (c) commonly used.

Here are some examples of Cost Units used in various industries:

Name of Industry	**Cost Units used**
Paper	Per Tonne (or) Per Kg
Steel	Per Tonne
Sugar	Per Quintal
Cement	Per Tonne
Textile (cloth)	Per Metre
Transport	Passenger Kilometre
Electricity	Per Kilo Watt-hour
Bricks	Per 1000 bricks

(k) Cost Centre: According to the Chartered Institute of Management Accountants, London, Cost Centre is defined as a location, person or items of equipment (or group of these) for which costs may be ascertained and used for purposes of cost control. In other words, cost centre is a part of an organization which includes location, processes, equipment, (or) machine centres, various departments, persons etc. in relation to which costs can be charged or ascertained.

Cost Centres can be classified into the following types :

- Personal Cost Centre: : It is made up of a single person or a group of people, such as a salesperson, a marketing manager, and so on.
- Impersonal Cost Centre: An impersonal Cost Centre is one that comprises of a place or pieces of equipment.
- Operation Cost Centre: It is made up of machines and/or people who perform comparable tasks.
- Process Cost Centre: A Process Cost Centre is a Cost Centre that comprises of a single process or a continuous sequence of operations.

Features of Cost Accounting

a) It is a process of accounting for costs.
b) It keeps track of income and expenses related to the production of goods and services.
c) It supplies information from which future estimations and quotations are generated.
d) It is concerned with cost estimation, control, and reduction
e) It establishes budgets and standards so that actual cost may be compared to find out deviations/variances

Importance of Cost Accounting

Because of the limits of financial accounting, management has recognised the need of cost accounting. Whatever form of business it is, it entails spending money on labour, materials, and other items needed for creating and disposing of the product. At each level, management must avoid the possibility of waste. It must ensure that no machine is idle, that efficient labour is adequately rewarded, that byproducts are correctly utilised, and that expenses are accurately calculated. Aside from management, the installation of a competent costing system benefits creditors and employees in a variety of ways. Cost accounting boosts an organization's total production and acts as a key instrument in bringing wealth to the nation. As a result, the value of cost accounting can be addressed under the following headings:

A. Costing as an Aid to Management

Management benefits greatly from cost accounting. It gives thorough costing information to management in order for them to keep effective control over stores and inventory, boost organisational efficiency, and reduce waste and losses. It makes it easier to delegate responsibility for essential tasks and rate staff. For all of this, management must be capable of properly utilising the information provided by cost accounts.

B. Costing as an Aid to Creditors

Investors, banks and other money lending institutions have a stake in the success of the business concern and are, therefore, benefited immensely by the installation of an efficient system of costing. They can base their judgment about the profitability and future prospects of the enterprise on the costing records.

C. Costing as an Aid to Employees

Employees have a vested stake in the success of their employer's business. They profit in a variety of ways from the implementation of an effective costing system. They profit from ongoing employment and increased remuneration through incentives, bonus programmes, and so on.

D. Costing as an Aid to National Economy

A costing system that is efficiently delivers prosperity to the company enterprise, which increases government revenue. The overall economic development of a country occurs as a result of increased production efficiency. Controlling costs and eliminating waste and inefficiencies aided the advancement of the industry and, as a result, the nation as a whole.

Did you know?

State whether the following statement is "True" or "False"

Costing and Cost Accounting are the same thing:

- True
- False

Correct answer: False

Objectives of Cost Accounting

- To determine the cost of manufacturing per unit, such as cost per kilogramme, cost per metre, cost per litre, cost per tonne, and so on.
- Cost accounting aids in determining the selling price. Cost accounting allows for the accurate determination of production costs and the fixing of selling prices.
- Accounting for costs aids in cost control and cost reduction.
- Cost accounting enables the determination of divisional, activity-based, and unit-based profitability.
- Cost accounting also aids in the identification of waste, inefficiencies, and other flaws in the manufacturing processes/services provided.
- Cost accounting aids in the presenting of pertinent data to management, which aids in decision making. Decision making is a crucial function of management, and it necessitates the presentation of pertinent facts. Cost accounting allows for the systematic display of pertinent facts, allowing for decision making.
- Cost accounting also aids in the forecasting of future costs.

Advantages of Cost Accounting

Cost accounting assists management in determining the true cost of each operation by establishing objectives and standards of operation, comparing actual performance to standards, and identifying gaps or variances. If the deviations are negative, management takes remedial action to eliminate the variances. The following are the benefits of cost accounting to management, employees, creditors, the government, and the general public:

Advantages to the Management

(1) Makes planning easier.

(2) Aids in policy formulation.

(3) Helpful in establishing performance objectives and standards.

(4) Makes cost comparison easier.

(5) Contributes to successful cost control.

(6) Establishes the selling price.

(7) Determines the profit of each action.

(8) Assists management in making decisions.

(9) Aids in cost-cutting.

(10) Tracks performance.

Advantages to the Employees

(1) Ensures equitable incentive wage systems

(2) Promotes employment security, recognition, and advancement.

(3) Useful for determining staff operational efficiency.

Advantages to the Creditors

(1) Assesses a company's financial soundness and creditworthiness.

(2) Persuade investors to extend their credit lines.

(3) Builds trust among creditors, debentureholders, banks, and others

Advantages to the Government

(1) It helps to formulate business policies and national plans for industrial development.

(2) It makes it easier to assess taxation and create indexes.

(3) It assists in effective utilization of resources, i.e., materials, labour and machines etc.

(4) It assists the government for cost reduction, price fixation, export and import and granting subsidy etc.

Advantages to the Public

(1) It aids in the removal of waste and inefficiency.

(2) It makes it easier for customers to pay a reasonable price for things.

(3) It contributes to the advancement of national economic growth.

(4) Generates new job opportunities.

(5) Improves people's living conditions.

Limitations of Cost Accounting

- There is a lack of consistency in its procedures and processes.
- Costs are classified and interpreted in such a variety of ways that, despite having the same title, they are computed on different bases.
- When projections are made beyond the recorded cost data, the lack of consistency becomes more pronounced.
- Inherent limitations of cost accounting objections raised by different sections of business societies against the introduction of cost accounting.
- For newly founded industries, cost accounting is unnecessary. Furthermore, modern costing procedures are not appropriate for all businesses.
- Cost accounting system involves considerable amount of expenditure at the installation stage. Thus costing system is not economical for a small concern.

- Cost accounting necessitates the use of accounting techniques and record-keeping. These are far more detailed and difficult to complete than those required for financial accounting.

General Principles of Cost Accounting

1. Cause-Effect Relationship:

Each cost item should have a cause-and-effect link identified. Each expense item should be as closely tied to its cause as feasible, and the impact on the various departments should be determined. A cost should be shared exclusively by units that transit through the departments that incurred the cost.

2. Charge of Cost Only after its Incurrence:

Only costs that have been incurred should be included in the unit cost. For example, while the product is still in the manufacturing, the unit cost should not be paid along with the selling price.

3. Past Costs Should not Form Part of Future Costs:

Past costs should not be recovered from future costs since it would mislead not only the genuine results of the future period but also other assertions.

4. Exclusion of Abnormal Costs from Cost Accounts:

All costs incurred because of abnormal reasons (like theft, negligence) should not be taken into consideration while computing the unit cost. If done so, it will distort the cost figures and mislead management resulting in wrong decisions.

5. Principles of Double Entry Should be Followed Preferably:

To reduce the likelihood of a mistake or error, cost ledgers and cost control accounts should be kept on double entry principles as much as feasible. This will assure the accuracy of cost sheets and cost statements created for cost estimation and cost control.

Classification of Costs

The different bases of cost classification are:

- By time (Historical, Pre-determined).
- By nature, or elements (Material, Labour and Overhead).
- By degree of traceability to the product (Direct, Indirect).
- Association with the product (Product, Period).
- By Changes in activity or volume (Fixed, Variable, Semi-variable).
- By function (Manufacturing, Administrative, Selling, Research and development, Pre-production).
- Relationship with accounting period (Capital, Revenue).
- Controllability (Controllable, Non-controllable).
- Cost for analytical and decision-making purposes (Opportunity, Sunk, Differential, Joint, Common, Imputed, Out-of-pocket, Marginal, Uniform, Replacement).
- Others (Conversion, Traceable, Normal, Avoidable, Unavoidable, Total).

(1) Classification on the Basis of Time

(a) Historical Costs:

These expenses are calculated after they have been incurred. Such expenses are only available once the production of a certain item has been completed. They are objective in character and may be validated using actual operations.

(b) Pre-determined Costs:

These expenses are computed before they are incurred based on a characterization of all cost-influencing elements. Such expenses could include:

(i) Estimated costs: Costs are estimated before goods are produced; these are naturally less accurate than standards.

(ii) Standard costs: This is a particular concept and technique. This method involves:

(a) establishing predetermined norms for each cost factor and product;

(b) a comparison of the actual to the standard to determine variation;

(b) determining the reasons of such variations and taking corrective action.

(2) By Nature or Elements

There are three broad elements of costs:

(a) Material: The substance from which the product is made is known as material. It can be direct as well as indirect.

Direct material: It refers to those materials which become a major part of the finished product and can be easily traceable to the units. Direct materials include:

(i) All materials specifically purchased for a particular job/process.

(ii) All material acquired and latter requisitioned from stores.

(iii) Components purchased or produced.

(iv) Primary packing materials.

(v) Material passing from one process to another.

Indirect material: All material which is used for purposes ancillary to production and which can be conveniently assigned to specific physical units is termed as indirect materials. Examples, oil, grease, consumable stores, printing and stationary material etc.

(b) Labour: Labour cost can be classified into direct labour and indirect labour.

Direct labour: It is defined as salaries paid to workers involved in the manufacturing process whose time can be conveniently and cheaply traced to units of product. Wages paid to compositors in a printing press, workers in a foundry in a cast iron plant, and so on.

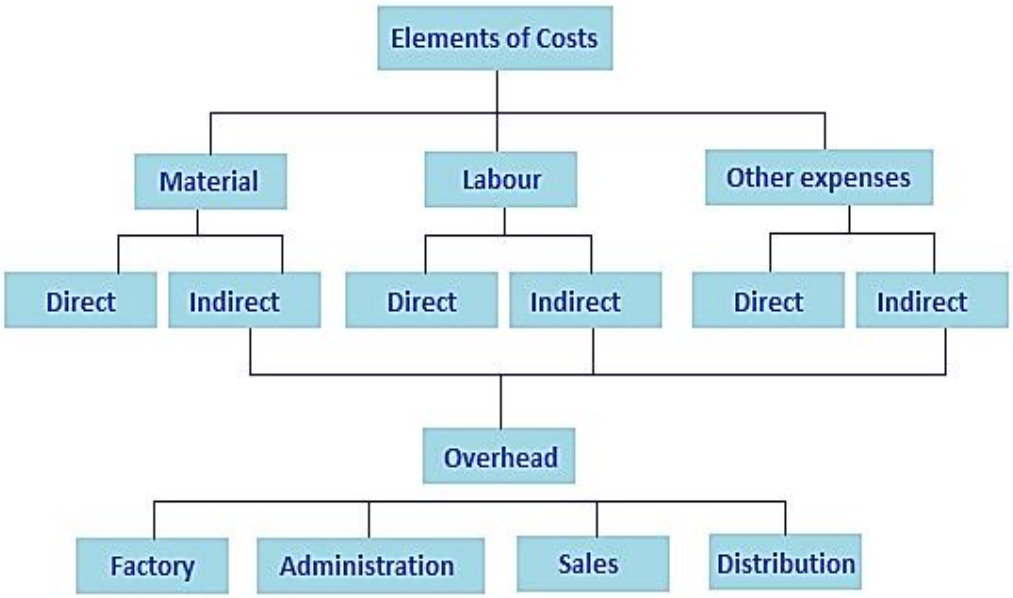
Indirect labour: it is defined as labour performed for the purpose of carrying out tasks ancillary to the provision of products or services. It is not practicable to link it to particular units of output. Wages of storekeepers, foremen, timekeepers, supervisors, inspectors, and so on are examples.

(c) Expenses: Expenses may be direct or indirect.

Direct expenses: These expenses are incurred on a specific cost unit and identifiable with the cost unit. Examples are cost of special layout, design or drawings, hiring of a particular tool or equipment for a job; fees paid to consultants in connection with a job etc.

Indirect expenses: These are expenses which cannot be directly, conveniently and wholly allocated to cost centre or cost units. Examples are rent, rates and taxes, insurance, power, lighting and heating, depreciation etc.

The various elements of cost can be illustrated by the following chart:



(3) By Degree of Traceability to the Products

Cost can be distinguished as direct and indirect.

Direct Costs:Direct costs are those that can be easily traced back to a product, costing unit, cost centre, or specific activity, such as the cost of wood used to make furniture. It is also known as traceable cost.

Indirect Costs: Indirect costs are difficult or impossible to link to a single product. They are common to various items, such as a plant manager's compensation. It is also known as common costs.

Costs may be direct or indirect in relation to a specific division or department. For example, all of the expenditures incurred in the Power House are indirect in terms of the main product, but the fuel cost or supervisory wages are direct in terms of the Power House itself. It is vital to understand why the cost is being calculated and whether it is related with a product, department, or activity. Direct costs can be assigned to a costing unit or cost centre. Indirect costs, on the other hand, must be allocated to other items if proper measurement techniques are not available. These may include a formula or base that is not quite right or exact.

(4) Association with the Product

Costs can be divided into two categories: product costs and period costs.

Product Costs: Product costs are those that can be traced back to the product and are included in inventory values. It includes the cost of direct materials, direct labour, and manufacturing overheads in a manufacturing company. The product cost is the total factory cost. Product costs are used to value inventories, which are recorded as an asset on the balance sheet until they are sold. The cost of goods sold for the product is transferred to the cost of goods sold account.

Period Costs: Period costs are incurred on a time basis, such as rent, salaries, and so on, and include numerous selling and administrative expenditures necessary to keep the business going. They are required to produce money, but they are not related with production and hence cannot be assigned to a product. They are charged to the time in which they occur and are classified as expenses.

Selling and administrative expenses are classified as period expenses for the following reasons:

(i) Most of these expenses are fixed in nature.

(ii) It is difficult to apportion these costs to products equitably.

(iii) It is difficult to determine the relationship between such cost and the product.

(iv) The benefits accruing from these expenses cannot be easily established.

A company's net income is determined by both product and period costs. Product costs are included in the product price and have no effect on income until the product is sold. Period costs are billed to the period in which they occur.

(5) By Changes in Activity or Volume

Fixed, variable, and semi-variable costs are the three types of costs.

Fixed Costs: The Chartered Institute of Management Accountants, London, defines fixed cost as "the cost which is incurred for a period, and which, within certain output and turnover limits, tends to be unaffected by fluctuations in the levels of activity (output or turnover)".

These expenses are incurred in order to offer physical and human facilities required for business operations. These expenses are incurred as a result of contractual obligations and management decisions. They emerge with the passage of time rather than with the production of goods and are expressed in terms of time. Rent, property taxes, insurance, supervisory pay, and so forth are examples.

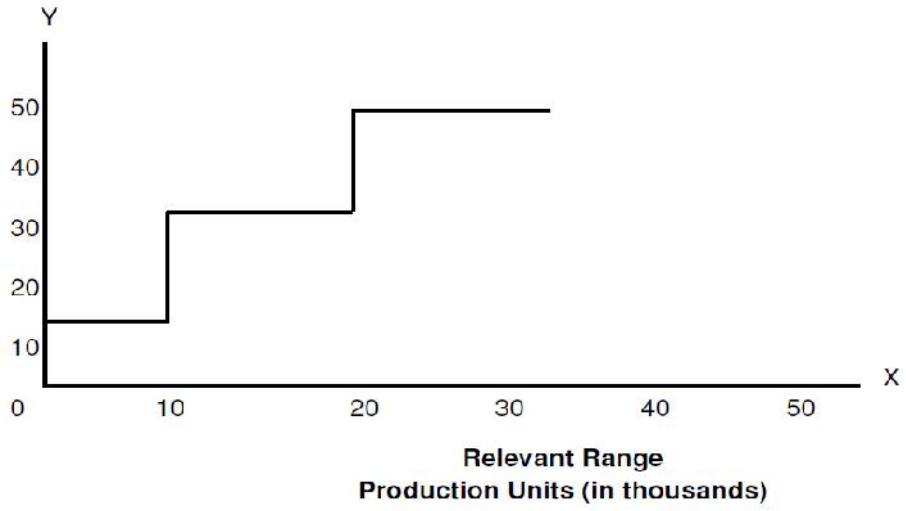
It is incorrect to assert that fixed expenses never vary. Depending on the circumstances, these costs may vary. Fixed refers to non-variability in relation to the relevant range. For the purposes of analysis, fixed costs can be divided into the following categories:

(a) Committed Costs: These are costs incurred to maintain specific facilities and cannot be eliminated quickly. The management has little or no control over these costs, such as rent, insurance, and so on.

(b) Policy and Managed Costs: Policy costs are incurred for implementing particular management policies such as executive development, housing, etc. Such costs are often discretionary. Managed costs are incurred to ensure the operating existence of the company e.g., staff services.

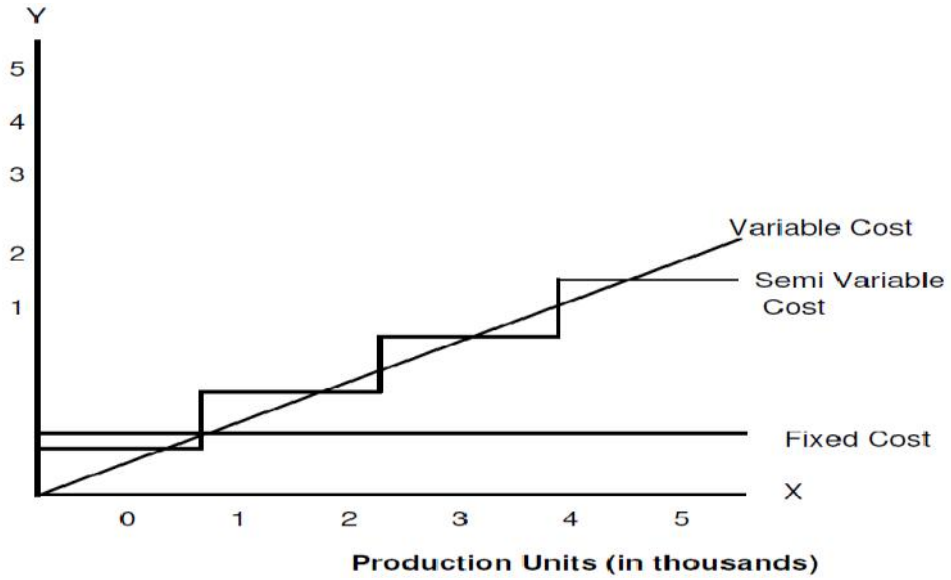
(c) Discretionary Costs: These are unrelated to operations and are under management's control. These costs are the consequence of unique policy decisions, new research, and so on, and they can be avoided or reduced to an acceptable level at the discretion of management.

(d) Step Costs: These are costs that are constant at one level of output and then increase by a fixed amount at a higher level of output.



Variable Cost: Variable costs are those that vary directly and proportionally with production, such as direct materials and direct labour. It should be noted that the variable cost per unit is constant, but the total cost varies with output levels. It is always expressed in terms of units rather than time. Management decisions might have an impact on cost-behavior patterns. Variability is a relative concept. If the conditions under which the variability was calculated change, the variability must be calculated again.

Semi-fixed (Semi-Variable) costs: Such costs contain fixed and variable elements. Because of the variable element, they fluctuate with volume and because of the fixed element; they do not change in direct proportion to output. Semi-variable costs change in the same direction as that of the output but not in the same proportion. Depreciation is an example; for two shifts working the total depreciation may be only 50% more than that for single shift working. They may change with comparatively small changes in output but not in the same proportion.



(6) Functional Classification of Costs

A firm serves several purposes. The following are some examples of functional costs:

(a) Manufacturing/production Costs:It is the cost of operating the manufacturing division of an undertaking. It includes the cost of direct materials, direct labour, direct expenses, packing (primary) cost and all overhead expenses relating to production.

(b) Administration Costs: They are indirect and covers all expenditure incurred in formulating the policy, directing the organisation and controlling the operation of a concern, which is not related to research, development, production, distribution or selling functions.

(c) Selling and Distribution Cost:The selling cost is the cost of attempting to create and increase demand, such as through marketing, market research, and so on. The distribution cost is the expense incurred that begins with making the package manufactured ready for dispatch and concludes with making the reconditioned packages available for re-use, such as warehousing, cartage, and so on. It includes the cost of transferring items to central or local storage. The expense involved in transporting things to and from prospective clients, as in the case of goods for sale or return, is also considered distribution cost.

(d) Research and Development Costs: These are the costs of discovering new ideas, processes, and products through experimentation and commercialising the results.

(e) Pre-production Cost:Certain expenses are spent when a new factory is established or a new product is introduced. There are practise runs. Such expenses are known as pre-production expenditures and are classified as delayed revenue expenditure. They are deducted from future production costs.

(7) Relationships with Accounting Period

Capital and revenue can both be considered costs.

Capital expenditure is classified as an asset since it provides benefits in the future. Revenue spending, on the other hand, benefits just the current period and is classified as an expense. When an asset is written off, capital expenses become cost to that extent. Only when capital and revenue are properly differentiated can the income of a specific period be accurately determined. Under all circumstances, it is impossible to discern between the two.

(8) Controllability

Costs are both controllable and uncontrollable.

Controllable Cost: The Chartered Institute of Management Accountants defines controllable cost as "cost which can be influenced by its budget holder".

Non-Controllable Cost:This is a cost that cannot be controlled at any level of managerial oversight. The distinction between the words is critical for cost accounting, cost control, and responsibility accounting.

A person at a specific organisational level can influence a controllable cost. Costs that are manageable are not completely controllable. Some costs can be controlled in part by one person and in part by another, for example, maintenance costs can be controlled by both the production and maintenance managers. The word "controllable costs" is frequently used to refer to variable costs, while non-controllable costs are defined as fixed.

Belkaoni has mentioned the following fallacies about controllable costs:

(i) All variable costs are controllable and fixed are not.

(ii) All direct costs are controllable and indirect costs are not.

(iii) All long-term costs are controllable.

The time factor and decision-making authority can sometimes make a cost manageable. All costs can be controlled if the time period is long enough. Delegation that is done correctly aids in the establishment of unambiguous responsibility and controllability. However, all costs can be handled by one or more people. The authority and responsibility for cost control are transferred at several levels, with the managing director ultimately liable for all costs.

(9) Costs for Analytical and Decision Making Purposes

(a) Opportunity Costs: Opportunity cost is the cost of selecting one course of action and the losing of other opportunities to carry out that course of action. It is the amount that can be received if the asset is utilised in its next best alternative.

Edwards, Hermanson and Salmonson define it as "the benefits lost by rejecting the best competing alternative to the one chosen. The benefit lost is usually the net earnings or profit that might have been earned from the rejected alternative"

Example: Capital is invested in plant and machinery. It cannot be now invested in shares or debentures. The loss of interest and dividend that would be earned is the opportunity cost.

Another example is when the owner of a business foregoes the opportunity to employ himself elsewhere. Opportunity costs are not recorded in the books. It is important in decision making and comparing alternatives.

(b) Sunk Costs: A sunk cost is one that has already been incurred and cannot be avoided by decisions taken in the future. As it refers to past costs, it is called unavoidable cost. The National Association of Accountants (USA) defines a sunk cost as "an expenditure for equipment or productive resources which has no economic relevance to the present decision making process". This cost is not useful for decision making as all past costs are irrelevant. CIMA defines it as the past cost not taken into account in decision making.

It has also been defined as the difference between the purchase price of an asset and its salvage value.

(c) Differential Cost: Differential cost has been defined as "the difference in total cost between alternatives, calculated to assist decision making". Differential cost is the increase or decrease in total costs resulting out of:

(a) Producing and distributing a few more or few less of products;

(b) A change in the method of production/distribution;

(c) An addition or deletion of a product or a territory; and

(d) The selection of an additional sales channel.

(d) Joint Costs: The processing of a single raw material results in two or more different products simultaneously. The joint products are not identifiable as different types of product until a certain stage of production known as the split-off point is reached. Joint costs are the costs incurred upto the point of separation. One product may be of major importance and others of minor importance which are called by-products.

Bierman and Djckman define it as: "Joint costs relate to a situation in which the factors of production by their basic nature result in two or more products. The jointness results from there being morethan one product, and these multi-products are the result of the methods of production or the natureof raw material and not of a decision by management to produce both".

(e) Common Costs: Common costs are those costs which are incurred for more than one product, job, territory or any other specific costing object. They are not easily related with individual products and hence are generally apportioned.

The National Association of Accountants defines the term as "the cost of services employed in the creation of two or more outputs which is not allocable to those outputs on a clearly justified basis".

It should be kept in mind that management decisions influence the incurrence of common costs e.g. rent of the factory is a common cost to all departments located in factory.

(f) Imputed Costs: Some costs are not incurred and are useful while taking decision pertaining to a particular situation. These costs are known as imputed or notional costs and they do not enter into traditional accounting systems.

Examples: Interest on internally generated funds, salaries of owners of proprietorship or partnership, notional rent etc.

(g) Uniform Costs: They are not distinct costs as such. Uniform costing signifies common costing principles and procedures adopted by a number of firms. They are useful in inter-firm comparison.

(h) Marginal Costs: It is the aggregate of variable costs, i.e., prime cost plus variable overheads. Thus, costs are classified as fixed and variable.

(i) Replacement Costs: This is the cost of replacing an asset at current market values e.g. when the cost of replacing an asset is considered, it means the cost of purchasing the asset at the current market price is important and not the cost at which it was purchased.

(j) Out of Pocket Cost: It involves payment to outsiders i.e. gives rise to Cash Expenditure as opposed to such costs as depreciation which don't involve any cash expenditure. Such costs are relevant for price fixation during recession or when make or buy decision is to be made.

(10) Other Costs

(i) Conversion Cost: It is the cost of a finished product or work-in-progress comprising direct labour and manufacturing overhead. It is production cost less the cost of raw material but including the gains and losses in weight or volume of direct material arising due to production.

(ii) Normal Cost: This is the cost which is normally incurred at a given level of output in the conditions in which that level of output is achieved.

(iii) Traceable Cost: It is the cost which can be easily associated with a product, process or department.

(iv) Avoidable Costs: Avoidable costs are those costs which under the present conditions need not have been incurred.

Example: (a) Spoilage in excess of normal limit; (b) Unfavourable cost variances which could have been controlled.

(v) Unavoidable Costs: Unavoidable costs are those costs which under the present conditions must be incurred.

(vi) Total Cost: This is the sum of all costs associated to a particular unit, or process, or department or batch or the entire concern. It may also mean the sum total of material, labour and

overhead. The term total cost however, is not precise, it needs to be made precise by using terms that indicate the elements of cost included.

(vii) Value Added: Strictly, it is not cost. It means the selling price of the product/service less the cost of materials used in the product or the service. Often depreciation is also deducted for ascertaining "value added".

Did you know?

A cost which does not involve any cash outflow is called_____ or_____

Correct answer: Notional cost, Imputed cost

Distinction between Financial Accounting and Cost Accounting

Both financial accounting and cost accounting are concerned with systematic recording and presentation offinancial data. Financial accounting reveals profits and losses of the business as a whole during a particularperiod, while cost accounting shows, by analysis and localization, the unit costs and profits and losses of differentproduct lines. The main difference between financial accounting and cost accounting are summarized below:

Financial Accounting	Cost Accounting
a) It provides the information about the business in a general way. i.e Profit and Loss Account, Balance Sheet of the business to owners and other outside partners.	a) It provides information to the management for proper planning, operation, control and decision making.
b) It classifies, records and analyses thetransactions in a subjective manner, i.eaccording to the nature of expense.	b) It records the expenditure in an objectivemanner, i.e according to the purpose forwhich the costs are incurred.
c) It lays emphasis on recording aspect withoutattaching any importance to control.	c) It provides a detailed system of control formaterials, labour and overhead costs withthe help of standard costing and budgetarycontrol.
d) It reports operating results and financialposition usually at the end of the year.	d) It gives information through cost reports tomanagement as and when desired.
e) Financial Accounts are accounts of thewhole business. They are independent innature.	e) Cost Accounting is only a part of the financial accounts and discloses profit or loss of eachproduct, job or service.
f) Financial Accounts records all thecommercial transactions of the businessand include all expenses i.e Manufacturing,Office, Selling etc.	f) Cost Accounting relates to transactionsconnected with Manufacturing of goodsand services, means expenses which enterinto production.
g) Financial Accounts are concerned withexternal transactions i.e.	g) Cost Accounts are concerned with internaltransactions, which do not

transactionsbetween business concern and third party.	involve any cashpayment or receipt.
h) Only transactions which can be measured inmonetary terms are recorded.	h) Non-Monetary information likes No of Units /Hours etc are used.
i) Financial Accounting deals withactualfigures and facts only.	i) Cost Accounting deals with partly facts andfigures and partly estimates / standards.
j) Financial Accounting do not provideinformation on efficiencies of various workers/Plant & Machinery.	j) Cost Accounts provide valuable informationon the efficiencies of employees and Plant &Machinery.
k) Stocks are valued at Cost or Market pricewhichever is lower.	k) Stocks are valued at Cost only.
l) Financial Accounting is a positive science asit is subject to legal rigidity with regarding topreparation of financial statements.	l) Cost Accounting is not only positive sciencebut also normative because it includestechniques of budgetary control andstandard costing.
m) These accounts are kept in such away tomeet the requirements of Companies Act2013 as per Sec 128 & Income Tax Act, 1961Sec 44AA.	m) Generally Cost Accounts are keptvoluntarily to meet the requirements of themanagement, only in some industries CostAccounting records are kept as per theCompanies Act.

Both cost accounting and financial accounting are concerned with systematic recording and presentation of financial data. The two system rest on the same principles concerning debit and credit and have the same sources of recording the transactions.But cost accounting is much more detailed than financial accounting. This is because in financial accounting, profit or loss is ascertained for the business as a whole whereas in cost accounting, detailed cost and profit data for various parts of business, like departments, products, etc., are shown.

Example: Numerical

Suppose a company is manufacturing three products- X,Y and Z. Under financial accounting and cost accounting, the following types of statements are prepared:Firstly, Under financial accounting- A profit and loss account is prepared to compute profit as shown:

Profit and Loss account for the period……..

	Rs.		**Rs.**
To Materials	75000	By sales	150000
To Wages	20000		
To Other expenses	25000		

To Profit (Balance figure)	30000		
	150000		**150000**

The statement shows in last slide depict that the total profit is Rs. 30000 but it does not disclose the details of profit/loss of each of the products X,Y and Z in the total profit. This is revealed by cost accounting.Now, Under cost accounting- A detailed statement is prepared as follows:

Statement of Cost and Profit for the period…….

	Total	**Product X**	**Product Y**	**Product Z**
Materials	75000	40000	12000	23000
Wages	20000	10000	5000	5000
Other expenses	25000	20000	3000	2000
Total Cost	**120000**	**70000**	**20000**	**30000**
Sales	150000	96000	28000	26000
Profit/Loss(-)	**30000**	**26000**	**8000**	**(-) 4000**

Conclusion

The statement prepared under cost accounting shows that in total profit of Rs. 30000. Product X contributed Rs. 26000 and Product Y Rs 8000, whereas Product Z gave a loss of Rs. 4000.

When the firm's management gets this information, it will investigate to find out the reason for loss in Product Z.

If product Z cannot be made profitable, its production should be stopped to improve the overall profit picture of company. However, this type of information is not revealed by financial accounting

Summary

- Cost is the amount of expenditure (actual or notional) incurred on, or attributable to a specified thing or activity.
- Costing is the techniques and processes of ascertaining costs.
- Cost accounting is the establishment of budgets, standard costs and actual costs of operations, processes, activities or products, and the analysis of variances, profitability or the social use of funds.
- Principles of cost accounting are - cost should be related to its cause; cost should be charged only after it has been incurred; the convention of prudence should be ignored; abnormal costs should be excluded from cost accounts; past costs not to be charged to future period; principles of double entry should be applied wherever necessary.
- Costing is an aid to management, creditors, employers and national economy.
- Costs have been classified by - time, nature or elements, degree of traceability to the product, association with the product, changes in activity or volume, function, relationship

with accounting period, controllability, cost for analytical and decision-making purposes, etc.

- Cost centre means, a production or service location, function, activity or item of equipment whose costs may be attributed to cost units.
- Cost unit is a unit of product or service in relation to which costs are ascertained.
- Financial accounting and cost accounting are distinct from each other.

Keywords

- Cause – effect relationship
- ***Cost accounting***
- Cost driver
- Financial accounting
- Product cost
- Period cost
- Sunk cost
- ***Market Price:*** **Price of a commodity in the market.**
- ***Physical Unit:*** **A unit of measurement.**

Self Assessment

1. Cost Accounting is not needed by a non-profit organisation such as a hospital.

A. True

B. False

2. Notional costs and imputed costs mean the same thing.

A. True

B. False

3. Rent on owned building is included in cost accounts (June, 2009).

A. True

B. False

4. Notional costs are not included while ascertaining costs.

A. True

B. False

5. Conversion costs and overheads are interchangeable terms.

A. True

B. False

6. The method of costing used in a refinery is "operating costing". (December,2010)

A. True

B. False

7. Cost reduction is cost control. (December, 2008)

A. True

B. False

8. Cost accounting is a branch of financial accounting. (December, 2008)

A. True

B. False

9. In cost accounting, like financial accounting, absolute accuracy is aimed at.

A. True

B. False

10. All materials and stores such as lubricating oil, will be direct.

A. True

B. False

11. Opportunity cost is recorded in the books of account. (December,2010)

A. True

B. False

12. Differential cost is the change in the cost due to change in _____ from one level to another.
13. Management accounting is primarily concerned with _____.
14. In Cost Accounting stock are valued at _____ only.
15. Profit is the resultant of two varying factors viz _____ and _____.
16. _____ cost are historical costs which are incurred in the past.

17. Joint Cost is suitable for-

A. Infrastructure Industry

B. Ornament Industry.

C. Oil Industry

D. Fertilizer Industry

18. Cost units of Hospital Industry is-

A. Tonne

B. Student per year

C. Kilowatt Hour

D. Patient Day

19. Cost units of Automobile Industry is-

A. Cubic meter

B. Bed Night

C. Number of Call

D. Number of vehicle

20. Identify the Example/s of Non-Production costs includes:

A. Administrative costs
B. Selling and Distribution costs
C. Finance costs
D. All of the above

21. Out of the followings Production costs includes:

i) Direct materials

ii) Direct labour

iii) Direct expenses

iv) Variable production overheads

v) Fixed production overheads

Identify which of the above are included?

A. (I) (II) (IV)
B. (I) (II) (III)
C. Only (I) and (II)
D. All of the above

22. The cost per unit of variable costs _____.

A. Increases with increase in volume
B. Remains constant
C. Constant to a certain volume
D. None

23. Sales and distribution costs include:

A. The wages and salary costs of all employees working in the selling and distribution departments, including sales commissions for sales representatives
B. Advertising costs and other marketing costs
C. Operating costs for delivery vehicles
D. All of the above

Answer for Self Assessment

l.	B	2.	A	3.	A	4.	B	5.	B
6.	B	7.	B	8.	B	9.	B	10.	B
11.	B	12.	Activity	13.	Management	14.	cost	15.	Sales,

cost

16. sunk 17. C 18. D 19. D 20. D

21. D 22. D 23. D

Review Questions

1. What do you understand by Cost Accounting?

2. Define the terms Cost Centre and "Cost Unit."

3. What are the important objectives of Cost Accounting?

4. What are the differences between financial account and cost accounting?

5. Distinguish between cost accounting and management accounting.

6. What are the factors to be considered for installation of good costing system?

7. Describe the practical difficulties in installation of costing system.

8. Cost Accounting has become an essential tool of management. Give your comments on this statement.

9. Indicate the various advantages of Cost Accounting.

10. Define costing and discuss briefly its objects and advantages.

11. What are the limitations of cost accounting?

12. Write short notes on :

(a) Costing;

(b) Cost Accountancy;

(c) Cost Control;

(d) Cost Reduction;

(e) Cost Unit and Cost Centre.

13. Write short notes on the following:

(a) Out of Pocket Cost.

(b) Sunk Cost

(c) Opportunity Cost

(d) Imputed Costs

14. Cost may be classified in a variety of ways according to their nature and the information needs ofthe management" Discuss.

15. What methods of costing would you apply in the following industries ? State how cost should beascertained in each case ?

(i) Building,

(ii) Colliery,

(iii) Soap works,

(iv) Motor cars,

(v) Radio sets,

(vi) Ship building.

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Web Links

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Unit 02: Cost Sheet

CONTENTS

Objectives

After studying this unit, you will be able to:

- Understand the Concept of Single or Output Costing.
- Familiarize with Applicability of Single or Output Costing.
- Understand Treatment for Raw Material, Work in Progress & Finished Goods, and Treatment for Scrap.
- Explain the importance of cost sheet
- Identify the various steps in the preparation of cost sheet.

Introduction

Cost in any organization plays an important role in determining its profitability. Cost ascertainment is essential for cost control and cost management. Cost ascertainment is the determination of cost for a unit, product, process or center based on actual data. There are various methods of costing like job costing, unit costing, batch costing, process costing, operating costing and contract costing which are helpful in as certaining the cost of a job, product, batch, process, service and contract respectively. The following chapter will emphasis on one of the methods of costing for a unit or product which is called as Single, Unit or Output Costing.

2.1 Meaning of Single or Output Costing

In output costing method, the cost per unit of output or production is ascertained. The cost per unit is derived by dividing the total cost with the total quantity produced. This type of costing is applied where the output is in identical quantitative units and manufacturing process is continuous. In this method, the various cost elements like prime cost, work/factory cost, office cost and cost of sales are determined so as to arrive at the total cost of production. There are two approaches to output costing method, i.e. cost sheet and production account. A statement of cost or cost sheet describes various components of cost at various stages. Another alternative to present the cost elements in vertical form account is the production statement or account. Both cost sheet and production account presents the same information with one major distinction. The production account shows sales and profit or loss figures along with the cost of production. The output costing method is useful in ascertaining the total cost and per unit cost of production that can be compared with the past years figures, in the same cost sheet, by the management for decision making. Moreover, it helps the management in deciding the final selling price for the product.

2.2 Industries Using Single or Output Costing

Output costing is widely used by the manufacturing units producing a single product or identical products on mass basis with the consistent manufacturing processes. Such concerns also have cost units that are physical and natural. The various major industries using output costing methods are Sugar Industry, Paper Industry, Mining Industry, Cement Industry, Breweries Industry and Flour Milling Industry etc.

Name and Cost Unit of Specific Industries

Following are the cost unit of some specific industries:

	Name of the industry	Cost unit
1	Textile industry	Per meter
2	Brick industry	Per 1000 brics
3	Milk industry	Per liter
4	Paper industry	Per rim or kg
5	Sugar industry	Per Quintal
6	Cement industry	Per Ton
7	Wine industry	Per Gallon
8	Mine industry	Per Ton
9	Coal industry	Per Ton
10	Steel industry	Per Ton

Definition

Unit costing or output costing is that technique of cost accounting in which the cost of production of a unit of output and total cost of production is ascertained. This method is also called the single costing because the process of production comprises only one stage or a single operation.

Walter W. Bigg, "Unit costing method is a method of costing applied to ascertain the cost per unit of a production where standard and identical products are manufactured."

J. R. Batliboi, "Unit costing or output costing may be defined as, Single or output cost system is used in business were a standard product is turned out and it is desired to find out the cost of a basic unit of production."

The Institute of Cost and Management Accountants, London"output costing is the basic costing method applicable where goods or services result from a series of continuous or repetitive operations or processes to which costs are charged before being averaged over the units produced during the period."

2.3 Features of Output Costing

(1) Output costing is the method of costing adopted in concerns where there is a production of single product or a few grades of the same product differing only in size, shape or quality by continuous process of manufacture. The units of production or output are identical and the costs of units are physical and natural.

(2) Under this method, the cost per unit of output, say, per ton, per barrel, per kilogram, per meter, per quintal, per bag, etc. is ascertained. The cost per unit of output is ascertained by dividing the total cost incurred on a product during a given period of time by output produced during the period.

(3) Equality of cost is an important feature of this method. That is, under this method, cost units, which are identical, will have identical cost.

(4) Under this method, the cost of product is ascertained at the end of the accounting period.

(5) cost information relating to a product may be presented in the form of either cost sheet or production account.

(6) the cost collection and the cost ascertainment are quite simple.

(7) The cost per unit of output, determined under single. Costing enables the management to make real comparison between different periods and between different firms within the same industry, as the unit of output is a common factor between different periods and between different firms within the same industry.

2.4 Objectives of Output Costing

(1) To ascertain the total cost of the output as well as the cost per unit of output.

(2) To ascertain the profit or loss on production.

(3) To analyze the expenditure by nature, classify them into element of cost and know the extent to which each element of cost contributes to the total cost.

(4) To facilitate comparison of the cost of one period with the cost of another period to know the efficiency or otherwise of the production.

(5) To facilitate the preparation of tender or quotation.

(6) To control the cost of the product through comparative study of the costs of any two periods or through the comparison of the actual costs with the pre-determined standard cost.

2.5 Important Items Regarding Preparation of Statement of Cost and Cost Sheet

1. Normal Loss of Materials

This type of loss is unavoidable and arises due to the nature of material. For example – loss by evaporation of liquid materials, loss due to loading and unloading of materials, etc.

This loss is not deducted from the cost of material rather it is charged to the output because it is a principle of costing that all normal expenses which are necessarily to be incurred should be included in the cost of production.Therefore, in order to absorb normal material losses in cost, the rates of usable materials are inflated so that such losses are covered. In other words, such normal loss should be ignored and this will get automatically charged to output.

2. Abnormal Loss of Materials

Abnormal losses are those losses which arise due to abnormal reasons such as loss by theft, loss by fire, careless handling etc. The cost of materials abnormally lost should be deducted from the value of materials purchased so that output is charged only for the materials used in production. Abnormal losses are charged to Costing Profit and Loss Account.

3. Wages of Normal Idle Time

Normal idle time is inherent in any work situation and cannot be reduced. The cost of normal idle labour time is charged to the cost of production. Hence, wages of normal idle time is not subtracted from the labour cost.

4. Wages of Abnormal Idle Time

Abnormal idle time arises due to unanticipated causes such as strikes, lockouts, fire, accidents, major machine break-down, earthquakes, etc. Loss of time due to such abnormal causes cannot be planned. Such causes are sudden and non-frequent.The cost of abnormal idle time is not included in cost of production. The wages paid for abnormal idle time should be debited to Costing P/L A/c. Hence, wages of abnormal idle time is subtracted from the labour cost.

5. Sale of Scrap, Defective, Salvage or Residue

If clear information is given, then adjustment of these sales will be made accordingly. But, if it is not clear that what the nature of scrap defective, etc., the sale value of scrap etc. is deducted before computing factory cost.

6. Defective or Rejected Work

Sometimes, under production process there might be defective goods. The production not conforming to the standard set is known as defective. If such goods cannot be rectified, then it may be sold in the market at lower rate.Whatever the amount is collected from such sale is deducted from the factory cost. Similarly, the defective units are also deducted from the number of units produced.

On the other hand, the defective units which can be rectified by incurring extra expenses, then such extra expenses incurred on such a rectification can be added in factory overhead as an extra factory overhead. After that the saleable units and their costs can be determined.

7. Cash Discount and Trade Discount

Cash discount is not considered as the part of cost of production, since it is of financial nature.Whereas, trade discount is treated as sales promotion expense and is included in selling and distribution expenses or may be deducted from gross sales.

8. Allocation of Joint Expenses

In absence of clear-cut information factory overhead is allocated on the basis of wages ratio and office and administration expenses and selling and distribution expenses on the basis of works cost ratio.

9. Packing Charges

Treatment of packing charges depends upon its nature. If, in absence of packing, goods cannot be sold, then it should be treated as direct expense (i.e. packing of mustard oil etc.).Packing charges in respect of partly finished goods are considered as factory overhead. In the same way, packing expenses concerned with finished goods are included in selling and distribution expenses.

Did you Know?

State whether the following statement is "True" or "False"

Cost figures in the cost sheet cannot be compared with the past year figures in thesame cost sheet for analysis purpose by the management.

- True
- False

Correct answer: False

2.6 Cost Collection or Cost Accumulation

1. Materials:

As materials both direct and indirect are issued to production against properly authorized material requisitions. The direct and indirect material costs can be ascertained through material requisitions.Through the analysis of material requisitions, the quantities of direct and indirect materials issued to production can be ascertained, and on the basis of the prevalent method of pricing material issues, the direct and indirect material costs can be ascertained.

Accounting of Materials:

Materials are dealt in cost accounting as follows:
(i) The direct material costs are taken as a part of Prime Cost.
(ii) Indirect material costs are charged to Factory Overheads.
(iii) Normal loss of materials is adjusted by inflating the issue price of materials.

2. Labour:

The labour costs are collected periodically through pay rolls kept separately for each section or type of work without the detailed job cards or chits required in job costing.

Treatment of Labour Cost in Cost Accounting:

Labour cost is dealt as follows:
(i) Direct labour costs are treated as a part of Prime Cost.
(ii) Indirect labour costs are charged to Factory Overheads.

3. Direct Expenses:

Direct expenses or chargeable expenses are separately collected from the financial record where the actual direct expenses incurred are recorded.

The main expenses under this head are:

(i) Royalty
(ii) Architect and surveyor's fees
(iii) Expenses of drawing and designs
(iv) Excise duty etc.

Treatment:

It is treated as a part of Prime Cost.

4. Overheads:

Where cost finding is undertaken at the end of long interval, i.e., at the end of the year, after the overheads incurred are actually recorded in the financial book, the actual overheads incurred during the year are collected from the financial records.

The actual overheads collected from the financial records are analyzed into three broad categories, viz.:

(1) Factory Overheads,
(2) Office and Administration Overheads, and
(3) Selling and Distribution Overheads and are treated as such for cost finding.

2.7 Components of Cost and Treatment for Stock & Scrap

Components of Cost

The total cost has been divided into sub components representing the cost at various stages. Following are the various components of cost shown in the cost sheet or production account:

Prime Cost: Prime cost is also named as "Direct Cost", "Flat Cost", "Basic Cost" or "First Cost". It is the summation of all direct costs relating to production, i.e. direct material, direct labour and direct expenses.

Factory Cost: Factory cost is also named as "Work Cost", "Manufacturing Cost" or "Production Cost". It is the summation of prime cost and factory overheads that includes indirect material, indirect labour and indirect expenses of factory. Factory cost includes all the direct cost relating to product and the indirect cost relating to factory.

Office Cost: Office Cost is also named as "Cost of Production" or "Administration Cost". Office cost is the summation of factory or work cost and office & administrative overheads. Any cost

related to sales and distribution is not the part of office and administrative cost as they form a separate category. This total cost of production is adjusted with the opening and closing stock of finished goods to get the cost of goods sold.

Cost of Sales: It is also named as "Total Cost". It is derived by adding selling and distribution overheads to the cost of goods sold.

Example: **Numerical**

Ashwani Industries is into assembling of chairs and has certain expenditures that are mentioned below. You are required to determine the prime cost.

Particulars	**(Rs.)**
Cost of chair frames	1,20,000
Cost of cushions	75,000
Cost of nuts and bolts	20,000
Wages paid for the assembling of chairs	30,000

Ans: Cost of all Direct Material = Cost of chair frames + Cost of cushions + Cost of nuts and bolts= 1,20,000 + 75,000 + 20,000 = Rs. 2,15,000
Cost of Direct Labor = Wages paid for the assembling of chairs = Rs. 30,000
Prime Cost = Direct Material + Direct Labour = 2,15,000 + 30,000 = Rs. 2,45,000

Treatment for Raw Material:The actual value of the raw material consumed is to be included in the cost sheet. Thus, the determinationof value of raw material consumed becomes important. For the same, the opening and closing stockof raw material is adjusted with the raw material purchased during the year to arrive at the actual valueof raw material consumed.

Value of raw material consumed = Opening stock of raw material + Purchase of rawmaterial – Closing stock of raw material

Illustration 1:

Following are the cost details of Tehran Industries. You are required to calculate the factory cost.

Particulars	**(Rs.)**
Direct material	2,30,000
Labour cost for manufacturing products	1,25,000
Direct expenses	65,000
Rent for factory	1,00,000
General consumables	40,000
Salary of factory manager	32,000

Ans: Prime Cost = Direct material + Labour cost for manufacturing products + Direct expenses
= 2,30,000 + 1,25,000 + 65,000 = Rs. 4,20,000
Factory Overheads = Rent for factory + General consumables + Salary of factory manager
= 1,00,000 + 40,000 + 32,000 = 1,72,000 Rs.
Factory Cost = Prime Cost + Factory Overheads
= 4,20,000 + 1,72,000 = Rs. 5,92,000

Illustration 2:

Calculate the office cost from the following cost data:

Particulars	**(Rs.)**
Direct material	12,000
Direct Labor	5,000
Direct expenses	2,000
Power and Fuel	3,500
Office Stationary	1,100
Office Telephone charges	200

Ans: Prime Cost = Direct material + Direct labour + Direct expenses
= 12,000 + 5,000 + 2,000 = Rs. 19,000
Factory Cost = Prime Cost + Power and fuel
= 19,000 + 3,500 = Rs. 22,500
Office Cost = Factory Cost + Office stationery + Office telephone charges
= 22,500 + 1,100 + 200 = Rs. 23,800

Illustration 3:

Find out the value of raw material consumed for M/s Sameer from the following given information:

Particulars	(Rs.)
Opening stock of raw material	55,000
Closing stock of raw material	15,000
Purchase of raw material	80,000

Ans: Value of raw material consumed = Opening stock of raw material + Purchase of raw material – Closing stock of raw material= 55,000 + 80,000 – 15,000 = Rs. 1,20,000

Treatment for Work-in-Progress:Work-in-Progress is that part of stock which has not been completely manufactured. It requires somemore work to be done for becoming the finished goods. They are in such a form which is not yet readyto be sold. It is usually abbreviated as "WIP". It can be valued at prime or factory cost basis. But it isincorrect to value it at prime cost as many of the work overhead expenses get incurred on such goods.Work in progress is to be adjusted before calculating the net factory or work cost. The opening stockof WIP is added and closing stock of WIP is subtracted from gross work cost before arriving at theactual or network or factory cost.

Example: **Numerical**

Show the treatment of Work-in-Progress in the cost sheet from the available given information:

Particulars	(Rs.)
Prime cost	23,50,000
Factory Overhead	8,53,000
Opening WIP	2,10,000
Closing WIP	1,60,000

Ans: Gross Work Cost = Prime cost + Factory overheads
= 23,50,000 + 8,53,000 = Rs. 32,03,000
Work or Factory Cost = Gross Work Cost + OpeningWIP – Closing WIP
= 32,03,000 + 2,10,000 – 1,60,000 = Rs. 32,53,000

Treatment for Finished goods:Finished goods are the goods that have been manufactured completely from the production's point ofview. It is valued at the cost of production as no further cost is to be added at the factory level. Theadjustment for finished goods is of key importance for determining the cost of goods sold. We canarrive at the cost of goods sold by adding opening stock of finished goods and subtracting closingstock of finished goods from cost of production.

Cost of Goods Sold = Cost of production + Opening stock of finished goods – Closing stockof finished goods

Illustration 4:

Find out the Total cost and Factory overheads for Budhiraj& Sons from the following given information:

Particulars	(Rs.)
Prime cost	45,400
Factory Cost	52,600
Office Overhead	12,500

Opening stock of finished goods	1,000
Closing stock of finished goods	1,500
Salesman salary	5000

Ans: Factory Overheads = Factory Cost – Prime Cost
= 52,600 – 45,400 = Rs. 7,200
Cost of Production = Factory Cost + Office overheads
= 52,600 + 12,500 = Rs. 65,100
Cost of Goods Sold = Cost of Production + Opening stock of finished goods – Closing stock of finished goods
= 65,100 + 1,000 – 1,500 = Rs. 64,600
Factory Cost = Prime Cost + Factory Overheads
Total Cost = Cost of Goods Sold + Salesman Salary
= 64,600 + 5,000 = Rs. 69,600

Treatment for Scrap:Scrap is a left over after the production or manufacturing process of a product. It is of small valuewhich can be sold off to recover some cost. Scrap arises from low quality of raw material and faults inproduct designing, manufacturing processes etc. The amount realised from the sale of scrap is to beadjusted and should be deducted either from factory overheads or gross work cost.

In case, some material (before being used) are found to be defective and considered to be scrap, then itshould be adjusted with the value of raw material used and is to be reduced from the cost of materialused. Any loss on sale of such material should be charged to the costing P&L account.

2.8 Cost Sheet Approach for Output Costing

The cost data can be presented in two major ways for the purpose of ascertaining, controlling andcomparing total and per unit cost.

Cost Sheet/Cost Statement:

A cost sheet is statement which shows the break-up and build-up of costs, it is a document which provides for the assemblyof the detailed cost of a cost centre or a cost unit.

C. I. M. A. London, "Cost sheet is a document which provide for the assembly of estimated details cost in respect of cost center and cost unit."

Wheldon, "Cost sheets are prepared for the use of management and consequently, they must include all the essential details which will assist the manager in checking the efficiency of production."

Cost Sheet or a Cost Statement is "a document which provides for the assembly of theestimated detailed elements of cost in respect of cost centre or a cost unit." The analysis for the differentelements of cost of the product is shown in the form of a statement called "Cost Sheet." The statementsummarises the cost of manufacturing a particular list of product and discloses for a particular period:

(I) Prime Cost;

(II) Works Cost (or) Factory Cost;

(III) Cost of Production;

(IV) Total Cost (or) Cost of Sales.

Cost sheet is a statement that presents the total and per unit cost of production with regard to any costunit or cost centre for a specific period of time. It is prepared in a tabular form presenting the variouscomponents of cost at various stages. It can be prepared on weekly, monthly, quarterly, half yearly oryearly basis. Cost sheet helps the accountant to determine the selling price by ascertaining the cost.Cost sheet is also a managerial tool for cost manager to judge the efficiency of production. The variouscost components may be compared with the budgeted figures to keep them under control. Openingand closing stock variations in the raw material, work in progress and finished goods are also adjustedin the statement. A cost sheet illustrates the following things:

1. Total Cost of Production

2. Total Quantity of Production

3. Per Unit Cost of Total Quantity Produced

4. Components of Cost, i.e. Prime Cost, Work Cost etc.

5. Opening and Closing Raw Material, WIP and Finished Goods

6. Direct and Indirect Classification of Cost

Importance of Cost Sheet

(1) It provides for the presentation of the total cost on the basis of the logical classification.

(2) Cost sheet helps in determination of cost per unit and total cost at different stages of production.

(3) Assists in fixing of selling price.

(4) It facilitates effective cost control and cost comparison.

(5) It discloses operational efficiency and inefficiency to the management for taking corrective actions.

(6) Enables the management in. the preparation of cost estimates to tenders and quotations.

2.9 Methods of Cost Presentation Under Unit Costing

Types of Cost Sheet

Cost Sheet maybe of following two type-

Historical Cost Sheet: This cost sheet is prepared on the historical cost figure i.e. on the basis of cost actually incurred during a period. It is prepared at a regular interval of time, say weekly, monthly, quarterly, half yearly and yearly.

Estimated Cost Sheet:Such a cost sheet is prepared prior to the actual commencement of the period of production. Estimated cost sheet is prepared for the purpose of quotation or tender price.

2.10 Format and Illustrations of Cost Sheet

Cost Sheet (or Statement of Cost) for the period..... No. of unit produced		
Particulars	**Total cost**	**Cost per unit**
Direct material		
Direct Labor		
Direct expenses		
Prime cost		
ADD: Work Overhead		
Work Cost		
ADD: Administrative overhead		
Cost of production		
ADD: Selling and distribution overhead		
Total Cost/cost of sale		
Add: Profit		
Selling Price		

Detailed Format of cost sheet

Particulars	**Amount**	**Amount**

Opening Stock of Raw Material	***	
Add: Purchase of Raw materials	***	
Add: Purchase Expenses	***	
Less: Closing stock of Raw Materials	***	
Less;- Sale of Material Scrap (if any)	***	
Raw Materials Consumed	***	
Direct Wages (Labour)	***	
Direct Expenses	***	
Prime cost		***
Add :- Factory Over Heads:		
Factory Rent	***	
Factory Power	***	
Indirect Material	***	
Indirect Wages Supervisor	***	
Salary	***	
Drawing Office Salary	***	
Factory Insurance	***	
Factory Asset Depreciation	***	
Less:- Sale of Factory Scrap (If any)		
Add: Opening Stock of WIP	***	
Less: Closing Stock of WIP	***	
Works cost		***
Add:- Office and Administration Overheads:-		
Office Rent	***	
Asset Depreciation	***	
General Charges	***	
Audit Fees	***	
Bank Charges	***	
Counting house Salary	***	
Other Office Expenses	***	
Cost of Production		***
Add: Opening stock of Finished Goods	***	
Less: Closing stock of Finished Goods	***	
Cost of Goods Sold		***
Add:- Selling and Distribution OH:-		
Sales man Commission	***	
Sales man salary	***	
Traveling Expenses	***	
Advertisement	***	
Delivery man expenses	***	
Bad Debts	***	
Cost of Sales /Total Cost		***
Add: Profit		***
Sales		***

Illustration 5

Prepare a cost sheet of the following data relating to the manufacture of Jeans:

Number of Jeans manufactured during the month	**1000**
	Rs.
Direct materials consumed	20,000
Direct labour	8,000
Indirect labour (in factory)	2,500
Supervision costs (in factory)	1,000
Factory premises rent	1600
Factory lighting	600
Oil for machines	100

Depreciation of machines	500
Office overheads	8,000
Office salaries	2,000
Misc. office expenses	1,000
Selling and distribution overheads	6,000
Note: A profit margin of 20% on the total cost of goods is expected on the sale of Jeans.	

Answer: **Cost Sheet (for the period)**

Particulars	**Total**	**Per Unit**
Direct materials	20000	
Direct labour	8000	
Prime Cost	**28000**	**28**
Work/Factory overhead:		
Indirect Labor	2,500	
Supervision cost	1,000	
Factory lighting	600	
Oil for machines	100	
Depreciation of Machines	500	
Factory rent	1,600	**6.30**
Work Cost	34,300	34.30
Office and administrative overhead:		
Office overhead	8,000	
Office salaries	2,000	
Misc. expenses	1,000	11
Cost of production	45,300	45.30
Selling and distribution overheads:	6000	6
Total cost	51,300	51.30
Profit 20% of total cost	10,260	10.26
Sales	61,560	61.56

Illustration 6:

From the following information for the month of January, prepare a Cost Sheet

Particulars	**Rs.**
Direct materials consumed	57,000
Direct labour	28,500
Factory rent and Rates	2,500
Office rent and Rates	500
Plant repair and maintenance	1,000
Factory heating and lighting	1,250
Factory manager's salary	400
Office salaries	1600
Director's remuneration	1,500
Telephone and Postage	200
Printing and Stationary	100
Legal Charges	150
Advertisement	1,500
Salesman's salary	2,500

Showroom rent	500
Sales	1,16,000

Answer: **Cost Sheet for the month of January**

Particulars		**Total**
Direct materials		57,000
Direct labour		28,500
Prime Cost		85,500
Work/Factory overhead:		
Factory rent and rates	2,500	
Plant repair and maintenance	1,000	
Plant Depreciation	1,250	
Factory heating and lighting	400	
Factory manager's salary	2,000	7,150
Work Cost		92,650
Office and administrative overhead:		
Office salaries	1,600	
Director Remuneration	1,500	
Telephone and Postage	200	
Office rent and rates	500	
Printing and Stationary	100	
Legal Charges	150	4,050
Cost of Production		96,700
Selling and Distribution overhead:		
Advertisement	1,500	
Salesmen's Salary	2,500	
Showroom rent	500	4,500
Total Cost/Cost of sales		1,01,200
Profit		14,800
Sales		1,16,000

Illustration 7:

The following particulars have been extracted from the books of Bombay Manufacturing Co. Ltd., Calcutta, for the year ended 31 March 2022

Particulars	**Rs.**
Stock of material as on 1 April, 2021	47,000
Stock of material as on 31 March, 2022	50,000
Material purchased	2,08,000
Drawing office salaries	9,600
Counting office salaries	14,000
Carriage inward	8,200
Carriage outward	5,100

Cash discounts allowed	3,400
Bad debt written off	4,700
Repair of plant, machinery and tool	10,600
Rent, rates, taxes and insurance (factory)	3,000
Rent, rates, taxes and insurance (office)	1,000
Travelling expenses	3,100
Travelling salaries and commission	8,400
Production wages	1,40,000
Depreciation on plant and tool	7,100
Depreciation written off on furniture	600
Director's fee	6,000
Gas and water charges (factory)	1,500
Gas and water charges (office)	300
General charges	5,000
Manager's salary	12,000

Out of 48 working hours in a week, the time devoted by the manager to the factory and office was on an average 40 hours and 8 hours respectively throughout the accounting year. You are required to prepare a Cost Sheet.

Answer: **Cost Sheet for the year ending 31 March, 2022**

Particulars		**Total**
Raw material consumed:		
Stock of material (opening)	47000	
Add: Purchases	2,08,000	
Carriage inward	8,200	
Less: Closing stock	(50000)	2,13,200
Production wages		1,40,000
Prime Cost		**3,53,200**
Factory overhead:		
Rent and rates	3000	
Drawing office salaries	9600	
Depreciation of plant	7,100	
Repairs of plant	10,600	
Factory gas and power	1,500	
Manager's salary (12000*40/48)	10,000	**41,800**
Factory cost		**3,95,000**
Office and Administration Overhead:		
Office rent and rates	1,000	

Depreciation of furniture	600	
Director's fees	6,000	
Gas and Water	300	
General charges	5,000	
Manager's salary (12,000 × 8/48)	2,000	
Counting house salaries	14,000	**28,900**
Cost of Production		**4,23,900**
Selling and Distribution Overhead:		
Carriage outwards	5,100	
Bad debts	4,700	
Travelling expenses	3,100	
Travelling salaries and commission	8,400	**21,300**
Cost of Sales or Total Cost		**4,45,200**

Illustration 8: Prepare the cost sheet

Particulars	**Rs.**
Raw material purchased	32,250
Carriage on purchased	850
Direct wages	18,450
Factory overhead	2,750
Selling overhead	2,450
Office overhead	1,850
Sales	75,000
Sale of scrap	250
Opening stock of finished goods	9,750
Closing stock of finished goods	11,100

Answer: **Cost Sheet**

Particulars		**Amount (Rs.)**
Raw Material	35,250	
Add: Carriage on purchases	850	36,100
Direct Wages		18,450
Prime Cost		**54,550**
Factory Overheads		2,750
		57,300
Less: Sale of Factory Scrap		(250)
Work cost		**57,050**
Office Overheads		1,850
Cost of Production		**58,900**

Add: Opening stock of finished goods	**9,750**
	68,650
Less: Closing stock of finished goods	**(11,100)**
Cost of Goods Sold	**57,550**
Selling Overheads	**2,450**
Cost of Sales	**60,000**
Profit	**15,000**
Sales	**75,000**

Summary

- Various methods of costing are job costing, unit costing, batch costing, process costing, operating costing and contract costing. ·
- Output costing method is useful in determining the total and per unit cost of output.
- Various major industries using output costing methods are Sugar Industry, Paper Industry, Mining Industry, Cement Industry, Breweries Industry and Flour milling Industry etc.
- Major component of costs are Prime Cost, Factory Cost, Office Cost, Cost of Goods Sold and Cost of Sales.
- Cost sheet and production statement are the tools to showcase the total cost of production with regard to any cost unit or cost center for a specific period of time for proper ascertainment and analysis.

Keywords

- Output Costing
- Cost Sheet
- Prime Cost
- Factory Cost
- Office Cost
- Cost of Sales
- Work in Progress
- Finished Goods
- Scrap
- Production Account

SelfAssessment

1. Cost Sheet can be prepared on weekly, monthly, quarterly, half yearly or yearly basis.

A. True

B. False

2. Types of cost sheet are past cost sheet and future cost sheet.

A. True

B. False

3. Advertising expense is a cost component of selling and distribution overheads.

A. True

B. False

4. Cost sheet is also a managerial tool for cost manager to judge the efficiency of production.

A. True

B. False

5. Cost sheet tells about quality and labour efficiency of the production.

A. True

B. False

6. Prime cost, work cost, office cost and total cost are components of cost sheet.

A. True

B. False

7. Salary to factory manager is a type of office overhead cost.

A. True

B. False

8. The presentation of production statement is generally made in an account form which is called as _____.

9. _____ is another approach, apart from cost sheet, to present the cost information for proper ascertainment and analysis.

10. Production account depicts various components of _____.

11. Production statement is said to provide some more information than cost sheet regarding _____ and sales value.

12. The expenses like factory rent and depreciation of plant is shown on the _____ side of production account.

13. At the end of production account, the loss figure will come on the _____ side of the account.

14. Sales traveller's wages is a part of _____ overhead cost.

15. Presentation of production account is made in a _____ form.

16. Prime cost is not called as

A. Direct Cost

B. Basic Cost

C. Float Cost

D. Flat Cost

17. Factory Cost is the summation of

A. Prime cost and Office overheads
B. Office cost and Office overheads
C. Prime cost and Factory overheads
D. Office cost and selling overheads

18. Working of cost of goods sold requires

A. Cost of Production and Opening & Closing stock of finished goods
B. Cost of Production and Opening & Closing stock of raw material
C. Cost of Production and Opening & Closing Work in progress
D. None of the above

19. What is required to calculate the value of raw material consumed

A. Opening stock of raw material
B. Closing stock of raw material
C. Raw material purchased during the period
D. All of the above

20. Factory cost is not known as

A. Work Cost
B. Industrial Cost
C. Manufacturing Cost
D. Production Cost

21. Which of these is to be adjusted before calculating the network cost

A. Opening and Closing stock of raw material
B. Opening and Closing stock of WIP
C. Opening and Closing stock of finished goods
D. Scrap

22. Work in Progress is in the form which is

A. Ready to be sold
B. Ready to be used as raw material
C. Ready to be worked upon for further processing
D. Ready to be kept in warehouse

23. Office cost is the summation of

A. Work cost and office & administrative overheads
B. Work cost and selling and distribution overheads
C. Work cost and factory overheads
D. Prime cost and factory overheads

24. Scrap is

A. Left over of manufacturing process
B. Sold off to recover cost
C. Of small value
D. All of the above

25. Total cost is also known as

A. Cost of production
B. Cost of manufacturing
C. Cost of sales
D. None of the above

Answer for SelfAssessment

l.	A	2.	B	3.	A	4.	A	5.	B
6.	A	7.	B	8.	Production account	9.	Production statement	10.	Cost
11.	Profit or loss	12.	Debit	13.	Credit	14.	Selling and distribution	15.	Vertical account
16.	C	17.	C	18.	A	19.	D	20.	B
21.	B	22.	C	23.	A	24.	D	25.	C

Review Questions

1. What is output costing? Which are other different methods of costing?

2. Which are the industries that use the output costing and why?

3. What are the various components of cost? Explain them in detail with relevant examples.

4. Show the adjustments to be made for opening and closing stock of raw material, WIP andfinished goods in cost sheet?

5. What do you mean by the term "Scrap" and how it is to be treated in the cost sheet?

6. What is a Cost Sheet? Why it is prepared and what information does it provides to anaccountant?

7. Briefly explain the term "Cost sheet" along with its basic Proforma? How does it help indetermining the cost of sales? Also, explain its major types?

8. What do you mean by production account or statement? How it is different from costsheet? Also, show the various elements that form part of the production account.

9. Write short notes on :

(a) work in progress

(b) selling and distribution overheads

(c) examples of office and administration overheads

(d) Scrap

(e) types of cost sheet.

10. Write short notes on the following:

(a)"Cost of Production"

(b) How do you adjust stock of finished goods?

(c) production account or statement

11. Cost may be classified in a variety of ways according to their nature and the information needs ofthe management" Discuss.

Further Readings

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Web links

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Unit 03: Material Costing

CONTENTS

Objectives

After studying this unit, you will be able to:

- identify some of the advantages and disadvantages of keeping inventory in an operation,
- understand the basic principles of Material Control,
- study the Codification and Classifications of Materials,
- understand how requisition of purchase material did work in cost accounting.

Introduction

Material is very important part of the cost of a product. In some cases, it constitutes 80% of the totalcost of the product. It is very important to have a effective inventory management system. Good inventory management is essential since it is responsible for planning and controlling inventory from the raw material stage at a company to the inventory of delivered finished goods.

3.1 Meaning of Materials

Materials cost is one of the important elements of cost of product or unit. It constitutes a substantial proportion of the total cost of production. For material cost control purposes, it is very essential to know the important aspects of material, material control and material purchase control.

The term Material refers to all commodities consumed in the process of manufacturing. Material is a substance or mixture of substances that constitutes an object.Materials can be pure or impure, living or non-living matter. Materials can be classified based on their physical and chemical properties, or on their geological origin or biological function.

Materials: The term 'materials' refers to all commodities or components which are consumed in the process of manufacture. The materials may be classified into Direct Materials and Indirect Materials.

Direct Materials: Direct Materials form part of the finished products. They can be easily identified with a particular cost unit. For example, cotton used in textile mills, timber used in furniture industries.

Indirect Materials: Indirect materials indirectly used for conversion from raw materials into finished products. They cannot be easily identified with a particular cost unit. For example, spare parts, tools, nails, lubrications etc.

Materials are further classified on the basis of the nature which have to be used such as:

a) Raw Materials, e.g., rubber, timber, steel etc.
b) Components, e.g., instruments
c) Consumable stores, e.g., cotton waste, brushes
d) Maintenance Materials, e.g., spare parts
e) Tools, e.g., jigs and fixtures

Material cost: Material cost is the cost of materials used to manufacture a product or provide a service. Excluded from the material cost is all indirect materials, such as cleaning supplies used in the production process. Follow these steps to determine the amount of material cost to assign to a unit of production:

1. Ascertain the standard quantity of the material used to manufacture one unit.
2. Add the standard amount of scrap associated with manufacturing one unit.
3. Determine the standard amount of scrap associated with setting up the production run,and apportion it to the individual unit.
4. If any scrap is then sold, apportion the revenue back to the individual unit.

3.2 Purchase of Materials

Purchasing is an art. Wrong purchases increase the cost of materials, store equipment's and the finishedgoods. Hence, it is imperative that purchases should be effectively, efficiently and economically performed.

The methods of purchasing can be broadly classified as centralised and localised purchasing.

Centralized Purchasing

In a large organisation, manufacturing units are many. In such cases centralized purchasing is beneficial.Centralised purchasing means that all purchases are made by a single purchase department. Theadvantages are:

i. Specialised and expert knowledge is available.
ii. Advantages arise due to bulk purchases.
iii. The cost of purchasing can be reduced and selling price can be lowered.
iv. As there is good knowledge of market conditions, greater control can be exercised.
v. When materials have to be imported, it is advantageous to centralise the buying.
vi. Economy and ease in compilation and consultation of results.
vii. It can take advantage of market changes.
viii. Investment in inventories can be reduced.
ix. Other advantages include undivided responsibility, consistent buying policies.

The factors to be considered when decision regarding centralisation has to be taken are geographical.

Decentralisation of Purchases

In decentralised purchasing, each department or branch makes its own purchases. The advantages oflocalised purchasing are:

i. Each plant may have its own particular need. This can be given special attention.
ii. Direct contact can be established with suppliers.
iii. The time lag between indenting and receiving materials can be reduced.
iv. Technical requirements of each plant can be ascertained.

3.3 Purchase Procedure

Though different concerns adopt different practices regarding details recorded, forms and records used. The routine followed for the purchase of materials is usually the same. The steps may be enumerated as follows:

i. Indenting for materials
ii. Issuing of tenders and receiving quotations
iii. Placing of order
iv. Inspecting stores received
v. Receiving the stores accepted in inspection
vi. Checking and passing bills for payment.

(i) Indenting for Materials: The stores department prepares indents for the purchase of materials and sends it to the purchase department. The indents may be for replenishment of stocks or for a special job. The former are called regular indents and the latter special indents.Regular indents are prepared periodically and placed when the ordering level for different items of stocks are reached. The quantity indented is equal to the ordering quantity fixed for each item. The special indents are based on the demands received either from the planning or production department. They should be certified by the department originating it. They are purchased as and when required. Every document is usually linked with the previous and succeeding transaction to facilitate back references.

(ii) Issue of Tenders to Suppliers: The purchase department issue tenders to suppliers or publish them in papers. The suppliers quote their terms of price and delivery/payment. After the last date for receipt of quotations is over, the tenders are opened and a comparative statement is prepared. Tenders are prepared in triplicate. Of them, two are sent to the suppliers and one is retained with the purchase department. The supplier mentions his terms in the original.While considering the tenders, the reliability of the supplier has to be taken into account. The quality of goods and time taken to deliver the goods on previous occasions should be checked. The financial stability and capacity to deliver goods should be ensured.Sometimes purchases may be made without inviting quotations. The circumstances are when prices are controlled, or purchases are made under long-term contracts, or catalogue prices are available or when there is a cost plus contract. If, purchase is made under cost plus profit basis, the cost composition and reasonableness of price should be checked.

Specimen – Purchase Requisition

Ramkumar Co. Ltd.,

Purchase Requisition Regular / Special					
Date: _____ Date Required: _____			Dept: _____		
Sl. No.	Quantity	Description	Code No	Order no.	Supplier
Required by _____			Approved by _____ Purchase officer _____		

(iii) **Placing of Purchase Orders:** Normally six copies of purchase orders are made. The supplier, stores, inspection department, store accounting section, purchase department and progress department are sent one copy each.The purchase order has legal and accounting significance. From legal point of view, it binds both the parties to the terms of the contract. From accounting point of view, it signifies the amount which has to be spent. It signifies the stores department to accept the goods and the accounts department to accept the bill.

A.B.C. CO. LTD.

MATERIALS PURCHASE ORDER

Order No.: Indent No.: Store Receipt No.:
Date: Quotation No.: Inspection Note No.:

To
.....
.....
.....

This is in response to your quotation against our Tender No.:..... The terms and conditions mentioned overleaf will be applicable. Please supply the following items at the prices indicated below:

Sl. No.	Description	Stores Code No.	Specification	Quantity	Unit	Price

Terms of Delivery: Please send bill to:
Terms of Payment:
Special Conditions: For A.B.C. Co. Ltd.

(iv) **Inspection:** The supplier delivers goods at the place specified. Two delivery challans are prepared by the supplier one of which is returned. It is a proof of delivery. After receiving the goods, the inspection department or production department or maintenance department (as the case may be) is intimated. The quality of materials should be in accordance with the standards. The inspector should examine the various points to be checked, the standard expected, tolerances allowed and method to be followed. Afterinspection, as inspection note has to be prepared in triplicate, one copy is sent to the supplier, one to thestores and one to the inspection department.

(v) **Receiving Stores:** The stores department prepares a Stores Receipt Note for the quantity of stock accepted in inspection. After issuing of the Stores Receipt, the storekeeper is responsible for the stocks. The stores receipt is the document for the posting of receipts in Bin Card and the Stores Ledger. It is prepared in quadruplicate. The suppler, stores accounting section and purchase department are sent one copy each and one copy is retained with the stores. The supplier encloses this copy along with his bill. The stores accounting section prices the note on the basis of the purchase order.

(vi) **Checking and Passing of Bills for Payment:** Bills received by the purchase department are forwarded to the Stores Accounting Section to check the authenticity regarding quantity and price and the arithmetical accuracy. Special items included in the bills, e.g., freight, packing charges are verified with the purchase order. The bill is later passed for payment.

3.4 Inventory Control (Material Control)

"Inventory is a very expensive asset that can be replaced with a less expensive asset called 'information'. In order to do this, the information must be timely, accurate, reliable, and consistent. When this happens, you carry less inventory, reduce cost and get products to customers faster.''

-J.David Viale

Material control is defined as safeguarding of company's property in the form of materials by a proper system of recording and also to maintain them at the maximum level.

Inventory control is the systematic control and regulation of purchase, storage and usage of materials in such a way as to maintain an even flow of production and at the same time avoiding excessive investment in materials. Efficient material control reduces loses and wastages of materials that otherwise pass unnoticed.

Inventory control is the core of materials management. The need and importance of material varies in direct proportion to the idle time cost of men and machinery and the urgency of requirements. If men and machinery in the factory could wait and so could customers, materials would not lie in wait for then and no inventories, need be carried. But it is highly uneconomical to keep men and machines waiting and the requirements of modern life are so urgent that they cannot wait for materials to arrive after the need for them has arisen. Hence firms must carry materials.

Because materials constitute a significant part of the total production cost of a product and since this cost is controllable to some extent, proper planning and controlling of inventories are of great importance. Material control is a planned method of determining what to indent, so that purchasing and storing cost are minimum without affecting production or sales. Without proper control, materials have a tendency to grow beyond economic limits. Funds are tied up unnecessarily in surplus stores and stocks, productive operations are stalled, and finances of the plant are severely strained. Lack of control over material also leads to excessive consumption and wastage as operatives are liable to become careless with irrational supply of materials.

From the above discussion, we can derive the following important aspects:

1) To ensure the smooth flow of production without interruptions.
2) Prevention of excessive investments in materials stock.

3.5 Objectives of Material Control

(a) To enable uninterrupted production:

The main object of material control is to ensure smooth and unrestricted production. Production stoppages and production delays cause substantial loss to a concern.

(b) To ensure requisite quality of materials:

The quality of finished products depends mainly on the quality of raw materials used. If quality of the raw materials is not up to desired standards, the end product will not be of desired quality which affects the sale of the product in the market resulting in loss of profits as well as goodwill of the concern. It is of vital importance to exercise strict control and supervision over the purchases, storage and handling of materials.

(c) To minimize wastage:

The loss of material may occur on account of rust, dust, dirt or moisture, bad and careless handling of materials, poor packing and many other reasons. The causes responsible for such losses must be brought to light and utmost efforts should be made to minimise the wastage of raw materials. This is possible only by introducing an efficient materials control system.

(d) To fix responsibility:

A proper system of materials control also aims at fixing responsibility of operating units and individuals connected with the purchase, storage and handling of materials.Eg. Safeguarding of materials from loss of stock by theft and fire.

(e) To provide information:

Another objective of materials control is to provide accurate information regarding material cost and inventory whenever needed by management.

It might seem obvious that inventory control is efficient as long as material level is going down. Materials should increase or decrease in amount and time as related to sales requirements and production schedules.

Responsibility for control of materials is that of the top management, though decisions in this regard might well be based upon the combined judgment of the production manager, controller, the sales manager and the purchasing manager. This is desired in view of the financial considerations involved in the problem and also because of need for coordinating the different kinds of materials and conflicting viewpoints of different departments. For example, sales manager, purchasing executive and production manager usually favour, though for different reasons, the policy of carrying larger amount of stock whereas the financial manager will prefer to keep investment in material at the lowest possible level. However, in a large number of organisations material control is generally made the specific responsibility of purchasing department.

3.6 Necessity and Importance of Material Control

1. For keeping the stock of raw materials within limits in the stores i.e., to avoid overstocking and understocking of raw materials, materials control is significant.
2. It ensures proper storage of materials. For the proper preservation and safety of materials, adequate storage facilities are to be provided. With the help of proper storing of materials, quantity of materials as and when required can be issued to various jobs.
3. For knowing proper cost of production, control over materials is indispensable.
4. Certain techniques and methods are developed under the system of materials control thereby ensuring optimum utilisation of materials.
5. In order to undertake continuous checking of materials, the necessity of a proper system of materials control cannot be ignored.
6. A well-managed system of materials control ensures the availability of different kinds of materials without delay.

As already pointed out while explaining the scope of material management that it includes purchases of materials, storekeeping and inventory control etc.

Lab Exercise:

Abnormal loss of material — — — — absorbed into the cost of production.

- is
- is not

Correct answer: is not

3.7 Advantages of Material Control

Material Control is a very important aspect of production planning, and hence, should be taken very seriously. In the case where managers are able to execute material planning properly, they can seek the following benefits:

(i) **To prevent overstocking and understocking**: Maintenance of optimum investment in the inventory is significant taking into account the operational requirements and the financial resources, with the aim of decreasing the carrying cost. Also to provide an uninterrupted supply of the required inventory, so that the operational activities are not held up for the long term.

(ii) **To ensure material procurement:** Material control has a crucial role to play in providing the required quality and quantity of material at a very low cost from reliable sources.

(iii) **(To ensure economy in purchasing**: Purchase of material is a specialized function, purchase of material at affordable prices, a valuable contribution can be made to reduce the cost.

(iv) **To make certain proper quality:** At the time of purchase of material, primary consideration should be given to quality, as the material of inferior quality or substandard quality or defective, would be of no use.

(v) **To minimize total cost:** Total cost includes ordering cost and carrying cost. Material control takes into account various factors which ensure the availability of the material at a very low cost.

(vi) **To avoid wastage and losses:** Various control methods and techniques are implemented to prevent the wastage, misuse, and loss of material at the time of storage and usage.

(vii) **To maintain records:** Material control plays an important role in maintaining a proper and up-to-date record of the materials.

(viii) **To provide the necessary information:** It is required to provide relevant information about raw material, its cost, and availability to the management which helps the management in taking important decisions.

3.8 Principles of Material Control

The functions of an effective system of material control include scheduling of the requirements, purchasing, receiving, inspecting, and maintaining stock records. To ensure the effective and efficient operation of the material control system, it is important to follow these principles:

a) There should be proper coordination among various departments, particularly the production department, purchasing department, inspection department, stores department, and cost department.

b) There should be a centralized purchasing set up under the authority of an experienced and competent purchase manager.
c) Standard printed forms should be in use for making requisitions, placing orders, receiving materials, inspection of materials, and issue of materials for consumption.
d) There should be a proper system for classification, codification, and standardization of materials.
e) There should be an efficient arrangement for storing materials to avoid the possibility of deterioration of quality, theft, and wastage.
f) There should be an effective system of internal checks covering every aspect, thus ensuring proper control over transactions at every stage. Each transaction relating to materials must be approved by the relevant authority.
g) Different stock levels (e.g., maximum level, re-order level, and minimum level) should be fixed for each item of material in the stores.
h) There should be a proper system for the valuation of materials issued to production since it strongly influences costing records.
i) A perpetual inventory system should be used to ensure that the stocks of various items of material are recorded after each transaction.
j) Regular reports should be prepared on the quantity and value of materials received and issued, as well as the balance in hand.
k) There should be regular reconciliation of the reports on materials with corresponding accounting records.

3.9 Essentials of Material Control

Stringent control over an organization's material is essential for preventing theft, and also to reduce the overall wastage and misuse, due to excessive inventory, overissue, spoilage, leakage, pilferage, deterioration, etc. The essentials of material control are:

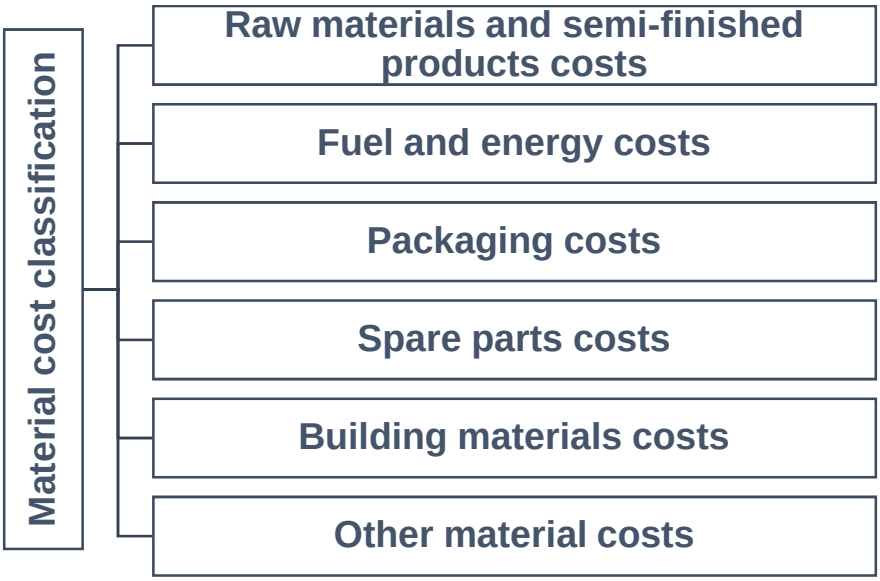
1. There should be proper coordination and cooperation among different departments of the organization as to the purchasing, receiving, testing, storing, production, planning, and accounting.
2. There must be a centralized purchase department in the organization under the control of a purchase manager who is competent as well as qualified.
3. The company must follow a perpetual inventory system that reflects the physical movement of goods in chronological order, along with the closing balance. This ensures up-to-date information about the quantity of material
4. There has to be a proper purchase system that ensures procurement of materials and stores of the prescribed quality from a reliable source, at reasonable prices.
5. Storage of material needs to be properly planned provided adequate protection and supervision.
6. Minimum and maximum stock levels should be fixed, and budgets are to be prepared for effective control.
7. There has to be an ideal method that classifies and codifies material.
8. Forms used for the requisition, order, issue, return and transfer of material must be in a standard format.
9. There have to be proper storage facilities to prevent losses occurring due to damage, evaporation, pilferage, theft, and deterioration.

10. An effective internal control system and internal audit should be there to make certain that all the movement of inventory is properly accounted for and reported.

3.10 Classifications of Material Cost

Some raw materials required for the manufacture of any product. Electricity, fuel and other material costs are also needed for production. Material costs constitute a considerable share in the total cost of production and their planning is an important task in the business planning process. Procedure and features of planning of material costs we will consider today

Material costs are the costs of acquiring of material resources necessary for business.



All material costs can be divided into the following groups:

1. Raw materials and semi-finished products costs

The cost of acquiring the necessary raw materials and semi-finished products belongs to this group. Thisgroup of material costs is often the largest.

Raw materials and semi-finished products costs should be planned taking into account the planned volume of production and the rate of cost per unit of finished product.Rate of cost per unit of finished product is determined by multiplying the technological expenses norms of individual materials at the price of such individual materials.

The total amount of these expenses can be determined by the formula:

Crm = PVp x Rc

Crm – the sum of raw materials, semi-finished products costs,

PVp – planned production volume,

Rc – rate of cost per unit of finished product.

2. Fuel and energy costs

Acquisition costs of gasoline, machine oil, gas, solid fuel, electricity, heat belong to this group. Fuel and energy costs are defined similarly. The technological expenses of fuel and energy per unit determined first. Money rate of such costs per production unit defined after that.

Total amount of costs on fuel and energy determined by multiplying the planned volume of production at the money rate of such costs per production unit.

The fuel costs for cars can be defined by the formula:

Cf = Cn x Cm x (FCr/100) x Fp

Cf – cost of fuel,

Cn – number of cars,

Cm – standard mileage per car, kilometers per month (year),

FCr – rate of fuel consumption per car per 100 kilometers, liters,

Fp – price per liter of fuel.

3. Packaging costs

Acquisition costs of various containers (boxes, bales, boxes) belong to these costs.Packaging costs also depend on production volumes. These expenses are determined by multiplying the expected volume of production at the rate of packaging of finished products.

4. Spare parts costs

Expenses of spare parts used to repair equipment, machinery or vehicles. Planning of the costs for spare parts is difficult. These costs should be planned taking into account the degree of depletion of assets of thecompany.

There are no needs to plan costs for spare parts if company have new equipment and full guarantee for it.The breakages of equipment are more likely if it is worn out. Costs for spare parts should be planned taking into account the specific proposals of maintenance in this case.

5. Building materials costs

The cost of building materials arises when the company is building new facilities or making renovation of existing facilities.

6. Other material costs

All material costs which are not included in the above groups related to other expenses. It may be, for example, waste production or other costs.

Other material costs should be planned concretely to their types. These costs can be unpredictable very often, so their planned amount can be determined by using of their average percentage.The average percentage of other material costs is the ratio of the amount of such costs to the cost of raw materials in previous periods.

Planned amount of other material costs can be calculated by the formula:

Omca = Crm x Pomc

Omca – the amount of other material costs,

Crm – planned sum of raw materials and semi-finished products costs,

Pomc – The average percentage of other material costs.

Material costs plan of the company by their types we can make using the following table:

Types of material cost	1Q	2Q	3Q	4Q	Year
Raw materials and semi-finished products					
Fuel and energy					
Packaging					
Spare parts					
Building materials					
Other material costs					
Total material costs					

3.11 Classification and Codification of Materials

Classification and codification of materials is necessary for keeping the material in store. Store is classified into different departments and codified them to handle the materials and costs associated with material handling easily. The classification may be basing on nature of material, type of material or on their importance. E. g. Materials related with engineering are classified as bronze,

copper, steel, and mild steel etc. Each category further classified suitably. A written document is maintained by store-keeper which describes the location of material.

Classification of Materials

Classification is the systematic division, grouping, or categorization of materials or items based on some common characteristic.Classification of materials can be performed on different bases (e.g., nature, manufacturing process, value, and purpose). To identify materials that are purchased and stored for commercial purposes, they should be properly classified.

The department in charge of storage should closely study and monitor the materials, ensuring their safe custody, meticulous handling, and protection from damage, fire, pilferage, and spoilage.

A broad classification of materials is shown below, based on their nature, use, and service.

- Raw Materials
- Consumable Stores
- Machinery and Plant
- Factory and Office Equipment
- Inflammable Stores
- Chemicals
- Furniture and Fixtures
- Scrap Materials
- Packaging Materials
- General Stores

(A) Basis for Classification of Materials

1) Basis of Nature
2) Basis of Manufacturing Process
3) Basis of Value
4) Basis of Movement of Stores

Basis of Nature

Based on their nature, materials can be divided into:

(i) Direct Materials: Direct materials are items that can be identified with a product or a group of products and can be easily measured and charged directly into the product. These materials are part of the finished product (e.g., timber in furniture).

(ii) Indirect Materials: These are materials that cannot be traced to a specific product or be charged directly to various products. Indirect materials do not form part of the product. Examples include repair and maintenance stores, lubricating oils, and cleaning materials.

Basis of Manufacturing Process

Based on the manufacturing process, stores are divided into:

(i) Pre-process Stock: These are items that are yet to be used in the manufacturing process and are obtained prior to the start of production. They include raw materials, bought-out parts and assemblies, and stock in the pipeline of materials in transit.

(ii) Intermediate Stock: Intermediate stock comprises the parts or assemblies that are manufactured within the factory for use in the final product.

(iii) Finished Goods or Finished Products: As the name indicates, finished goods are the items that have been duly manufactured in the factory and are ready for shipment or sale to the customers.

Basis of Value

Based on value, stores may be divided into:

(i) Category A: Category A consists of materials which constitute 5% to 10% of the total items in the stores and represents 70% to 85% of the total stores value.

(ii) Category B: This category consists of materials which constitute 10% to 20% of the total items in the stores and represents 10% to 20% of the total stores value.

(iii) Category C: This category consists of cheap materials which constitute 70% to 85% of the total items in the stores and represents 5% to 10% of the total stores value.

Category A items are costly items, calling for a greater level of control to preserve them. A reasonable degree of care may be taken to control category B items, while a routine type of care may be applied to control C category (or residuary) items.

Basis of Movement of Stores

Based on the movement of stores (i.e., rate of consumption), stores items may be divided into:

(i) Fast Moving Stock: Fast moving stock is exhausted rapidly due to high demand from production departments.

(ii) Slow Moving Stock: This category consists of stores or materials that are consumed or exhausted slowly due to limited demand from the production departments.

(iii) Dormant Stock: This category consists of items that are not in demand at present and may regain demand in the future. This category includes seasonal materials, which are only required during specific seasons.

(B) Advantages of Classification of Materials

Classifying the items that a business holds in its stores leads to many advantages. These include:

1. Helpful in Grouping of Stores Items: Classification helps to group different items in the store. Items that fall under a particular category can be stored in one location, ensuring optimal use of storage space.

2. Easy Location: Proper classification of stores items helps in the easy identification of the various items. Storekeepers can easily find materials whenever they are required in the production departments.

3. Proper Accounting: Record-keeping processes are easier when items are properly classified. Furthermore, simplified record-keeping ensures accuracy in posting receipts and issues in the stores records.

4. Proper Care: By classifying items based on value, storekeepers can ascertain their relative importance. Accordingly, a suitable degree of supervision and control can be exercised that is proportional to the value of each item.

5. Avoidance of Duplication: Proper classification helps to avoid the possibility of duplicate stock items and materials.

6.Standardization: Classification helps to standardize various items in the stores. Standardization involves variety reduction using fixed sizes and types, leading to uniform standards for similar items.

(2) Codification of Materials

After classifying and grouping the various items in an organization's stores, it is useful to codify them.

Codification is the process of assigning a number or symbol to each store item, along with a name, in order to make it easy and convenient to identify.The codification of store items thus leads to time-saving and labor efficiencies.

Different kinds of store codes are used today. Most have been specially designed to suit the requirements of a particular organization.These codes may be based on the nature of stock items, the purpose for which the items are used, or on any other basis that is viewed as suitable according to the local circumstances.Also, the accurate identification of the materials may require a lengthy description. This can be complicated and, hence, may add to the confusion.Codification is necessary because it involves the assignment of logical and systematic numbers or alphabets (or both) to help in the simple but accurate identification of the materials.

(A) Advantages of Codification

The main advantages of codification include:

1) Avoidance of Lengthy Description
2) Accurate Identification of Stores
3) Convenience in Issue of Materials
4) Maintenance of Secrecy
5) Simplification of Stores Accounting
6) Prevention of Duplication
7) Convenience in Preparing Material Forms
8) Other Advantages

(1) Avoidance of Lengthy Description:

Helps in avoiding the use of lengthy names and descriptions for store items, thus saving time and energy.

(2) Accurate Identification of Stores:

Assists in the accurate and convenient identification of store items. Easy identification of store items saves time and costs involved in-store handling.

(3) Convenience in Issue of Materials:

Codification of store items on scientific lines helps in eliminating the possibility of errors in the issue of materials. It also increases the efficiency of store-keeping staff.

(4) Maintenance of Secrecy:

Every manufacturing concern, owing to necessity, attempts to keep its production activities and processes a secret. Codification of store items helps in maintaining secrecy in production activities.

(5) Simplification of Stores Accounting:

Helps in maintaining accurate records since scientific codification enables systematicity.

(6) Prevention of Duplication:

Prevents the duplication of items. As all similar items in the store are grouped together, when an item is coded once, it is not assigned an alternative name.

(7) Convenience in Preparing Material Forms:

Codification of store items makes the preparation of various forms and documents relating to stores easy and convenient (e.g., Bill of Materials, Purchase Requisitions, and Material Requisitions).

(8) Other Advantages:

Helps in the standardization of store items and in the reduction in their variety. It also helps in reducing storage costs and increasing efficiency.

The use of codification also leads to efficiencies in the following areas:

i. Purchasing
ii. Recording
iii. Accounting
iv. Computerizing pricing
v. Costing
vi. Indexing
vii. Inspection

(B) Systems of Codification

1) Alphabetical System
2) Numerical System
3) Decimal System
4) Combined Alphabetical and Numerical System

In materials departments, four main systems of codification are commonly used. An overview of each system is given below.

(1) Alphabetical System

In the alphabetical codification system, alphabetical codes rather than numerical codes are applied to items.

Each item in the storehouse is first classified and grouped based on its nature, use, and other factors. In turn, the items are analyzed to create a unique and descriptive alphabetical identifier.

For example, under an alphabetical codification system, iron ore may be assigned the code IN-O, whereas iron bars may be assigned the code IN-BA.

(2) Numerical System

In a numerical system, the codes assigned to materials are numerical. Numbers are allotted as codes, which is useful for future expansion. For example, iron ore may receive the code of 05—10 and iron bars may have 11—67.

(3) Decimal System

Codes in a decimal system consist of numbers, but instead of dashes in between two numbers, decimals (i.e., periods or full stops) are placed.This makes the codes more flexible and makes future expansion a straightforward affair. For example, iron may be assigned the code 11.67.02 and iron bars may have 11.67.03.

(4) Combined Alphabetical and Numerical System

Hybrid systems exist that combine all three of the above. Codes in a hybrid system may look like IN–05.10 (e.g., for iron ore) and IN-11.6 (e.g., for iron bars), and so on.

(C) Bins and Racks

Bins

A bin is a compartment or a separated portion of a cabinet or pigeon-hole used to store a specific material.A bin card is used to show, at a glance, the quality and quantity of the materials stored inside. It functions as a materials movement record and as a replenishment index.A bin card is a brief version of the stock ledger pertaining to an item. It serves the purpose of a ready-reckoner for the binned item. As such, it is a kind of mirror for the bin.A specimen of a bin card is shown below.

Bin Card

Bin No. .....
Article. .....
Code No. Identification. .....
Unit of Issue .....

Max. Stock .....
Min. Stock .....
Order Stock .....
Danger Stock .....

Date	Delivery or Issue Note No.	Qty. / Weight		Balance	Date	Delivery or Issue Note No.	Qty. / Weight		Balance
		Receipt	Issue				Receipt	Issue	

Racks

A rack is a fixed or movable frame of either wood or metal bars.Racks are used to keep materials inside a store. They are just like almirahs, whether open or closed. Racks are mostly used to hold general store items, and they are in common use.Racks are commonly applied to store tubes, bars, sheets, plates, cables, drums, and other items. Other racks acks may also be specially designed.

Methods of Codification

1) Alphabetical Codification of Materials
2) Mnemonic Codification
3) Numerical Codification
4) Decimal Codification
5) Alphanumeric Codification
6) Color CodificationAlphabetical Codification of Materials

As the name indicates, this method involves the use of alphabetical letters as codes to facilitate the easy and quick identification of materials.Alphabetical codification of materials is the most simple approach, but it lacks flexibility.

Code	Description
A	Raw Materials
B	Tools and Gauges
C	Spare Parts
D	Capital Stores
E	General Supplies
F	Finished Products

2. Mnemonic Codification

This is a modified version of the alphabetical codification system. It involves the use of alphabetical letters to create codes that aid memory.Mnemonic codification is simple to operate because it helps staff to memorize the items in a store. However, if similar codes are assigned to several items, this can lead to confusion, and the method also lacks flexibility.

Code	Description
BB	Ball Bearing
CS	Capital Store
SS	Steel Screw
RB	Rubber Belt
SW	Steel Wire
SB	Steel Bolts

3. Numerical Codification

Also known as straight number codification, numbers are used in numerical codification to represent different items in a store. A series of numbers may be assigned to store items of similar nature.Numerical codification of materials is the simplest and most widely used method in manufacturing enterprises due to its flexibility.

Code	Description
0	Raw Material
1	Bought Out items
2	Gauges
3	Tools
4	Scrap
5	Machinery Items

4. Decimal Codification

This is another numerical system of codification with the difference that instead of full numbers, decimals are used.It is generally used in businesses where a mechanized system of accounting is in use. Under this method, whole numbers are used to indicate the main group or the master group, while decimals are used to indicate sub-groups.

Items	Code	Items	Code
Metals	2.00	**Raw Materials**	3.00
Aluminum	2.01	Rubber	3.01
Zinc	2.02	Plastic	3.02
Lead	2.03	Paints	3.03
Nickel	2.04	Leather	3.04
Copper	2.05	Paper	3.05
Steel	2.06		

This method has the advantage of flexibility and unlimited scalability. Also, using decimal points makes the numbers easier to read and remember.However, the main disadvantage of decimal codification is its complexity. It also involves the possibility of misplacing or omitting decimals.

5. Alphanumeric Codification

Also known as the alpheno-serial system or the combined code system, this system uses alphabetical letters in conjunction with numbers to codify store items.The broader groups of store items are represented by alphabetical symbols while the detailed groups are represented by numbers.

Description	Code
Plywood 1/4″ I Grade	pw 141
Plywood 1/4″ II Grade	pw 142
Plywood 1/4″ III Grade	pw 143
Plywood 1/2″ I Grade	pw 121
Plywood 1/2″ II Grade	pw 122

6. Color Codification

As the name indicates, under this method, color markings are used to denote code numbers. This method can be applied to codify metals, cables, small component parts, drums of oil, and various other items.If the colors used are not too complicated, this method affords a ready means of identification on sight.

For example, in the case of metal, color codes can be used as follows:

Green	for Iron
Blue	for Steel
Red	for Copper
Black	for Aluminum
White	for Zinc

Summary

- The materials are of two types, namely:

direct materials, and (ii) indirect materials.

- The methods of purchasing can be classified as centralised and localised purchasing, centralised purchasing means that all purchases are made by a single purchase department while in localized purchasing each department or branch makes its own purchases.
- The routine followed for the purchase of materials may involve: indenting for materials, issuing of tenders and receiving quotations, placing of order, inspecting stores received, receiving the stores, and checking and passing bills for payment.
- Inventory control is the systematic control and regulation of purchase, storage and usage of materials in such a way as to maintain an even flow of production and at the same time avoiding excessive investment in inventories.

Keywords

- Material Cost
- Centralised purchasing
- Decentralised purchasing
- Purchase order
- Direct Material
- Indirect Material
- Inventory Control
- Dormant Stock
- Standardization
- Bins
- Racks
- Mnemonic Codification

Self Assessment

1. One of the basic needs of material management is to pay the lowest possible prices, consistent with quality and value requirement for purchases materials.

A. True
B. False

2. Procurement of an item does necessarily mean purchasing.

A. True
B. False

3. Decentralized purchasing approach exist when the entire purchasing function is made a responsibility of single person.

A. True
B. False

4. If we buy materials very frequently, cost of ordering goes up.

A. True
B. False

5. Purchase requisition is usually prepared by the storekeeper.

A. True
B. False

6. In centralized purchasing all purchases are made by the purchasing department

A. True
B. False

7. Material returned note is prepared to keep a record of return of surplus materials to stores.
A. True
B. False

8. The main objective of bill of material is:
A. Fixed asset requisition
B. Material requisition
C. Product requisition
D. None of the above

9. Defective items can be —— after incurring some additional costs.
A. Disposed off
B. Rectified
C. returned
D. None of the above

10. ……is the task of buying goods of right quality, in the right quantities, at the right timeand at the right price.
A. Supplying
B. Purchasing
C. Scrutinizing
D. Recruiting

11. All portions of the material production from _____ to _____ are considered to be a linked chain under the supply chain concept.
A. work in process, final customer
B. raw material, work in process
C. work in process, raw material
D. raw material, final customer

12. _____ and _____ are costs that increase or decrease with the quantity sold.
A. Direct labor, indirect material
B. Direct labor, direct material
C. Indirect labor, indirect material
D. Indirect labor, direct material

13. _____ must satisfy the demands of the marketplace. It does so by using plants, machinery, equipment, labor, and materials as efficiently as possible.
A. Marketing
B. Finance
C. Production
D. Engineering

14. A schedule is satisfactory when:
A. Capacity is greater than the production plan
B. It doesn't specify to the plant when to start production
C. Capacity is consistent with the production plan
D. It doesn't specify to the plant when to stop production

15. The bill of materials shows all the parts required to make _____.
A. one item
B. the MPR
C. work-in-process inventory
D. raw materials inventory

Answer for Self Assessment

1.	A	2.	A	3.	B	4.	A	5.	A
6.	A	7.	A	8.	B	9.	B	10.	B
11.	D	12.	B	13.	C	14.	C	15.	A

Review Questions

1. What do you understand by the concept material?
2. Define Material Control.
3. What are the important functions of Materials Control?
4. Explain the objectives of Material Control.
5. Explain briefly the essentials of Materials Control.
6. What are the advantages of Material Control?
7. What do you mean by material purchase control?
8. What is Centralized Purchasing? What are its merits and demerits?
9. What is meant by Decentralized Purchasing?
10. What are the important functions of the purchasing department?
11. Explain briefly the duties of a purchase Manager in a large organization.
12. What are the important functions of the purchasing department?
13. What are the procedure to be adopted for purchasing the materials?
14. Write Short notes on:
    (a) Bill of Materials
    (b) Material Requisition
    (c) Goods Received Note
    (d) Purchase Order
15. Briefly explain the Classification and Codification of materials.

Further Readings

- Deepak Jain, Cost & Management Accounting Taxmann Publications Pvt. Ltd.
- Khan and Jain, Management Accounting.
- N.S. Zad, Cost & Management Accounting Taxmann Publications Pvt. Ltd.
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- Ravi M. Kishore, Advanced Management Accounting; Taxmann's, Taxmann Publication (P) Ltd. 59/32, New Rohtak Road, New Delhi – 110 005.

Web Links

- https://www.dynamictutorialsandservices.org/2019/04/cost-sheet-solved-practical-problems-2_68.html

Unit 04: Techniques of Inventory Control

CONTENTS

Objectives

After studying this unit, you will be able to:

- acquaint with the latest techniques in inventory control,
- study the procedures of Purchase, Storing and Issues,
- review financial analysis of inventory management,
- understandStore keeping and its functions.

Introduction

Material is a major cost element, and it has been noted that material content accounts for 60 to 65 percent of a product's entire cost structure. Because material costs account for a sizable share of total costs, management must devote more attention to this aspect. The term ‘material,' as it is commonly used in manufacturing, refers to raw materials utilised in production, sub-assemblies, and fabricated parts. Sometimes the terms 'materials' and 'stores' are used interchangeably. However, the meanings of the two names are not the same. 'Stores' has a broader definition and includes numerous products other than raw materials, such as tools, equipment, maintenance and

repair items, manufacturing supplies, components, jigs, and fixtures. Finished items and partially finished goods are sometimes included in the scope of this category. This chapter discusses many areas of material control such as purchasing, storekeeping, issuing, and other issues such as material losses, among others. Material control is described as the safeguarding of a company's property in the form of materials through a good documentation system, as well as maintaining them at the highest level possible.

4.1 Techniques of Inventory Control

The following are the common techniques of inventory control:

- Min-max Plan
- The Two-bin System
- Order Cycling System
- ABC Analysis
- Fixation of various levels
- Use of Perpetual Inventory System and Continuous Verifications
- Use of Control Ratios
- Review of Slow and Non-moving Items.
- VED analysis

4.2 Min-Max Plan

It is one of the oldest material control approaches. Under this strategy, the analyst establishes a maximum and minimum for each stock item, taking into account its consumption, requirements, and the margin of safety required to reduce the danger of stock-outs. The minimal level serves as the reorder point, and an order is placed for the amount of material required to bring it up to the maximum level.

The method is quite basic and is based on the concept that minimum and maximum quantity limitations for various commodities can be appropriately specified and created. This plan does not address issues such as economic order quantity and identifying high-value and important stock items for extra management attention.

4.3 The Two-Bin System

The primary technique for this approach is to keep two piles, bundles, or containers for each item of stock. The first bin stores enough material to last until the next order is placed, which is the time between when an order is received and when the next order is placed. The second bin houses the safety stock as well as the typical amount used from the order date to the delivery date. When the stock in the first bin is depleted and the stock in the second bin is depleted, a requisition for additional supply is produced and sent to the purchasing department. There is no everlasting material record under this bin since no bin-tag (quantity record of materials) card is kept.

4.4 Order Cycling System

In the order cycle system, the amounts in hand of each item or class of stock are evaluated on a regular basis, such as every 30, 60, or 90 days. If it is discovered during a scheduled periodic review that the stock level of a given item will not be sufficient until the next scheduled review, given its likely rate of depletion, an order is placed to refill its supply. The review period will change from one firm to the next, as well as between various materials within the same firm. Critical stock items normally necessitate a quick evaluation cycle. Orders for replenishing a specific stock item are placed in order to raise it to some desired level, which is frequently indicated in terms of number of days or weeks supply.

The scheduled periodic review plan does not take into account differences in rates of usage for different items of stock, so items whose usage has declined will have excess stock, whereas some

items' rates of depletion may have increased to the point where their stock is depleted much before the next review date. Furthermore, the system causes procurement and purchasing operations to peak around review periods.

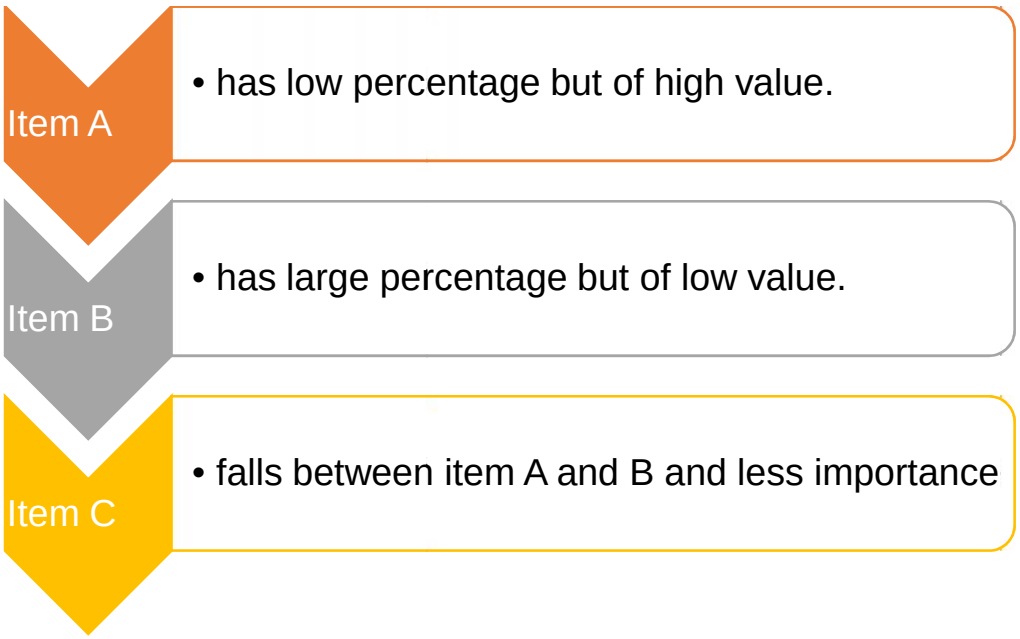
4.5 ABC Analysis

Material control is primarily an issue of analysis due to the multiple pieces and materials that go into each and every industrial product. ABC analysis (Always Better Control) is a common analytical approach that is thought to have started in America with the 'General Electric Company.' The ABC approach is based on material segregation for selection control. It calculates the monetary value, or cost significance, of each material item in relation to the total cost and material value. The reasoning behind this type of research is that management should examine each item of stock in terms of its utilisation, lead time, technical or other issues, and its relative money value in relation to the entire investment in inventory. Critical, i.e., high-value products, require close attention, whereas low-value things require the least amount of expense and work in the process of inventory control.

Under ABC analysis, the different items of stock may be ranked in order of their average material investmentor on the basis of their annual rupee usage. The important steps involved in segregating materials orinventory control are:

i. Find out future use of each item of stock in terms of physical quantities for the review forecast period.
ii. Determine the price per unit for each item.
iii. Determine the total project cost of each item by multiplying its expected units to be used by the price per unit of such item.
iv. Beginning with the item with the highest total cost, arrange different items in order of their total cost as computed under step (iii) above.
v. Express the units of each item as a percentage of total costs of all items.
vi. Compute the total cost of each item as a percentage of total costs of all items.

ABC analysis is also known as proportional parts value analysis. It is an analytical method of stock control. This technique of stock control according to value method. Under this technique of material control, materials are listed in A, B and C categories in descending order based on value consumptions.



Example: **Explanation**

Category	Percentage of item	Percentage of cost

A	8%	75%
B	22%	18%
C	70%	7%

Ans: In the example purchase stores and issue of materials are to be strictly controlled in case of item A because it has high material cost. In case the C item little material control is exercised because it has very small portion of costs. Theseanalyses will facilitate the management to exercise control on the basis value of material.

Material Item	Importance on the basis of value
A	Most important
B	Average
C	Less important

If it is convenient different items may be classified into only three categories and labelled as A, B, and C respectively depending upon whether they are high value items, middle value items or low value items. If need be, percentage of different items may be plotted on a chart. The entire working of ABC analysis may be explained with the help of the following simplified example:

Example: **ABC Analysis**

	Unit	% of total		Cost per unit	Total Cost ₹	% of total cost ₹	
1	400	4	A	50.00	20,000	25.0	A
2	600	6		40.00	24,000	30.0	
3	1,000	10	B	14.00	14,000	17.5	B
4	1,200	12		10.00	12,000	15.0	
5	2,800	28	C	2.00	5,600	7.0	C
6	4,000	40		1.10	4,400	5.5	
	10,000			100.0	80,000	100.0	

Graphical Presentation of ABC Plan

Example: **Illustration**

One can take the example of a Furniture Store.

Step 1**:** Multiply the total number of items by the cost of each unit to find the annual

usage value.

Products	Annual Number of Items Sold	Costs per unit	Annual Usage Value
Beds	5000	$80	$400,000
Chairs	1500	$20	$30,000
Coffee Tables	700	$40	$28,000
Desks	600	$40	$30,000
Ottomans	500	$30	$15,000
Dining Table	700	$50	$35,000
Book Cases	600	$15	$9,000
Office Chairs	10,000	$20	$200,000
Wardrobes	600	$40	$24,000
Computer Cabinet	700	$30	$21,000

Step 2: After noting all the products of the inventory, it's time to list them in the descending order based on annual consumption value.

Products	Annual Number of Items Sold	Costs per unit	Annual Usage Value
Beds	5000	$80	$400,000
Office Chairs	10,000	$20	$200,000
Dining Table	700	$50	$35,000
Chairs	1500	$20	$30,000
Desks	600	$40	$24,000
Coffee Tables	700	$40	$28,000
Wardrobes	600	$40	$24,000
Computer Cabinet	700	$30	$21,000
Ottomans	500	$30	$15,000
Book Cases	600	$15	$9,000

Step 3: Sum up and add the total number of units sold and the annual consumption value.

Products	Annual Number of Items Sold	Costs per unit	Annual Usage Value
Beds	5000	$80	$400,000
Office Chairs	10,000	$20	$200,000
Dining Table	700	$50	$35,000
Chairs	1500	$20	$30,000
Coffee Tables	700	$40	$28,000
Wardrobes	600	$40	$28,000
Desks	600	$40	$24,000
Computer Cabinet	700	$30	$21,000
Ottomans	500	$30	$15,000
Book Cases	600	$15	$9,000
Totel	**20,900**		**771,000**

Step 4: Find out the cumulative percentage of products sold along with the percentage of annual consumption value.

Products	Annual Number of Items Sold	Costs per unit	Annual Usage Value	Percentage of Annual Units Sold	Percentage of Annual Consumption Value
Beds	5000	$80	$400,000	23.80	52.00
Office Chairs	10,000	$20	$200,000	47.61	27.00
Dining Table	700	$50	$35,000	3.33	5.06
Chairs	1500	$20	$30,000	7.14	4.15
Desks	700	$40	$28,000	3.33	4.03
Coffee Tables	600	$40	$24,000	2.85	2.08
Wardrobes	600	$20	$24,000	2.85	2.08
Computer Cabinet	700	$30	$21,000	3.33	2.02
Ottomans	500	$30	$15,000	2.38	1.05
Book Cases	600	$15	$9,000	2.85	1.01
Totel	**20,900**		**$771,000**		

Step 5: In the last step, split the data and numbers into the three A, B, and C categories. Remember, it's essential to set the data in the ratio of 80:15:5.

	Products	Annual Number of Items Sold	Costs per unit	Annual Usage Value	Percentage of Annual Units Sold	Percentage of Annual Consumption Value
79%	Beds	5000	$80	$400,000	23.80	52.00
	Office Chairs	10,000	$20	$200,000	47.61	27.00
13%	Dining Table	700	$50	$35,000	3.33	5.06
	Chairs	1500	$20	$30,000	7.14	4.15
	Desks	700	$40	$28,000	3.33	4.03
8%	Coffee Tables	600	$40	$24,000	2.85	2.08
	Wardrobes	600	$20	$24,000	2.85	2.08
	Computer Cabinet	700	$30	$21,000	3.33	2.02
	Ottomans	500	$30	$15,000	2.38	1.05
	Book Cases	600	$15	$9,000	2.85	1.01
	Totel	**20,900**		**$771,000**		

A category B category C category

The table shows that items listed in Category A generate approximately 79% of annual consumption value, B yields 13%, while C generates 8% revenue.

4.6 Major Applications of ABC Analysis

1. The Manufacturing Sector

ABC Inventory Analysis assists manufacturers in optimising inventory replenishment schedules. Managers can use it to categorise stock goods based on their total annual cost. ABC Analysis is also required if the organisation intends to integrate Kaban to manage workflows.

2. Supply Chain and Warehouse

ABC Inventory Classification is mostly used in the supply chain and warehouses for stock count cycles. Items in category A, for example, must be counted quarterly. B-class items must be counted twice a year. C category products, on the other hand, have the most leeway. They are estimated once a year on an annual basis.

3. Retail and E-commerce

ABC Management is commonly used in the retail and e-commerce industries for consumer segmentation. It enables retailers and e-commerce owners to identify and target their most valued customers. ABC Analysis employs essential metrics such as sales revenue, purchasing power, and contribution margin. The shops can develop a chart based on the measurements and then categorise their customers as A, B, or C.

4. Logistics Industry

ABC Analysis is also beneficial to the logistics business. In this case, ABC management is critical to inventory control. The relevance of the products is determined by several parameters such as sales ratio, profit margin, and transportation cost, among others.

4.7 Fixation of Various Levels

Fixation of Norms of Inventory Holdings

The rules for inventories are established by either high management or the Materials department. Top management typically establishes monitory restrictions for inventory investment. The materials department must allocate this investment to the numerous items while ensuring the company's seamless operation. A variety of factors are taken into account when determining stock levels for individual items for the purposes of control and economy.Some of them are:

1. Lead time for deliveries.	5. Storage cost	9. Obsolescence price.
2.The rate of consumption.	6. Availability of space.	10.Seasonal consideration of price and availability.
3. Requirements of funds.	7.Price fluctuations.	11. EOQ (Economic Order Quantity), and
4.Keepingqualities, deterioration, evaporation etc	8. Insurance cost.	12. Government and other statuary restriction

Any decision concerning the procurement, storage, and usage of an item must be founded on an overall understanding of the importance of the key ones among them. Material control demands keeping inventory of each material item as low as feasible while also ensuring its availability as and when required for production. These two goals can only be met if inventory levels are properly planned. If the inventory level is not appropriately planned, the outcomes can be either overstocking or understocking. Carrying a significant stock of any item will unnecessarily tie up a substantial quantity of working capital, resulting in a loss of interest. Furthermore, exceeding the legal limit would result in deterioration. Furthermore, there is the danger of obsolescence if the end product for which the inventory is required becomes obsolete. Again, carrying a large stock has an increased cost of carrying, such as insurance and rent handling expenses. Under stocking, on the other hand, is equally undesirable because it causes stock outs and, as a result, production holdups. Production halts, resulting in idle facility costs. Furthermore, failing to meet delivery deadlines results in customer and goodwill damage. These two extremes can be avoided by a proper fixation of two important inventory level viz, the maximum level and the minimum level. The fixation of inventory levels is also known as the demand and supply method of inventory control. Generally, the organization fixes following stock levels:

1) Maximum Level: This represents the minimum quantity above which stocks should not be held at any time.
2) Minimum Level: This represents the minimum quantity of stock that should be held at all times.
3) Danger Level: Normal issues of stock are usually stopped at this level and made only under specific instructions.
4) Ordering Level: It is the level at which indents should be placed for replenishing stocks.
5) Ordering Quantity: It is the quantity that is ordered.

1) Maximum Level:

It is normally a matter of policy. The various factors that should be taken into consideration are:

Capital Outlay: Investment to be made in stores, raw materials and other bulk items is an important consideration.

a. Available storage space for material.
b. Storage and insurance cost of material.
c. If certain goods are subject to obsolescence, the spare parts and components etc. of such products stocked should be limited.
d. Consumption of material periodically i.e. monthly, annually.
e. Lead time for delivery of material.

f. Certain goods are seasonal in nature and can be purchased only during specific period. Hence maximum level will be fixed for each season.
g. Price advantage arising out of bulk purchases should be availed.
h. The Economic Order Quantity also influences the maximum level.
i. Maximum stock level can be computed as follows:-

Maximum stock level = Re-order level + Re-ordering quantity –
(Minimum consumption x Minimum re-order period)

2) Minimum Level

The minimum level is also a matter of policy and is based on:

a. Consumption of material periodically i.e. monthly, annually.
b. Lead time for delivery of material.
c. The production requirement.
d. The minimum quantity that could be advantageously purchased.
e. If an item is made to order then no minimum level is necessary.
f. The minimum stock level can be computed as follows:

Minimum level = Re-order level - (Normal consumption x Normal re-order period)

3) Danger or Safety Level

Because material use varies from day to day and week to week, effective forecasting is impossible. To avoid stock-outs, a safety or reserve stock is kept on hand. The ideal level of safety stock is one that minimises both stock-out and carrying expenses.

This level is a stock level between the minimum and zero stock. It is computed for things that can be used for many orders or products. When the danger level is reached, the storekeeper usually does not issue. Priority is usually given to an order/product for the utilisation of these goods. This level is set up specifically for production control so that priority items can be manufactured.

This level is occasionally set higher than the minimum level. This level is preventive in this scenario. This level is corrective if it is lower than the minimal level. The safety stock level can be computed as follows:

Safety stock level = Ordering level – (Average rate of consumption × Re-order period)
OR
(Maximum rate of consumption - Average rate of consumption) × Lead time

4) Ordering Level

The annual consumption of an item and the time lag between ordering and receiving can be collected from past records. Based on these facts and policies, the ordering level and ordering quantity can be calculated, as follows:

Ordering level = Minimum level + Consumption during time lag period
OR
Maximum consumption x Maximum re-order period.
OR
Maximum consumption x Lead time + Safety Stock

The ordering level should be fixed so that when an indent is placed at the ordering level, the stock reaches the minimum level when the replenishment is received. The ordering level is calculated from the following factors:

(a) The expected usage

(b) The minimum level

(c) The lead time.

The order point is calculated keeping in mind the worst conditions so that minimum stock is always maintained.

Lab Exercise:

Fill in the blank

Two important opposing factors in fixing the economic order quantity are _____ and Carrying Cost.

- Ordering Cost
- Material Cost

Correct answer: Ordering Cost

Illustration 1:

Materials X and Y are used as follows:	
Minimum usage	− 50 units each per week
Maximum usage	− 150 units each per week
Normal usage	− 100 units each per week
Ordering quantities	X = 600 units
	Y = 1,000 units
Delivery period	X = 4 − 6 weeks
	Y = 2 − 4 weeks
Calculate for each material (i) Maximum level (ii) Minimum level and (iii) Ordering level	

Solution:

Material X

Ordering level = Maximum usage x Maximum delivery period
= 150 x 6 = 900 units.
Minimum level = Ordering level - (Normal usage x Normal delivery period)
= 900 − (100 x 5) = 400 units
Maximum level = (Ordering level + Ordering quantity) − (Minimum usage x Minimum delivery period)
= 900 + 600 − (50 x 4) = 1,500 – 200 = 1,300 units

Material Y

Ordering Level = Maximum usage x Maximum delivery period
= 150 x 4 = 600 units
Minimum Level = Ordering level − (Normal usage x Normal delivery period)
= 600 − (100 x 3) = 300 units.
Maximum Level = (Ordinary level + Ordering quantity) - (Minimum usage x Minimum delivery period)
= 600 + 1,000 − (50 x 2) = 1,600 − 100 = 1,500 units.

Normal delivery period has been computed as follows:
Material X = (4+ 6)/2 = 5 weeks
Material Y = (2+ 4)/2 = 3 weeks

5) Ordering Quantity or Economic Ordering Quantity

The fundamental concerns of material control are two: how much of an item should be ordered at one time and when should an order be placed. When settling on an economical ordering amount, attempts are made to determine the appropriate order size. Material carrying charges and the ordering cost associated with the placement of purchase orders must be considered when determining the appropriate order size; the total of both must be minimised. Material carrying

charges comprise interest on capital invested in material stores, rent for storage space, salary and wages of the store-keeping department, any loss due to pilferage and deterioration, store insurance charges, stationery, etc. utilised by the shops, taxes on inventories, and so on. Rent for the space used by the purchasing department, salaries and wages of officers and staff in the purchasing department, depreciation on the department's equipment and furniture, postage, telegraph charges and telephone bills, stationery and other consumables required by the purchasing department, any travelling expenses incurred, and the costs of inspection, etc., on receipt of material are all examples of ordering costs.

The optimum ordering quantity, i.e., the quantity for which the cost of holding plus the cost of purchasing is the minimum is known as Economic ordering Quantity and is calculated by the following formula:

$$EOQ = \sqrt{\frac{2U * P}{S}}$$

Where,

E.O.Q. = Economic Ordering Quantity

U = Annual consumption (units) during the year

P = Cost of placing an order

S = Annual cost of storage of one unit.

The fundamental concerns of material control are two: how much of an item should be ordered at one time and when should an order be placed. When settling on an economical ordering amount, attempts are made to determine the appropriate order size. Material carrying charges and the ordering cost associated with the placement of purchase orders must be considered when determining the appropriate order size; the total of both must be minimised.

The material carrying charges include:

- interest on the capital invested in the stores of materials,
- rent for the storage space,
- salaries and wages of the store-keeping department,
- any loss due to pilferage and deterioration,
- stores insurance charges, stationery, etc.
- used by the stores, taxes on inventories, etc.

Ordering costs may include:

- rent for the space used by the purchasing department,
- the salaries and wages of officers and staff in the purchasing department,
- the depreciation on the equipment and furniture used by the department
- postage
- telegraph charges and telephone bills,
- the stationery and other consumables required by the purchasing department,
- any travelling expenditure incurred, and the costs of inspection etc., on receipt of material.

Illustration 2:

Ace Ltd. manufactures a product and the following particulars are collected for the year ended March, 2022:

Monthly demand (units)	250
Cost of placing an order (Rs.)	100
Annual carrying cost (Rs. per unit)	15

Normal usage (units per week)	50
Minimum usage (units per week)	25
Maximum usage (units per week)	75
Re-order period (weeks)	4–6

You are required to calculate:

(i) Re-order quantity

(ii) Re-order level

(iii) Minimum level

(iv) Maximum level

(v) Average stock level.

Answer:

i) $\mathbf{EOQ} = \sqrt{\frac{2U*P}{S}}$

Where, U = Annual consumption (units) during the year

P = Cost of placing an order

S = Annual carrying cost per unit

$= \sqrt{\frac{2*2600*100}{15}} = 186$ units (Approx.)

(ii) Re-order level = Maximum Re-order period or Maximum delivery period x Maximum usage

= 6 weeks x 75 = 450 units.

(iii) Minimum level = Re-order level – (Normal usage x Average delivery period or Normal re-order period)

= 450 units – (50 units x 5 weeks) = 200 units.

(iv) Maximum level = (Re-order level + Re-order quantity) - (Minimum usage x Minimum delivery period or Minimum re-order period)

= (450 units + 186 units) – (25 units x 4 weeks) = 536 units.

(v) Average stock level = [(Maximum level + Minimum level)] ÷ 2

= (536 units +200 units)/2= 368 units

Or Average stock level = Minimum level + 1/2 Reorder quantity

= 200 units + 1/2 x 186 = 293 units.

Illustration 3:

A factory requires 1,500 units of an item per month. The cost of each unit is Rs. 27. The cost per order is Rs. 150 and material carrying charge works out to 20% of the average material. Find out the economic order quantity (EOQ) and ascertain the number of orders to be placed per year. Would you accept a 2% price discount on a minimum supply of 1,200 units?

Answer:

Annual requirement 1500 units × 12 = 18,000 units

$$EOQ = \sqrt{\frac{2U*P}{S}} = \sqrt{\frac{2*18000*150}{20\%\ of\ 27}} = 1000 \text{ Unit}$$

No. of orders per year = 18000 ÷ 1000 = 18 orders

If discount is given (original price – 2% discount)

Cost price = Rs. 27 – 0.54 = Rs. 26.46

When 2% Price Discount is Available

No of orders to be placed: 18000 ÷ 1200 = 15 orders

Material carrying cost: 20% of 26.46 = 5.292

Total cost without discount = ordering cost + carrying cost + purchase price

= 18 x 150 + ½ x 1000 x 5.40 + 18000 x 27 = 2700 + 2700 + 4,86,000 = 4,91,400

Total cost with 2% discount

= 15 x 150 + ½ x 1200 x 5.292 + 18000 x 26.46 = 2250 + 3175.20 + 4,76,280 = Rs. 4,81,705.20

Since the total cost is less with 2% discount, the proposal may be accepted

4.8 Perpetual Inventory System and Continuous Stock Verification

The perpetual inventory system is designed to help with material control. It is a stock control system used by the retail department. The system employs a method of recording shops that ensures that information about each transaction, issue, and current stock balance is always available.

The Institute of Cost and Management Accountants of England and Wales, defines perpetual inventory as "A system of records maintained by the controlling department, which reflects the physical movement of stocks and their current balances."

According to Weldon, "Perpetual inventory system is a method of recordings stores balances after every receipt and issue, to facilitate regular checking and obviate closing down of work for stock-taking."

Thus, it is a mechanism for determining current balance after recording every material receipt and issue through stock records. It is vital to remember that the perpetual inventory is usually monitored by a continual stock-taking operation. The term "perpetual inventory" refers to the system of it recordkeeping, whereas "continuous stock-taking" refers to the physical comparison of such records with actual stocks.

Perpetual inventory system comprises of:

1) Comparison of Bin Cards (quantitative perpetual inventory) and Stores Ledger Accounts (quantitative-cum-valued perpetual inventory),
2) Continuous Stock-Taking (Physical perpetual inventory)

1) Comparison of Bind Cards and Stores Ledger Account

The storekeeper is in charge of the bin card, and the store accountant is in charge of the store ledger account. Each retail item is captured at these locations at the same time. Normally, the sum of the balances shown by the two records equals the total.However, there may arise some differences between these two records due to the following reasons:

(i) Omission of an item of store in bin card or stores ledger account.

(ii) Wrong posting of an item of store either in bin card or in stores ledger account.

(iii) Arithmetical error in working out their balances. Therefore, the balances of the two records should be reconciled at frequent intervals and correct balances should be drawn

2) Physical Stock Verification

Without a systematic mechanism for physical store verification, the perpetual inventory system is incomplete. Physical stock verification should be used to ensure that the balances reported on the bin card or stores ledger account are correct.Physical stock verification may be conducted in the following two ways:

(i) Periodic stock verification

It refers to a system in which physical stock verification is performed on a regular basis, such as once or twice a year. The value of stock is calculated using this method by physically counting the shares on a specific day, usually at the end of the year.

(ii) Continuous stock verification

This approach consists of counting and checking a set number of products at random every day of the year, ensuring that all shop items are confirmed numerous times throughout the year. Only on the date of actual verification is the storekeeper given notice of the specific merchandise to be confirmed.

4.9 Advantages of Perpetual Inventory System

(i) Easy detection of errors

Errors and fraud are readily detectable at an early stage. It aids in the prevention of their occurrence.

(ii) Better control over stores

The system maintains tighter control over all receipts and issues in order to provide a complete picture of both the quantities and values of stock on hand at all times.

(iii) No interruption of production process

The production process is not disrupted because physical stock verification is done on a planned and frequent basis.

(iv) Acts as internal check

Under the system, records are made in the bin cards and store ledger accounts at the same time, serving as an internal check to discover problems as they occur.

(v) Investment in materials kept under control

The investment in materials is maintained to a bare minimum since the actual stock is constantly compared to the maximum and lowest levels.

(vi) Early detection of loss of stock

Stock loss due to shrinkage, evaporation, accident, fire, theft, and other causes is easily detectable.

(vii) Accurate and up-to-date accounting records

The storekeeper and store accountant become more vigilant in their work as a result of regular stocktaking, and they preserve accurate and up-to-date records.

(viii) Easy to prepare interim accounts

It is possible to prepare periodical profit and loss account and balance sheet without physical stock-taking being made.

4.10 Bin Card

A bin card is a quantitative record of shop revenues, issues, and closing balances. Each item is labelled with its own bin card. The bin card is updated whenever a transaction occurs. The things are received/issued only when the transaction has been registered. When materials are received, the amount from the items received note is put in the bin card in the receipt column, and the issues to various departments are recorded in the issue column. The balance amount is computed and recorded.

The several levels shown on a bin card allow the storekeeper to obtain items as needed. Amount on order and quantity reserved are sometimes reported separately.

Code No.:	Level of Stock
Description:	Maximum:
Unit of Quantity:	Minimum:
Location Code:	Danger:
	Ordering:
	Ordering Qty:

Date	Doc. No.	Receipts	Issues	Balance	On Order	Reserved

4.11 Stores Ledger

The store ledger is used to keep track of all material receipt and issuance transactions. The amounts and values are recorded in the columns receipts, issues, and balance. Additional information such as the amount ordered and the quantity reserved may be recorded. It is possible to keep separate sheets for each item or a continuous stores ledger. To eliminate the chance of removal or loss, the sheets should be serially numbered.

Code No.:	Maximum Level:	Suppliers' Name
Description:	Minimum Level:	1.
Substitute:	Danger Level:	2.
Location Code:	Ordering Level:	3.
	Ordering Quantity:	

Date	Receipts				Issues				Balance			On Order		Reserved	
	Doc. No.	Qty.	Rate	Value	Doc. No.	Qty.	Rate	Value	Qty.	Rate	Value	P.O. No.	Qty.	G.R. No.	Qty.

4.12 Use of Control Ratio

1) Inventory turnover ratio:

It helps management to avoid capital being locked up unnecessarily. This ratio reveals the efficiency of stock-keeping. Inventory turnover ratio is given by the formula:

Cost of material consumed / Cost of average stock held during the period

Cost of average stock = (Cost of opening stock + Cost of closing stock)/2

The inventory turnover ratio can be calculated (in days) as follows:

Days during the period / Inventory turnover ratio

This will reveal the number of days for which the stocks are held.

2) Input-output ratio:

It is the ratio of the amount of material input to the amount of output. This ratio allows for a comparison between actual consumption and standard consumption, indicating whether material utilisation is positive or unfavorable.

4.13 Review of Slow and Non-Moving Items

It is Usually known as the FSN analysis. FSN stands for fast-, slow-, and non-moving in inventory management. FSN is one of the inventory management approaches that involves categorization of things based on their consumption levels, quantity, and rate of usage.

Fast-moving inventory, as the name implies, is merchandise that moves rapidly and must be supplied often. In general, stock in this category has an inventory turnover ratio more than three and accounts for around 10-15% of overall inventory.

Slow-moving inventory is inventory that moves slowly through the supply chain and has a turnover ratio of 1-3. It is usually between 30 and 35 percent of the overall supply. Non-moving inventory is defined as inventory that seldom moves, has an inventory turnover ratio of less than one, and accounts for 60-65 percent of total stock.

4.14 VED Analysis

VED analysis is a strategy for inventory management that categorises inventory based on its functional significance. It divides stock into three categories depending on its value and requirement for an organization's production or other operations. The acronym VED stands for Vital, Essential, and Desirable.

V-Vital category

The category "Vital" covers inventory that is required for manufacturing or any other process in a company, as the name implies. A lack of goods in this category can substantially impede or interrupt the correct running of activities.

E- Essential category

Inventory is included in the essential category, which is second only to being crucial. These, too, are critical for any business since they might create a halt in production or impede another operation. However, the loss caused by their unavailability may be transitory, or the stock item or part may be repairable.

D- Desirable category

The desired category of inventory is the least critical of the three, and its absence may cause small halts in manufacturing or other activities. Furthermore, such deficits may be easily replenished in a short period of time.

4.15 Importance of VED Analysis

Maintaining an optimal amount of inventory is critical for every firm. Maintaining inventory entails expenses, thus this study divides inventory into three sections to assist managers in making inventory management decisions.There are four types of costs to maintain stock which are:

A) Item cost

This is the price or cost of the inventory items. It is the actual purchase value of holding stock. As a result, with more inventory, it will be higher, and vice versa.

B) Ordering / Set-up Cost

Certain expenses are incurred while purchasing inventory. These may include transportation and packaging fees, among other things.

C) Holding Costs

There are a few charges after purchasing inventory products. These may be connected to storage, stock or inventory insurance charges, personnel expenses associated with stock handling, and so on. It also covers any damage, leakage, or pilferage of the merchandise under question.

D) Stock Out Cost

These expenses are incurred as a result of an inventory item running out of stock. It includes lost output as a result of a spare part being out of stock. Furthermore, this may cause the product's sale to be delayed. Furthermore, the product itself may run out of supply. Such losses are included in the stockout cost.

Illustration 3:

One parcel containing two important materials was received by a factory and the invoice pertaining to the same discloses the following information:

Material-I 500 kgs. @ Rs. 2.00 per kg.	1,000.00
Material-II 600 kgs. @ Rs. 1.60 per kg.	960.00
Insurance	39.20
Sales Tax	98.00
Freight etc.	55.00

Due to mishandling in the factory's store a loss of 10 units of material-I and 6 units of material-II was noted.What rate would you adopt, for issuing these vital components to the jobs? Also give your changed rate, if a provision of 10% is to be kept for probable risk of obsolescence.

Answer:

	Material-I ₹	*kgs.*	*Material-II* ₹	*kgs.*
Material Price	1,000	500	960.00	600
Insurance (value)	20		19.20	
Sales tax (value)	50		48.00	
Freight (weight)	25		30.00	
	1,095	500	1,057.20	600
(–) Loss due to mishandling (normal loss)		10		6
Total	1,095	490	1,057.20	594

Rate of issue = Rs. 1,095 ÷ 490 = Rs. 2.23 (approx.) for material-I.

= Rs. 1,057.20 ÷ 594 = Rs. 1.78 (approx.) for material-II.

Revised Rate for issue

	Material.-I	**Material-II**
	(kgs.)	(kgs.)
Qty. available for issue	490	594.0
Less: 10% provision for obsolescence	49	59.4
Effective quantity for issue	441	534.6

Revised rate for issue

= Rs. 1,095 ÷ 441 = Rs. 2.48 (approx.) for Material-I

= Rs. 1,057.20 ÷ 534.6 = Rs. 1.98 (approx.) for Material.-II

Summary

- The function of receiving supplies, storing them, and issuing them to workshops or departments is known as storekeeping.
- ABC analysis is a value-based material control approach in which items are analysed based on their worth, with more expensive and precious commodities receiving more attention and care.
- Economic Ordering Quantity (EOQ) is the amount of the order that saves the most money when acquiring a material and, as a result, contributes to keeping the material at the best possible level and at the lowest possible cost.
- A perpetual inventory system is a means of documenting store balances after each receipt and issue in order to allow regular checking and eliminate the need for stock taking.

Keywords

- ABC analysis
- VED analysis
- Min- Max
- Economic Order Quantity (EOQ)
- Two-Bin System
- Re-order Level
- Average Stock
- Perpetual Inventory System
- Control Ratios
- Bins
- Store Ledger
- Inventory Valuation

Self Assessment

1. According to the global company profile, Amazon.com's advantage in inventory management comes from its almost fanatical use of economicorder quantity and safety stock calculations.

A. True
B. False

2. A major challenge in inventory management is to maintain a balance between inventory investment and customer service.

A. True
B. False

3. Which item to order and with which supplier the order should be placed are the two fundamental issues in inventory management.

A. True
B. False

4. Work-in-process inventory is devoted to maintenance, repair, and operations.

A. True
B. False

5. ABC analysis classifies inventoried items into three groups, usually based on annual units or quantities used.
A. True
B. False

6. In ABC analysis, "A" Items are the most tightly controlled.
A. True
B. False

7. ABC analysis is based on the presumption that carefully controlling all items is necessary to produce important inventory savings
A. True
B. False

8. The annual demand is 1,000 units. The unit price is Rs, 10 per unit. The carrying cost of inventory is 10% and the ordering cost is Rs. 5 per order. The economic order lot to be ordered is —
A. 100 units
B. 800 units
C. 200 units
D. 400 units.

9. Continuous stock taking is a part of —
A. Annual stock taking
B. Perpetual inventory
C. ABC Analysis
D. None of the above.

10. ……is the task of buying goods of right quality, in the right quantities, at the right time and at the right price.
A. Supplying
B. Purchasing
C. Scrutinizing
D. Recruiting

11. Which of the following inventory costs represents the cost of loss of demand due to shortage in supplies?
A. Stockout cost
B. Unit cost
C. Procurement cost
D. Carrying cost

12. A manufacturing company purchases 9000 parts of a machine for its annual requirements ordering for month usage at a time, each part costing Rs. 20. The ordering cost per order is Rs. 15 and carrying charges are 15% of the average inventory per year. What should be the optimum order quantity?
A. 200
B. 300
C. 400
D. 500

13. A manufacture can produce 12000 bearing per day. The manufactures received an order of 8000 bearing per day from a customer. The cost of holding a bearing in stock Rs. 0.20 per month. Set up cost per production run is Rs. 500. Assuming 300 working days in a year, the frequency of production run should be

A. 4.5 Days
B. 4.5 Months
C. 6.8 Days
D. 6.8 Months

14. An item can be purchased for Rs.100. The ordering cost is Rs.200 and the inventory carrying cost is 10% of the item cost per annum. If the annual demand is 4000 units, the economic ordering quantity is

A. 50
B. 100
C. 200
D. 400

15. A company uses 2555 units of an item annually. Delivery lead time is 8 days. The reorder point (in number of units) to achieve optimum inventory is

A. 7
B. 8
C. 56
D. 60

Answer for Self Assessment

1.	B	2.	A	3.	B	4.	B	5.	B
6.	A	7.	B	8.	A	9.	B	10.	D
11.	A	12.	B	13.	D	14.	D	15.	C

Review Questions

1. Define inventory control. Why is inventory control necessary?
2. What are the different methods of controlling inventory?
3. Explain what 'minimum level' is, 'maximum level', 'ordering level', quantity. How are they determined?
4. Explain ABC analysis. What are its merits?
5. Perpetual inventory is a method of maintaining records, whereas continuous stock taking involves physical checking of those records with actual stock. Comment.
6. What do you mean by stores layout?
7. What is Economic Order Quantity? Explain its significance.
8. What is Perpetual Inventory System? Explain its advantages.
9. What do you understand by Bin Card and Stores Ledger?
10. What is Inventory Turnover Ratio? Explain its importance.
11. From the following particulars calculate :

    Normal usage 100 units per day

    Maximum usage 130 units per day

Minimum usage 60 units per day

Economic Order Quantity 5000 units

Re-order Period 25 to 30 days.

(a) Re-order Level. (b) Minimum Level. (c) Maximum Level. (d) Average Level.

12. Calculate E 0 Q from the following:

    Annual Consumption = 600 units.

    Ordering Cost Rs. 12 per order.

    Carrying Cost 20% Price per unit Rs. 20.

13. A manufacturing company purchases 2000 units of a particular material per year at a unit cost of Rs.20, the ordering cost per order is Rs.50 and the inventory carrying cost is 25%. Find out the Economic Order Quantity and number of orders to be placed in a year

14. Calculate Economic Order Quantity from the following particulars :

    Annual Consumption = 20000 units.

    Buying Cost per order Rs. 10.

    Cost per unit Rs. 100.

    Inventory Carrying Cost 10% of cost.

15. A company manufacturers 5,000 units of a product per month. The cost of placing an order is Rs. 100. The purchase price of the raw material is Rs. 10 per kg. The re-order period is 4 to 8 weeks. The consumption of raw materials varies from 100 kg. to 450 kg. per week. The average weekly consumption being 275 kg. The carrying cost of inventory is 20% per annum. Assuming 52 weeks in a year, you are required to calculate —

    I. Re-order quantity;
    II. Maximum level;
    III. Minimum level; and
    IV. Average level.

16. Pooja Pipes Ltd. uses about 75,000 valves per year and the usage is fairly constant at 6,250 valves per month. The valve costs Rs. 1.50 per unit when bought in large quantities; and the carrying cost is estimated to be 20% of average inventory investment on an annual basis. The cost to place an order and process the delivery is Rs. 18. It takes 45 days to receive delivery from the date of an order and a safety stock of 3,250 valves is desired.

    You are required to determine

    I. The most economical order quantity and frequency of orders;
    II. the reorder point; and
    III. the most economical order quantity if the valves cost Rs. 4.50 each instead of Rs. 1.50 each.

17. A consignment was received from a foreign supplier, containing four types of material. The invoice reveals the following :

Material A 2,000 kgs. @ Rs. 2.00 per kg.	Rs. 4,000.00
Material B 1,000 kgs. @ Rs. 3.00 per kg.	Rs. 3,000.00
Material C 1,500 kgs. @ Rs. 4.00 per kg.	Rs. 6,000.00
Material D 500 kgs. @ Rs. 4.50 per kg.	Rs. 2,250.00
Freight paid by supplier	Rs. 1,000.00
Expenses incurred by importer	Rs. 1,600.00
Duty paid by the importer	Rs. 610.00

Insurance	Rs. 152.50

Loss due to breakage was recorded as follows:

Material A - 20 kgs.; Material B - 20 kgs.; Material C - 45 kgs.; and Material D - 10 kgs.

Provision of 10% is made for evaporation and minor losses due to seasonal variations. Calculate the rate at which these should be issued.

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Web Links

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Unit 05: Pricing Material Issues

CONTENTS

Objectives

After studying this unit, you will be able to:

- acquaint with the latest techniques in inventory control,
- use inventory management tools and techniques,
- review financial analysis of inventory management,
- understandStore keeping and its functions.

Introduction

All receipts and issues of materials are the important aspects to continuous flow of production. Asystematic. procedure should be adopted for movement of materials from one place to another place.Materials received and stored are issued on the basis of stores requisition, bills of materials, stock inbalance, proper authorization and pricing material issues etc. It is clear that ascertainment of accuratematerial cost, fixing of material issue and effective cost control are the primary objective in order to fulfilthe needs of management. For this reason, the following aspects considered to be the subject matter ofvaluation of materials issues.

1. Valuation of total cost of materials purchased.

2. Material Issue Procedure.

3. Important methods of pricing of materials issued.

5.1 Valuation of Total Cost of Materials Purchased

Material costing is very important in terms of the valuation of the cost of materials consumed by the production department as well as in terms of the estimation of the value of materials in stock. For costing purposes, the material cost is worked out by the actual cost incurred by taking price quoted by supplier as the basis subtracting the discounts and adding any other expenses not

covered. In practice discounts maybe allowed by the supplier in the following ways such as : (a) Trade Discount. (b) Quantity Discount and (c) Cash Discount.

a. Trade Discount:

Trade Discount is allowed by the seller to the buyer who has to resell the goods.This allowance is to compensate the buyer for the cost of storage, breaking bulk, selling repacking thegoods etc.

b. Quantity Discount:

This discount refers to the allowance which is allowed by the supplier to thebuyer to encourage large orders. Placing the large orders from the buyers gives savings in costs which arisefrom large-scale production to the supplier. Part of the savings allowed by supplier to the buyer by meansof a quantity discount.

c. Cash Discount:

Cash Discount is allowed by the supplier to a buyer to encourage prompt payment of cash within the stipulated period.

5.2 Materials Issue Procedure

Issues of materials are based on production programme. Based on this and the bill of materialswork orders are printed, listing for each material quantity to be issued against each component requiringthat material. The storekeeper is very much concerned with the material control, as he is responsible for themissue of materials based on the proper authorization of material requisition and bills of materials.

Materials Requisition:

Purchase or Material Requisition is also known as Intent for Materials. Thisis a document prepared by the production department for requisition of materials is known as MaterialsRequisition. The storekeeper is authorized to issue the materials based on the proper authority to avoid themisappropriation of material. The store keeper is responsible to maintained a record of serial number onrequisition, issues and stock balances are up to date are must be posted in stores ledger.

Bill of Materials:

Bill of materials is a document which shows a complete listing for each material,quantity to be issued against each component requiring that materials for a particular job order or process.Bill of Materials is prepared by the production department before the quantity of the components to bemanufactured. This is helpful for the purpose of initiate material requisition and estimation of costmaterials to collect quotations.

5.3 Method of Pricing of Materials Issues

In the relation to the estimation of the cost of the product for pricing decisions, material issues assure a key role. Material price usually refers to the price quoted and accepted in the purchase orders. Materials are issued from the stores to work orders based on the material requisition. But stock of materials consists of different consignment received at different dates and prices. This means that actual cost can take on several different values and same method of pricing the issue of materials must be selected.

A firm purchases materialfrequently at different prices. It keeps all the material in the same store, without differentiating the price at which the materials were purchased. It issues the materials from the store to different jobs, orders, processes etc as and when required.

THUS, the cost of the material issued variesHowever, the cost of material is to be recovered? Then question arises at what price the material isto be issued.The problem arises when it is difficult to identify and locate the price at which the material was purchased.

When materials are issued to production department, a difficulty arises regarding the price at which materials issued are to be charged. The same type of material may have been purchased in different lots at different times at several different prices. This means that actual cost can take on several different values and same method of pricing the issue of materials must be selected.

Essentials of a Good Pricing Method

1. It should recover the price of materials.
2. It should be near the market price so that the effect of current market price is revealed in the cost ofissues.
3. It should not lead to significant variations in cost of similar jobs from period to period.
4. It should not necessitate heavy adjustment in the value of stock of materials.
5. It consider the policy of management related to valuation of stock.
6. It should consider the nature of materials.

There are different methods used for pricing the materials issues may be summarized in the following categories:

Cost Price Methods	Average Price Method	Notional Price Methods
(a) Specified Price	(a) Simple Average	(a) Standard Price
(b) First-in First-out (FIFO)	(b) Weighted Average	(i) Current Standard
(c) Last-in First-out (LIFO)	(c) Periodic Simple Average	(ii) Basic Standard
(d) Highest-in First-out (HIFO)	(d) Moving Simple Average	(b) Inflated Price
(e)Base Stock	(e) Moving Weighted Average	(c) Market Price
		(i) Replacement Price
		(ii)Realizable Price

5.4 Cost Price Methods

a) Specified Price (Identifiable) Method

Sometimes materials are purchased to be utilised in a particular job or issues can be identified with a particular receipt. In these cases, the actual purchase price can be charged. This method can be adopted when prices are stable or when the materials are covered by price control orders. This method has limited application only.

b) First-in First-out (FIFO) Method

This method is based on the assumption that materials which are purchased first are issued first. It uses the price of the first batch of materials purchased for all issues until all units from this batch have been issued. In other words, the materials are issued at the oldest cost price listed in the store's ledger account and thus, the materials in stock are valued at the price of the latest purchases. It should be noted that the assumption of FIFO is only for accounting purpose i.e. the physical flow of materials need not necessarily be in the order of the flow of cost, though normally materials would be expected to move out of stock on approximately a FIFO basis because oldest stocks are usually used up first.

Example: Illustration

Receipts:
20th Oct. 500 kgs. @ 5.00 per kg.
23rd Oct. 250 kgs. @ 5.50 per kg.

Ans: Issues: 25th Oct. Issue of 600 kgs. will be valued as follows:
500 kgs. @ 5 per kg.
100 kgs. @ 5.50 per kg.

Advantage of FIFO method

1) It is simple to understand and easy to operate.

2) It is Logical method. it considers the normal procedure of utilizing first of those materials which are received first–materials are issued in order of purchases.
3) It issued at purchase prices, recovers the cost of materials and cost of the process, job, orders etc can be easily and correctly ascertained.
4) It is useful when the prices are falling.
5) If closing stock is valued at the market price as closing stock contains materials purchased recently.
6) It is useful when number of transactions is limited and prices of materials are steady.

Disadvantage of FIFO method

1) Increases possibility of clerical errors, if consignments are received frequently at varying prices.
2) In case of wide fluctuation in prices comparison of cost of different jobs, orders, processes etc will be difficult.
3) For pricing one issue, often more than one price is to be taken.
4) When prices rise, issue price does not reflect market prices. Products are charged at low prices and closing stock contain materials purchased at distant prices and does not represent recent prices.

Illustration 1:

The received side of the Stores Ledger Account shows the following particulars

Jan. 1 - opening balance 500 units @ Rs. 4

Jan. 5 - received from vendor 200 @4.25

Jan. 12 - received from vendor 150 @4.10

Jan. 20 - received from vendor 300 @ 4.5

Jan. 25 - received from vendor 400 @ 4

Issue of materials were as follows: -

Jan. 4 – 200 units; Jan. 10 – 400 units;

Jan. 15 – 100 units Jan. 19 – 100 units;

Jan. 26 – 200 units; Jan. 30 – 250 units.

Issues are to be priced on FIFO method. Write out Stores Ledger Account for the month of January

Answer:

STORES LEDGER ACCOUNT FOR THE MONTH OF JANUARY - (FIFO) METHOD

Date	Particulars	Receipt			Issues			Balance		
		Units	Rate	Total cost	Units	Rate	Total cost	Units	Rate	Total cost
Jan 1	Balance b/d	-	-	-	-	-	-	500	4.00	2000
Jan 4	Requisition Slip No….	-	-	-	200	4.00	800	300	4.00	1200
Jan 5	Goods Received Note No….	200	4.25	850	-	-	-	300 200	4.00 4.25	1200 850
Jan 10	Requisition Slip No…	--	--	-	300 100	4.00 4.25	1200 425	100	4.25	425
Jan 12	Goods Received	150	4.10	615	--	--	-	100 150	4.25 4.10	425 615

	Note No…									
Jan 15	Requisition slip No.	--	-	-	100	4.25	425	150	4.10	615
Jan 19	Requisition slip no	-	-	-	100	4.10	410	50	4.10	205
Jan 20	Goods Received Note	300	4.50	1350	-	-	-	50 300	4.10 4.50	205 1350
Jan 25	GoodsReceived NoteNo..	400	4	1600				50 300 400	4.10 4.50 4.00	205 1350 1600
Jan 26	RequisitionSlip No….	-	-	-	50 150	4.10 4.50	205 675	150 400	4.50 4.00	675 1600
Jan 30	Requisitionslip No…	--	--	--	150 100	4.50 4.00	675 400	300	4.00	1200
Closing stock of materials 300 units @ Rs. 4; Value of Closing Stock Rs. 1200										

c) Last-in First out (LIFO) Method

The principle adopted is that the materials used in production is from the latest purchase. The inventory is priced at the oldest costs. As the method applies the current cost of materials to the cost of units, it is also known as the replacement cost method. It is the most significant method in matching cost with revenue in the income determination procedure.

Example: Illustration

Receipts:
20th Oct. 500 kgs. @ 5.00 per kg.
23rd Oct. 250 kgs. @ 5.50 per kg.

Ans: Issues: 25th Oct. Issue of 600 kgs. will be valued as follows:
250 kgs. @ 5.50 per kg.
350 kgs. @ 5.00 per kg.

Advantage of LIFO method

1. It is simple and useful when transaction are few.
2. It is a good method of avoiding tax.
3. It is a systematic method. It matches current costs with current revenues in a better way.
4. It reveals real income in times of rising prices.
5. It minimises unrealised inventory gains and losses and tends to stabilise reported operation profitsespecially when the industry is prone to sharp price fluctuations.

Disadvantage of LIFO method

1) When rates of material receipts are highly fluctuating, the method becomes complicated.
2) More than one price may have to be adopted for an issue.
3) Cost of different batches vary greatly, making inter-firm and intra-firm comparison difficult.
4) The stocks require to be adjusted during falling prices.
5) Unless purchases and sales occur in equal quantities the current costs cannot be easily matched with current revenue.
6) The company can time the purchases to cause high or low costs thus changing reported income at will.

7) Existing profit sharing and bonus can be effected by an accounting change. Employees will have difficulty in understanding the cause for these changes.

Illustration 2:

The received side of the Stores Ledger Account shows the following particulars

Jan. 1 - opening balance 500 units @ Rs. 4

Jan. 5 - received from vendor 200 @4.25

Jan. 12 - received from vendor 150 @4.10

Jan. 20 - received from vendor 300 @ 4.5

Jan. 25 - received from vendor 400 @ 4

Issue of materials were as follows: -

Jan. 4 – 200 units;

Jan. 10 – 400 units;

Jan. 15 – 100 units;

Jan. 19 – 100 units;

Jan. 26 – 200 units;

Jan. 30 – 250 units.

Issues are to be priced on LIFO method. Write out Stores Ledger Account for the month of January

Answer:

STORES LEDGER ACCOUNT FOR THE MONTH OF JANUARY - (LIFO) METHOD										
Date	**Particulars**	**Receipt**			**Issues**			**Balance**		
		Units	**Rate**	**Total cost**	**Units**	**Rate**	**Total cost**	**Units**	**Rate**	**Total cost**
Jan 1	Balance b/d	--	--	--	--	--	--	500	4.00	2000
Jan 4	Requisition Slip No….	--	---	---	200	4.00	800	300	4.00	1200
Jan 5	Goods Received Note No….	200	4.25	850	--	--	--	300 200	4.00 4.25	1200 850
Jan10	Requisition Slip No…	--	--	--	200 200	4.25 4.00	850 800	100	4.00	400
Jan 12	Goods Received Note No…	150	4.10	615	--	--	--	100 150	4.00 4.10	400 615
Jan 15	Requisition Slip No. ….	--	--	--	100	4.10	410	50 100	4.10 4.00	205 400
Jan 19	Requisition slipNo…..	--	--	--	50 50	4.10 4.00	205 200	50	4.00	200
Jan 20	Goods Received Note No…	300	4.5	1350	--	--	--	50 300	4.00 4.50	200 1350
Jan 25	Goods ReceivedNote No..	400	4	1600				50 300 400	4.00 4.50 400	200 1350 1600
Jan	Requisition	-	-	-	200	4.00	800	50	4.00	2

26	SlipNo….							300 200	4.50 4.00	0 0 13 50 800
Jan 30	Requisition SlipNo…	--	--	--	200 50	4.00 4.50	800 225	50 250	4.00 4.50	2 0 0 112 5

d) Highest-in First-out (HIFO) Method

This method is based on the assumption that the stock of materials should always be valued at the lowest possible price. Accordingly, materials purchased at the highest price should be used for making the issue. This method is useful because issues are based on actual cost. It aims at recovering the highest cost of materials when the market is constantly fluctuating. But at the same time this method involves too many complicated calculations. And also, this method has not been adopted widely. It is mainly used for monopoly products or cost-plus contracts. When stocks are undervalued, a secret reserve is created.

Illustration 3:

From the following details of stores receipts and issues of material "XYZ" in a manufacturing unit, prepare the Stores Ledger using Highest In First Out Method (HIFO):

2003 January 1	Opening stock 4,000 units at Rs. 5
4	Purchased 1,000 units at Rs. 7 per unit
8	Purchased 1,200 units at Rs. 8 per unit
12	Issued 1,000 units
15	Purchased 700 units at Rs. 10 per units
19	Purchased 300 units at Rs. 8 per unit
23	Issued 800 units
25	Purchased 509 units at Rs. 10 per unit
31	Issued 400 units.

Answer:

Stores Ledger Account

(Highest In First Out (HIFO) Method)

Date	Receipts			Issues			Balance		
	Qty.	Rate Rs.	Amt. Rs.	Qty.	Rate Rs.	Amt. Rs.	Qty.	Rate Rs.	Amt. Rs.
2003									
Jan.1							4,000	5	20,000
" 4	1,000	7	7,000				4,000	5	20,000
							1,000	7	7,000
" 8	1,200	8	9,600				4,000	5	20,000
							1,000	7	7,000
							1,200	8	96,000
" 12				1,000	8	8,000	4,000	5	20,000
							1,000	7	7,000
							200	8	1,600
" 15	700	10	7,000				4,000	5	20,000
							1,000	7	7,000
							200	8	1,600
							700	10	7,000
" 19	300	9	2,700				4,000	5	20,000
							1,000	7	7,000
							200	8	1,600
							700	10	7,000
							300	9	2,700
				700	10	7,000	4,000	5	20,000
" 23				100	9	900	1,000	7	7,000
				800			200	8	1,600
							200	9	1,800
"25	500	10	5,000				4,000	5	20,000
							1,000	7	7,000
							200	8	1,600
							200	9	1,800
							500	10	5,000
"31				400	10	4,000	4,000	5	20,000
							1,000	7	7,000
							200	8	1,600
							200	9	1,800
							100	10	1,000

e) Base Stock Method

The principle adopted is that costliest materials are issued first, Inventory is valued at the lowest possible price. The method requires detailed records. It is mainly used for monopoly products or cost-plus contracts.When stocks are undervalued, a secret reserve is created.

A certain minimum stock of a material is always carried and is priced at the original cost (usually at the lowest purchase price). The portion of stock above this level is issued and priced under any one of the methods.The disadvantages of this method is that the stock may be undervalued and hence the computation of return on capital will not be reliable.

Example: Illustration

From the following details of stores receipts and issues of materials in a manufacturing unit, prepare the stores ledger using Base Stock Method of valuing the issues; assume base stock 200 tonnes.

01.1.2003	Purchased 500 tones at Rs. 2 per ton
10.1.2003	Purchased 300 tones at Rs. 2.10 per ton
15.1.2003	Issued 600 tons
20.1.2003	Purchased 400 tones at Rs. 2.20 per ton
25.1.2003	Issued 300 tons
27.1.2003	Purchased 500 tons at Rs. 2.10 per ton
31.1.2003	Issued 200 tons

Answer:

Stores Ledger Account (Base Stock - FIFO)

Date	Receipts			Issues			Balance		
	Qty	Rate Rs.	Amt. Rs.	Qty.	Rate Rs.	Amt. Rs.	Qty.	Rate Rs.	Amt. Rs.
01.01.2003	500	2	1,000				500	2	1000
10.01.2003	300	2.10	630				500	2	1000
							300	2.10	630
15.01.2003				300	2	600			
				300	2.10	630	200	2	400
20.01.2003	400	2.20	880				200	2	400
							400	2.20	880
25.01.2003				300	2.20	660	200	2	400
							100	2.20	220
27.01.2003	500	2.10	1,050				200	2	400
							100	2.20	220
							500	2.10	1,050
31.01.2003				100	2.20	220	200	2	400
				100	2.10	210	400	2.10	840

Closing Stock = 600 tons (200 x Rs. 2 + 400 x Rs. 2.10) = Rs. 1,240

5.5 Average Price Methods

In this method, the issues to the production department are split into equal batches from each shipment at stock. It is a realistic method reflecting the price levels and stabilizing the cost price. The following various methods of averaging issue prices may be used:

a. Simple Average Method
b. Weighted Average Method
c. Periodic Simple · Average Method
d. Moving simple Average Method
e. Moving Weighted Average

a) Simple Average Method

The simple average is the average of prices ignoring the quantities involved. It can be used when the prices are normally stable and the stocks purchased are in equal quantities or the stock value is small. It is calculated by dividing the total rates of materials by the number of rates of prices. A new average is worked out after every receipt.

"The price, which is calculated by dividing the total of the prices of the materials in the stock from which the material to be priced could be drawn by the number of the prices used in that total"

Calculated by dividing the total of unit purchase prices of different lots o in stock on the date of issue by the number of prices used in the calculation and quantity of different lots is ignored

There are chances for under-recovery or over-recovery of cost of materials, since the quantity purchased is ignored. Thus, this method is not generally followed. The following formula is applied for calculation of material issue price under simple average method:

Issue Price = Total of Unit Prices of Materials in Stock / Number of Prices

Example: Discussion

Assuming the facts given in FIFO example, the average will be

Rs. (5+ 5.5)/ 2 = Rs. 5.25 per kg

Illustration 4:

From the following prepare stores ledger account using Simple Average Method for the month of January 2003:

January 1 opening balance 500 units at Rs. 2 per unit

3 Issued 100 units

4	Issued 100 units
8	Issued 100 units
13	Purchased 400 units at Rs. 3 per unit
14	Purchased 200 units at Re. 1 per unit
16	Issued 150 units
20	Purchased 400 units at Rs. 4 Per unit
24	Issued 250 units
25	Purchased 500 units at Rs. 5 per unit
26	Issued 300 units
28	Purchased 200 units at Rs. 2 per unit
31	Purchased 200 units at Rs. 4 per unit

Answer:

Date	Receipt			Issues			Balance		
	Units	Rate	Total cost	Units	Rate	Total cost	Units	Rate	Total cost
01.2022	500	2	1,000				500	2	1,000
03.2022				100	2	200	400	2	800
04.2022				100	2	200	300	2	600
08.2022				100	2	200	200	2	400
13.2022	400	3	1,200				200	2	400
							400	3	1,200
14.2022	200	1	200				200	2	400
							400	3	1,200
							200	1	200
16.2022				150	2	300	650	1,500	
20.2022	400	4	1,600				1,050		3,100
24.2022				250	2.5	625	800	2,475	
25.2022	500	5	2,500				1,300		4,975
26.2022				300	3.25	975	1,000	4,000	
28.2022	200	4	400				1,200		4,400
31.2022	200	4	800				1,400		5200

b) Weighted Average Method

Under this method, the price of materials issue is determined by dividing the total cost of materials in stock by the total quantity of material in stock. Here weighted average rate is calculated based on both quantity and price of the materials in stock. As more issues are made, a new average rate is computed and this average rate is applied to the subsequent issues. The total cost is divided by the total quantity to arrive at the value. This method avoids price fluctuations and reduces the number of calculations and gives an acceptable figure for stock.Weighted average price recovers cost of materials from the production process. During the periods of heavyfluctuations,weighted average price method will provide better results, because it tends to smooth out wide fluctuations in prices. The material issue price is calculated by the formula given below:

Weighted Average Price =Value of Materials in Stock / Quantity in Stock

Example: Discussion

The weighted average will be calculated as follows (with previously given data):

$(5 \times 500 + 5.5 \times 100)/ 600 = \text{Rs. } 5.083$

Advantage ofWeighted Average Method:

I. It is logical and consistent.

II. Changes in prices do not affect issues and inventory.

III. The values reflect actual costs.

Disadvantage of Weighted Average Method:

I. It involves considerable amount of clerical work.

II. When prices change frequently, it is inconvenient and complex.

III. As it is not the actual price, it is not realistic.

Illustration 5:

From the following particulars, prepare stores Ledger Account on weight Average basis:

2022 March 1	Opening balance 200 units at Rs. 2 per unit
10	Purchased 300 units at Rs. 2.40 per unit
15	Issued 250 units
18	Purchased 250 units at Rs. 2.60 per unit
20	Issued 200 units.
25	Purchased 300 units at Rs. 2.50 per unit
31	Purchased 100 units at Rs. 2 per unit

Answer:

Date	Receipt			Issues			Balance		
	Units	Rate	Total cost	Units	Rate	Total cost	Units	Rate	Total cost
01.2022	200	2	400				200	2	400
10.2022	300	2.40	720				200	2	400
							300	2.40	720
15.2022				250	2.24	560	250		560
18.2022	250	2.60	650				500		1210
20.2022	200	2.42	484				300		726
25.2022	300	2.50	750				600		1474
31.2022	100	2	200				700		1676

Working Notes:

Issue Price = Value of Materials in Stock / Quantity in Stock

Issue Rate on 15th = 400 + 720 / 200 + 300 = Rs. 2.24

Issue Rate on 20th= 560+650/ 250+250 = Rs. 2.42

c) Periodical Simple Average Method

Under this method, the simple average rate is calculated for a particular period ignoring the rate of opening stock. The issue price is calculated by totaling the unit price of all materials purchased during a particular period by the total number of prices during that period. Thus, this rate is applied to the issue to production for a particular period say a month and not at the occasion of each issue of materials.

Some companies may price materials by taking average of the prices of all receipts during a period, e.g., a month, a week, etc. for the subsequent period. Only those prices - relevant to the period is taken into account. Purchases made during the period and closing stock are taken into account.

Example: Discussion

The receipts during the month were at the rates of Rs. 5, Rs. 5.50, Rs. 6 and Rs. 4.50.

The periodic simple average will be:

Total Prices of Materials/ Total Number of Prices

(5 + 5.50 + 6 + 4.50)/ 4 = Rs. 5.25

Disadvantages of Periodical Simple Average Method:

I. Pricing of issues ignores heavy fluctuations in price during the current period.
II. it is not an exact cost method.
III. It involves heavy clerical work.

d) Periodic Weighted Average Method

This method is similar to the periodic simple average method. In this method issue rate is calculated by total cost of materials purchased during a period by the total quantity of materials purchased during that period. Here both quantity and prices of materials in stock during a particular period are taken into account for calculation of periodic weighted average rate.

Under this method the issue rate is determined for a particular period ignoring the rate and quantity of opening stock. A new average rate is computed at the end of each period say a month and this average rate is applied to subsequent issues.

Example: Discussion

If the total receipts during a month is 1,000 kg. costing Rs. 25,000, the periodic weighted average will be

25000/ 1000 = Rs. 25 per kg

Advantages of Periodic Weighted Average Method

I. Clerical costs are reduced.
II. It is useful in process costing.
III. The issue price is not affected by short-term fluctuations.

Disadvantages of Periodic Weighted Average Method

I. At the end of the accounting period, heavy clerical work is involved.
II. Violent fluctuations are ignored till the end of the period.
III. Closing stock can be erroneously valued and nil stock may have a residual value.

Illustration 6:

From the following detail of stores receipts and issues of material "EXE" in a manufacturing unit, prepare the Stores Ledger using Periodic Simple Average Method.

2003 Jan. 1	Opening Stock 200 units at Rs. 2 per unit
Jan. 5	Purchased 400 units at Rs. 3 per unit
Jan. 10	Issued 250 units
Jan. 16	Purchased 500 units at Rs. 3 per unit
Jan. 20	Issued 300 units
Jan. 31	Purchased 200 units at Rs. 4 per unit
Feb. 10	Issued 500 units
Feb. 15	Purchased 400 units at Rs. 4.50 per unit
Feb. 20	Issued 300 units
Feb. 25	Purchased 200 units at Rs. 6 per unit

Answer:

Stores Ledger Account (Periodic Simple Average Method)

Date	Receipts			Issues			Balance		
	Qty.	Rate Rs.	Amt. Rs.	Qty.	Rate Rs.	Amt. Rs.	Qty.	Rate Rs.	Amt. Rs.
01.01.2003	200	2	400				200	2	400
05.01.2003	400	3	1,200				400		
10.01.2003				250			350		
16.01.2003	500	3	1,500				850		
20.01.2003				300			550		
31.01.2003	200	4	800				750		
	1,300		3,900	550	4.66	2,563	750	4.66	3,495
Feb.1 Balance	750	4.66	3,495				750	4.66	3,495
10.02.2003				500			250		
15.02.2003	400	4.50	1,800				650		
20.02.2003				300			350		
25.02.2003	200	6	1,200				550		
	1,350		6,495	800	5.25	4,200	550	5.25	2,888

e) Moving Simple Average Method

In this method, periodic simple average prices are further averaged. By dividing periodic average prices by the number of periods taken, the moving average is calculated. The period chosen should cover the period in which the material is issued.

The value of closing stock may be undervalued or overvalued. When prices are rising, the issue price worked out is lower than the periodic average prices for the period concerned and vice versa.

Example: Illustration

Month	Periodic Average Price (Rs.)	Moving Average Price (Rs.)
January	2.50	
February	2.60	2.60
March	2.70	2.72
April	2.85	2.85
May	3.00	3.03
June	3.25	

f) Moving Weighted Average Method

The material issue price is calculated by dividing the total of the periodic weighted average prices for a number of periods by the total number of such periods.

Illustration 7:

From the following particulars, prepare stores Ledger Account on Periodic Weighted Average Method.:

2022 March 1	Opening balance 200 units at Rs. 2 per unit
10	Purchased 300 units at Rs. 2.40 per unit
15	Issued 250 units
18	Purchased 250 units at Rs. 2.60 per unit
20	Issued 200 units.
25	Purchased 300 units at Rs. 2.50 per unit
31	Purchased 100 units at Rs. 2 per unit

Answer:

Stores Ledger Account (Periodic Simple Average Method)

Date	Receipts			Issues			Balance		
	Qty.	Rate Rs.	Amt. Rs.	Qty.	Rate Rs.	Amt. Rs.	Qty.	Rate Rs.	Amt. Rs.
01.01.2003	200	2	400				200		
05.01.2003	400	3	1,200				400		
10.01.2003				250			350		
16.01.2003	500	3	1,500				850		
20.01.2003				300			550		
31.01.2003	200	4	800				750		
	1,300		3,900	550	3.18	1,749	750	3.18	2,385
Feb.1 Balance	750	3.18	2,385				750		
10.02.2003				500			250		
15.02.2003	400	4.50	1,800				650		
20.02.2003				300			350		
25.02.2003	200	6	1,200				550		
	1,350		5,385	800	5	4,000	550	5	2,750

5.6 Notional Price Methods

a) Standard Price Method

The price of issues for each item is pre-determined for a stated period taking into account all the factors affecting price, e.g., market trends, transportation costs, etc. Standard prices are determined for each material. All issues and inventory are kept at the standard price. These should be revised from period to period.

Standard can be basic or current standard. The basic standard is fixed for long periods and it gives the ideal price. It assists forward planning. Current standard keeps costs of the products adjusted to prevailing trends in markets. Basic standard on the other hand, helps to study trends in production costs over a period.

The difference between standard and actual is transferred to the purchase price variance account.

Advantages of Standard Price Method

I. It simplifies accounting as only quantities are recorded.
II. As only one rate is adopted, inconsistency is avoided.
III. It helps to determine purchase efficiency. If actual cost is more than the standard than there is unfavorable purchasing efficiency and vice versa.
IV. It is simple to operate.
V. It provides stability to the costing system.

Disadvantages of Standard Price Method

It does not reflect the actual or expected cost but only a target.

Illustration 8:

From the following particulars, prepare a stores Ledger Account by Standard Price Method of issue of materials. The standard price of a material is fixed at Rs. IO per unit.

2022 Mar 1	Opening stock of materials 1,000 units at Rs. 15 per unit
3	Purchased 500 units at Rs.1O per unit
7	Issued 500 units
12	Purchased 1,000 units at RS.15
15	Purchased 800 units at Rs.I0
19	Issued 700 units
22	Issued 500 units
27	Purchased 600 units at Rs.12
29	Issued 300 units
30	Purchased 100 units at Rs.14
31	Issued 400 units

Solution:

Date	Receipt			Issues			Balance		
	Units	Rate	Total cost	Units	Rate	Total cost	Units	Rate	Total cost
2022 Mar. 1							1,000	15	15,000
3	500	10	5,000				1,500		20,000
7				500	10	5,000	1,000		15,000
12	1000	15	15000				2,000		30,000
15	800	10	8000				2,800		38,000
19				700	10	7000	2,100		31,000
22				500	10	5000	1,600		26,000
27	600	12	7200				2,200		33,200
29				300	10	3000	1,900		30,200
30	100	14	1400				2,000		31,600
31				400	10	4000	1,600		27,600

b) Inflated Price Method

Inflated price includes carrying costs, losses due to evaporation etc. It aims to recover full costs of materials purchased.

This method is used to cover material losses on account of obsolescence, deterioration, and materials handling expenses. Under this method cost of materials issue, such losses and expenses are directly charged to material cost. Therefore, when the issue of materials is made, the price is to inflated to cover all the losses and expenses.

c) Market Price Method

Materials may be issued at the replacement price. The replacement price is the cost of the same type of materials in the market at any given time. This method is also known as Replacement Rate Method. Under this method issue materials that are valued at the market rate prevailing at the time issue. It therefore follows that when prices increase the stock on hand is continuously under estimated because receipts are cost at actual and issued at higher rates. Conversely Hand grossly over estimated. This method is most suitable when quotations or tenders have to be made because they are to be quoted at competitive prices. Besides this system requires continuous monitoring of market price for all materials and hence it is very unwieldy.

Advantages of Market Price Method

I. It measures results correctly and accurately as current revenues are matched against current costs.
II. It differentiates between holding gains and operating gains.
III. A realistic and competitive selling price can be determined.

Disadvantages of Market Price Method

I. In the absence of a market price, replacement price cannot be determined.
II. As it is not based on actual cost, they may increase the confusion and complication in accounting.

5.7 Selection of Material Pricing Method

The various method of pricing issues has merits and demerits. The choice of any method depends on many factors which can be summarized as under:

I. the frequency of purchases.
II. price fluctuations and its range.
III. method of stock valuation.
IV. customs and practices followed in the industry, whether uniform costing system is being followed.
V. stock turnover rate.
VI. percentage cost of raw materials to total cost of products.

VII. economic order quantity.
VIII. effect of pricing method on tax payable.
IX. the accuracy required and the accuracy which would be obtained.
X. clerical work involved.
XI. costing system adopted.
XII. traceability of issue to purchase lot.
XIII. frequency of receipts and issues.
XIV. whether standard costing system is adopted.
XV. the nature of business.
XVI. the possibility of using different methods for different classes of items.

In addition to the above, the following factors have to be satisfied:

I. The purchase cost is covered.
II. The issue price reflects the market price,
III. There is no significant variation in cost from period to period, and
IV. The system does not necessitate heavy adjustment at the time of valuing closing stock.

Summary

- Weighted average method is preferred where prices do not change frequently as it spreads the input more frequently.
- In case of rising prices of purchase if production cost are lower and stock value are higher in the FIFO method, revised by LIFO method. Weighted and simple average methods both spread the rising purchase cost between production and closing stock, weighted average method equitably, simple average erratically.
- Complete cost of receipts will be covered while the issue of closing stock when FIFO. LIFO weighted average method is used, whereas while use of simple average method gain or loss will be created.
- Given that prices change frequently weighted average method involves more calculations and may not produce an exact unit price. FIFO and LIFO methods would be preferable since no calculations are necessary to establish the issue prices throughout the year.

Keywords

- Two-Bin system
- First-In-First-Out (FIFO)
- Last-In-First-Out (LIFO)
- Highest-In-First-Out (HIFO)
- Periodic Simple Average Method
- Periodic Weighted Average Method
- Standard Price Method
- Inflated Price Method
- Market Price or Replacement Price Method

Self Assessment

1. Under ABC analysis, _____ class items require loose control

2. Under ABC analysis, _____ class items are costliest.

3. Inventory valuation is done at latest price under _____ method.

4. Fluctuation in prices are averaged out under _____ method.

5. Under _____ method cost of goods sold represents cost of recent purchases.

6. Under rising prices higher income is reported under _____ method.

7. Under rising prices lower income is reported under _____ method.

8. If raw materials prices are inflated, which of the following stock valuation methods will show the lowest gross profit?
A. Last In, First Out (LIFO)
B. First In, First Out (FIFO)
C. Replacement Cost
D. Simple Average

9. Which of the following is a disadvantage of the FIFO method of stock valuation?
A. Physical issues must follow the same order as physical receipts
B. One issue may be split between two or more different deliveries for costing purposes
C. Jobs started on the same day must be issued with stock from the same delivery
D. It is necessary to analyze deliveries that specific issues have been obtained from

10. The re-ordering quantity that may be measured is:
A. Weighted Average Cost
B. Standard Cost
C. FIFO
D. LIFO

11. Which of the following source documents in a cost accounting system is designed to exercise control over the delivery and accurate recording of receipts of goods?
A. Goods received note
B. Order to the supplier
C. Material requisition
D. Purchase requisition

12. The total amount of the materials subsidiary ledger inventory cards must be equal to the amount in the following account:
A. Cost of goods sold
B. Purchase of raw materials
C. Material inventory
D. Work-in-process inventory

13. Issue of material under _____ method is from oldest lots.
A. FIFO
B. LIFO
C. Average
D. None of the above

14. FIFO method is :
A. Logical
B. Illogical
C. Recognised by AS2
D. both a & c

15. _____ method is advantageously used in process industries.
A. W.A.
B. Simple Average
C. LIFO
D. FIFO

Answer for Self Assessment

1.	C	2.	A	3.	FIFO	4.	Weighted Average	5.	LIFO
6.	FIFO	7.	LIFO	8.	A	9.	B	10.	D
11.	A	12.	C	13.	A	14.	D	15.	A

Review Questions

1. Discuss the various methods of pricing materials issues to production.
2. Which of the issuing methods would you recommend under conditions of raising prices and why?
3. What do you understand by FIFO? What are its merits and demerits?
4. What do you understand by LIFO? What are its merits and demerits?
5. What is Specific Price Method? Explain its significance.
6. Write short notes on:
   a. Base Stock Method.
   b. Market Price Method.
   c. Inflated Price Method.
   d. Standard Price Method.
7. What do you understand by Simple Average Method and Weighted Average Method?
8. Explain briefly the Periodic Simple Average Method and Periodic Weighted Average Method.
9. Define and explain the following terms and the treatment given in Cost Accounts:
   a. Waste
   b. Scrap
   c. Spoilage
   d. Defectives.
10. Identify the factors effecting the selection of Material Pricing Method.
11. Following is the information by XYZ company Ltd. Related to first week of December, 2022

Days	Receipts		Issues
	Units	Rate per unit	(units)
1st	40	15.00	
2nd	20	16.50	
3rd	-	-	30
4th	50	17.10	-
5th	-	-	20
6th	-	-	40

Calculate the cost of materials issued under (i) FIFO METHOD; (ii) LIFO method

12. From the following transactions, prepare separately the Stores Ledger Accounts, using the following pricing methods: (i) the FIFO, (ii) the LIFO.

January 1	Opening balance 100 units @ Rs. 5 each
January 5	Received 500 units @ Rs. 6 each
January 20	Issued 300 units
February 5	Issued 200 units
February 6	Received 600 units @ Rs. 5 each
March 10	Issued 300 units
March 12	Issued 250 units

13. The following transactions occur in the purchase and issue:

2022 Jan. 2	Purchased 4000 units at Rs. 4.40 per unit
Jan. 20	Purchased 500 units at Rs. 5 per unit
Feb. 5	Issued 2000 units
Feb. 10	Purchased 6000 units at Rs. 6 per unit
Feb. 12	Issued 4000 units
March 2	Issued 1000 units
March 5	Issued 2000 units
March 15	Purchased 4500 units at Rs. 5.50 per unit
March 20	Issued 3000 units

From the above, prepare the stores ledger account in two ways (a) by adopting FIFO (b) by adopting LIFO method.

14. From the following receipts and payments of a material X prepare a stores ledger account showing under Simple Average Method and Weighted Average Method.

2022 Jan. 1	Opening stock 200 units at Rs. 3.50 per unit
3	Purchased 300 units at Rs. 4 per unit
5	Issued 400 units
13	Purchased 900 units at Rs. 4.30 per unit
15	Issued 600 units
23	Purchased 600 units at Rs. 3.80 per unit
25	Issued 600 units.

15. From the following details of store receipts and issues of materials 'PQ' in a manufacturing visit prepare the stockledger using weighted average methods of valuing the issues.

2022 Jan. 1	Opening stock 2.000 units at Rs. 5 per unit
4	Issued 1.500 units
5	purchased 4,500 units at Rs. 6 per unit
9	issued 1,600 units
12	Returned to stock 100 units (from the issue of January 4)
15	Purchased 2,400 units at Rs. 6.50 per unit
18	Purchased to supplier 200 units out of the quantity received on January 5'"
25	Purchased 1,000 units at Rs. 7 each
28	Issued 2,100 units

29	Purchased 1,200 units at Rs. 7.50 per unit	
30	Issued 2800 units	

16. Show the Stores Ledger entries as then would appear when using: (a) Weighted Average Method (b) Simple Average Method and (c) LIFO Method.

		Units	Rater Per unit
2022 March 1	Opening Balance	600	2.00
4	Purchased	400	2.20
7	Issued	300	
9	Purchased	400	2.30
15	Issued	300	
20	Issued	400	
25	Purchased	400	2.40
29	Issued	300	

17. The following information refers to the receipts and issues of a certain material during January 2022.

January 1	Purchased 1.000 units at Re. I per unit
5	Purchased 1,000 units at Rs. 1.10 per unit
11	Issued 500 units
15	Purchased 1,600 units at Rs. 1.15 per unit
18	Issued 1.200 units
20	Purchased 1,500 units
25	Purchased 1,500 units at Rs. 1.20 per unit
29	Issued 200 units

Write up the priced stores ledger card adopting the standard method of issue at Rs. 1.10 per unit

Further Readings

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Unit 06: Marginal Costing

CONTENTS

Objectives

After studying this unit, you will be able to:

- Concepts of marginal costing.
- How to use break-even analysis for decision making.
- Applications of marginal costing
- Practical applications of marginal costing in fixation of selling price, Key or limiting factor, make or buy decisions, selection of a suitable product mix, effect of change in price, closing down or suspending activities, maintaining a desired level of profit.

Introduction

Marginal costing is not a distinct method of ascertainment of cost but is a technique which applies existing methods in a particular manner so that the relationship between profit & the volume of output can be clearly brought out. It is an accounting system where only variable cost or direct cost will becharged to the cost units. It concentrates on thecontrollable aspects of business by separating fixedand variable costs. Explains to answer variousoperating decisions, such as what level of sales isrequired to break even, how many units of a productis to be sold in order to earn a target level ofoperating profit etc.

6.1 Marginal Costing

As one of the instruments of management accounting, marginal costing assists management in making specific choices. It gives management with information on cost behavior and the impact of such expenses on an enterprise's profitability. The definition of marginal costing is "the determination of marginal costs and the impact on profit of changes in volume or type of production by distinguishing between fixed and variable costs." Marginal costing is not a distinct costing method. It is just a strategy used by accountants to assist management in making decisions. In the United States, it is also known as "Direct Costing." This technique of

costing is also known as "Variable Costing", "Differential Costing" or "Out-of-pocket" costing.

The marginal cost of a product or service is the cost that would be saved if that unit were not produced or given.

According to CIMA Terminology, Marginal Costing is the determination of marginal costs and the effect on profit of changes in volume or type of output by distinguishing between fixed and variable costs. In this method of costing, only variable costs are charged to operations, processes, or products, with all indirect costs being written off against profits in the period in which they arise.

Thus, marginal costing is an accounting approach in which variable expenses are charged to cost units and period fixed costs are written off in full against the total contribution. Its unique significance lies in decision making. It is a means of utilizing current methodologies in a specific way to reveal the link between profit and production volume.

6.2 Features of Marginal Costing

a. Costs are classified as constant or variable, with semi-variable costs classified similarly.
b. Only variable costs are included for calculating the value of work-in-progress and finished product inventories.
c. Fixed expenses are charged off to revenue entirely during the period in which they are incurred and are not included for assessing product costs/inventory.
d. Prices may be based on marginal costs and contributions, but in normal conditions, prices would cover overall expenses.
e. It incorporates the methods of cost recording and cost reporting.
f. The profitability of divisions or products is decided by marginal contribution.
g. The unit cost of a product is the average variable cost of making a product.

6.3 Advantages of Marginal Costing

1. Data on the cost-volume-profit connection, which is required for the purposes of profit planning, is not difficult to extract from standard accounting statements. As a result, management no longer has to deal with two distinct sets of data in order to link one to the other.
2. Changes in absorption of fixed expenditures caused by growing or lowering inventory have no effect on a period's earnings. While using direct costing, earnings rise in the same direction as sales when all other variables stay constant (e.g., selling prices, expenses, and sales mix).
3. Manufacturing cost and income statements in direct cost form closely match management's ideas more closely than absorption cost form. As a result, management finds direct cost reporting simpler to grasp and use.
4. Because the whole amount of fixed expenses for the period shows in the income statement, the influence of fixed costs on profits is highlighted.
5. Marginal income numbers allow for the relative evaluation of goods, regions, client classes, and other company segments without obscuring the findings due to the distribution of common fixed expenses.
6. Marginal costing is associated with cost-cutting strategies such as standard costs and flexible budgets.
7. When business is slow, marginal costing provides a stronger and more rational foundation for determining sales pricing and competing for contracts.
8. Only marginal costing can be used to calculate the break-even point.

6.4 Limitations of Marginal Costing

Marginal costing technique has the following limitations:

1. Costs are characterised as fixed or variable in marginal costing. Cost segregation into fixed and variable expenses is challenging and cannot be done precisely.
2. Marginal costing is based on the assumption that cost behaviour may be represented by a straight line. This indicates that fixed costs stay constant over time at various levels, whereas variable costs vary in a linear manner, i.e., the change is proportional to the change in volume. In practise, fixed costs are subject to alter at varied levels of output, particularly when more plant and equipment are installed, and so variable costs may not vary in proportion to volume.
3. Under marginal costing technique fixed costs are not included in the value of stock of finished goods and work-in-progress. As fixed costs are incurred, these should also form part of the costs of the product. Due to this elimination of fixed costs from finished stock and work-in-progress, the stocks are understated. This affects the results of profit and loss account and the balance sheet. Thus, profit may be unnecessarily deflated.
4. Monthly operational statements will be less realistic and relevant in the marginal costing system than in the absorption costing system. This is due to the fact that under this structure, marginal contribution and profits alter as the sales value changes. Profits vary from period to period when sales are irregular.
5. Marginal costs may not provide entire information; for example, an increase in output and sales may be attributable to excessive utilisation of existing equipment, resource growth, or machine replacement of labour. The marginal contribution of the P/V ratio fails to explain why this is happening.
6. The problems inherent in the apportionment and calculation of under and over absorption of fixed overheads are eliminated by the marginal costing approach, but the issue of under or over absorption of variable overheads persists.
7. Although marginal costs are important for assessing profitability in the near term, long-term profit is accurately calculated on a full costs basis alone.
8. Marginal costing does not give a benchmark for assessing performance. Marginal contribution statistics do not reflect many of the effects revealed by variance analysis. Efficiency variation, for example, represents the efficient and inefficient utilisation of plant, equipment, and labour, and this kind of value is missing in the marginal cost analysis.
9. Marginal costing analysis implies that the sales price per unit will stay constant throughout all stages of production, however this might alter in practise and provide incorrect conclusions.
10. In an era of rising automation and technological innovation, fixed costs have a far greater influence on product than variable costs. As a consequence, a system that disregards fixed costs is less successful since a significant percentage of the cost is overlooked.
11. Under the marginal costing approach, the selling price is determined by contribution. In the event of 'cost plus' contracts, this may not be achievable.

Thus, the above limitations indicate that fixed costs are equally important in certain cases.

Lab Exercise:

Fill in the blanks:

1. Marginal Costing is also known as_____.
2. _____ is a variable cost of one unit of a product or a service i.e. a cost which would be avoided if that unit was not produced.

Correct answer: 1. Variable Costing/Differential Costing/ Out of Pocket

6.5 Managerial Uses of Marginal Costing

Cost Ascertainment

Marginal costing technique facilitates not only the recording of costs but their reporting also. The classification of costs into fixed and variable components makes the job of cost ascertainment easier. The main problem in this regard is only the segregation of the semi-variable cost into fixed and variable elements. However, this may be overcome by adopting any of the methods in this regard.

Cost Control

Management may understand marginal cost figures more readily than absorption costing statements. The division of expenses into fixed and variable costs allows management to exert control over production costs and hence effect efficiency.

While variable costs may be managed at lower levels of management, fixed costs can be controlled at the highest level. Using this method, management may investigate the behaviour of costs under various production and sales situations and so exercise better cost control.

Decision-Making

Every day, modern management faces a slew of decision-making challenges. The primary criteria for determining the optimal course of action is profitability. Marginal costs through 'contribution' aids management in issue resolution.

Some of the decision-making problems that can be solved by marginal costing are:

a. Profit planning
b. Pricing of products
c. Make or buy decisions
d. Product mix etc.

6.6 Applications of Marginal Costing

a. Profit planning

b. Evaluation of Performance

c. Make or Buy Decisions

d. Closure of a Department or Discontinuance of a Product

e. Maintaining a Desired Level of Profit

f. Offering Quotations

g. Accepting an Offer or Exporting below Normal Price

h. Alternative Use of Production Facilities

i. Problem of Key Factor

j. Selection of a Suitable Product Mix

Profit planning

There are four ways in which profit performance of a business can be improved:

a. by increasing volume;
b. by increasing selling price;
c. by decreasing variable costs; and
d. by decreasing fixed costs.

Profit planning is the planning of future activities in order to maximise profits or maintain a certain level of profit. When there is a change in selling price, variable costs, or product mix, the contribution ratio (which is the ratio of marginal contribution to sales) reveals the relative profitability of the various sectors of the firm. Because fixed and variable expenses are combined, absorption costs fail to accurately reflect the impact of any such change on the company's earnings.

Illustration 1:

A toy manufacturer makes an average net profit of Rs. 2.50 per piece on a selling price of Rs. 14.30 by producing and selling 60,000 pieces or 60% of the potential capacity. His cost of sales is:

Direct material	Rs. 3.50
Direct wages	Rs. 1.25
Works overhead	Rs. 6.25 (50% fixed)
Sales overhead	Rs. 0.80 (25% variable)

During the current fiscal year, he expects his fixed expenses to rise by 10%, while direct material and direct labour prices will rise by 6% and 8%, respectively. However, he is unable to raise the selling price. In this circumstance, he receives an offer for an order equivalent to 20% of his capacity. The worried client is a one-of-a-kind consumer.

What minimum price will you recommend for acceptance to ensure the manufacturer an overall profit of Rs. 1,67,300?

Solution:

Particulars	**Cost at present in Rs.**	**Anticipated cost in Current Year in Rs.**
No of Units	60,000	-
Sales value	8,58,000	8,58,000
Variable cost:		
Direct Material	3.50	3.71 (3.50 × 106%)
Direct Material	1.25	1.35 (1.25 × 108%)
Work overhead	3.125 (6.50 × 50%)	3.125
Sales Overhead	0.600 (0.80 ×25%)	0.600
Total Variable Cost per unit	8.075	8.385
Fixed Cost:		
Work overhead	60,000 (6.250 – 3.125) = 1,87,500	2, 06,250 (1,87,500×110%)
Sales Overhead	60,000 (0.80 × 75%) = 36,000	39,600 (36,000 × 110%)
Total Fixed Cost	2,23,500	2,45,850
Present selling Price	14.30	14.30
Contribution per unit	14.30-8.075	14.30 – 8.385
Contribution in Rs.	3,73,500	3,54,900
Profit (Contribution-Fixed Cost)	1,50,000	1,09,050
Profit desired in current year		1,67,300
Increase in profit		58,250

Sales in No of units by increasing the Sales level by 20% = Rs. 60,000/60% × 80%= Rs. 20,000

Additional Variable Cost of 20,000 units = Rs. 20,000 × 8.385= Rs. 1, 67,700

Minimum sales price for 20,000 additional units = Rs. (1, 67,700 + 58,250)/20,000= Rs. 11.297

Illustration 2:

The following data relate to a manufacturing company:

Plant capacity:	4,00,000 units per annum
Present utilisation:	40%

Actuals for the year were:

Selling price	RS. 50 per unit
Materials cost	RS. 20 per unit
Variable manufacturing costs	RS. 15 per unit
Fixed costs	RS. 27 lakhs

In order to improve capacity utilisation the following proposals are being considered:

Reduce selling price by 10%.

Spend additionally `3 lakhs on sales promotion.

How many units should be made and sold in order to earn a profit of `5 lakhs per year?

Solution:

Revised selling price (Rs. 50 less 10%)	Rs. 45 per unit
Variable cost:	
Material cost	Rs. 20
Variable manufacturing cost (per unit)	Rs. 15
Total variable cost	Rs. 35 per unit
Contribution	Rs. 10 per unit
Total contribution required:	
Fixed costs	Rs. 27,00,000
Additional promotion expenses	Rs. 3,00,000
Profit	Rs. 5,00,000
Total	Rs. 35,00,000

Total number of units to be made and sold to earn a contribution of Rs. 35,00,000

= Total Contribution/ Contribution per unit = Rs. 35,00,000/Rs. 10 = 3,50,000 units

Evaluation of Performance

Distinct parts of a company, such as a department, a product line, or a certain market or sales division, have different income generating potential. A firm will always prioritise departments or product lines that contribute more than others. The performance of each of these sectors may be determined using cost-volume-profit analysis or the contribution technique. The study will assist the firm in making decisions that will maximise profitability.

Illustration 3:

A business produces three products A, B and C for which the standard variable costs and budgeted selling prices are as follows:

	A (Rs.)	B (Rs.)	C (Rs.)
Direct Material	3	6	8
Direct Material	4	4	10

Variable overhead	3	5	7
Selling price	18	25	48
In two successive periods, sales are as follows:	Units	Units	Units
Period I	10,000	10,000	10,000
Period II	20,000	13,000	5,000

For each period, the budgeted fixed overheads were Rs. 135,000. Despite higher sales, the profit for the second quarter fell below that of the first. Present data to management to demonstrate why this drop-in profit should or should not have happened.

Solution:

		Product A		Product B		Product C		Total	
		Period I	Period II	Period I	Period II	Period I	Period II	Period I	Period II
A	Sales (Units)	10,000	20,000	10,000	13,000	10,000	5,000	30,000	38,000
B	Selling Price P.U in ₹	18	18	25	25	48	48	-	-
C	Sale value in (₹'000) (A × B)	180	360	250	325	480	240	910	925
D	Variable Cost P.U in ₹	10	10	15	15	25	25	50	50
E	Variable Cost (₹'000) (A × D)	100	200	150	195	250	125	500	520
F	Contribution (₹'000) (C-E)	80	160	100	130	230	115	410	405
G	Fixed Overhead (₹'000)	-	-	-	-	-	-	135	135
H	Net Profit (F-G) (₹'000)	-	-	-	-	-	-	275	270
	P/V Ratio	44.4		40		47.9			

Comment:

Although sales have climbed by 8,000 units, sales value has increased by Rs. 15,000. Marginal costs have risen by Rs. 20,000 to cover the cost of new production units, resulting in a Rs. 5,000 decrease in profit.

The most lucrative line is Product C, which contributes the biggest proportion of revenue. Product A is the second most lucrative, while Product B is the least profitable of the three.

The bad situation in Period II is due to an unfavourable sales mix, since production of the most lucrative line C has been reduced while production of the less profitable items A and B has been increased.

Make or Buy Decisions

When management is faced with the decision of whether it is more cost effective to acquire a component or a product from outside sources or to make it internally, marginal cost analysis may be of help. In such cases, a deceptive judgement would be made based on the whole cost analysis. If the plan is to purchase from outside, then what is currently being created should be used, and the price provided by the outsider should be less than the marginal cost. If the idea is to manufacture something that is already being bought elsewhere, the cost of manufacturing should include any extra expenses such as depreciation on new machinery and interest on capital, and that cost should be compared to the purchase price.

Illustration 4:

A television manufacturing business discovers that although component X costs to manufacture, it is available in the market for Rs. 5.75 per, with full certainty of continuing supply. The breakdown of cost is:

Materials	**Rs. 2.75 each**
Labor	**Rs. 1.75 each**
Variable overheads	**Rs. 0.50 each**
Depreciation and other fixed cost	**Rs. 1.25 each**
	Rs. 6.25 each

a) Should the company make or buy the component?

b) What should be your decision if the supplier offered component at Rs. 4.85 each?

Solution:

Marginal cost per unit of component X

Materials	**Rs. 2.75**
Labor	**Rs. 1.75**
Variable overheads	**Rs. 0.50**
Total	**Rs. 5.00**

a. The aforementioned component costs Rs. 5.75 apiece to acquire. If the firm has excess capacity that cannot be filled with more lucrative work, it is advised that the aforesaid component be made in-house since the marginal cost of Rs. 5.00 per is less than the purchase cost of Rs. 5.75.

b. If the purchase cost of Rs. 4.85 each is less than the marginal cost of Rs. 5.00 each, it is advised that the component be purchased from the provider to save Rs. 0.15 each. As much as feasible, the available surplus capacity may be used for other reasons.

Closure of a Department or Discontinuance of a Product

As previously stated, the marginal costing approach aids in determining a product's profitability. It delivers information in a way that shows us how much each product contributes to fixed costs and profit; the product or department that contributes the least should be abandoned, save for a limited period of time. If the management is to choose a product from the available options, the items that contribute the most should be picked, while those that contribute the least should be discarded.

Maintaining a Desired Level of Profit

A company's product pricing must be reduced from time to time due to competition, government laws, and other compelling factors. The contribution per unit is lowered as a result of such reduction, while the industry is interested in maintaining a minimal level of earnings. If the company's product demand is elastic, the greatest level of profits may be maintained by increasing sales. Marginal costing methods may be used to calculate the amount of such sales.

Illustration 5:

S. Ltd. manufactures and markets a single product. The following information is available:

	Rs. Per unit
Materials	**8**
Conversion costs (variable)	**6**
Dealer's margin	**2**
Selling price	**20**
Fixed cost Rs. 2,50,000	
Present sales, 80,000 units	
Capacity utilisation: 60 per cent	

There is acute competition. Extra efforts are necessary to sell. Suggestions have been made for increasing sales:

(i) By reducing sales price by 5%

(ii) By increasing dealers margin by 25% over the existing rate.

Which of the two suggestions you would recommend if the company desires to maintain the present profit? Give reasons.

Solution:

Present marginal cost per unit:	**Rs.**
Materials	**8**
Conversion costs (variable)	**6**
Dealer's margin	**2**
Total	**16**

Contribution per unit = Selling price - Marginal cost= 20.00 - 16.00 = Rs. 4.00

Total contribution = Rs. 4 × 90,000 = 3,60,000

Profit = Contribution − Fixed cost= Rs. 3,60,000 − Rs. 2,50,000 = Rs. 1,10,000

Since in both suggestions fixed costs remain unchanged, the present profit can be maintained by keeping the total contribution at the present level i.e. Rs. 3,60,000.

(i) Reducing sales price by 5%

New sales price = (Rs. 20.00- Rs. 1.00) = Rs. 19.00

New dealers margin = 10% of Rs. 19.00 = Rs. 1.90

Variable costs = Rs. 8 + Rs. 6 + Rs. 1.90 = Rs. 15.90

Contribution per unit = Rs. 19.00 − Rs. 15.90 = Rs. 3.10

Sales (units) required to maintain the present level of profit.= Total contribution / Contribution per unit = 3,60,000/ 3.10 = 1,16,111 units

(ii) Increasing dealer's margin by 25%

New dealer's margin = Rs. 2 + 25% = Rs. 2.50

New variable cost = Rs. 8 + Rs. 6 + Rs. 2.50 = Rs. 16.50

Contribution = Rs. 20 – Rs. 16.50 = Rs. 3.50

Sales= 3,60,000/3.50= 1,02,857 units

The second proposal is recommended because the contribution per unit is higher and the sales (in units) are lower. Lower sales efforts and less finance would be required in implementing the (ii) proposal.

Offering Quotations

One of the most effective methods of sales marketing is to provide low-cost quotes. A corporation makes a profit of '2,40,000 by manufacturing 80,000 units (80% of capacity). Assume the Punjab Government has issued a procurement for 20,000 units. The units confiscated by the government are anticipated to have little effect on the business's current sales of 80,000 units, and the company also desires to submit the lowest feasible quote. Because it provides an extra marginal contribution and hence profit, the corporation may quote any amount over marginal cost.

Accepting an Offer or Exporting below Normal Price

The amount of production and sales may sometimes be expanded by lowering the typical pricing of extra sales. In this scenario, the concern should be careful enough to recognise that sales at below-market prices in new areas should not have an impact on the primary market. To be safe, the product may be sold under a different brand's label. If there is an increase in sales due to export orders, items may be offered at a lower price than usual.

Illustration 6:

The cost of a manufacturing company for product is:

Materials	**Rs. 12**
Labor	**Rs. 9**
Variable expenses	**Rs. 6**
fixed expenses	**Rs. 18**
Total	**Rs. 45**

The unit of product is sold for RS.51.00.

The company's normal capacity is 1,00,000 units. The figures given above are for 80,000 units. The company has received an offer for 20,000 units @ RS. 36 per unit from a foreign customer.

Advice the manufacturer on whether the order should be accepted. Also give your advice if the order is from a local merchant.

Solution:

Marginal cost for additional 20,000 units

	Per unit Rs.	**For 20,000 units**
Material	12	2,40,000
Labor	9	1,80,000
Variable expenses	6	1,20,000
Marginal cost	**27**	**5,40,000**
Additional revenue to be realized		7,20,000
Marginal cost		5,40,000
Net additional revenue (Marginal contribution)		1,80,000

The offer should be accepted since it includes an extra Rs.1,80,000 donation. Because fixed expenditures have already been recovered from the local market, the overall profit would grow by Rs. 1,80,000.

Furthermore, orders from local customers should not be accepted at Rs. 36 per unit or at any rate less than the standard price, i.e., Rs. 45, since this would result in a general decrease in product selling prices.

Note: Acceptance of the new order should not result in production exceeding current capacity, since this would result in significant increases in certain fixed expenditures.

If fixed expenditures rise, the increase should be accounted for by including it in the overall increased cost to be compared with the higher income.

Alternative Use of Production Facilities

Contribution analysis should be performed to arrive at the final option when other uses of production facilities or different techniques of making a product are available.

The option that will offer the greatest contribution will be typically and plainly chosen.

Problem of Key Factor

The product that contributes the most will be the most lucrative. To maximise profit, resources should be directed toward the product that contributes the most. However, contribution is not the sole measure used to determine profitability. In practise, various variables may restrict the number of units that may be produced, even if the items contribute significantly. These elements are equally significant in making management choices since they restrict the amount of production at a certain moment in time or over a period of time. Key considerations, scarce factors, limiting factors, primary budget elements, and regulating factors are all examples of these. The limiting factors may be sale, raw material, labour, plant capacity, and capital availability; for example, for a company

established in a new town, labour may be a key factor, or the company may find it difficult to acquire an unlimited quantity of raw material due to scarcity or the quota system, etc. In the latter instance, material will be crucial. Before making a choice, the amount to which these elements affect should be thoroughly studied. Contribution per unit of key factor should be examined, and the course of action with the greatest contribution per unit of key factor should be chosen.

Illustration 7:

You are given the following information in respect of products X and Y of Bee Cee Co. Ltd. Show which product is more profitable during labour shortage.

	Product X	Product Y
Selling price	Rs.42	Rs.33
Direct material	Rs.15	Rs.15
Labour hours (50 paise per hour)	18 hours	9 hours
Variable overheads	50% of Direct wages	

Solution:

Computation of Marginal Contribution

Particulars	Product X	Product Y
Selling price per unit in Rs.	42	33
Direct Material per unit in Rs.	15	15
Labour Hours (A)	18	9
Labour cost per hour (B) in Rs.	0.50	0.50
Labour cost per unit (A × B) in Rs.	9	4.50
Variable overhead (50% of Labour Cost) in Rs.	4.50	2.25
Total Variable Cost per unit in Rs	28.50	21.75
Contribution per unit in Rs.	13.50	11.25

Since Labour is in shortage so it will be treated as Key factor and the product which is generating higher contribution per hour will be preferred.

Contribution per labour hour:

Product X = Rs. 13.50/18 = Rs. 0.75

Product Y = Rs. 11.25/9 = Rs. 1.25

Since contribution per labour hour for product Y is higher so product Y is more profitable.

Selection of a Suitable Product Mix

A company that produces more than one product may have to select how much of each product to create or sell. The marginal costing approach is very useful in determining the most lucrative product or sales mix. The ideal product combination is one that maximises contribution.

In the absence of a critical element, the contribution under different mixes will be determined, and the blend with the greatest contribution will be chosen for production.

Summary

- A marginal cost is the cost of one unit of a product or service that would not be produced or delivered if that unit did not exist. In other words, the marginal cost is the amount that changes the aggregate costs if the volume of production is raised or lowered by one unit at any given volume of output.

- Marginal costing is an accounting approach in which variable expenses are charged to cost units and period fixed costs are written off in full against the aggregate contribution. It has a unique value in decision-making.
- Absorption costing is a costing approach that charges all direct expenses and relevant overheads to products or cost centres to determine the overall cost of production. Production expenses, as well as administrative and other expenditures, are absorbed. It is a theory that allocates both fixed and variable costs to cost units, i.e. entire costs are charged to production.

Keywords

- Marginal costing
- Cost-Volume-Analysis
- Break-Even point
- Selling Price
- Make or Buy decision
- Key factor
- Product mix

Self Assessment

1. In make or buy decision, marginal costs as well as additional fixed costs are the factors to be considered.

A. True

B. False

2. Change in product mix decision should be merely based on contribution.

A. True

B. False

3. If direct labor is not affected by the change in the type of material, it will form a part of differential cost.

A. True

B. False

4. In absorption costing, cost is divided into three major parts while in marginal costing cost is divided into two main parts.

A. True

B. False

5. If sales is less than production and there is no opening stock, it suggests there is closing stock. In such a scenario, profit under marginal costing will be less than the one shown by absorption costing.

A. True

B. False

6. Theory of contribution is the excess of sales over variable costs.

A. True

B. False

7. In Analytical method of calculating marginal costing, it is determined on the basis of past records.

A. True

B. False

8. Which of the following statements are true about marginal costing?
A. In marginal costing, fixed costs are treated as product costs
B. Marginal costing is not an independent system of costing
C. The elements of cost in marginal costing are divided into fixed and variable components
D. Both b and c

9. While computing profit in marginal costing, _____.
A. The fixed cost gets added to the contribution
B. The total marginal cost gets deducted from total sales revenue
C. The total marginal cost gets added to total sales revenue
D. None of the above

10. Which of the following assumptions are made while calculating marginal cost?
A. Total fixed cost is constant at all levels of output
B. Total variable cost varies according to the volume of output
C. All elements of cost can be divided into fixed and variable components
D. All of the above

11. Which of the following techniques of costing differentiates between fixed and variable costs?
A. Marginal costing
B. Standard costing
C. Absorption costing
D. None of the above

12. Under marginal costing, the stock is valued at _____.
A. Total Cost
B. Fixed Cost
C. Variable Cost
D. None of the above

13. Marginal cost is equal to _____.
A. Variable overheads
B. Prime cost plus variable overheads
C. Prime cost minus variable overheads
D. None of the above

14. In two periods total costs amounts to Rs 50000 and Rs 40000 against production of 20000 and 15000 units respectively. Determine marginal cost per unit and fixed cost.
A. Rs 2 and Rs 10,000
B. Rs 4 and Rs 5000
C. Rs 10 and Rs 8000
D. None of the above

15. Given production is 1,00,000 units, fixed costs is Rs 2,00,000 Selling price is Rs 10 per unit and variable cost is Rs 6 per unit. Determine profit using technique of marginal costing.
A. Rs 2,00,000
B. Rs 8,00,000
C. Rs 6,00,000
D. None of the above

Answer for SelfAssessment

1.	B	2.	B	3.	B	4.	A	5.	A
6.	A	7.	A	8.	D	9.	B	10.	D
11.	A	12.	C	13.	B	14.	A	15.	A

Review Questions

1. Define marginal cost and marginal costing. How variable costs and fixed costs are treated inmarginal costing?
2. Explain the role of contribution technique in decision making, giving suitable illustrations.
3. "Fixed costs do not change with changes in volume and it is difficult for management to controlthem". Discuss.
4. What Is Marginal Costing? What Are Its Features?
5. How Is The Concept Of Marginal Costing Practically Applied?
6. Write short notes on: (a) Optimizing Product Mix. (b) Make Or Buy Decision. (c) Fixation Of Selling Price. (d) Need For Marginal Costing
7. What Are The Limitations Of Marginal Costing?
8. Why Fixed Costs Are Ignored In 'make Or Buy' Decisions?
9. State the utility of marginal costing in price fixation during trade depression and for exportpurposes.
10. XYZ Ltd. is manufacturing three products, A, B and C. All the products use the same raw material which is available to the extent of 61 000 kg only. The following information is available from the books and records of the company.

Particulars	Product A	Product B	Product C
Selling price per unit	Rs.100	Rs.140	Rs.90
Variable cost per unit	Rs.75	Rs.110	Rs.65
Raw material requirement per unit [kg]	5	8	6
Market demand - units	5000	3000	4000

Advise the company about the most profitable product mix and also compute the amount of profitresulting from such product mix if the fixed costs are Rs.1, 50,000.

11. From the following information, find out the amount of profit earned during the year using themarginal costing technique:

Fixed cost	Rs. 5,00,000
Variable cost	Rs. 10 per unit
Selling price	Rs. 15 per unit
Output level	1,50,000 units

12. Sales 10,000 Units @ Rs.25 Per UnitVariable Cost Rs.15 Per UnitFixed Costs Rs.1,00,000Find Out The Sales For Earning A Profit Of Rs.50,000
13. The records of ram ltd., Which has three departments give the following figures:

	Dept. A (Rs.)	Dept. B (Rs.)	Dept. C (Rs.)	Total (Rs.)
Sales	12,000	18,000	20,000	50,000
Marginal Cost	13,000	6,000	15,000	34,000
Fixed Cost	1,000	4,000	10,000	15,000
Total Cost	14,000	10,000	25,000	49,000
Profit/Loss	-2,000	+8,000	-5,000	1,000

The management wants to discontinue product c immediately as it gives the maximum loss. How would you advise the management?

Further Readings

- Deepak Jain, Cost & Management Accounting Taxmann Publications Pvt. Ltd.
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- S.P. Jain & K.L. Narang, Cost and Management Accounting; Kalyani Publishers, 23, Daryaganj, New Delhi-110 002.
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- M.N. Arora, Cost and Management Accounting (Theory and Problems); Himalaya Publishing House, Ramdoot, Dr. BhaleraoMarg, Kelewadi, Girgaon, Mumbai-400 004.
- Ravi M. Kishore, Advanced Management Accounting; Taxmann's, Taxmann Publication (P) Ltd. 59/32, New Rohtak Road, New Delhi – 110 005.

Web Links

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Unit 07: CVP Analysis

CONTENTS

Objectives

After studying this unit, you will be able to:

- use break-even analysis for decision making.
- Understand Break-even analysis/cost-volume profitanalysis & its objectives, advantages,limitations
- Application of Marginal cost equation
- Understand the Methods for determining break even points:

  - Algebraic methods

  - Graphic presentation

Introduction

For some companies, just about each product or service is new and different. This is true for Clear Channel Communications, Inc., (CCC; www.clearchannel.com), the world's largest owner of radio stations and provider of live entertainment events. CCC produces live entertainment, mostly musical entertainment, in more than 70 locations. Each show offers a new opportunity for CCC to be profitable, but careful planning is necessary to achieve success. A key part of this planning for CCC is to use cost-volume-profit analysis, the topic of this chapter. CCC uses cost-volume-profit (CVP) analysis to project estimated profits for each live event, given the company's projections

about attendance; that is, CVP analysis shows the relationship between volume of attendance and the event's related costs and profits. Some of CCC's events are planned on a fixed-fee basis; that is, the entertainer is paid a fixed amount for the performance that is not tied to attendance. Other events are planned so that the entertainer receives a payment based on attendance. The fixed-fee arrangement is somewhat riskier for CCC because CCC bears the risk of low attendance and therefore low profits or losses; of course, the upside is that CCC does well if attendance is high. In contrast, the entertainer paid on the basis of attendance shares some of the risk. For fixed-fee events, CCC uses attendance projections and cost-volume-profit analysis to carefully project costs and profits and to plan levels of advertising and other expenses. This type of short-term profit planning is critical for CCC's overall success and profitability.

7.1 Cost–Volume–Profit (CVP) Analysis

A fundamental of accounting is that all revenues and costs must be accounted for and the difference between the revenues and costs is the profit, or loss, of the business. Costs can be classified as either a fixed cost or a variable cost.

A fixed cost is one that is independent of the level of sales; rather, it is related to the passage of time. Examples of fixed costs include rent, salaries and insurance.

A variable cost is one that is directly related to the level of sales, such as cost of goods sold andcommissions.

This categorization of costs into "variable" and "fixed" elements and their relationship with sales and profits has been developed as "break-even analysis". This break-even analysis is also known as Cost–volume– profit (CVP) analysis.

Cost–volume–profit (CVP) analysis is defined in CIMA's Official Terminology as

'the study of the effects on future profit of changes in fixed cost, variable cost, sales price, quantityand mix'.

In break-even analysis or CVP analysis an activity level is determined at which all relevant cost arerecovered and there is a situation of no profit or no loss. This activity level is called breakeven point.The break-even point in any business is that point at which the volume of sales or revenues exactly equalstotal expenses or the point at which there is neither a profit nor loss under varying levels of activity. Thebreak-even point tells the manager what level of output or activity is required before the firm can make aprofit; reflects the relationship between costs, volume and profits. In another words breakeven point is thelevel of sales or production at which the total costs and total revenue of a business are equal.

At Break-even point or level, the sales revenues are just equal to the costs incurred. Below Breakeven pointlevel the firm will make losses, while above this level it will be making profits. This is so because that whilethe variable costs vary according to the variations in the volume or level of activity while the fixed costs donot change.

Below the breakeven point, fixed costs will eat up all excess of sales over variable cost and yet beunsatisfied, leaving a loss. Above the BEP, excess of sales over variable costs (this excess is known ascontribution) is much more than the fixed costs of the activities and, it, thus leads to profits. Thus in BreakEven analysis or Cost Volume Profit Analysis, it is possible to analyse the effect of changes in volume, pricesand variable costs on the profits of an organization, while taking fixed costs as unchangeable.

The cost-volume-profit (CVP) analysis helps management in finding out the relationship of costs andrevenues to profit. The aim of an undertaking is to earn profit. Profit depends upon a large number of factors,the most important of which are the cost of manufacture and the volume of sales effected. Both these factorsare interdependent-volume of sales depends upon the volume production, which in turn is related to costs.Cost, again, is the resultant of the operation of a number of varying factors. Such factors affecting cost are:

i. Volume of production;

ii. Product-mix;

iii. Internal efficiency;

iv. Methods of production; and

v. Size of plant; etc.

Analysis of cost-volume-profit involves consideration of the interplay of the following factors:

i. Volume of sales;

ii. Selling price;

iii. Product mix of sales;

iv. Variable costs per unit; and

v. Total fixed costs.

The relationship between two or more of these factors may be (i) present in the form of reports andstatements, (ii) shown in charts or graphs, or (iii) established in the form of mathematical deductions.

7.2 Objectives of Break-Even Analysis /Cost-Volume-Profit Analysis

The objectives of cost-volume profit analysis are given below:

1. In order to forecast profit accurately, it is essential to know the relationship between profits and costs on the one hand and volume on the other.
2. Cost-volume-profit analysis is useful in setting up flexible budgets which indicate costs at various levels of activity.
3. Cost-volume-profit analysis is of assistance in performance evaluation for the purposes of control. For reviewing profits achieved and cost incurred the effects on costs of changes in volume are required to be evaluated.
4. Pricing plays an important part in stabilizing and fixing up volume. Analysis of cost-volume-profit relationship may assist in formulating price policies to suit particular circumstances by projecting the effect which different price structures have on costs and profits.
5. As predetermined overhead rates are related to a selected volume of production, study of cost-volume relationship is necessary in order to know the amount of overhead costs which could be charged to product costs at various level of operation.

7.3 Advantages of Break-Even analysis

i. It provides detailed and clearly understandable information. The chart visualises the information very clearly and a glance at the chart gives a vivid picture of the whole affairs. The information is presented in a simple form and therefore, is clearly understandable even to a layman.

ii. The profitability of different products can be known with the help of break-even charts, besides the level of no-profit no-loss. The problem of managerial decision regarding temporary or permanent shutdown of business or continuation at a loss can be solved by break-even analysis.

iii. The effect of changes in fixed and variable costs at different levels of production or profits can be demonstrated by the graph legibly.

iv. The break-even chart shows the relative importance of fixed cost in the total cost of a product. If the costs are high, it induces management to take measures to control such costs.

v. The economies of scale, capacity utilisation, comparative plant efficiencies can be analysed through the break-even chart. The operational efficiency of a plant is indicated by the angle of incidence formed at the intersection of the total cost line and sales line.

vi. Break-even analysis is very helpful for forecasting, long-term planning, growth and stability.

7.4 Limitations of Break-Even Analysis

Though break-even analysis has gradually become service tool for modern financial management, there are certain objections raised against the utility of break-even analysis:

1. Fixed costs do not always remain constant.
2. Variable costs do not always vary proportionately.
3. Sales revenue does not always change proportionately.
4. The horizontal axis cannot measure the units sold in as much as many unlike type of products are sold by the same enterprise.
5. Break-even analysis is of doubtful validity when the business is selling many products with different profit margins.
6. Break-even analysis is based on the assumption that income is influenced by changes in sales so that changes in inventory would not directly affect income. If marginal costing is used, this assumption would hold good but in other cases, changes in inventory will affect income because the absorption of fixed costs will depend on production rather than sales.
7. Condition of growth or expansion in an organisation are not assumed under break-even analysis. In actual life of any business organisation, the operation undergoes a continuous process of growth and expansion.
8. Only a limited amount of information can be presented in a single break-even chart. If we have to study the changes of fixed costs, variable costs and selling prices, a number of charts will have to be drawn up.
9. Even simple tabulation of the results of costs and sales can serve the purpose which is served by a break-even chart, hence there is no need of presenting the data through a break-even chart.
10. The chart becomes very complicated and difficult to understand for a layman, if the number of lines or curves depicted on the graph are large.
11. The chart does not provide any basis for comparative efficiency between different units or organizations.

Lab Exercise

State whether the following statement is "True" or "False":
B.E.P. is a level where total revenue is equal to total cost:
- True
- False

Correct answer: **True**

7.5 Uses of Cost-Volume-Profit Analysis

1. C.V.P. analysis helps in forecasting costs and profits as a result of change in volume.
2. It helps fixing a sales volume level to earn or cover a given revenue, return on capital employed, or rate of dividend.

3. It assists determination of effect of change in volume due to plant expansion or acceptance of an order, with or without increase in costs or in other words a quantum of profit to be obtained can be determined with change in volume of sales.
4. C.V.P. analysis helps in determining relative profitability of each product, line, project or profit plan.
5. Through cost volume-profit analysis inter-firm comparison of profitability can be done intelligently.
6. It helps in determining cash requirements at a desired volume of output, with the help of cash breakeven charts.
7. Break-even analysis emphasises the importance of capacity utilisation for achieving economy.
8. From break-even analysis during severe recession, the comparative effects of a shut down or continued operation at a loss is indicated.
9. The effect on total cost of a change in the fixed over-head is more clearly demonstrated through break-even analysis and cost- volume-profit charts.
10. The conditions of a business such as profit potentialities, requirements of capital, financial stability and incidence of fixed and variable costs can be gauged from a study of the position of the breakeven point and the angle of incidence in the break-even chart.

7.6 Marginal Cost Equation

The Following are the main important equations of Marginal Cost :

Sales = Variable Cost + Fixed Expenses ± Profit I Loss

(or)

Sales - Variable Cost = Fixed Cost ± Profit or Loss

(or)

Sales - Variable Cost = Contribution

Contribution = Fixed Cost + Profit

The above equation brings the fact that in order to earn profit the contribution must be more than fixed expenses. To avoid any loss, the contribution must be equal to fixed cost.

Lab Exercise:

Re-write the following sentences after filling-in the blank spaces with appropriate word(s)/ figure(s):

(a) At break-even point, the contribution will be equal to _____. **(fixed costs)**

(b) Excess of budgeted revenues over the break-even revenue is called_____, **(Margin of Safety)**

(c) When there is no _____, profit figures revealed under marginal and absorption costing are identical**. (Inventories)**

7.7 Contribution

If a system of marginal costing is operated in an organisation with more than one product, it will not be possible to ascertain the net profit per product because fixed overheads are charged in total to the profit and loss account rather than recovered in product costing. The contribution of each product is charged to the firm's total fixed overheads and profit is ascertained. Contribution is the difference between selling price and variable cost of sales. It is visualised as some sort of a fund or pool, out of which all fixed costs, irrespective of their nature are to be met, and to each product has

to contribute its share. The excess of contribution over fixed costs is the profit. If the total contribution does not meet the entire fixed cost, there will be loss.

In normal circumstances, selling prices contain an element of profit but there may be circumstances, when products may have to be sold at cost or even at loss. Therefore, the character of contributions will have the following composition under different circumstances:

i. Selling price containing profit:
   Contribution = Fixed cost + Profit
ii. Selling price at cost:
   Contribution = Fixed cost
iii. Selling price at loss:
   Contribution = Fixed cost – Loss

Illustration 1:

From the following information, calculate the amount of profit using marginal cost technique:

Fixed cost Rs. 3,00,000

Variable cost per unit Rs. 5

Selling price per unit Rs. 10

Output level 1,00,000 units

Solution:

Contribution	=	Selling Price - Marginal Cost
	=	(1,00,000 x 10) - (l,OO,OOO x 5)
	=	10,00,000 - 5,00,000
	=	Rs.5,OO,OOO
Contribution	=	Fixed Cost + Profit
Rs. 5,00,000	=	3,00,000 + Profit
Profit	=	Contribution - Fixed Cost
Profit	=	Rs. 5,00,000 - Rs. 3,00,000
	=	Rs. 2,00,000

7.8 Profit-Volume Ratio

Profit Volume Ratio is also called as Contribution Sales Ratio (or) Marginal Income Ratio (or) Variable Profit Ratio. It is used to measure the relationship of contribution, the relative profitability of different products. processes or departments.

The ratio or percentage of contribution margin to sales is known as P/V ratio. This ratio is also known as marginal income ratio, contribution to sales ratio, or variable profit ratio. P/V ratio, usually expressed as a percentage, is the rate at which profit increases with the increase in volume. The formulae for P/V ratio are:

$$\text{P / V ratio} = \frac{\text{Marginal Contribution}}{\text{Sales}}$$

Or

$$\frac{\text{Sales Value - Variable Cost}}{\text{Sales Value}}$$

Or

$$1 - (\text{Variable Cost/Sales Value})$$

Or

$$\frac{\text{Fixed Cost + Profit}}{}$$

Sales Value

Or

Change in Profits / Contributions

Change in Sales

A comparison for P/V ratios of different products can be made to find out which product is more profitable.

Higher the P/V ratio more will be the profit and lower the P/V ratio, lesser will be the profit. P/V ratio can be improved by:

i. Increasing the selling price per unit.
ii. Reducing direct and variable costs by effectively utilising, men, machines and materials.
iii. Switching the production to more profitable products showing a higher P/V ratio.

Illustration 2:

From the following information calculate:

1. P/V Ratio
2. (2) Break-Even Point
3. (3) If the selling price is reduced to Rs. 80, calculate New Break-Even Point:

Total sales	Rs. 5,00,000
Selling price per unit	Rs. 100
Variable cost per unit	Rs. 60
Fixed cost	Rs. 1,20,000

Solution:

(1) P / V Ratio	=	(Contribution / Sales)*100
Contribution	=	Sales - Variable Cost
Total Sales	=	Rs. 5,00,000
Selling price per unit	=	Rs. 100

Sales in units	= 5,00,000/100 = 5000 units
Contribution	= Rs. 5,00,000- (5,000*60)
	= Rs. 5,00,000 - Rs. 3,00,000 = Rs. 2,00,000
P/V Ratio	= (2,00,000/5,00,000)*100 = 40%
(2) Break-Even Point in sales	= Fixed cost/ PV ratio
	= 1,20,000/ 40% = Rs. 3,00,000

(3) If the Selling price is reduced to Rs. 80 :

Sales	= Rs. 5,00,000 * 80 /100 = Rs. 4,00,000

Break-Even Point (in units)	= Fixed cost / contribution per unit
	Or
	= Fixed Cost/ (Selling Price - Variable Cost)
	= Rs. 1,20, 000/ 80-50 = 4000 units
Break-Even Point in Sales	= 4,000 units x Rs. 80
	= Rs. 3,20,000

7.9 Significance of Profit-Volume (P/V) Ratio

Profit volume (or contribution-sales) ratio is a logical extension of marginal costing. It is the study of the interrelationships of cost behaviour patterns, levels of activity and the profit that results from each alternative combination. The significance of profit volume ratio may be enumerated from the following application which are as under:

a. Ascertainment of profit on a particular level of sales volume.
b. Determination of break-even point.
c. Calculation of sales required to earn a particular level of profit.
d. Estimation of the volume of sales required to maintain the present level of profit in case selling prices are to be reduced by a stipulated margin.
e. Useful in developing flexible budgets for cost control purposes.
f. Identification of minimum volume of activity that the enterprise must achieve to avoid incurring losses.
g. Provision of data on relevant costs for decisions relating to pricing, keeping or dropping product lines, accepting or rejecting particular orders, make or buy decision, sales mix planning, altering plant layout, channels of distribution specification, promotional activities etc.
h. Guiding in fixation of selling price where the volume has a close relationship with the price level.
i. Evaluation of the impact of cost factors on profit.

Illustration 3:

Sales Rs. 2,00,000

Profit Rs. 20,000

Variable Cost 60%

You are required to calculate:

(1) P I V Ratio

(2) Fixed Cost

(3) Sales volume to earn a profit of Rs. 50,000

Solution:

Sales	=	Rs. 2,00, 000
Variable cost	=	60%
Variable cost	=	(60*2,00,000)/100

	=	Rs. 1,20,000
1. P/V ratio	=	(Sales-variable cost) *100/ sales
	=	80,000 * 100/ 2,00,000
	=	40%
2. Contribution	=	Fixed Cost + Profit
		Or
	=	Sales - Variable Cost
	=	Rs. 2,00,000 - Rs. 1,20,000 = Rs. 80,000
Contribution	=	Fixed Cost + Profit
80000	=	Fixed Cost + Rs. 20000
Fixed cost	=	Rs. 80,000 - Rs. 20,000 = Rs. 60,000

3. Sales volume to earn a profit of Rs. 50,000

Sales	=	(Fixed Cost + Desired Profit)/PV ratio
	=	(Rs. 60,000 + Rs. 50,000)/ 40%
	=	Rs. 2,75,000

7.10 Margin of Safety

Margin of safety is the difference between the actual sales and sales at break-even point. Sales beyond break-even volume brings in profits. Such sales represent a margin of safety. Margin of safety is calculated as follows:

Margin of safety = Total sales – Break even sales

Margin of safety can also be calculated with the help of P/V ratio i.e.

Margin of safety = Profit/ PV ratio

Margin of safety can also be expressed as percentage of sales

Margin of safety × 100/ Total sales

It is important that there should be reasonable margin of safety, otherwise, a reduced level of activity may prove disastrous. The soundness of a business is gauged by the size of the margin of safety. A low margin of safety usually indicates high fixed overheads so that profits are not made until there is a high level of activity to absorb fixed costs.

A high margin of safety shows that break-even point is much below the actual sales, so that even if there is a fall in sales, there will still be a point. A low margin of safety is accompanied by high fixed costs, so action is called for reducing the fixed costs or increasing sales volume.

The margin of safety may be improved by taking the following steps:

i. Lowering fixed costs.
ii. Lowering variable costs so as to improve marginal contribution.
iii. Increasing volume of sales, if there is unused capacity.
iv. Increasing the selling price, if market conditions permit, and
v. Changing the product mix as to improve contribution.

7.11 Methods for Determining Break Even Points

The sales volume which equates total revenue with related costs and results in neither profit nor loss is called break-even point (BEP). Break-even point can be determined by the following methods:

Algebraic methods:

i. Contribution Margin Approach
ii. Equation technique

Graphic presentation:

i. Break-even chart
ii. Profit volume chart

Algebraic Methods

i. Contribution Margin Approach

Break-even point (in units) =Total fixed costs/ (Selling price per unit Variable cost per unit)

Or

Break-even point (in rs.) = = Beak-even points (units) × Selling price per unit

ii. Equation Technique

It is based on an income equation i.e.

Sales – Total costs = Net profit.

Breaking up total costs into fixed and variable,

Sales – Fixed costs – Variable cost = Net profit

Sales = Fixed costs + Variable cost + Net profit

i.e.

SP(S) = FC + VC(S) + P

where

SP	=	Selling price per unit
S	=	Number of units required to be sold to break-even
FC	=	Total fixed costs
VC	=	Variable cost per unit
P	=	Net profit (Zero)
SP (S)	=	FC + VC(S) + Zero
	=	FC + VC(S) + 0
S	=	FC/ (SP-VC)

To calculate the level of sales required to earn a particular level of profit, the formula is:

Required Sales (in Rs.) = (Fixed cost + Desired profit)/ PV ratio

Graphic Presentation

a. Break-even chart

According to the Chartered Institute of Management Accountants, London the break-even chart means "a chart which shows profit or loss at various levels of activity, the level at which neither profit nor loss is shown being termed as the break-even point".

It is a graphic relationship between costs, volume and profits. It shows not only the BEP but also the effects of costs and revenue at varying levels of sales. The break-even chart can therefore, be more appropriately called the cost-volume-profit graph.

Assumptions regarding Break-Even Charts are as under:

i. Costs are bifurcated into variable and fixed components.
ii. Fixed costs will remain constant and will not change with change in level of output.
iii. Variable cost per unit will remain constant during the relevant volume range of graph.
iv. Selling price will remain constant even though there may be competition or change in volume of production.
v. The number of units produced and sold will be the same so that there is no operating or closing stock.
vi. There will be no change in operating efficiency.
vii. In case of multi-product companies, it is assumed that the sales mix remains constant.

b. Profit-volume Graph

Profit volume graph is the graphical representation of the relationship between profit and volume. Separate lines for costs and revenues are eliminated from the P/V graph as only profit points are plotted. It is based on the same information as is required for the traditional break-even chart and is characterised by the samelimitations. The steps in the construction of profit volume graph are as follows:

i. Profit and fixed costs are represented on the vertical axis.
ii. Sales are shown on the horizontal axis.
iii. The sale line divides the graph into two parts both horizontally and vertically. The area above thehorizontal line is the 'profit area' and that below it is the 'loss area' at which fixed costs arerepresented on the vertical axis below the sale line and profits on the same axis above the sale line.
iv. Profits and fixed costs are plotted for corresponding sales volume and the points are joined by a linewhich is the profit line.

Illustration 4:

From the following information calculate the Cash Break-Even Point:

Selling,price per unit	Rs. 60
Variable cost per unit	Rs. 40
Fixed cost	Rs. 2,00,000
Depreciation included in fixed cost	Rs. 50,000

Solution:

Cash Fixed Cost = Rs. 2,00,000 - Rs. 50,000 = Rs. 1,50,000
= 60 - 40 = Rs.20

Cash Break-Even point in units = Cash Fixed Cost/ Contribution per unit

= 1,50,000/ 20 = 7500 units

7.12 Angle of Incidence

The angle formed by the sales line and the total cost line at the break-even point is known as Angle of Incidence. The angle of incidence is used to measure the profit earning capacity of a firm. A large angle of incidence indicates a high rate of profit and on the other hand a small angle of incidence means that a low rate of profit.

Relationship between Angle of Incidence, Break-Even Sales and Margin of Safety Sales

1. When the Break-even sales are very low, with large angle of incidence, it indicates that the firm is enjoying business stability and in that case margin of safety sales will also be high.
2. When the break-even sales are low, but not very low with moderate angle of incidence, in that case though the business is stable, the profit earning rate is not very high as in the earlier case.
3. Contrary to the above when the break-even sales are high, the angle of incidence will be narrow with much lower margin of safety sales.

Illustration 5:

The sales of a company are @ Rs. 200 per unit	20,00,000
Variable cost	12,00,000
Fixed cost	6,00,000
The capacity of the factory	15,000 units

Determine the BEP. How much profit is the company making?

Solution:

Number of Units Presently Sold by Company	=	20,00,000/200
	=	10,000 units
Variable Cost per Unit	=	Total Variable Cost/ No.of Units
	=	12,00,000/ 10,000
	=	120
Contribution per Unit	=	SP – VC
	=	200– 120
	=	80
BEP (in Units)	=	Fixed Cost/ Contribution Per Unit
	=	6,00,000/80
	=	7500 units
Profit by the Company	=	(No. of Units Sold × Contribution Per Unit) – Fixed Cost
	=	(`10,000 × `80) – `6,00,000= 2,00,000

Summary

- Contribution or gross margin is the difference between sales and the marginal cost of sales. Fixed costs are written off against contribution during the period. Thus:

Selling price – Variable cost = Contribution

Contribution – Fixed costs = Profit

Fixed costs + Profit = Contribution

Sales = Marginal costs + Fixed costs + Profit..

- Profit Volume Ratio (P/V Ratio) is the ratio or percentage of contribution margin to sales. i.e.

  P / V ratio = Marginal Contribution/ Sales

  OR

  $$\frac{\text{Change in Profits / Contributions}}{\text{Change in Sales}}$$

- Break-even analysis is the categorization of costs into variable and fixed elements and their relationship with sales and profits.
- Break-even point is the level of activity where total revenue equals the total costs (variable and fixed). It is that level of activity at which an enterprise makes neither a loss nor any profit. At break-even point, the sales revenues are just equal to the costs incurred. i.e.

  Break-even points (Units) = Total fixed costs / (Selling price per unit - Marginal cost per unit)

  OR

  = Total fixed costs/ Contribution per unit

  Break-even point (Rs.) = Fixed Cost/ P V Ratio

  OR

  = Beak-even points (units) × Selling price per unit
- Break-even chart is graphic presentation showing approximate profit or loss of an organization at different levels of activity with in a limited range.
- Cash break-even point is the level of activity where there is neither a cash profit nor a cash loss.
- Profit volume graph is the graphical representation of the relationship between profit and volume.
- BEP (%) + Margin of Safety (%)= 100%
- Variable Cost ratio (%) + P/V Ratio (%) = 100%
- Margin of safety is the difference between the actual sales and sales at break-even point. Margin of safety is calculated as follows:

  Margin of safety = Total sales - Break even sales

Keywords

- Contribution
- PV ratio
- Cost-Volume-Analysis
- Break-Even point
- Break even chart
- Margin of safety
- Angle of incident
- Break even analysis

SelfAssessment

1. When a factory operates at full capacity, fixed cost also becomes relevant for make or buy decisions.

A. True
B. False

2. Semi-variable costs are ignored in marginal costing.

A. True
B. False

3. Cost volume profit relationship' is a more comprehensive term than 'break-even analysis'

A. True
B. False

.

4. Margin of safety is the difference of actual sale and standard sale.

A. True
B. False

5. Contribution is not only the criterion for deciding profitability.

A. True
B. False

6. Theory of contribution is the excess of sales over variable costs.

A. True
B. False

7. If sales is less than production and there is no opening stock, it suggests there is closing stock. In such a scenario, profit under marginal costing will be less than the one shown by absorption costing.

A. True
B. False

8. When the sales increase from ` 40,000 to ` 60,000 and profit increases by ` 5,000, the P/V ratiois—

A. 20%
B. 30%
C. 25%
D. 40%.

9. A company which has a margin of safety of ` 4,00,000 makes a profit of ` 80,000. Its fixed cost is5,00,000, its break-even sales will be —

A. Rs.` 20 lakh
B. Rs.` 30 lakh
C. Rs.` 25 lakh
D. Rs.` 40 lakh.

10. The problems associated with marginal costing are

A. Difficulties in divisions of costs
B. Problem of valuation of stocks
C. Ignores time elements
D. All of the above

11. Given production is 1,00,000 units, fixed costs is Rs 2,00,000 Selling price is Rs 10 per unit and variable cost is Rs 6 per unit. Determine profit using technique of marginal costing.

A. Rs 2,00,000
B. Rs 8,00,000
C. Rs 6,00,000
D. None of the above

12. Opportunities to achieve further growth within current businesses are:

A. Intensive Opportunities
B. Integrative Opportunities
C. Diversification Opportunities
D. None of the above

13. When contribution is positive but equal to fixed cost,

A. There is loss equal to fixed costs
B. There is loss more than fixed costs
C. There will be loss less than fixed costs
D. There will be neither profit not loss

14. When contribution is negative but less than fixed cost,

A. There is loss equal to fixed costs
B. There is loss more than fixed costs
C. There will be loss less than fixed costs
D. All of above are false

15. Which of the following statements related to Contribution Analysis are ture?

A. If contribution is zero, there is loss equal to fixed costs
B. If contribution is negative, loss is less than fixed costs
C. If contribution is positive and more than fixed cost there will be profit.
D. All of the above

Answer for SelfAssessment

1.	A	2.	B	3.	A	4.	B	5.	A
6.	A	7.	A	8.	C	9.	C	10.	D
11.	A	12.	A	13.	D	14.	C	15.	A

Review Questions

1. What do you understand by Cost Volume Profit Analysis?
2. Briefly explain the objectives of cost volume profit analysis.
3. Explain Marginal cost equation.
4. What is Contribution? How it is computed?
5. How Is The Concept Of Marginal Costing Practically Applied?
6. Write short notes on :
   a. Profit Volume ratio.
   b. Margin of Safety.
   c. Break-Even chart.

d. Angle of Incidence

7. "The effect of a price reduction is always to reduce the P/V ratio to raise break-even point and to shorten the margin of safety". Explain and illustrate by numerical examples.
8. What do you understand by P/V ratio? Discuss the importance of P/V ratio and state how P/V ratio can be improved?
9. From the following particulars you are required to calculate (a) P I V ratio and (b) Break-even point:

   Present sales Rs. 2,00,000

   Variable cost Rs. 1,20,000

   Fixed expenses Rs. 40,000

   Ascertain the effect of 10% reduction of selling price on (a) P / V ratio and (b) Break-Even Point.

   Also calculate the sales required to maintain the profit at the present level.
10. From the following particulars, calculate :

a) P / V Ratio

b) Profit when sales are Rs. 40,000, and

c) New break-even point if selling price is reduced by 10%

Fixed cost = Rs. 8,000

Break-even point = Rs. 20,000

Variable cost = Rs. 60 per unit

11. A product is sold at a price of Rs.120 per unit and its variable cost is Rs. 80 per unit. The fixed expenses of the business are Rs 8,000 per year. Find

i. BEP in Rs and units,

ii. profits made when sales are 240 units,

iii. Sales to be made to earn a net profit of Rs. 5,000 for the year.

12. A company manufactures a product, currently utilizing 80% capacity with a turnover of Rs. 8,00,000 at Rs.25 per unit. The cost data are as under:Material Cost Rs. 7.50 per unit, Labour Cost Rs. 6.25 per unit. Semi-Variable Cost (including variable cost of Rs. 3.75 per unit) Rs. 1,80,000.Fixed Cost Rs. 90,000 upto 80% level of output, beyond this an additional Rs. 20,000 will be incurred.

Calculate:

1. Activity level at Break-Even Point.
2. Number of units to be sold to earn a net income of 8% of sales.
3. Activity level needed to earn a profit of Rs. 95,000.
4. What should be the selling price per unit, if break-even point is to be brought down to 40% activity level?

13. From the following particulars, you are required to find out (a) Contribution (b) Break-even point in units (c) Margin of safety and (d) Profit

Total Fixed cost	Rs. 4,500
Total Variable cost	Rs. 7,500
Total Sales	Rs. 15,000
Units sold	5,000 units

Also calculate the volume of sales to earn profit of Rs. 6,000.

14. From the following data, calculate:

a. P /V Ratio.
b. Profit when sales are Rs. 40,000.
c. New break-even point if selling price is reduced by 20%.

Fixed Expenses Rs. 8,000.

Break-Even point Rs. 10,000.

15. The following are the cost information in relation to the manufacture of a product:

Selling price - Rs. 10 per unit

Trade discount - 5% of selling price

Material cost - Rs. 3 per unit

Labour - Rs. 2 per unit

Overheads:

Fixed Rs. 10,000

Variable 100% of labour cost

Calculate:

a. BE P.
b. Profit if sales are 15% above break-even volume.

16. Sales Price - Rs. 20 unit

Variable manufacturing cost - Rs. 11 per unit

Variable selling cost - Rs. 3 per unit.

Fixed factory overheads - Rs. 5,40,000 per year.

Fixed selling costs - Rs. 2,52,000 per unit.

Calculate:

a. BEP Volume and Value.
b. Sales required to earn a profit of Rs. 60,000.
c. Sales required to earn a profit of 10% of sales.

17. From the following data, find out how many units should be sold to earn a net profit of 10% on sales.

Selling price per unit Rs. 20

Variable cost per unit Rs. 14

Fixed cost (total) Rs. 7,92,000

18. A company estimates that next year it will earn a profit of Rs. 50,000. The budgeted fixed costs and sales are Rs. 2,50,000 and Rs. 9,93.000 respectively. Find out the break-even point for the company.

19. Plant I produces a product which costs Rs. 3 per unit when produced in quantities of 10,000 Units and Rs. 2.50 per Unit when produced in quantities of 20,000 units. You are asked to estimate total fixed costs.

20. Present production and sales : 8,000 units

Selling price per unit Rs. 20

Direct labour Rs. 2.50

Variable overhead Rs 100% of direct labour cost

Direct materials Rs. 5

Fixed costs Rs. 40,000

Find out;

a. PV Ratio
b. Sales required to break-even point and
c. Margin of safety

21. The projected capacity of a plant, when sold, would return Rs. 70,000 in sales income to the company. The variable costs for this production volume were determined to be Rs. 30,000. The fixed costs are Rs. 20,000. Determine the following:

1. the break-even point of the business
2. the profit or loss to the business on sales of Rs. 49,000; Rs. 2S,OOO
3. the amount of sales that will enable the business to earn a net profit of Rs. 2S,OOO

22. A company budgets for a production of 1,50,000 units. The variable cost per unit is Rs. 14 and fixed cost is Rs. 2 perunit. The company fixes its selling price to fetch a profit of 15% on cost.

a. What is the break-even point?
b. What is the profit-volume ratio?
c. If it reduces its selling price by 5%, how the revised selling price affect the break-even point and the profit-volumeratio?
d. If a profit increase of 10% is desired more than the budget, what should be the sales at the reduced prices?

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Unit 08: Standard Costing

CONTENTS

Objectives

After studying this unit, you will be able to:

- Explain how standard costs are set.
- Explain the concept of standard costing.
- Identify and describe the purpose of a standard costing system.
- Practical applications of standard costing.

Introduction

The term standard cost refers to the cost that management believes should be incurred to produce goods or service under anticipated conditions. Establishing a Standard costing system will be quite useful to the Management in both planning and control. In the planning stage, it can assist the Management with necessary data; at the control stage, it can be used to find the deviations between the actual vis-a-vis the standards. The measurement of such deviations is carried out through the technique of variance analysis.

This chapter examines the functional-based standard costing systems in managing costs, improving planning and control and facilitating decision making and product costing. It provides detailed discussion of cost variance analyses for all product cost elements and considers their behavioral implications. Mix and yield variance analyses are also presented when it is possible to make input substitutions.

8.1 Standard Costing

Cost control, leading to cost reduction, should always be the objective of any firm or institution where scarce resources are used. Even if the firm can sell its goods of services at a very remunerative price, it should still try to reduce the use of factors of production, without jeopardizing the quality of the product or the services. The best way of doing this is to constantly think as to whether the cost can be further reduced, but the first step is to try to see that these do not go beyond a level determined beforehand. If this approach is adopted, i.e., if an attempt is made to ascertain beforehand what costs should be and a further attempt is made to see that actual costs do not go beyond this level, the approach will be that of standard costing. In fact, it is the philosophy of standards which will bring the best results and not merely the mechanism of adopting the standard costing techniques. The philosophy of standards, in a nutshell, means scrupulously separating all types of wastages and losses and not allowing them to cloud the cost of production, at least for purposes of internal consumption. Suppose, a worker normally working 8 hours should produce 20 units for a wage of`20; the proper labor cost of production is `1 per unit. Suppose forany reason the worker produces only 12units. Normally, the payment of `20 will be spread over 12 units and one would say that the labor cost per unit is `1.67. But if the philosophy of standards is practiced, one would say that the proper labor cost of 12units will still remain `1 per unit of Rs. 12 in all; 8 units have not been produced and, therefore, at the rate or `1per unit, there is loss of Rs. 8. This amount should be charged to a separate account. This account should be shown as a separate item in the revenue accounts of the firm so that management would know, at the end of each period, the extent of losses that have unnecessarily taken place. Of course, if extra efficiency has been obtained, the effect of that efficiency should be credited to a separate account and shown as a separate item in the revenue account.

This really is the essence of standard costing - to set targets of cost, to try to achieve those targets, to compare the actual cost with the targets, to ascertain the reasons and to record the reasons in the books of account, or if a regular record is not maintained, at least to bring the monetary effects of various factors that have operated in the organization, to the notice of the management. Thus standard costing is an excellent system of control of costs and of measuring efficiency, and of improving upon it.

It may be noted in passing that usually standard costs are also given the name of pre-determined costs. This means that before work is actually started an extremely careful estimate of cost is prepared to serve as the standard against which the actual is to be measured. This term should not be confused with pre-production costs since that would mean the cost to be incurred actually before production commences, such as on trial runs. Further, standards should not be confused with estimates. Estimates connote rather loose forecasts of anything and in fact one thinks of actual being correct and tend to judge the accuracy of estimates on the basis of actual. In case of standard costs, the emphasis is that the figures of standard costs are correct and that one must explain why the actual differ from the standards. Standards are far more exact and exacting than forecasts or estimates.

8.2 Definition

Standard costs are the scientifically pre-determined costs of manufacturing a single unit or a number of units of product or of rendering a service during a specified future period. The Chartered Institute of Management Accountants, London, defines standard cost as "a standard expressed in money. It is built up from an assessment of the value of cost elements. Its main uses are providing bases for performance measurement, control by exception reporting, valuing stock and establishing selling prices."

What is evident from the above definition is that standard costs are planned costs of a product under current or anticipated operating conditions. The dictionary meaning of the word 'standard' is that it is a "thing serving as a basis for comparison", "thing recognized as model for imitation". But it should be noted 'standard' is a relative term. Admittedly, what is standard for one may be

substandard for another and vice versa. However, what is significant is that within an organization, it serves as a desirable target. The term 'standard cost' consists of two parts, viz., 'standard' and 'cost'. 'Standards' can be established in respect of quantities and qualities like materials and labor. Cost involves the expression of the standard so established in values.

CIMA defines standard costing as "a control technique which compares standard costs and revenues with actual results to obtain variances which are used to stimulate improved performance". The technique of standard costing may be summarized as follows:

(i) Pre-determination of technical data related to production, i.e. details of materials and labor operations required for each product, the quantum of losses, level of activity, etc.

(ii) Pre-determination of standard costs, in full details for each element of cost viz. material, labor and overhead.

(iii) Comparison of the actual performances and costs with the standards and working out the variances i.e., the difference between the actual and the standards.

(iv) Analysis of the variances in order to determine the reasons for deviations of actuals from the standards, and

(v) Presentation of information to the appropriate level of management for suitable action.

8.3 Significance/Advantage of Standard Costing

Though the advantages will be fully comprehended when on has gone through the whole study paper and has studied the various implications of standard costing, we give below the important significance/advantages:

1. To determine standards which are at once practicable and represent efficient performance, the management will have to be fully aware of all the facilities that are available, the best way in which work can be done (for example, time and motion study is essential if labour standards are to be fixed properly) and will have to gather continuous and up-to-date information about all the happenings; this exercise will enable the firm to locate many sources of wastages and losses and to block them.

2. Human beings often work hard to achieve standards which are within their reach; therefore, setting up of such standards will almost automatically mean greater efficiency in operations. Further, almost everyone will think in terms of setting the targets and of achieving them. This will be specially so if the system of rewards and punishment is also geared to the results.

3. If standards are themselves challenged periodically on a systematic basis, it will mean a constant increase in efficiency.

4. Standard costing involves not only pre-determined quantity standards but also standards in respect of prices and rates. This may mean that all materials issued and labor applied will be evaluated on the basis of standard price and rates. This will itself reduce clerical labor. One can say that in general standard costing is more economical than the ordinary system of costing where quantities and prices vary day by day or week by week.

5. Standard costing will enable objective judgment of the people and to that extent the systems of promotions, etc., will be more acceptable in the firm.

6. The management's own time can be saved to a large extent because the attention of management will be invited only to those matters which really require their attention. This will be done through the analysis of the deviation between the standard costs and actual costs. Management need pay attention only to those factors which have meant efficiency or inefficiency. (Management by Exception).

7. For the purpose of fixing prices, standard costs play a useful role; they exclude the day-to-day fluctuations in cost resulting from inefficient use of resources and movement in prices. Standard cost represent the long-term estimates; cost and price, therefore, can be fixed on a long-term basis.

8. Even for valuation of inventory, standard cost should be the proper basis. If actual costs are high only because there has been a wastage of resources, it is not proper to capitalize those losses by including them in the value of inventory. Nothing becomes more valuable simply because of wastage and, therefore, inventory values should better be determined on the basis of standard costs.

9. In short, one can day that if a firm practices standard costing on proper lines, i.e., standards are themselves determined in a way which will not impose too great a burden on the worker or other employees or the firm, it may infuse in the minds of the staff a desire to achieve the standards and thus show greater efficiency.

10. At every stage of setting the standards, simplification and standardization of productions, methods and operations are effected and waste of time and material is eliminated. This assists in managerial planning for efficient operation and benefits all the divisions of the concern.

11. Costing procedure is simplified. There is a reduction in paper work in accounting and less number of forms and records are required. There is considerable saving in clerical time and expenditure leading to reduction in the cost of the costing system.

12. This system facilitates delegation of authority and fixation of responsibility for each department or individual.

13. Where constantly reviewed, the standards provide means for achieving cost reduction. This is attained through, improved quality of products, better materials and men, effective selection and use of capital resources etc.

14. Standard costs assist in performance analysis by providing ready means for preparation and interpretation of information.

15. This facilitates the integration of accounts so that reconciliation between cost accounts and financial accounts may be eliminated.

8.4 Applications of Standard Costing

Standard costing is quite useful to the management in its function say planning, controlling etc and most important in decision making and performance evaluation. Standard costing can be used for:

1. Projecting the profit level of the business at any level of production.

2. To help in execution of management's function effectively i.e. planning and controlling of cost.

3. To analyze the impact of cost if sales volume increase/decrease by certain percentage.

4. To measure the efficiency of production.

5. To measure the performance of each segment.

6. To identify and measurement of variances between standards and actuals.

7. To design performance measurement systems to encourage employees to participate for the betterment of the Organization.

Lab Exercise:

Review Question:

Re-write the following sentence after filling-in the blank spaces with appropriate word:

_____ is a technique which uses standards for costs and revenues for

the purpose of control through variance analysis.

Correct answer: Standard costing

8.5 Difference between Estimated Costs and Standard Costs

Although, Pre-determination is the essence of both Standard Costing and Estimated Costing, the two differ from each other in the following respects:

Standard Costing-

(1) It is used on the basis of scientific.

(2) It emphasizes "what the cost should be."

(3) It is used to evaluate actual performance and it serves as an effective tool of cost.

(4) It is applied to any industry engaged in mass production.

(5) It is a part of accounting system and standard costing variances are recorded in the books of accounts.

Estimated Costing-

(1) It is used on the basis of statistical facts and figures.

(2) It emphasizes "what the cost will be."

(3) It is used to cost ascertainment for fixing sales price.

(4) It is applicable to concern engaged in construction work.

(5) It is not a part of accounting system because it is based on statistical facts and figures.

8.6 Determination of Standard Costs

The following preliminary steps must be taken before determination of standard cost:

(1) Establishment of Cost Centers.

(2) Classification and Codification of Accounts.

(3) Types of Standards to be applied.

(a) Ideal Standard

(b) Basic Standard

(c) Current Standard

(d) Expected Standard

(e) Normal Standard

(4) Organization for Standard Costing.

(5) Setting of Standards.

(1) Establishment of Cost Centers: It is the first step required before setting of Standards. According to CIMA, London Cost Centre is "a location. Person or item of equipment for which costs may be ascertained and used for the purpose of cost control." Cost centre is necessary for the determination of standard costs for each product and comparison of actual cost with the predetermined standards to ascertain the deviations to take corrective measures.

(2) Classification and Codification of Accounts: Classification of Accounts and Codification of different items of expenses and incomes help quick ascertainment and analysis of cost information.

(3) Types of Standards to be Applied: As 'standard' is a relative expression, one has to determine for oneself what one deems appropriate as a 'standard'. However, one should not lose sight of the objective which normally should be avoidance of all losses and wastages as far as possible. Management may certainly fix standards on the basis of maximum possible efficiency, possibly with an assumption of no wastage, no idle time, etc. However, this is not realistic; the standard will be the 'Ideal Standard' but impracticable - no one will even make an attempt to achieve it.

Alternatively, an average of past few years' costs could be taken as basis but this will mean perpetuating past inefficiencies, by making them the target. This will defeat the very purpose of standard costing. A target should be such that it will induce the worker to give out his best. In order to make people believe in standards and to induce them towards achieving them, standards should better be such as can be achieved but with an effort; in other words, they should be somewhat idealistic. Determination of the type of standard to be used is one of the important steps before setting up of standard cost. The different types of standards are given below:

(a) Ideal Standard

(b) Basic Standard

(c) Current Standard

(d) Expected Standard

(e) Normal Standard

(a) Ideal Standard: This standard refers to the target which can be attained under most ideal conditions. Hence, it is more idealistic and less realistic. It is defined by the Terminology as: "The standard which can be attained under the most favorable conditions, with no allowance for normal losses waste and machine down time".

(b) Basic Standard: This is a "standard" which is established for use, unaltered over a long period of time. Standards are fixed scientifically and hence it is more of a technical job. These standards are supposed to remain unchanged so long as quality requirements are constant. Moreover, if forward contracts are entered into regarding materials and labor pact signed for a certain period, the costs can be planned accordingly. Such costs, i.e., basic standards may, however, have to be adjusted for changes in circumstances in a period.

(c) Current Standard: In practice, standards are fixed on the basis of scientific studies but adjusted for current subjective factors. A standard, therefore, is made realistic to reflect the anticipated conditions affecting operations; it is not too idealistic. Such a standard would bring to sharp focus the avoidable causes for variances, leading to control action. A current standard is a standard for a certain period, for certain condition and for certain circumstances. Basic standards are more idealistic whereas current standards are more realistic. Most companies use current and not basic standards.

(d) Expected or Attainable Standard:A standard though idealistic should also be realistic. If targets are fixed for a certain budgeted period, taking into account the expected conditions, it can be known as "expected standard" or "attainable standard". It is defined by CIMA, London as "a standard which can be attained if a standard unit of work is carried out efficiently, a machine properly operated or a material properly used. Allowances are made for normal losses, waste and machine downtime.

(e) Normal Standard: Yet another target is one which is intended to cover a longer period of time - a period long enough to cover one trade cycle, i.e., roughly 7 to 10 years. This is defined as "the average standard which it is anticipated can be attained over a future period of time, preferably, long enough to cover one trade cycle".

(4) Organization for Standard Costing: The success of the standard costing system depends upon the reliability of standards. Hence the responsibility for setting standard is vested with the Standard Committee. It consists of

(a) Purchase Manager

(b) Production Manager

(c) Personnel Manager

(d) Time and Motion Study Engineers

(e) Marketing Manager and Cost Accountant

(5) Setting of Standard: The Standard Committee is responsible for setting standards for each element of costs as given below:

I. Direct Material

II. Direct Labor

III. Overheads

(a) Fixed Overheads

(b) Variable Overheads

I. Standard for Direct Material Cost

The following are the standard involved in direct materials cost:

(i) Material Quantity or Usage Standard.

(ii) Material Price Standard.

*(i) Material Usage Standard:*Material Usage Standard is prepared on the basis of material specifications and quality of materials required to manufacture a product. While setting of

standards proper allowance should be provided for normal losses due to unavoidable occurrence of evaporation, breakage etc.

*(ii) Material Price Standard:*Material Price Standard is calculated by the Cost Accountant and the Purchase Manager for each type of materials. When this type of standard is used, it is essential to consider the important factors such as market conditions, forecasting relating to the trends of prices, discount etc.

II. Standard for Direct Labor Cost

The following standards are established:

(i) Fixation of Standard Labor Time

(ii) Fixation of Standard Rate

*(i) Fixation of Standard Labour Time:*Labour Standard time is fixed and it depends upon the nature of cost unit, nature of operations performed, Time and Motion Study etc. While determining the standard time normal ideal time is allowed for fatigue and other contingencies.

*(ii) Fixation of Standard Rates:*The standard rate fixed for each job will be determined on the basis of methods of wage payment such as Time Wage System, Piece Wage System, Differential Piece Rate System and Premium Plan etc.

III. Setting Standards for Overheads

The following problems are involved while setting standards for overheads:

(1) Determination of standard overhead cost

(2) Estimating the production level of activity to be measured in terms of common base like machine hours, units of production and labour hours.

Setting of overhead standards is divided into fixed overhead. Variable overhead and semi-variable overhead. The determination of overhead rate may be calculated as follows:

$$\textbf{(a) Standard Overhead Rate} = \frac{\textbf{Standard overhead for the budget period}}{\textbf{Standard Production for the budget period}}$$

$$\textbf{(b) Standard Variable Overhead Rate} = \frac{\textbf{Standard overhead for the budget period}}{\textbf{Standard Production for the budget period}}$$

Standard Hour: Usually production is expressed in terms of units, dozen. kgs, pound, liters etc. When productions are of different types, all products cannot be expressed in one unit. Under such circumstances, it is essential to have a common unit for all the products. Time factor is common to all the operation. ICMA, London, defines a Standard Time as a "hypothetical unit pre-established to represent the amount of work which should be performed in one hour at standard performance."

Standard Cost Card: After fixing the Standards for direct material, direct labor and overhead cost, they are recorded in a Standard Cost Card. This Standard cost is presented for each unit cost of a product. The total Standard Cost of manufacturing a product can be obtained by aggregating the different Standard Cost Cards of different processes. These Cost Cards are useful to the firm in production planning and pricing policies.

8.7 Standard costing system

Standard costing system provides standard cost for budgeting purpose to plan future performance. Standards are pre-determined, and it helps organization to achieve its objectives in economic and efficient manner. It can be used to motivate employee to achieve set standards of production/expenses level i.e. ideal standards. It provides some allowances for wastage and idle time (attainable standards), it recognizes the fact the labor are likely to waste some material and will become absent for various reasons like sickness.

A standard costing system initially records the cost of production at standard. Units of inventory flow through the inventory accounts (work-in-process -> finished goods ->cost of goods sold) at their per-unit standard cost. Standards are compared with actual outcomes to find deviations and reasons for these deviations, so that corrective action can be taken. It helps in managing human resources by giving them signal that their performances are being measured, compared and

analyzed. Rewards can be given and Disciplinary action can be taken based on pre-defined criteria communicated to them, so that decisions regarding whatever action taken can be justified to avoid resentment among workforce. The management evaluates the performance of a company by comparing it with some predetermined measures. Therefore, it can be used as a process of measuring and correcting actual performance to ensure that the plans are properly set and implemented.

8.8 Installation of a Standard Costing System

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

- To Set the predetermined standards for sales margin and production costs
- To ascertain and collect the actual results
- To compare the actual performance with pre-determined standards
- To determine the variances
- To analyze and investigate the variances
- To ascertain the causes of variance
- To take corrective action where necessary.
- To adjust the budget in order to make the standards more realistic

8.9 Functions of Standard Costing System

- **Valuation:** Assigning the standard cost to the actual output.
- **Planning:** Use the current standards to estimate future sales volume and future costs.
- **Controlling:** Evaluating performance by determining how efficiently the current operations are being carried out.

8.10 Features of a Standard Costing System

- The fact that standards are based on estimates.
- Standards will change according to conditions.
- It provides continual incentive for employee to keep costs and performance in line with predetermined standard.
- A standard cost system helps focus management's attention on the following questions and their causes:
  a. Were materials purchased at prices above or below standard?
  b. Were materials used in quantities above or below standard?
  c. Is labor being paid at rates above or below standard?
  d. Is labor being used in amounts above or below standard?

8.11 Standard Costs for Material, Labor, and Overhead

It should be noted that though standards must be set for materials, labor and overheads, only an integrated approach will bring the best results. There can be saving in labor, for example, if materials of certain quality or size are purchased or if more automatic machines are introduced. When standards are to be laid down, the exact process of production and the facilities that are to be used for the purpose should be decided and taken into account. Then only the standards can be fixed properly.

The first step in the development of a standard costing system is to set standard cost, i.e., to predetermine the standards in respect of each element of cost - direct material, direct labor and overheads. Extreme care is essential in the fixation of standards as the success of a standard costing

system depends largely upon the accuracy of the standard costs used. While setting production cost standards, the following factors should be considered:

i. Technical and operational aspects of the concern.
ii. Industrial engineering criteria for materials, labor, etc.
iii. The type of standard to be used.
iv. Proper classification of the accounts so that variance may be determined properly.
v. Responsibility for setting standards. As definite responsibility for variances from standards is ultimately to be laid on individuals or departments, it is obvious that all those individuals or departments should be associated with setting of standards.

8.12 Direct Materials Standards

The standard cost of direct materials is closely related to the quantities and prices of materials to be used in production. Hence, two related standards are set:

(i) Materials Usage Standard: The object of setting the materials usage standard is to achieve maximum efficiency in materials usage. The first step in this connection lies in specifying the size and quality of materials. This is followed by an analysis of the materials requirements. A list is prepared showing the details of materials-size, grade, quantity etc. - for setting the standard. This is known as a 'Standard Materials Specification.' The standard quantities of materials to be used per unit of production can be laid down by one of the following means:

a. By reference to the weight of materials in the final production.
b. On the basis of past performance with due allowance for change in conditions.
c. By means of test runs conducted under different conditions and taking an average of quantities used.

Due allowance must be made for normal wastage. This is generally based on an estimate wastage which is unavoidable, e.g., normal loss through evaporation, off-cuts, broken parts, etc.

(ii) Materials Price Standard: Standards are set for material prices after due consideration of the efficiency of purchasing and store-keeping functions. The aim of setting materials price standard is to achieve maximum efficiency in this function, and thus minimize direct materials costs. The price standard should provide for discount on purchases, economy of bulk purchasing and anticipated changes in market price.

8.13 Standard Cost for Direct Labour

Direct labor costs depends upon labor time and wage rates and therefore, setting standard cost for direct labor involves setting two related standard:

(i) Standard Labor Time: This indicates the precise time (hours) that labor of a particular grade should take to perform a given operation. The main object of setting standard labor time is to derive maximum efficiency in the use of labor time. The standard time may be set on the basis of past performance with adjustments for change of conditions. Time and motion studies are a great help in setting standard time.

(ii) Labor Rate Standard: This refers to the wage rates expected to be paid to different grades of labor employed in the organization. The object is to plan for the actual wages to be paid. A variety of factors should be considered and allowance made for them while setting standard wage rates, principal of them are-future trend of wages which can be anticipated; collective agreement between labor and management; guaranteed minimum wages; and overtime wages, if the level of activity makes overtime inevitable.

Both these standards must be set after a detailed study of labor work involved. Besides, the workers employed must be graded on a standard basis.

8.14 Standard Overhead Rates

The principal object of setting standard overhead rates is to minimize the overhead costs chargeable to production. Following steps are necessary for setting standard rates:

(i) The level of activity of production departments and the work to be done by the service departments should be determined.

(ii) Overheads costs should be classified into fixed, variable and semi-variable overheads. The costs expected to be incurred under each head for each of the production and service departments should be calculated for a given period. The expected costs may be laid down in details in the form of cost-budgets based on past experience, present conditions and future trends.

(iii) The standard overhead rates for each of the service departments should be calculated and applied to the producing departments.

(iv) The standard overhead rates for the producing departments may be determined as a direct labor hour rate, or a machine hour rate, or as a percentage of direct wages. The rates may be computed using the following ratios:

$$\text{DirectLabourrate} = \frac{\text{Amountofoverheads}}{\text{Labourhoursduringagivenperiod}}$$

$$\text{Machinehourrate} = \frac{\text{Amountofoverheads}}{\text{Machinehoursduringagivenperiod}}$$

$$\text{PercentageofDirectWages} = \frac{\text{Amountofoverheads}}{\text{DirectLabourCostduringagivenperiod}}$$

8.15 Standard Administration Costs

The object of setting standard administration cost is to secure the maximum quantity and quality of administrative services at minimum cost. For this purpose, all administrative functions should be studied in detail. O and M division by examining the office operations and suggesting simplification and standardization of methods and procedures may help a lot in this.

The standard quantity of work to be performed may be set by one or more of the following methods:

i. On the basis of past performance
ii. On the advice of organization and methods team
iii. Time and motion studies; and
iv. Choosing appropriate 'work units' and fixing standard costs per work-unit.

Administrative costs should be classified into fixed, variable and semi-variable items before setting the standard rates

Standard Cost for Selling and Distribution

Since selling and distribution expenses are primarily related to volume of sales, a sales forecast is essential before setting standards of selling and distribution costs. The classification of these costs into fixed, variable and semi-variable items is necessary. Another pre-requisite for setting standards is a detailed examination of the functions and determining standard units of operation.

8.16 Other Costing Methods

a) Joint Product costing

b) Throughput accounting

c) Environmental costing

a) Joint Product costing: Some products may be produced at the same time in the same processbefore being separated for sale or further individual processing. Theseproducts are known as joint products and the separation point is known asthe splitoffpoint.For example, different types

of carbonated drinks might use a commonstarting process where syrup, sweeteners and malt are added before theyare split up and individual flavourings added.Joint costs are the total of the raw material, labour, and overhead costsincurred up to the initial splitoffpoint. The joint costs can not normally be directly attributable to individual jointproducts or byproducts.Therefore, arbitrary allocations may have to beused instead.

Methods of joint cost apportionment

There are many ways in which joint costs can be apportioned to productssuch as:

- physical measurement
- market value at point of separation
- net realisable value/net relative sales value

In turn, the methods will result in different inventory valuations and, therefore,different recorded profits.

b) Throughput accounting: Throughput accounting is very similar to marginal costing, but it can be usedto make longer termdecisions about capacity/production equipment.Throughput accounting is based on three concepts: throughput, inventory (orinvestment) and operating expenses. The basic premise is that managersshould aim to increase throughput while simultaneously reducing inventoryand operational expense.

In throughput accounting, the only cost that is deemed to relate to volume ofoutput is the direct material cost. All other costs (including all labour costs)are deemed to be fixed. These fixed costs may be called Total FactoryCosts (TFC).

Throughput contribution = Revenue – Totally variable costs

The aim of throughput accounting is to maximize this measure ofthroughput contribution.

Since totally variable costs are normally just raw materials and bought in components, it is often convenient to define throughput contribution as:

Throughput contribution = Revenue – direct material costs

Multiproductdecision making in throughput accounting

The usual requirement in questions is to maximize contribution (given thatfixed costs are unaffected by the production decision in the short run) perunit of the limiting factor. In throughput accounting the approach should be to maximize the throughput contribution earned.

c) Environmental management accounting: Organizations are beginning to recognize that environmental awarenessand management are not optional, but are important for longtermsurvivaland profitability.

The contribution of environmental management accounting (EMA)

EMA is concerned with the accounting information needs of managers inrelation to corporate activities that affect the environment as well asenvironmentrelatedimpacts on the corporation. This includes:

- Identifyingand estimating the costs of environmentrelatedactivities
- Identifying and separately monitoring the usage and cost of resourcessuch as water, electricity and fuel and to enable costs to be reduced
- Ensuringenvironmental considerations form a part of capital investmentdecisions
- Assessingthe likelihood and impact of environmental risks
- Includingenvironmentrelatedindicators as part of routine performancemonitoring
- Benchmarking activities against environmental best practice.

Classification of environmental costs

Management are often unaware of the extent of environmental costs andcannot identify opportunities for cost savings. In order to determine thepotential for costs savings it will be important to understand the nature ofenvironmental costs that can be experienced by a firm.Environmental costs can be categorized as quality related costs (qualitycosts are explored again in a later chapter). This results in four costcategories:

• **Environmental prevention costs** – those costs associated withpreventing adverse environmental impacts

• **Environmental appraisal costs** – the cost of activities executed todetermine whether products, service and activities are in compliancewith environmental standards and policies

• **Environmental internal failure costs** – costs incurred to eliminateenvironmental impacts that have been created by the firm

• **Environmental external failure costs** – costs incurred afterenvironmental damage has been caused outside the organization.

Summary

- Standard costs are pre-determined estimates of cost of a single unit or a number of units of a product service.
- Standard costing is a method of preparation of standards and their uses for comparison with actual costs by variance analysis.
- All standards are established on the basis of absorption costing system.
- Application of Standard Cost for:
    - Effective planning and controlling costs
    - Pricing decisions including submission of quotations, answering tenders etc
    - Identification and measurement of variances from standards
    - Designing performance measurement systems
- Types of various standards are basic, current, expected, normal, ideal.
- Standard costing system provides standard cost for budgeting purpose to plan future performance.
- Valuation, planning, controlling are the main function of standard costing system.
- Standard item represents budgeted data which changes according to the level of actual activity or actual output.

Keywords

- Standard costing.
- Standards
- Valuation
- Joint Product Costing
- Throughput costing
- Environmental costing
- Material costing
- Ideal standard
- Expected standard

SelfAssessment

1. Controlling is not a part of the cost accounting concept.

A. True

B. False

2. The basic standard within the Standard Costing process is established forshort period.

A. True
B. False

3. Analysis of variancesis a part of the Standard Costing process within an organization.
A. True
B. False

4. Audit fees are a part of the administration overhead in an organization.
A. True
B. False

5. Standard cost is a predetermined or estimated cost to either produce a good/service or perform an activity within the organization.
A. True
B. False

6. Standard Costing System helps to establish the breakeven point for the products manufactured by the company.
A. True
B. False

7. Standard Costing Systemhelps to fix the selling price for the products manufactured within an organization.
A. True
B. False

8. Which of the following is not a demerit of the Standard Costing System?
A. The traditional cost variances are not tied to any specific product lines
B. Standard Costing System is much more expensive than other systems
C. It is usually less expensive than normal or actual costing
D. All of the above

9. Which of the following industries is Standard Costing most suited for?
A. It is suitable for industries that produce standard products
B. It is suitable for enterprises that are engaged in service activities
C. It is suitable for industries that produce non-standard products
D. None of the above

10. Which of the following is true about Standard Costing?
A. It is a technique of implementing cost control within the organisation
B. It helps in planning out business activities within the organisation
C. Both a and b are incorrect

D. Both a and b are correct

11. Which of the following is not a criticism of a standard costing system?
A. It is more expensive than other systems
B. Variances calculated under standard costing come too late to be useful
C. It can cause dysfunctional behaviour in a JIT/FMS environment
D. Traditional cost variances are not tied to specific product lines

12. Which of the following is not an advantage of standard costing?
A. It provides a basis for sensible cost comparisons
B. It enables managers to manage by exception
C. It provides a means of performance evaluation and employee rewards
D. It is usually less expensive than actual or normal costing

13. Standards that can be attained only under the best circumstances are referred to as:
A. Attainable standards
B. Budget standards
C. Ideal standards
D. Practical standards

14. Which of the following is true of standards?
A. Standards represent a benchmark or a norm
B. Standards relate to input quantity
C. Standards relate to input cost
D. All of the above

15. The final decision as to what standard costs should be the responsibility of:
A. Management.
B. Quality control engineers.
C. Purchasing agents.
D. managerial accountants

Answer for SelfAssessment

1.	B	2.	B	3.	A	4.	A	5.	A
6.	B	7.	A	8.	C	9.	A	10.	A
11.	B	12.	D	13.	C	14.	D	15.	A

Review Questions

1. Define Standard Costing?
2. What do you understand by Standard Cost and Standard Costing?

3. What are the differences between Standard Costing an Estimated Costing?
4. What are the advantages of Standard Costing?
5. Discuss the preliminary steps for determination of Standard Cost.
6. Discuss briefly the procedure of establishment of standard costs regarding material, labour and overheads
7. Explain the different types of Standards?
8. Describe and compare the different methods of accounting for standard costs.

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Unit 09: Variance Analysis

CONTENTS

Objectives

After studying this unit, you will be able to:

- Compute and analyze the direct material, direct labor and overhead variances
- explain how variances are used for control
- Calculate mix and yield variances for direct materials and direct labor.
- Describe variance reporting to management.

Introduction

A company's performance is determined in large part by how efficiently and successfully it manages its costs. In a larger sense, the cost amount may be calculated and documented using Historical costing or predetermined costing. The phrase historical costing refers to the determination and recording of real expenses spent after manufacturing has been completed.

Effective cost ascertainment and cost management are major goals of cost accounting. Because it is not used in accordance with a predetermined plan of action, historical costing is ineffective for cost management. Furthermore, it does not give any standard for judging real performance. Based on the limits of historical costing, it is critical to know what the cost should be before production starts so that the specific reasons for failing to meet the objective may be recognized and blame assigned. For such a strategy to identifying reasons to assess performance, appropriate steps to rectify weaknesses may be offered and implemented.

9.1 Variance Analysis

Standard Costing serves as a measuring stick for management in determining "Variances" to assess production performance. Variances are defined as the difference between Standard Cost and Actual Cost for each cost element incurred within a certain time. The process of assessing variance by

subdividing the overall variation in such a manner that management may assign blame for below-standard performance is referred to as "Variance Analysis."

The variance might be either positive or negative. It presents "Favorable Variance" when real performance exceeds the Standard. Similarly, when actual performance falls short of the benchmark, this is referred to as "Unfavorable Variance."

Variation analysis assists management in determining - Variation analysis assists management in determining–

(a) The size of the variance

(b) The causes for the difference between actual and budgeted performance

(c) The person accountable for poor performance

(d) Corrective measures to be taken

Variance is defined by the Chartered Institute of Management Accountants London as "the difference between planned, budgeted, or standard cost and actual cost; and similarly for revenue."

Variance analysis is described as "the analysis of performance using variances." It is the process of calculating the quantity of and determining the reason of differences between real and standard expenses.

Variance analysis entails two steps:

(a) Computing individual variances and

(b) Determining the cause(s) of each variance.

Actual costs that are greater than standard costs indicate inefficiency, and the discrepancy is referred to as unfavorable or adverse. A negative or unfavorable variance is one that diminishes profit. A profit-increasing variance is advantageous. Variance is calculated for each cost factor for which criteria have been defined. Each deviation is examined to determine the underlying reasons so that management may apply adequate control. The reason is assigned to the variation; for example, materials price variance indicates that the variance occurred as a result of a change in the price of materials. Some of the variation is within your control, while others are not. The goal of such categorization is to concentrate adequate attention on the controlled variance. This adheres to the management-by-exception philosophy.

Variations occurring over a period may be compared to variances on the same account stated as a percentage of standard expenses and compared to the previous month's percentage. A comparison between the standard and the reality, or between the basic standard and the present standard, may be made.

As previously mentioned, the origin and causes of variations must be tracked by breaking down total variances into their component parts in order to establish and isolate the reasons of each variance.

Positive and negative variances should be given equal weight. A negative variance indicates inefficiency in the use or waste of materials, labor, and resources. A favorable variance might be the result of increased productivity, the manufacturing of poor items, or the application of an inaccurate standard. A negative variance may be offset by a positive variance, necessitating investigation and proper action.

9.2 Forms of Variances

Favorable and Unfavorable Variance

If the actual cost is less than the standard cost, the difference is known as a favorable variance, credit variance, or positive variance, and is represented by (F) or Cr. If, on the other hand, real costs exceed standard costs, the divergence is referred to as an unfavorable variance, debit variance, negative variance, or adverse variance, and is represented by (A) or Dr. - it decreases profit.

Controllable and Uncontrollable Variance

The variation is known as a controlled variance when it represents the degree of efficiency of a person or department, i.e., a specific individual or departmental head is accountable for the variance. Obviously, such a variation is controllable with appropriate action. Uncontrollable

variation is one that cannot be controlled by individual or departmental activity. This variation is driven by external causes such as changes in market circumstances, variations in demand and supply, and so on. It cannot be blamed on any one person or group inside the organization.

When deviations are disclosed, management's attention is directed especially to manageable discrepancies. If a variation is generated by numerous sources, the portion of the cost variance that is attributable to each element should be calculated.

Certain variations in material, labor, or overhead may occur as a result of changes in the underlying situation upon which the standards are based.

Revision Variance

This is the amount by which a budget is updated but which, by regulation, is not included in the regular cost rate. Wage rate changes after wage agreements, fiscal policy, and other factors may have an impact on standard expenses. To account for these uncontrolled circumstances and to avoid the amount of labor and expense associated with change, the fundamental standard costs are permitted to remain. It is critical to identify the variation caused by non-revision in order to properly analyze the other variances.

Method Variance

It is the difference between the standard cost of a product made or an operation conducted using conventional procedures and the cost of doing the operation using an alternative approach. Standards typically consider the best approach available, and any variation will result in an unfavorable variance. As a result, such variations should be kept to a minimum.

After revising the standards in accordance with the revision variance and variance techniques, variance analysis is normally carried out.

Illustration 1:

Standard cost of a product in a factory is predetermined as follows:

Material (5 units @ Rs.4 each)	20
Labor (20 hours @ Rs. 1.50 per hour)	30
Overhead expenses	10
Total	60

During a period, 8,000 units were produced whose actual cost was as follows:

Material (40,500 units @ Rs.5 each)	2,02,500
Labor (1,50,000 hours @ Rs. 1.60 each)	2,40,000
Overhead expenses	90,000
Total	5,32,500

Prepare a statement showing standard cost, actual cost and variances.

Solution:

Statement of Standard Cost, Actual Cost, and Variances

Particulars	Standard cost	Actual cost	Variance
Material	1,60,000	2,02,500	42,500 (A)
Labour	2,40,000	2,40,000	—
Overhead expenses	80,000	90,000	10,000 (A)
Total	4,80,000	5,32,500	52,500 (A)

The statement above depicts the variation in each cost category. Each such variation may be investigated further. Before doing such an analysis, it is crucial to understand the two major processes in cost buildup. The expense is incurred initially and then charged to production. For example, supplies are generally acquired first and then supplied for production, but wages are

incurred first and then charged to production based on time spent on production. Thus, cost accumulation has two stages: I the incurring stage and (ii) the recovery stage. Recognizing these two phases is critical since variations occur at both the incurring and healing periods. At all of these steps, analysis entails identifying and quantifying the variations.

Before we begin analyzing the variances, the following critical considerations about the efficacy of variance analysis should be noted:

(i) Variances should not be applied automatically for control reasons. They are just indications of where the cause of rising costs occurs. The governing authority must decide if the extra expenses are justified. The real cost may be greater owing to variables outside the responsible authority's control, and the responsible authority may have helped to keeping the actual cost from increasing too much. In such a case, enforcing implicit restrictions based on revealed variations would lead to employee demoralization.

(ii) The degree of activity should be assessed for comparability when comparing actual expenses to norms. If criteria for a budgeted level of activity have been developed and the actual level differs, a simple comparison of actual with budgets would be incorrect. The criteria should be updated to reflect the actual level of activity accomplished. However, care must be made to discern between fixed and variable expenses. The disparity between the original and amended standards is referred to as "Revision Variance."

(iii) When calculating the variation in fixed costs (especially fixed overheads), keep in mind that what is charged to cost is not the real cost but an amount based on specified recovery rates multiplied by production, which may be stated in standard hours.

9.3 Two-Way Analysis of Variances

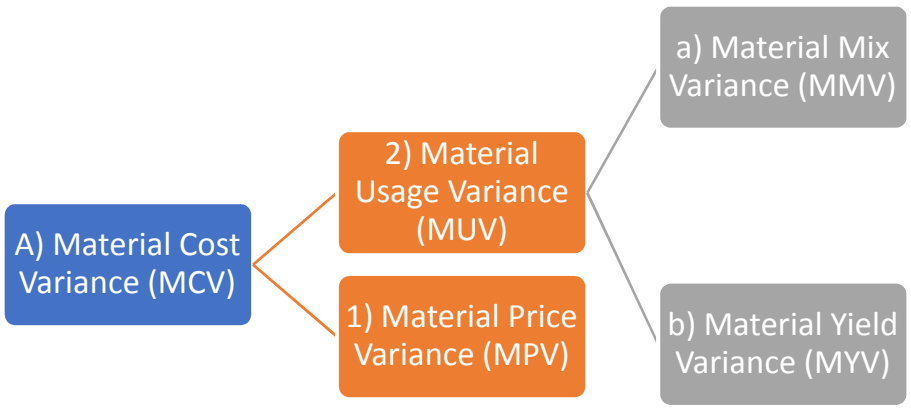
Each variation must be broken down into I incurring variance and (ii) recovering variance. Furthermore, the reasons of a variation may be either efficiency or inefficiency in resource utilization, or a change in the price paid for the resources. As a result, we have the following analysis:

(A) Material cost variance	- Material price variance
	- Material usage variance
(B) Labour cost variance	- Labor rate variance
	- Labor time variance
(C) Overheads cost variance	- Overhead expenditure variance
	- Overhead volume variance

Each cost factor is divided into two main sections. It is referred to as "Two-way Analysis."

9.4 Material Variance

Classification of material variances are as under:



A) Material cost variances

The difference between the standard cost of materials provided and the actual cost of materials utilized is referred to as materials cost variance.

Material Cost Variance= Standard Cost of Material for Actual Output – Actual Cost of Materials Used

OR

(TSC – TAC)

OR

(SQ × SP) – (AQ × AP)

Variations in material costs occur as a result of changes in the material's price or consumption. According to this, material cost variations may be divided into two categories: material price variance and material use variance.

1) Material price variance

This is the fraction of the material cost variation that is related to the difference between the stated standard price and the actual price paid. The difference between the standard price provided and the actual price paid for the direct materials utilized is the material price variation. This is a "recurring" variation. This shows the additional cost of the units acquired. Standard unit usage should not be taken into account while doing this computation. It's calculated by dividing the actual amount by the difference between the standard and real prices. The formula is as follows:

Material Price Variance = Actual Quantity (Standard unit price – Actual unit price)

OR

AQ (SP – AP)

Material price variation is defined as the difference between "what it really cost and what it would have cost if the actual consumption had been paid for at the usual price."

Causes of Material Price Variance

Material price variations may be caused by one or more of the following factors:

(i) Changes in the market price of the materials used;

(ii) Changes in buy amount or uneconomical size of purchase order resulting in a differentprice;

(iii) Failure to secure cash and/or trade reductions offered when standards were established;

(iv) Rush order to meet supply deficit;

(v) Failure to take advantage of off-season pricing or failure to buy when prices arelower;

(vi) Emergency purchase at the request of the production/sales management;

(vii) Changes in issue price due to differences in changes related to store-keeping, materials handling, carriage inward expenses etc.;

(viii) Changes in the amount of taxes and duties;

(ix) Changes in the quality or specification of goods acquired;

(x) Use of substitute material with a higher or lower unit price; and

(xi) Changes in the pattern or amount of taxes and duties.

The buying manager is often responsible for material price variances. However, the variation may eventually be traceable to circumstances outside his control, such as changes in market price.

2) Material usage variance

This is the fraction of the material cost variation caused by the difference between the standard amount stated and the actual quantity utilized. The difference between the standard amount indicated for the output accomplished and the actual quantity utilized, both valued at standard prices, constitutes the material consumption variance. The materials consumption variance is

defined as the difference between the actual amount of materials used and the standard quantity established multiplied by the standard price. This variance is calculated using the following formula:

Material Usage Variance = Standard Price (Actual Quantity – Standard Quantity) i.e. SP (AQ – SQ)

Causes of Material Usages Variance

One or more of the following causes might have contributed to the variation in usage:

(i) Inadequate material care.

(ii) Defective production demanding more materials for rectification.

(iii) Abnormal waste owing to pilferage or other losses in material usage.

(iv) Inefficiency in production due to inappropriate technique or lack of requisite expertise in workers.

(v) Use of a material-mix different than the standard mix; and

(vi) Yield from materials that is more than or less than the standard yield.

(vii) Purchase of substandard materials or change in material quality.

(viii) Rigid technical specifications and strict inspection lead to more rejections, requiring more materials for rectifications.

(ix) use of substitute material leads to poor quality.

(x) improper machine maintenance leads to breakdowns and increased material use; and

(xi) poor raw material inspection.

A positive variance is not necessarily beneficial to the company. For example, a decrease in waste caused by slowing down the process may result in a reduction in material consumption, but the subsequent rise in labor and overhead expenses may considerably outweigh the beneficial material usage variance.

Material usage variance may further classify into:

a) Material mix variance

Changes in the composition of the material mix are one of the causes of material consumption variation. It is caused by a change in the material mix utilized in manufacture. As a result, if a greater percentage of the more costly material is utilized than is specified in the standard mix, the materials utilization will be higher than the norm. The use of cheaper materials in significant quantities, on the other hand, will suggest a lower cost of materials utilization than the norm. It is the fraction of material consumption variation caused by the difference between the standard and actual composition of a material combination. In other words, this variation results from a shift in the actual material mix ratio relative to the standard material mix ratio. It is determined by subtracting the standard price of standard mix from the standard price of real mix.

Assume that the materials standard for creating an object is 6 kilogramme. of material A at Rs. 5 per kg. and 4 kg. of material B at Rs. 6 per kg., and the actual amounts utilized are 5 kg. of material A and B each. The overall amount consumed remains at 10 kg, however the material costs will rise as stated below:

Standard:	Material A 6 kg. @ Rs. 5	30.00	
	Material B 4 kg. @ Rs. 6	24.00	54.00
Actual:	Material A 5 kg. @ Rs. 5	25.00	
	Material B 5 kg. @ Rs. 6	30.00	55.00

The overall cost has increased due to the change in the relative proportions of the two elements; this is the nature of the mix variance. It is computed by comparing the standard mix at standard prices (as updated) to the actual mix at standard prices.

Material Mix Variance = Standard Price (Revised Standard Quantity – Actual Quantity)

i.e. SP (RSQ - AQ)

Revised Standard Quantity (RSQ)

$$= \frac{\text{Total of Actual quantities of all types of material (TAQ)}}{\text{Total of Standard quantities of all types of material (TSQ)}} \times \text{Standard Quantity of each material}$$

Lab Exercise:

Review Question:

Re-write the following sentence after filling-in the blank spaces with appropriate word:

(i) _____ is the difference between planned, budgeted or standard cost and actual costs and similarly in respect of revenue.

(ii) The difference between standard material cost of actual production and the actual cost of direct material is _____

Correct answer: (i) Variance (ii) Material cost variance

b) Materials yield variance

The yield variance is the difference between the required standard yield and the actual yield produced. Materials yield variance is defined as the difference between actual yield of materials in manufacturing and standard yield (i.e. predicted yield from a given standard input) evaluated at standard output price. This variation is very important in processing industries, as the result of one process becomes the input of the next process until the finalized product is achieved at the end. The examination of this variation aids in the effective regulation of consumption. A low actual yield is an unfavorable yield variance that shows that material consumption exceeded the norm. A high actual yield implies efficiency, but a consistent high yield suggests that the standard should be revised.

Material Yield Variance = Standard cost per unit (Actual yield – Standard yield)

i.e. SC p.u. (AY-SY)

Note: AY will never change. SY will calculate for actual mix of quantity as under:

$$\text{New SY} = \frac{\text{Old SY}}{\text{TSQ}} \times \text{TAQ}$$

The yield variation may be caused by causes such as improper methods of operation, poor quality materials used, a lack of appropriate care in handling, a lack of sufficient supervision, and so on.

Points to be noted:

(i) Check that the level of output (yield, i.e. AY/SY) is the same for real and standard data; if not, compute a new SY).

(ii) Before beginning a question, always create a cost sheet or arrange all supplied figures in a table for both standard data and real data for the same level of production.

(iii) Before calculating variances, create a formula.

(iv) Mix variance is calculated when there is a variation between the actual input and the standard input for the same level of output.

(v) Material Yield Variance (MYV) is another name for Material Sub Usage Variance.

(vi) When computing the MYV, the actual yield (AY) will never vary, although the standard yield

may.

Illustration 2:

For producing one unit of a product, the materials standard is:

Material X :	6 kg. @	Rs.8 per kg., and
Material Y :	4 kg. @	Rs. 10 per kg.

In a week, 1,000 units were produced the actual consumption of materials was:

Material X :	5,900 kg. @	Rs. 9 kg., and
Material Y :	4,800 kg. @	Rs. 9.50 per kg.

Compute the various variances.

Solution:

Standard cost of materials of 1,000 units:		
Material X:	6,000 kg. @ Rs.8	48,000
Material Y:	4,000 kg. @ Rs. 10	40,000
Total		88,000
Actual cost:		
Material X	5,900 kg. @ Rs. 9	53,100
Material Y	4,800 kg. @ Rs. 9.50	45,600
Total		98,700
Total materials cost variance		10,700 (A)
Analysis:		
Material Price Variance: Actual Quantity (Standard Price - Actual Price)		
X = 5900 (Rs.8 - Rs. 9)		= Rs. 5,900 (A)
Y = 4800 (Rs. 10 - Rs. 9.50)		= Rs. 2,400 (F)
		3,500 (A)
Material Usage Variance: Standard Price (Standard Quantity - Actual Quantity)		
X = Rs. 8 (6,000 - 5,900)		= Rs. 800 (F)
Y = Rs. 10 (4,000 - 4,800)		= Rs. 8,000 (A)
		7,200 (A)

Illustration 3:

From the following particulars calculate:

(a) Material Cost Variance

(b) Material Price Variance

(c) Material Usage Variance

(d) Material Mix Variance

The Standard Mix of Productis:	X 300 Units at Rs. 7.50 per unit
	Y 400 Units at Rs. 10 per unit
	Z 500 Units at Rs. 12.50 per unit
The Actual Consumption was:	X 320 Units at Rs. 10 per unit
	Y 480 Units at Rs. 7.50 per unit
	Z 420 Units at Rs. 15 per unit

Solution:

Standard Cost of Standard Materials:		
X	300 x 7.50	= Rs.2,250
Y	400 xl0	= Rs.4,000
Z	500 x 12.50	= Rs.6,250
	1,200	Rs. 12,500
Actual Cost of Actual Materials:		
X	320 xl0	= Rs.3,2oo
Y	480 x 7.50'	= Rs.3,600
Z	420 x 15	= Rs.6,300
	1,220	Rs. 13,100

Revised Quantity:

$$X = \frac{1220}{1200} \times 300 \quad = 305$$

$$X = \frac{1220}{1200} \times 400 \quad = 406.66 \text{ unit}$$

$$X = \frac{1220}{1200} \times 500 \quad = 508.33 \text{ unit}$$

Calculation of Variance:	
(a) Material Cost Variance	= Standard Cost - Actual Cost
	= Rs. 12500 - Rs. 13100 = Rs. 600 (A)
(b) Material Price Variance	= Actual Quantity * (Standard price- actual price)
X = 320 (7.50 - 10)	= Rs. 800 (A)
y = 480 (10 - 7.50)	= Rs. 1200 (F)
Z = 420 (12.50 - 15)	= Rs. 1050 (A)
Material Price Variance	= Rs. 650 (A)
(c) Material Usage Variance	= Standard Price * (Standard Quantity – Actual Quantity)
X = 7.50 (300 - 320)	= Rs. 150 (A)
Y = 10 (400 - 480)	= Rs. 800 (A)
z = 12.50 (500 - 420)	=Rs. 1000 (F)
Material Mix Variance	= Rs. 50 (F)
(d) Material Mix Variance	= Standard Price * (Revised Standard Quantity – Actual Quantity)
y = 10 (407 - 480)	= Rs. 730 (A)
Z = 12.50 (508 - 420)	= Rs. 1100 (F)
Material Mix Variance	= Rs. 257.50 (F)

Illustration 4:

In a manufacturing process, the following standards apply:

Standard Price:	Raw material A	Rs.1 per kg.
	Raw materials B	Rs. 5 per kg.
Standard Mix		75% A;
		25% B (by weight)

Standard Yield		90%

In a period, the actual costs, usage and output were as follows:

Used:	4,400 kgs. of A costing	Rs. 4,650
	1,600 kgs. of B costing	Rs. 7,850
Output:	5,670 kgs. of products	

Solution:

Standard yield from 6,000, i.e. (4,400 + 1,600) kgs. of output is

6,000 kgs. × 90%,	i.e. 5,400 kgs.	
Material A (75%)	= 4,500 kgs. @ Rs.1	4,500
Material B (25%)	= 1,500 kgs. @ Rs. 5	7,500
	6,000 kgs.	12,000
Less:	600 kgs. (loss)	—
Output:	5,400 kgs.	12,000

Standard cost of actual output (5,670 kgs.)

(12000*5670)/5400= 12600

Actual cost	Kgs.	Rs.
Material A	4,400	4,650
Material B	1,600	7,850
	6,000	12,500
Less:	330(loss)	
	5,670	12,500

Variance Analysis

Material cost variance = Actual cost - Standard cost

= Rs.12,500-Rs. 12,600=Rs. 100 (F)

Price Variance	= AQ (SP - AP)	
Material A	= (4400 × Rs. 1) – Rs.4650	= Rs. 250 (A)
Material B	= (1600 × Rs. 5) – Rs.7850	= Rs. 150 (F)
		= Rs. 100 (A)
Mix Variance	= SP (RSQ – AQ)	
Material A	= Rs. 1 (4500 – 4400)	= Rs. 100 (F)
Material B	= Rs. 5 (1500 – 1600)	= Rs. 500 (A)
		= Rs. 400 (A)

RSQ for A, B is computed above in start.

Yield Variance = Standard cost per unit (Actual yield - Standard yield)

12000(5670-5400)/5400 = 600 (F)

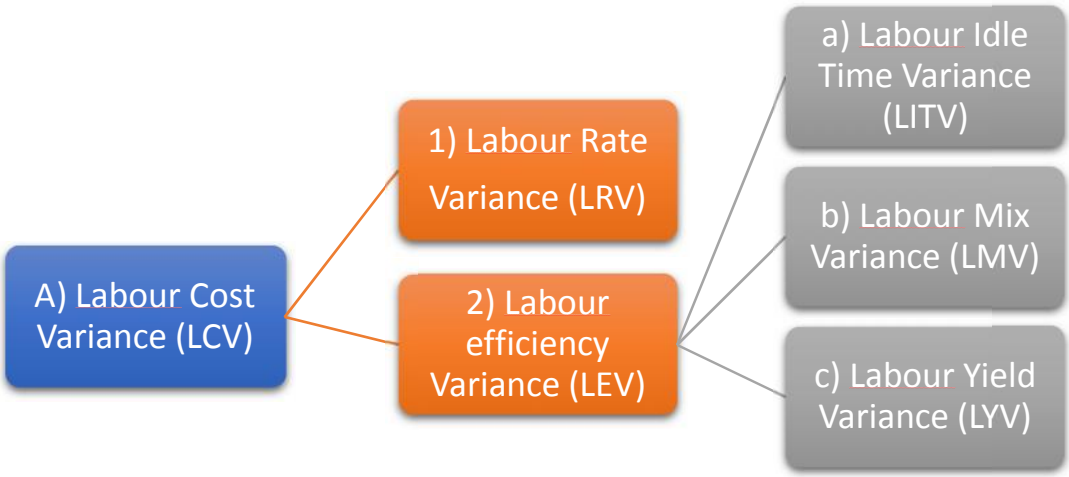
Total Material Cost Variance

Price Variance	100 (A)
Mix Variance	400 (A)
Yield Variance	600 (F)
	100 (F)

Reconciliation		
Standard cost of materials	12,600	
Price Variance	100 (A)	
Mix Variance	400 (A)	
Yield Variance	600 (F)	
Actual Cost		12,500

9.5 Labor variance

Classification of labor variances as under:



A) Labor cost variances

The difference between the standard direct wages stated for the activity performed and the actual direct wages paid is referred to as labor cost variance (also known as direct wage variation). The labor cost variance formula is as follows:

LCV = (Standard Hours x Standard Rate) - (Actual Hours x Actual Rate)

OR

LCV = (SH x SR) – (AH x AR)

Because the cost of labor is defined by labor time and pay, the labor cost variation is made up of one or both of these variances. As a result, labor cost variation is divided into two components: pay (labor) rate variance and labor efficiency variance.

B) Labor rate variance

This is the fraction of the pay differential caused by the difference between the actual rate and the standard rate of any specified. It is determined in the same way as the material price variance.

Labor Rate Variance = Actual Hours (Standard Rate - Actual Rate)

OR

LRV = AH x (SR – AR)

Causes of wages (labor) rate variance

The following factors contribute to wage rate variation:

(i) A change in the fundamental pay structure or in the piece work rate.

(ii) Overtime labor above what is offered in the normal rate.

(iii) Hiring one or more employees of a lower grade than the usual grade.

(iv) Payment of guaranteed earnings to employees who are unable to earn their regular salaries, if such guaranteed wages are included in the direct labor cost.

(v) New employees are not paid at their full customary salary rates.

(vi) The use of alternative payment methods, such as the payment of day rates when standards are based on the piece labor type of compensation.

(vii) Increased pay for overtime for emergency work.

(viii) A gang's composition in terms of skill and pay rate differs from that specified in the norm.

Pay rates are often determined by factors outside of the personnel department's control, such as labor market conditions, wage board awards, and so on. Wage rate variances are therefore entirely unregulated, with the exception of the percentage caused by the employment of insufficiently skilled labor, for which the departmental head may be held accountable.

2) Labor time or efficiency variance

The fraction of the direct pay variation caused by the difference between the standard labor hours provided and the actual labor hours performed is known as labor efficiency variance. Clearly, this variation offers a method to controlling worker efficiency and labor costs. In essence, it is a use variation. The variance is calculated as follows:

Labor Efficiency Variance = Standard Wage Rate (Standard Hours of Production – Actual Hours Worked)

OR

LEV = SR x (SH – AHW)

Causes of labor efficiency variance

The causes giving rise to labor efficiency variance are as follows:

(i) Lack of proper supervision or stricter supervision than specified;

(ii) Poor working conditions;

(iii) Defective machinery and equipment;

(iv) Discontentment in workers due to unsatisfactory personnel relations;

(v) Increase in laborturnover;

(vi) Use of non-standard material requiring more or less operation time;

(vii) Basic inefficiency of workers due to insufficient training, faulty instructions, incorrect scheduling of jobs, etc.

(viii) Wrong selection of workers.

Labor Cost Variance = Labor Efficiency Variance + Labor Rate Variance

OR

LCV = LEV + LRV

Illustration 4:

Actual hours worked	5,600
Actual wage paid	Rs.7,840
Standard rate per hour	Rs. 2
Standard hours produced	4,000

Calculation of wage variance.

Solution:

Wages variance = Standard cost – Actual cost

(4,000 × Rs.2) = Rs.8,000 – Rs.7,840 = Rs. 160 (F)

Wages rate variance = Actual hours (Standard rate - Actual rate)

= 5600 (2-1.4) = Rs. 3,360 (F)

Actual Rate = 7840/5600 = Rs. 1.4

Labour efficiency rate variance

2 (4,000 – 5,600) = Rs.3,200 (A)

Labour Cost Variance= Labour Rate Variance + Labour Efficiency Variance

= 3360 (F) + 3200 (A) = Rs. 160 (F)

Laborefficiency variance is sub-divided into the following variances:

(i) Idle time variance

(ii) Labor mix variance

(iii) Labor yield variance (or Labor revised-efficiency variance)

(i) Idle time variance

This variation, which is part of the wage efficiency variance, is represented by the standard cost of the actual hours that employees are idle owing to unusual circumstances.

Labor Idle Time Variance (LITV) =

(Actual hours paid for x Standard rate) – (Actual hours worked x Standard rate)

OR

Idle Hours x Standard rate

It is usually negative. Assume that the real period in the above example includes 1,000 idle hours. The idle time variation is thus Rs. 2,000 (A), and the efficiency variance is Rs. 1,200 (A), for a total of Rs. 3,200. (A).

(ii) Labor mix variance

It is sometimes referred to as Gang Composition Variance. This is a sub-variance caused by a variation in the makeup of a typical gang or labor force combination.

Labor mix variance =

(Actual hours at standard rate of actual gang – Actual hours at standard rate of standard gang)

OR

Standard rate (Revised standard labor hours - Actual labor hours)

OR

LMV = (RSH – AHW) x SR

$$\text{Revised labour hours} = \frac{\text{Total actual time}}{\text{Total standard time}} \times \text{Standard time}$$

The calculation is the same as the materials. It is included in the above-mentioned efficiency or time variance.

(iii) Labor yield variance (or Labor revised-efficiency variance)

This is because the standard output given differs from the actual output produced. This is done as follows:

Labor yield variance =

Standard labor cost unit (Actual output – Standard output)

OR

(Standard loss of actual total input – Actual loss) x

Average standard rate per unit.

OR

LYV = SC p.u. (AY – SY)

Note: AY will never change. SY will calculate for actual mix of our as under:

$$\text{New SY} = \frac{\text{Old SY}}{TSH} \times TAH$$

Illustration 6:

A factory, working for 50 hours a week, employs 100 workers on a job work. The standard rate is `1 an hour and standard output is 200 units per gang hour. During a week in June, ten employees were paid at 80 p. an hour and five at `1.20 an hour. Rest of the employees was paid at the standard rate. Actual number of units produced was 10,200. Calculate labor cost variances.

Solution:

(i) Cost Variance

Standard Cost – Actual Cost

Rs.5,100 – Rs.4,950 = Rs. 150 (F)

Workings:

(a) Calculation of Actual Cost:

85 workers for 50 hours @ Rs.1 per hour	= 4,250
10 workers for 50 hours @ 80 p. per hour	= 400
5 workers for 50 hours @ Rs. 1.20 per hour	= 300
Total actual cost	4,950

(b) Calculation of Standard Rate:

Standard cost per (gang hour)	= 100 × 50 × Rs.1	= Rs.5000
Standard production (per gang hour)	= 100 × 200 × 50	= 10000 unit
Standard rate per unit	= 5000/10000	= 50 p. per unit

(c) Calculation of Standard Cost:

Actual production × Standard rate 10,200 units × 50 p. per unit = Rs. 5,100

(ii) Rate Variance:

Because the actual pay rate differed from the norm in just 15 employees out of a total of 100 workers, the wage rate variance would be determined solely for these 15 individuals.

Actual Hours (Standard Rate – Actual Rate)

Therefore,

500 Hours (Rs.1 – 80 p.) = Rs. 100 (F)

250 Hours (Rs. 1 – Rs.1.20) = Rs. 50 (A)

Thus, the total rate variance is Rs. 50 (F).

(iii) Efficiency Variance:

Efficiency variance is indicated by the fact that, as compared with standard production of 10,000 units (200 units × 50 hours), the actual production is 10,200 units

Standard Rate (Standards Hours – Actual Hours)

Rs.1 (5,100 - 5,000) = Rs. 100 favorable.

Calculation of Standard Hours= (5000*10200)/10000 = 5100 hours

Yield Variance:

Standard Labor cost per unit of output (SY – AY)

0.50 (10,000 – 10,200) = Rs.100 (F)

Verification:

Cost Variance = Rate Variance + Efficiency Variance

Rs. 150 (F) = 50 (F) + Rs. 100 (F)

Illustration 7:

The standard labor component and the actual labor component engaged during the month are given below:

	Skilled	Semi-skilled	Unskilled
(a) Standard number of workers in a group	30	10	10
(b) Standard wage rate (Rupees per hour)	20	12	8
(c) Actual number of workers	24	15	12
(d) Actual wage rate/h	24	10	8

During the month of 200 working hours, the group produced 9,600 standard hours of work. You are required to calculate:

(i) Wage rate variance; (ii) Labor efficiency variance; (iii) Labor mix variance and (iv) Total labor cost variance.

Solution:

Category of		Standard			Standard		
workers	Hours	Rate	Rs.	Hours	Rate	Rs.	
Skilled	6,000	20	1,20,000		4,800	24	1,15,200
Semi-skilled	2,000	12	24,000		3,000	10	30,000
Unskilled	2,000	8	16,000		2,400	8	19,200
	10,000		1,60,000		10,200		1,64,400

Standard Cost of Labour for Actual Output =

(1,60,000 × 9,600)/10,000 = Rs. 1,53,600

Labour Cost Variance = Standard Cost for Actual Output – Actual Cost

= Rs. 1,53,600 – 1,64,400 = Rs. 10,800 (A)

Labour Rate Variance = Actual Hours (Standard Rate – Actual Rate)

Skilled = 24 x 200 (Rs.20 – Rs.24) = Rs. 19,200 (A)

Semi-skilled = 15 x 200 (Rs. 12 – Rs.10) = Rs. 6,000 (F)

Unskilled = 12 x 200 (Rs. 8 – Rs.8) = Nil

13,200 (A)

Labour Efficiency Variance = Standard Rate (Standard Time for Actual Output – Actual Time)

Skilled = rs. 20 (5,760 – 4,800) = rs. 19,200 (F)

Semi-skilled = rs. 12 (1,920 – 3,000)) = rs. 12,960 (A)

Unskilled = rs. 8 (1,920 – 2,400) = rs. 3,840 (A)

rs. 2,400 (F)

Labour Mix Variance = Standard Rate (Revised Standard Hours – Actual Hours)

Skilled = Rs. 20 (6,120 – 4,800) = Rs.26,400 (F)

Semi-skilled = Rs. 12 (2,040 – 3,000)) = Rs. 11,520 (A)

Unskilled = Rs. 8 (2,040 – 2,400) = Rs. 2,880 (A)

Rs. 12,000 (F)

Revised standard hours have been calculated as under:

Revised Standard Hours =

Total Actual Hours * Standard Hrs. of the Grade

Total Standard Hrs.

Skilled = 10,200/10,000 × 6,000 = 6,120 hours

Semi-skilled = 10,200/10,000 × 2,000 = 2,040 hours

Unskilled = 10,200/10,000 × 2,000 = 2,040 hours

Verification:

Labor Cost Variance = Labor Rate Variance + Labor Efficiency Variance

10,800 (A) = Rs. 13,200 (A) + Rs. 2,400 (F)

9.6 Overhead Cost Variances

The difference between the standard cost of overhead permitted for the actual output obtained and the actual overhead cost incurred is the total overhead cost variation. Overhead cost variation, in other terms, is the under or over absorption of overheads.

However, before we examine these variances, we need be familiar with the fundamental terminology employed in the calculation of overhead variance:

erminology employed in thee calculation of overhead variance:

$$(i)\text{Standardoverheadrate(perunit)} = \frac{\text{Budgetedoverhead}}{\text{Budgetedoutputinunits}}$$

$$(ii)\text{Standardoverheadrate(perhour)} = \frac{\text{Budgetedoverhead}}{\text{Budgetedhours}}$$

$$(iii)\text{Standardhoursforactualoutput} = \frac{\text{Budgetedhours} \times \text{Actualoutput}}{\text{Budgetedoutput}}$$

$$(iv)\text{Standardoutputforactualhours} = \frac{\text{Budgetedoutput (inunits)} \times \text{Actualhours}}{\text{Budgetedhours}}$$

(v) Absorbed (or Recovered) overhead = Standard Rate per hour × Actual Output

Or

standard rate per unit × standard hours for actual output

(vi) Budgeted overhead = Budgeted output × Std. overhead rate per unit

Or

Budgeted hours × Std. overhead rate per hour

(vii) Standard overhead = Std. output for actual time × Std. overhead rate per unit

Or

Actual hours × Std. overhead rate per hour

(viii) Actual overhead = Actual output × Actual overhead rate per unit

Or

Actual overhead = Actual output × Actual overhead rate per unit

A) Overhead cost variance

[Actual Output × Standard Overhead Rate Per Unit] – Actual Overhead Cost

OR

[Standard Hours for Actual Output × Standard Overhead Rate Per Hour] – Actual Overhead Cost

Overhead cost variances can be classified as:

1. Variable overhead variance
2. Fixed overhead variance

1. Variable overhead variance

It is the difference between the standard variable overhead cost and the real variable overheads. Because variable overhead costs fluctuate in proportion to output, only a change in spending may produce such fluctuation.It is calculated as:

Variable Overhead Variance =

(Standard Variable Overhead Rate × Actual Output) - Actual Variable Overheads

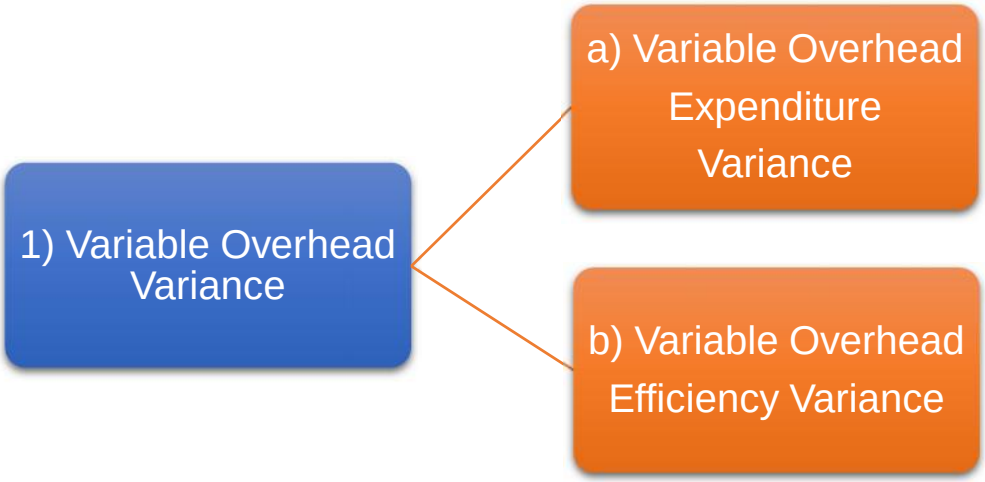
OR

(Standard Hours for Actual Output × Standard Variable Overhead Rate) – Actual Variable Overheads

OR

(Standard Rate × Actual output) – (Actual Rate × Actual output)

Variable overhead cost variance is commonly estimated in total since variable overheads change based on output rather than time, hence there is just one variance. However, some accountants suggest that some variable overhead may fluctuate over time as well, resulting in variable overhead efficiency variance, which may be evaluated if information pertaining to actual time spent and permitted is provided. Variable overhead variance may be divided into two pieces in this scenario.Classification of labor variances as under:



(a) Variable Overhead Expenditure Variance (VOExV)

(Actual Hours × Standard Variable Overhead Rate per Hour) – Actual Variable Overhead

OR

Actual Hours (Standard Variable Overhead Rate per Hour – Actual Variable Overhead Rate per Hour)

(b) Variable Overhead Efficiency Variance (VOEfV)

(Standard Time for Actual Production × Standard Variable Overhead Rate per Hour) – Actual Hours Worked × Standard Variable Overhead Rate per Hour).

OR

Standard Variable Overhead on Actual Production – Standard Variable Overhead for actual time.

OR

Recovered Overheads – Standard Overheads

It is better to compute variance related to variable overhead on the basis of hours rather then on the basis ofunits.

Illustration 8:

The following data is obtained from the books of a manufacturing company regarding variable overheads:

Budgeted production for January	300 units
Budgeted variable overhead	Rs.7,800
Standard time for one unit	20 hours
Actual production for January	250 units
Actual hours worked	4,500 hours
Actual variable overhead	Rs.7,000

Solution:

Variable Overhead Variance = Standard Cost – Actual Cost

= 6,500 – 7,000 = 500 (A)

Workings:

(a) Standard variable overhead cost of actual output

= 250 units × 26 per unit = 6,500

(b) Standard variable cost per unit

= 7800/300 = 26 per unit

Sometimes, a little refinement is introduced in the calculation of variable overhead variance and, therefore, the computation is as follows:

(i) Variable Overhead Expenditure Variance= Actual Cost – Standard overheads on hours worked

= 7,000 – 5,850 = 1,150 (A)

(a) Standard variable overhead on hours worked is

= 4,500 hours × 1.30 per hour = 5,850

(b) Standard variable overhead per hour

= 7800/6000 = 1.3

(ii) Variable Overhead Efficiency Variance= Standard variable overhead on hours worked – Standard variable overhead on actual output.

= 5,850 – 6,500 = 650 (F)

(iii) Variable Overhead Total Variance= Expenditure Variance + Efficiency Variance

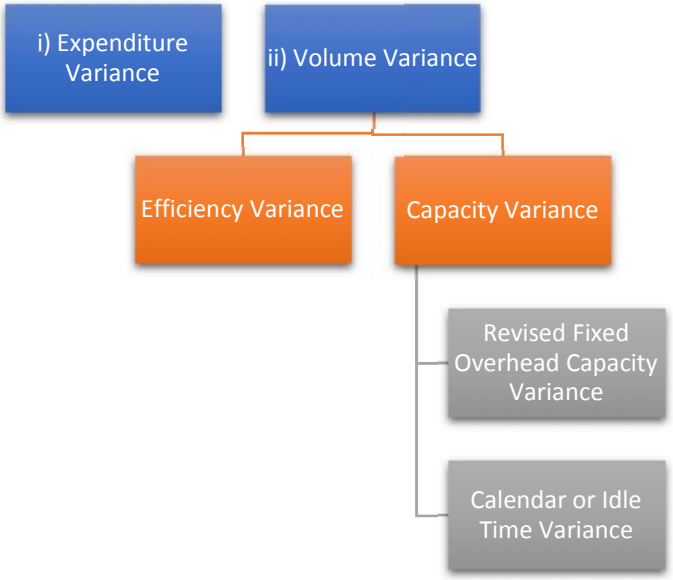
= 1,150 (A) + 650 (F) = 500 (A)

This is the same as variable overhead variance already arrived at.

2. Fixed overhead variance

Fixed overhead includes all expenses that are more or less constant regardless of the amount of production or the number of hours worked.

Classification of fixed overhead variances



The variation in fixed overhead costs is the difference between the standard fixed overhead costs permitted for the actual output attained and the real fixed overhead cost incurred, i.e.

FOCV= (Actual output × Standard fixed overhead rate) – Actual fixed overheads

OR

(Standard hours produced × Standard fixed overhead rate per hour) – Actual fixed overheads

OR

Recovered fixed overhead – Actual fixed Overhead

Standard overhead generated denotes the number of hours that should have been spent on the actual output. Fixed overhead variance may be roughly classified as follows:

(i) Expenditure variance and

(ii) Volume variance.

(i) Expenditure variance

This is often referred to as budget variance. This is calculated by comparing the overall overhead cost incurred to the planned overhead cost, i.e.

Budgeted fixed overhead – Actual fixed overhead

OR

(Budgeted hours × Std. fixed overhead rate) – Actual fixed overhead

If the real overheads are higher, the variance will be negative, and vice versa. This variance indicates the effectiveness of expenditure.

Illustration 9:

The following information relates to the month of June, 2013

		Budgeted	Actual
Output		20,000 units	22,000 units
Overheads	- Variable	1,00,000	1,07,000
	- Fixed	1,50,000	1,58,000

Compute the overheads variance.

Solution:

Variable overheads allowed or budgeted for actual output		
Standard Overhead for actual output		
(10000/20000 × 22000)	1,10,000	
Actual amount spent	1,07,000	
Variable overhead variance		3,000 (F)
Fixed overheads for the period		
(change in output having no effect on expenditure)	1,50,000	
Actual fixed overhead	1,58,000	
Fixed overheads expenditure variance		8,000 (A)
Total overheads variance		5,000 (A)

(ii) Volume variance

Volume variance is defined as the difference between overhead absorbed on actual production and overhead absorbed on planned output. This variation represents the excess or deficiency in fixed overhead absorption for a certain time. If the actual production exceeds the standard output, there is over-recovery of fixed overheads and volume variation is favorable; conversely, if the actual output is less than the standard output, there is under-recovery of fixed overheads and volume variance is favorable.

Volume Variance (FOVV)= (Actual output × Standard rate) – Budgeted fixed overheads

OR

Standard rate (Actual output - Standard output)

OR

Standard rate per hour (Standard hours produced - Budgeted hours)

OR

(Absorbed overhead – Budgeted overhead)

N.B.: Standard hour produced means number of hours which should have been taken for the actual outputas per the standard laid down.

VERIFY:-

F.O. COST VARIANCE = F.O. EXPENDITURE VARIANCE + F.O. VOLUME VARIANCE

9.7 Reporting of variances to management

The fundamental goal of reporting to management is to allow them to take remedial action and, to the greatest degree feasible, stop unfavorable variations. As a result, fast and accurate reporting of the variation is critical. The person or department responsible for the unfavorable controllable variance should be identified. A fluctuation in the price paid for raw materials, for example, would be the duty of the buying manager, but a variation in manufacturing efficiency would be the responsibility of the production manager. The board and managing director would be worried about the overall efficiency with which their plans were carried out by lower levels of management. Starting with the standard or budgeted profit, the different variations should be divided into two columns, favorable and unfavorable, and the net results added to or removed from the standard profit, yielding the actual profit. The variables that have led to the shift in the earnings picture are plainly visible to management. When presenting variance analysis to management, graphs and charts may be utilized, or the analysis may be presented in the form of statements and reports that provide key facts.

It is critical that the following requirements be met in order for variance reporting to be effective:

(i) The variations caused by each element should be accurately separated. If a portion of a variance due to one factor is incorrectly attributed to or merged with that of another, the analysis report presented to management will be misleading, and incorrect conclusions will be drawn;

(ii) Variances, particularly controllable variances, should be reported as soon as they occur. This would allow corrective action to be taken in a timely manner;

(iii) Analysis of uncontrollable variances should be done with the same care as for controllable variances, as the analysis of the off standard situation may reveal far-reaching effects on the economy of the concern; and

(iv) The forms of reports for the various types of variances should be designed with the needs of management and the size of the concern in mind, and no standard forms can, therefore, be

It is preferable to display profit data as a reconciliation of planned (or standard) and actual earnings based on variations.

Summary

- Variance analysis is the detailed investigation and assessment of variations.
- Variance can be divided into two part:
    - Variance related to cost
    - Variance related to sales.
- Cost Variance: Cost may be separated into three parts: material cost, labor cost, and overhead cost. As a result, every organization establishes criteria for these three types of costs and analyses the discrepancy between the standards and the actual costs spent.
- A favorable variance is one that has a positive influence on earnings, which might be owing to a cost decrease.

  Material cost variance is the difference between the standard direct material cost stipulated for the product achieved and the actual direct material cost utilized. MCV formulas are as follows:

  MCV = (SQ*SP)- (AQ*AP)

  MPV= AQ (SP - AP)

  MUV= SP (AQ-SQ)

  MMV= SP (RS-AQ)

  MYV= SC p.u. (AY-SY)

  For calculating the MYV actual yield (AY) will never change whereas standard yield may be changed
- The difference in labor costs between the standard direct wages stated for the activity performed and the actual direct wages paid is referred to as the labor cost variance.
- The difference between the standard cost of overhead permitted for the actual output obtained and the actual overhead cost incurred is the total overhead cost variation.
- Overhead cost variances can be classified as:
    - Variable overhead variance
    - Fixed overhead variance
- Variable Overhead Variance (VOV) is the difference between the standard variable overhead cost permitted for the actual output obtained and the actual variable overheads.
- It is preferable to calculate variation linked to variable overhead in hours rather than units.
- Actual item represents actual figure of a particular period.
- Budgeted item represents level of activity which business wants to achieve.

- A standard item represents budgeted data that varies depending on the degree of actual activity or production.
- The difference between the standard costs of fixed overhead permitted for the actual output attained and the real fixed overhead cost incurred is referred to as the fixed overhead variance.

Keywords

- Material Variance
- Labor Variance
- Overhead Variance
- Variable Overhead Variance (VOV)
- Fixed Overhead Variance (FOV)
- Actual Yield
- Variance Management
- Budget

SelfAssessment

1. The total variance can provide useful information about the source of cost differences.

A. True

B. False

2. The formula for price/rate variance is (AP - SP) x SQ.

A. True

B. False

3. The price variance reflects the difference between the quantity of inputs used and the standard quantity allowed for the output of a period.

A. True

B. False

4. The usage variance reflects the difference between the price paid for inputs and the standard price for those inputs.

A. True

B. False

5. The formula for usage variance is (AQ - SQ) * SP

A. True

B. False

6. The point of purchase model calculates the materials price variance using the quantity of materials purchased.

A. True

B. False

7. The difference between the actual wages paid to employees and the standard wages for all hours worked is the labor rate variance.

A. True

B. False

8. A company would most likely have an unfavourable labour rate variance and a favourable labour efficiency variance if

A. The mix of workers used in the production process was more experienced than the normalmix.

B. The mix of workers used in the production process was less experienced than the normal mix.

C. Workers from another part of the plant were used due to an extra heavy production schedule.

D. The purchasing agent acquired very high quality material that resulted in less spoilage.

9. The sum of the material price variance (calculated at point of purchase) and material quantity variance equals

A. The total cost variance.

B. The material mix variance.

C. The material yield variance.

D. No meaningful number.

10. The material price variance (computed at point of purchase) is

A. The difference between the actual cost of material purchased and the standard cost of material purchased.

B. The difference between the actual cost of material purchased and the standard cost of material used.

C. Primarily the responsibility of the production manager.

D. Botha and c.

11. A company wishing to isolate variances at the point closest to the point of responsibility will determine its material price variance when

A. Material is purchased.

B. Material is issued to production.

C. Material is used in production.

D. Production is completed.

12. When computing variances from standard costs, the difference between actual and standard price multiplied by actual quantity used yields a

A. Combined price-quantity variance.

B. Price variance.

C. Quantity variance.
D. Mix variance.

13. At the end of a period, a significant material quantity variance should be
A. Closed to Cost of Goods Sold.
B. Allocated among Raw Material, Work in Process, Finished Goods, and Cost of Goods Sold.
C. Allocated among Work in Process, Finished Goods, and Cost of Goods Sold.
D. Carried forward as a balance sheet account to the next period.

14. which of the following factors should not be considered when deciding whether to investigate a variance?
A. magnitude of the variance
B. trend of the variances over time
C. likelihood that an investigation will reduce or eliminate future occurrences of the variance
D. whether the variance is favourable or unfavourable

15. A total variance is best defined as the difference between total
A. Actual cost and total cost applied for the standard output of the period.
B. Standard cost and total cost applied to production.
C. Actual cost and total standard cost of the actual input of the period.
D. Actual cost and total cost applied for the actual output of the period.

Answers for SelfAssessment

1.	B	2.	B	3.	B	4.	B	5.	A
6.	A	7.	A	8.	A	9.	D	10.	A
11.	A	12.	B	13.	C	14.	D	15.	D

Review Questions

1. Explain the meaning, causes and disposal of labour variances.
2. Define 'Variance analyses. What are the ways of disposing of cost variances?
3. Variance analysis is an integral part of standard costing system.
4. Write short notes on:
   a. Material Cost Variance.
   b. Labour Mix Variance.
   c. Fixed Overhead Cost Variance.
   d. Fixed Overhead CalendarVariance.
   e. Sales Margin Volume Variance.
5. Explain the different types of Material Cost Variance.
6. What are the important uses of Variance Analysis?
7. From the following information, calculate:

a. Material Cost Variance
b. Material Price Variance
c. Material Usage Variance

Quantity of materials purchased 3,000 units. Value of material purchased Rs. 9,000. Standard quantity of material required per tone of finished product = 25 units. Standard rate of materials Rs. 2 per unit. Opening stock of materials Nil. Closing stock of materials 500 units. Finished production during the year 800 tons.

8. The following information was obtained from the records of a manufacturing unit using standardcosting system :

Particulars	Standards	Actual
Production	12000 units	11400 units
Working days	20	21
Fixed overheads	Rs. 1,20,000	Rs. 1,17,000
Variable overheads	Rs. 12,000	Rs.12,000

Calculate:

a. Variable overhead variance;
b. Fixed overhead expenditure variance;
c. Fixed overhead volume variance;
d. Fixed overhead efficiency variance;
e. Fixed overhead calendar variance.

9. Sharda Courier Ltd. started trading on 1st April 2013, manufacturing and selling one product. Thestandard cost per unit was:

Direct material: Standard price Rs. 10 per kilogram

Standard quantity: 20 kilogram per unit

Direct labour: Standard rate of pay Rs. 5.50 per hour

Standard time allowance: 12 hours per unit

Production overhead costs, all classified as fixed, were budgeted at Rs. 9, 00,000 per annum.

The standard time for producing one unit is 12 machine hours and normal capacity is 60,000 machine hours per annum. Production overhead is absorbed on machine hours. For the year ended 31st March 2014 the costs incurred and other relevant information is given below:

Direct material used— 1,00,000 kilograms at a cost of Rs. 10,50,000

Direct wages paid— Rs. 3,10,000 for 62,000 hours

Production overhead— Rs. 9,26,000

Machine capacity used— 60,000 hours

Actual output— 4,800 units

Assuming no stocks of work-in-progress or finished goods at year end.

You are required to:

Show the standard product cost for one unit.

Calculate variances for material (usage and price), labor (rate and efficiency) and overhead.

10. The following information is available from the cost records of Sushma &Co.. For the month of March, 2014:

Material purchased 24,000 kg Rs. 1, 05,600

Material consumed 22,800 kg

Actual wages paid for 5,940 hours Rs. 29,700

Unit produced 2160 units.

Standard rates and prices are:

Direct material rate is Rs. 4.00 per unit

Direct labour rate is Rs. 4.00 per hour

Standard input is 10 kg. for one unit

Standard requirement is 2.5 hours per unit.

Calculate all material and labor variances for the month of March, 2013.

11. Calculate labor variances from the following information standard hours for manufacturing a product X - 7,800 hours:

Actual Hours Worked	= 8,050 hours
Actual Wages paid during the period	=Rs. 16,100
Standard Wages	=Rs. 15,600

12. From the following data, calculate labor variances: The budgeted labour force for producing product A is:

20 Semi-Skilled workers @ Re. 0.75 per hour for 50 hours

10 Skilled workers @ Rs. 1.25 per hour for 50 hours

The actual labour force employed for producing A is:

22 Semi-Skilled workers @ Re. 0.80 per hour for 50 hours

8 Skilled workers @ Rs. 1.20 per hour for 50 hours

13. From the following information, calculate: (I) Overhead Budget Variance (2) Volume Variance

(3) Efficiency Variance (4) Capacity Variance (5) Total Overhead Cost Variance:

Normal Overhead Rate Rs. 3

Actual hours worked 20,000

Allowed hours for actual production 21,000

Allowed overheads for budgeted hours Rs. 70,000

Actual overheads Rs. 72,000

Further Readings

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- https://learn.financestrategists.com/explanation/variance-analysis/standard-costing/

Unit 10: Introduction to Management Accounting

CONTENTS

Objectives

After studying this unit, you will be able to:

- Understand the nature, scope and utility of management accounting.
- Difference between cost accounting, management accounting and financial accounting.
- Identify role of management accountant in decision making.
- Discuss tools and techniques of management accounting.

Introduction

Cost accounting's managerial components are expanded upon in management accounting. So thatcorporate activities may be properly organized and managed, it supplies management with data they can use for these purposes. To do this, the lesson's goal is to teach students about management accounting's meaning and purpose. In order to offer management with useful information for making decisions, what are the several ways and techniques of management accounting?

10.1 Management accounting

It is the job of management accounting to gather information that is beneficial to them. Transactions and events take occur at all businesses on a daily basis in the form of transactions and events such as sales, purchase orders, costs being fulfilled, payments being received or made, or assets being sold or acquired. It is the choices and actions of management that have a direct influence on the

company's operational efficiency and position. These transactions and occurrences are often quantified or represented in terms of money. They need to be monitored, documented, evaluated, and reported to the management so that the management can assess their impact on the enterprise's performance.

Management accounting is a more recent development when compared to other types of accounting, such as financial and cost accounting. To put it another way, it connects accounting with management. Management accounting encompasses any and all data of this kind that might be of use to the organization's leaders. Management accounting is concerned with whatever data needed to make decisions. However, the essential data are derived from the same accounting system, i.e. financial accounting and cost accounting systems, management accounting, as opposed to financial accounting, offers information for internal users.

Accounting, cost accounting, economic and statistical data are collected and provided to the men at different levels of management to help them in the execution of managerial tasks and the assessment of the performance of their evaluations in management accounting. Management activities, including as planning, decision-making, and control are made more effective and efficient by the invention and implementation of different ways of recording and analysis, interpretation, and presentation of financial, costing, and other data. The application of statistical and mathematical methods as well as accounting methods is an important aspect of management accounting. Forward-looking management accounting should be able to handle economic data such that it is acceptable for management usage.

10.2 Evolution of Management Accounting

There is a strong connection between the industrial revolution of the nineteenth century and managerial accounting. Early on, most businesses were owned and managed by a few owners and managers who borrowed based on their personal ties and assets. There was no need for extensive financial reporting since the company had no external shareholders and just a small amount of unsecured debt. However, the early large-scale manufacturing of textiles, steel, and other items necessitated the use of more complex management accounting techniques. Pressures from capital markets, creditors, regulatory agencies and federal taxation of income accelerated the growth in financial accounting standards after the turn of the century. Many businesses were forced to find new sources of finance because of a lack of traditional sources of funding. Audited financial reports were required in order to access these huge pools of foreign cash. Because outside investors depended on audited financial statements, independent auditors had a strong stake in creating well-defined reporting methods for corporations. Management accountants have been increasingly focused on meeting financial accounting regulations and releasing financial reports on time for many decades as a result. Management accounting has come to a standstill. In the early 1900s, as product lines grew and operations got more complicated, forward-looking corporations realized that they needed a distinct set of management-oriented reports from their financial reports. Management accounting methods up to the mid-1980s were almost identical to those in use before to the outbreak of World War I in the majority of corporations. Much significant advancement in management accounting has been made in recent years, however, as a result of new economic dynamics.

10.3 Definition of Management Accounting

The management accounting committee of the Anglo-American Council on Productivity defined management accounting as follows:

"The presentation of accounting information in such a way as to assist management in the creation of policy and in day to day operation of an understanding".

American Accounting Association defines management accounting as under:

"The application of appropriate techniques and concepts in processing historical and projected economic data of an entity to assist management in establishing plans for reasonable economic objectives and in the making of rational decisions with a view towards these objectives".

J Batty defines:

"Management accounting is the term used to describe accounting methods, systems and techniques which coupled with special knowledge and ability, assists management in its task of maximising profits or minimizing losses."

Brown and Howard define:

"Management accounting is that aspect of accounting which is concerned with the efficient management of a business through the presentation of management of such information as will facilitate efficient and opportune planning and control."

Robert Anthony has defined management accounting thus:

"Management accounting is concerned with accounting information which is useful to management"

According to CIMA, London:

"Management accounting is an integral part of management concerned with identifying, presenting and interpreting information used for: (a) formulating strategy; (b) planning and controlling activities; (c) decision taking; (d) optimizing the use of resources; (e) disclosure to shareholders and others external to the entity; (f) disclosure to employees; (g) safeguarding assets.

The above entails management participation to ensure that there is effective:

(i) Formulation of strategies for achieving objectives (strategic planning);

(ii) Provision of short-term operation plans (budgeting/profit planning);

(iii) Acquisition and use of finance (financial management) and recording of transactions (financial accounting as well as cost accounting);

(iv) Connectivity of operating and financial data; and

(v) Remedial action to carry plans and outcomes in line.

The concept of management accounting becomes evident once the meanings of'managing' and 'accounting' are grasped. The primary goal of management is to manage the company in accordance with a management pattern that includes the formulation of a plan, the assignment of responsibilities for implementing the plan, the organization of procedures to assist in the execution of the plan, and the control of performance. To aid in this procedure, the accounting system offers the following guidance to management:

(1) Data that will help in the composition of a plan covering all business operations;

(2) Quantitatively morph the proposal with sources available to finance the project costs;

(3) Devise workable performance targets matching the responsibilities and measure performance; and

(4) Assist in the overhaul of the plan.

Based on the preceding definitions, we can define management accounting as the processing and presentation of accounting, cost accounting, and other economic data, both historical and projected, to aid in the performance evaluation of managerial functions such as planning, decision-making, and control. Data processing and presentation need the use of cost accounting, budgetary control, standard costing, break-even analysis, ratio-analysis, funds and cash flow analysis, and other procedures.

10.4 Objective of Management Accounting

Ultimately, the goal of management accounting is to aid in the efficient performance of management's responsibilities in order to maximize profits and reduce losses. It comprises the calculation of all company plans and budgets. The following are examples: manufacturing, sales, distribution, research, and finance. Planning and budgeting are handled in a methodical manner via the use of management accounting. It analyses all financial and physical transactions in order to make accurate comparisons between projections and actual results.

These are the primary goals of management accounting:

1. To formulate Planning and policy

Setting objectives, establishing policies, and agreeing on an action plan are all part of the process of planning, which includes predicting on the basis of existing information. It makes it easier to prepare assertions based on historical performance and provides an estimate of future performance.

2. to interpretation of financial documents

The purpose of management accounting is to provide management with financial data. It is critical that financial data be presented in an understandable manner. It uses statistical tools like charts, diagrams, and graphs to display accounting data.

3. To assist in Decision-making process

Management accounting makes decision-making process more scientific with the help of various modern techniques. Each alternative's cost, price, profit, and savings data is gathered and evaluated to offer a solid foundation on which good judgments may be made.

4. To help in control

The use of management accounting aids in managerial oversight. Budgeting and management of performance may be achieved using conventional costing and other accounting techniques. The use of standard costing and budgets provide for cost management and departmental control, respectively. Management accounting is used to keep tabs on everyone's performance.

5. To provide report

The data provided by management accounting keeps executives up to date on the most recent state of the company. It aids in making rapid and accurate selections. It routinely updates the upper management on the progress of different departments.

6. To Facilitate Coordination of Operations

Business operations may be better managed with the help of accounting software. An essential tool for coordinating efforts is the budget.

Lab Exercise:

Re-write the following sentence after filling-in the blank spaces withappropriate word:

(i) Management accounting is related with_____.

(ii) Management accounting assists the management in _____.

Correct answer: (i) presentation of accounting data. (ii) creation of policy

10.5 Nature of Management Accounting

The following aspects are considered as the nature of management accounting:

*(i) Management accounting is a decision-making system:*To aid management in the establishment of policies and day-to-day operations, management accounting offers accounting information. Despite the fact that the management accountant does not make any decisions, he or she gives information that may be used by management to make better decisions. It effectively conveys a wide range of information in a logical and coherent manner.

*(ii) Management accounting is futuristic:*In contrast to financial accounting, management accounting focuses on the long term. Because choices are constantly being made on the future course of action, it aids in future planning. The data generated by management accounting may be used selectively and productively in the decision-making process.Only such financial statement facts are taken into consideration and communicated to management by a management accountant.

(iii) Management accounting is a technique of selective nature: Analysis of variances in profit from the previous period is aided by management accounting.

*(iv) Management accounting analyses different variables:*To understand why a company's earnings differs from the previous year, management accounting is useful. Different factors are examined in relation to the company's earnings and profitability.

*(v) Management accounting does not set particular formats for information:*Management is given the information they need in a manner that they can utilize to make choices about various parts of the company.

10.6 Scope of Management Accounting

Management accounting encompasses financial accounting as well as the administration of a cost accounting system, budgetary management, and statistical data collection. It emphasizes the need of establishing and operating internal controls while satisfying legal and customary criteria for the production of financial statements (profit and loss account, balance sheet, and cash flow statements). Accounting for management involves, among other things:

1. Accounting, cost accounting, tax accounting, and information systems implementation and operation. Accountants in management must constantly build and rebuild systems to suit the ever-changing demands of such jobs.

2. Compilation and storage of critical data for use in strategic management. The accounting and document files have a wealth of information about the company's previous success, making it impossible to make accurate predictions about the future. For example, the management accountant displays historical data in a manner that shows the company's current patterns. Among other things, he's expected to express his thoughts on how things are likely to alter in the future. As a result, this knowledge is useful in the planning stage. As a member of the management team, the management accountant may participate in or even oversee the actual planning process.

3. The ability to communicate management plans to all levels of an organization. Coordination of multiple business plan segments is ensured on one hand, while defining each segment's specific job helps management lead their actions.

4. Creating and implementing a reliable feedback system. The management would be able to carry out its oversight duties as a result of this. Management by exceptions may be implemented and maintained with the aid of these reports, which pinpoint substantial differences between actual and anticipated actions, while keeping to the principles of selectivity and relevance. Management expects the management accountant to analyze deviations, identify root causes, and make recommendations for resolving them where warranted.

5. Making accounting and other data intelligible and useful to management by analyzing and interpreting them. In order for the management to put the numerous facts and numbers into correct perspective, it is necessary to do such analysis and explanation. It helps management identify responsibilities and implement essential organizational changes to meet the goals of the firm in a more effective way via the use of such analysis.

6. Analyzing the impact of alternative ideas on the company's profitability and financial situation by supplying necessary accounting and other data. As a management accountant, you assist the management grasp and analyze the situation at hand, as well as explain the facts clearly in financial terms.

7. Assisting in implementing the idea of management by goals by providing methods and strategies for assessing the performance of the management.

8. Techniques for improving, changing, and refining current methods of analysis. To be a good management accountant, one must constantly keep in mind the practicality of current methods. He should also keep an eye out for the emergence of new approaches.

As a result, management accounting not only serves as a tool for management, but it also offers a method for evaluating the management's performance. While aiding management in their planning, decision-making, and control duties, it also gives owners and other stakeholders a way to assess the company's leadership and management abilities.

10.7 Tools and Techniques of Management Accounting

To assist management achieve their objectives, management accounting uses a variety of tools and strategies. Managerial accountants often utilize these methods for this task:

(i) Financial Planning: An organization's ability to meet its goals financially is determined via a process known as financial planning. Long and short-term financial goals, financial policies, and processes are all part of this process. The utilization of debt and equity capital, as well as the optimal amount of investment, are all aspects of financial policy that may be considered when determining a company's capital requirements.

(ii) Financial Statement Analysis: Financial statements are scrutinized in order to make data more useful. The primary methods of financial statement analysis utilized in management accounting

include comparative statement analysis, common size statement analysis, trend analysis, ratio analysis, cash flow analysis, and so on.

(iii) Decision Making: Management accounting assists management in selecting the optimal option that will maximize the business's profitability by using methods such as marginal costing, differential costing, capital budgeting, cash flow analysis, discounted cash flow, and so on.

(iv) Control Techniques: Management should ensure that the plan it developed is put into action. Management employs useful control techniques such as standard costing and budgetary control.

(v) Statistical and Graphical Techniques: Management accountants employ various statistical and graphical techniques to make information more meaningful and to present it in such a way that it can assist management in decision making. Linear programming, statistical quality control, investment charts, sales and earnings charts, and other approaches are quite useful.

(vi) Reporting: The management accountant is responsible for preparing the essential reports to provide information to the various levels of management by choosing the right data to be presented, organizing the data, or selecting the suitable reporting technique.

Lab Exercise

Re-write the following sentence after filling-in the blank spaces withappropriate word:

(i) Management accounting is suitable for _____.

(ii) Management accounting is a structure for _____.

(iii) Management accounting is also known as _____.

Correct answer: (i) large industrial and trading organizations. (ii) decision making. (iii) managerial accounting.

10.8 Difference between Financial Accounting and Management Accounting

In the sense that both study the impact of business transactions and events and report and interpret the results thereof, financial accounting and management accounting appear to be similar. Both offer information that can be used internally and externally. However, despite its roots in financial accounting, management accounting differs from it in the following ways:

(i) Financial accounting is concerned with all of the company's financial transactions and events. Besides examining the effects of business transactions and events on the organization as a whole, management accounting looks at the organizations various units and segments to see how they interact with one another. Consequently, the overall performance and position of the company can be seen in the financial statements, which include the profit and loss account, the balance sheet, and cash flow statements. Operations, inventory, products, processes and jobs all play a role in management accounting reports. It shows how business transactions and events affect costs, inventories, processes, jobs, and products, as well as how these factors interact with each other.

(ii)Secondly, financial accounting is more concerned with reporting the business's results and position to outside stakeholders, such as investors, creditors, and the government. Financial accounting sometimes employs "window-dressing" techniques in order to portray the company in a more favorable light. In management accounting, the emphasis is on gathering data for internal use, so the data reflects the actual or realistic situation.

(iii)It is unavoidable that all financial accounting is historical. Even after the event has passed, it keeps track of and analyses the data. Accounting for management examines current events and makes predictions about what will happen in the future. In other words, it makes use of information that is relevant to the future.

(iv)Data derived from financial accounting is more precise than data derived from management accounting because it is historical in nature and thus can only be an estimate. This ensures that management accounting information is delivered quickly enough.

(v)Reporting financial accounts has a much broader range of frequency than does management accounting. On a year-to-year basis, financial accounting results are reported. Managerial accounting makes use of reporting on a weekly, biweekly, or even monthly basis.

(vi) The "generally recognized standards" of financial accounting must be adhered to. As a result, the outside world's information demands must be taken into consideration. It must adhere to the standard conventions for presenting this kind of information. Financial accounting must also adhere to legal requirements when it comes to the substance and form of the information it provides. The "generally recognized standards" and other legal and/or customary restraints do not apply to management accounting. Because the data it creates is only for internal use, it is allowed to create its own rules, methods, and formats. Overhead expenses might be excluded from inventories or revenues can be reported before they are actually realized in management accounting. Such accounts are not permitted under generally recognized standards of financial accounting. Management accounting is concerned with the utility of the information rather than the general acceptance of the information. Depending on the situation, the shape and substance of management accounting reports might vary significantly.

(vii) Joint stock firms must keep accurate financial records in order to comply with the statutory requirements of company law and tax regulations. Financial accounting is required for tax reasons even in sole proprietorships and partnerships. However, management accounting is completely elective and its forms and substance are determined by the management's perspective.

(viii) Only monetary information is included in financial accounting reports. In addition to monetary information, management accounting statements also include non-monetary information, such as the number of employees, the amount of resources used, the amount of products produced and sold, and so on.

(ix) Statutory auditors must do an audit of the company's financial statements before they can be made public. Management accounting reports are not made public or audited since they are used for internal purposes alone.

10.9 Difference between Cost Accounting and Management Accounting

A company's cost and management accounting are both internal to the business. To aid management in its planning, decision-making, and regulating tasks using tools like budgetary control, standard costs, and marginal costs, both programmes have a same goal: Because of cost accounting, these tools have found their way into the management accountant's toolbox. There is a lot of overlap in their responsibilities. It's possible to discern between the two systems on the following grounds:

(i) In the field of cost accounting, one of the primary concerns is how expenses are determined, allocated, distributed, and recorded. Management accounting, on the other hand, focuses more on the impact and effect of expenses.

(ii) In the majority of cases, cost accounting data serves as a foundation for the use of management accounting tools and methodologies. Cost accounts and financial accounts are used to compile the information used in management accounting.

(iii) A management accountant looks at data from several angles, which is different from the viewpoint of a cost auditor. This explains why management accounting is more relevant and objective than cost accounting. The management accountant's job is to have a firm grasp of the many sorts of expenses and the impact they have on potential solutions to a company's challenges. The management accountant will benefit greatly from the efforts of a cost accountant in gathering this kind of expense information.

(iv) Generally, management accountants are located higher in the organizational structure than cost accountants.

(v) An accountant specializing in management accounting uses a broader perspective, which includes economic and statistical data as well as costing data, in order to help management be more exact in its planning, decision-making, and control processes.

(vi) Additionally, management accounting uses a wide range of techniques and tools not accessible in cost accounting such as cash flow and ratio analysis in addition to the ones available in traditional methods like variable costing and break-even analysis.

(vii) This encompasses both financial accounting and cost accounting, which is referred to as management accounting. Additionally, it includes tax planning and tax accounting. Cost accounting is distinct from financial accounting and tax accounting.

(viii) As a result, management accounting is equally concerned with short and long-term planning and use advanced methods such as sensitivity analysis in the planning and forecasting of pricing.

Accounting for the short term is the focus of cost accounting. It is the job of management accountants to evaluate capital investment projects.

(ix) Accounting for management has two main goals: to help management accomplish its duties and to assess the overall performance of the management as a whole. The purpose of cost accounting is to aid in management activities, not to evaluate management performance.

(x) Cost accounting is mostly based on previous data and forecasts the future. Management accounting has a future-oriented strategy. Cost accounting, on the other hand, is more reactive in character.

Management accounting is not required for the installation of a cost accounting system. In order for management accounting to be implemented, a cost accounting system must be in place.

10.10 Limitations of Management Accounting

Producing and supplying reliable accounting and other pertinent information to management is the job of the management accountant. As a result, the data given must be: (1) relevant and exact, (2) consistent and comparable, (3) presented in an acceptable and intelligible manner, (4) delivered at suitable intervals, (5) offered to fulfill the demands of different management levels. When creating his or her work, the management accountant is obliged to bear the aforementioned considerations in mind. Due to these drawbacks, information and reports provided by a management accountant are still lacking:

(1) There are several instances in which the same phrase might have a somewhat different connotation in the world of accounting. As a result, a person who is not acquainted with these concepts and numbers may quickly feel confused or irritated. Many people have difficulty understanding the term cost. These include the following: the cost of the project as a whole; the cost of the original project; the cost of the project after completion; the cost of the project after completion; and the cost of the project after completion. It is possible to use these phrases interchangeably even if they are not precisely synonymous because of their resemblance to one another. As a preventative measure, the management accountant should explain the meaning of certain terminology when addressing a particular issue with care and clarity. To the extent practicable, he should be consistent in defining these words.

(2) **Approximations:** It's impossible for management accounting data to be totally correct in every aspect. It is necessary to approximate a great quantity of data while compiling and preparing it. The higher the degree of approximation, the shorter the time lag between the occurrence and the publication of the event. Approximation is also necessary when calculating out projections and future expenditures. There may be times when even historical data is too expensive and time-consuming, forcing the management accountant to make some estimates. Therefore, the management must be cognizant of the degree of approximation when utilizing the information supplied by the management accountant. When it comes to approximations, the management accountant should stick to a consistent approach.

(3) **Incompleteness of the data**: Insofar as it is possible, a management accountant can only supply quantitative data to management. The management accountant may not have all the information needed to solve complex business challenges and make sound business choices, which necessitates the use of extra quantitative and qualitative data. There is no way to know how the quality and usefulness of a product is influenced by changes in the materials or techniques of production, for example, in management accounting. The management should be on the lookout for the notion that numerical analysis can fix all of a company's difficulties. The management accountant should attempt to highlight as many qualitative variables as feasible in each situation.

(4) **Importance of proper management action**: A management accountant may supply management with data and numbers in the manner they choose. Figures, on the other hand, are nothing more than scribbles on a sheet of paper. The success of a firm is a direct outcome of the actions of its employees. People in the organization can only benefit from the information provided by numbers in a variety of ways. Organizational leaders and employees may make effective use of this figure if they fully grasp its meaning and take appropriate action. The same set of statistics, if ignored or misconstrued, might lead to irrational decisions by management.

10.11 Role of Management Accountant in Decision Making

It is up to the management accountant to determine what he or she is capable of and where he or she sits in the company's hierarchy to accomplish a wide range of tasks. Confidence in him from top management and functional managers is also critical to his role's significance and effectiveness. In general, his responsibilities include all aspects of management, as stated as follows:

1. It is the job of a management accountant to develop and implement strategies that will allow for the forecasting of sales, spending budgets, and cost standards.

2. He'll come up with accounting standards and guidelines. Any discrepancy between the actual operations and the predetermined criteria may be analyzed by management to decide what, if any, remedial measures need to be taken. Comparing actual and projected performance should aid management in determining who is responsible for what and evaluating the performance of different functional and divisional chiefs in the organization.

3. As far as external controls, internal audits, and insurance coverage go, management accountants are in charge of safeguarding company assets.

4. He'll be in charge of tax policies and processes, and he'll be in charge of coordinating the different reports needed by various agencies.

5. The role of a management accountant is to keep abreast of the economic, social, and political dynamics that shape corporate operations.

The position of a management accountant may be determined by looking at the (obviously not complete) tasks listed above. He oversees all of the company's financial transactions as the top financial official. For the Board of Directors, he will be responsible for ensuring that the company's accounting methods and records are in order. Presidents and board chairmen will hold him accountable for his office's operations. To the extent that the president or chairman of the board or the Board of directors assigns him additional responsibilities, he must execute them. As a result, although the management accountant reports to the policy-making group at the top of the organization, he is accountable to the chief executive officer for his administrative duties.

Summary

- As a crucial part of business operations, accounting for management activities involves gathering, organizing, and interpreting data that is used for many different purposes, such as developing a company's strategy, monitoring its progress, making decisions, and safeguarding its assets. Accounting for management activities includes identifying, presenting, and interpreting data that is used for all of these purposes.
- Financial planning, financial statement analysis, marginal costing, differential costing, capital budgeting, cash flow analysis, standard costing and budgetary control, techniques of linear programming, statistical quality control, investment chart, sales and earning chart, etc. are some of the tools and techniques used in management accounting.
- Financial accounting, cost accounting and management accounting are distinct from each other.

Keywords

- Financial accounting
- Management accounting
- Cost accounting
- Financial Planning
- Decision Making
- Financial Statement analysis
- Management accountant
- Accounting Information

SelfAssessment

1. The use of management accounting is _____.
2. Management accounting is a _____of management but not a substitute of management.
3. Management accounting deals with both_____.
4. Management accounting and cost accounting are _____ in nature.
5. Management Accounting supplies information to the _____ so that later may be able to discharge all its functions properly.
6. The accounting data are analyzed by the management for effective planning and _____.
7. Management accounting system _____ be installed without financial and cost accounting system.
8. Management accounting deals with what kind of information?

A. Qualitative
B. Quantitative
C. Both
D. None of the above

9. Which of the following are tools of management accounting?

A. Financial Planning
B. Analysis of financial statements
C. Historical cost accounting
D. All of the above

10. Management accounting is suitable for:

A. Small trading organization
B. Large industrial and trading organization
C. NPOs
D. Co-operative societies

11. Management accounting is a structure for:

A. Cost Accounting
B. Financial accounting
C. Decision making
D. Budgeting

12. Management accounting and cost accounting are:

A. Contradictory in nature
B. Complementary in nature
C. Neutral in effect
D. None of the above

13. Management accounting maintains

A. Journal
B. Ledger

C. Trial Balance

D. None of these

14. Which of the following is not an objective of managerial accounting?

A. To help in planning and decision making

B. To provide data about the latest position of the firm

C. To help in policy formulation

D. To find profit or loss of the firm

15. Which of the following statement is true about management accounting?

A. Management accounting is mainly concerned with future. True

B. The use of management accounting is compulsory.

C. Management accounting is objective in nature.

D. Management Accounting and Cost Accounting are Synonymous.

Answers for SelfAssessment

1.	Optional	2.	Tool	3.	Quantitative and qualitative information	4.	Complementary	5.	Management
6.	Decision Making.	7.	Cannot	8.	C	9.	D	10.	B
11.	C	12.	B	13.	D	14.	D	15.	A

Review Questions

1. Explain briefly the meaning, nature and scope of management accounting.
2. Discuss the importance and limitations of management accounting for managerial decision-making.
3. Explain the tools and techniques of management accounting.
4. Distinguish between
   a. Cost accounting and management accounting
   b. Management accounting and financial accounting
   c. Bin Card and Store Ledger.
5. "Management accounting is concerned with accounting information which is useful to management".Comment.
6. Explain briefly the role of a management accountant.
7. What are the limitations of management accounting? How can these limitations be eliminated?
8. Explain the significance of decision-making costs. Briefly explain the various type of costs used bythe management in decision-making.

Further Readings

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Web links

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Unit 11: Analysis of Financial Statements

CONTENTS

Objectives

After studying this unit, you will be able to:

- Understand the nature, Attributes, Objectives, Importance, Limitations of financial statements.
- Analyze Recent Trends in Presenting Financial Statements.
- Understand the Tools for Analyzing Financial Statements.
- Applythe technique of Comparative Statement Analysis.
- analyze and Interpret the Financial Position and Performance of Companies through Vertical Analysis
- apply the technique of trend analysis

Introduction

Financial statements are official records of a business's, person's, or other entity's financial operations that offer an overview of a business's or person's financial status in both the short and long term. They may provide a concise picture of a company's status and operational outcomes. Financial analysis is useful in determining a company's financial status and profitability.

"Financial Statements Analysis is largely a study of relationship among the various financial factors in a business as disclosed by a single set of statements and a study of the trend of these factors as shown in a series of statements." – Myer

11.1 Financial Statements

Financial statements are a series of reports and schedules prepared by an accountant at the conclusion of a period of time for a commercial enterprise, as utilized in corporate company houses. The financial statements are the mechanism through which the accounting system accomplishes its primary role of presenting summary information about the business's financial affairs. These statements are the Balance Sheet or Position Statement and the Profit and Loss Statement or Income Statement. Of course, in order to provide a complete picture of an undertaking's financial affairs, the company may additionally compile a Statement of Retained Earnings and a Cash Flow Statement in addition to the foregoing. Every business in India is required to produce its financial statements in the form and content defined by Sections 2(2), 129, and 133 of the Companies Act 2013. The following are the implications of these statements:

(i) Balance Sheet or Position Statement: The balance sheet is a financial statement that details the assets, liabilities, and equity of a business. In other words, the balance sheet depicts the financial status on a certain date, generally at the conclusion of a year. The balance sheet displays how money is made accessible to the company's operations and how it is used in the firm.

(ii) Statement of Profit & Loss or Income Statement: Earning a profit is the primary goal of all commercial organizations, and the Statement of Profit and Loss or Income Statement is the document that shows how successful a company is in accomplishing this goal. Profits are important to the Board of Directors when evaluating a company's management, to shareholders or prospective shareholders when making investment choices, and to banks and other creditors when assessing the company's loan repayment capabilities and abilities. As a result, the profit and loss or income statement is considered as the key statement and is subjected to close examination by all interested parties. It is created for a certain time period that is specified in the title of these statements, which also contains the name of the company entity.

(iii) Cash Flow Statement: This is a statement that summarizes the funds available to support an organization's operations and the purposes to which such cash has been put during the time. A cash flow statement categorizes cash inflows and payments based on the organization's key operations, which include operating activities, investing activities, and financing activities. This statement shows the net cash inflows and outflows for each operation as well as for the whole firm. Accounting Standard 3 (Revised) "Cash Flow Statement" should be used to create the cash flow statement. The specifics of this assertion have been covered in another research.

11.2 Nature of Financial Statements

Financial statements are created to offer a monthly evaluation or report on progress by management and deal with the (a) status of the business's investments and (b) outcomes obtained during the period under review. The information presented in these financial statements is the result of the interaction of I recorded facts; (ii) accounting conventions; (iii) postulates or assumptions used to implement conventional procedures; (iv) personal judgments used in the application of conventions and postulates; and (v) accounting standards and guidance notes. These elements are described below:

(i) Recorded Facts: Cash in hand, cash at bank, bills receivable, bills payable, debtors, creditors, fixed assets, sales, purchases, wages, capital, and so on are examples of documented facts. These goods are listed based on historical transaction records and valued at the price at which such transactions occurred. Facts that have not been documented in the accounting books are not portrayed in the financial accounts, regardless of how significant they may be.

(ii) Accounting Conventions: Accounting conventions relate to some basic accounting concepts, the implementation of which has been sanctified through time. For example, according to the conservation principle, provision is provided for predicted losses while expected earnings are neglected. These conventions are used for inventory value, allocating spending between capital and income for asset valuations, and so on.

(iii) Postulates: Accountants make a variety of assumptions about the conventions they use. One of these assumptions or postulates is that the firm will continue to operate beyond the time covered by the financial statements, i.e., that the business is a going concern. This assumption is known as the permanence postulate, and it is used to value the business's assets at cost less depreciation. If this assumption is not made, the assets may have to be valued at realizable value, which may be negligible if the business is not a going concern. The monetary postulate is another hypothesis

made by accountants. It is the implicit assumption that the value of money, or its purchasing power, remains constant over time. When valuing various assets over time, accountants do not take price changes into account. However, accountants in the West have recently shown a growing awareness of the importance of incorporating price-level changes when preparing financial statements. The realization postulate is a third postulate that takes into account the time lag between production and sales. According to this postulate, total revenue is considered to be earned at the time of sale, not at the time of production. This postulate serves as the foundation for the convention of matching costs with revenues, in which costs incurred in the previous period are carried forward to be accounted for against revenues earned in a later period.

(iv) Personal Judgments: It should be highlighted that the use of conventions, assumptions, or postulates is dependent on the accountant's own judgment. For example, the accountant's own judgments govern the selection of depreciation techniques, the mode of amortization of fake assets, the method of stock valuation, the calculation of provision for dubious debts, and so on. The presence of the consistency principle, on the other hand, acts as a check on the accountant's ability to utilize his own judgment. Because the accountant is influenced by previous practices, the scope of his own judgment is limited.

(v) Accounting Standards and Guidance Notes: Accountants prepare financial statements using multiple accounting rules and guidance notes.

11.3 Attributes of Financial Statements

Financial statements created for a business should have the following characteristics if they are to suit the purpose and purposes for which they are intended:

(a) Relevance: The financial statements presented must be relevant to the purpose for which they are intended. While extraneous and misleading disclosures should be avoided, no important or significant information should be withheld from the public. The accountant who produces such statements should be clear about the relevance and materiality, if any, of the different facts on which these statements are based. Various nations' Companies Acts prohibit the publication of certain significant information.

(b) Accuracy and Freedom from Bias: Financial statements should provide a complete and accurate picture of an enterprise's development, status, and prospects. They must be properly prepared for this function. Inaccuracy may not only result in legal implications, but it may also undermine the goals for which the remarks are intended. It should be noted, however, that absolute accuracy is not always possible, but this does not imply that rash and inaccurate data should be provided on purpose. The least that can be expected is that those who prepare and present financial statements do not allow their personal prejudices to color the facts.

(c) Comparability: Financial statements become more useful when they are comparable. Comparison with earlier statements aids in measuring performance and localizing patterns in the commercial enterprise's development and position. Comparisons with other comparable businesses or the industry demonstrate the enterprise's strength in comparison to other businesses and the industry.

(d) Analytical Presentation: The financial statements should be presented in a classified format to allow for a more thorough and relevant examination. Proper categorization aids in tracking and comprehending the reasons of the outcomes shown in these statements. Inefficient performance and wasteful actions may be revealed using detailed and classified information. This categorization aids in the faster study of these papers.

(e) Promptness: There is no question that financial statement production is relatively hard, but a significant delay in their creation would lessen the relevance and value of these statements. They should be prepared as quickly as feasible after the time for which they are intended has ended. The time lag between the end of the period and the compilation of these statements may make teaching the reasons of the outcomes shown by the statements challenging. Such delays, and the subsequent delayed response, may cause more damage than benefit to the company.

(f) Generally Accepted Principles: Because financial statements are intended for a broader audience, they must be generally acceptable and understandable. Only when these statements are produced in conformity with "Generally Accepted Accounting Principles" will they be acceptable and understandable. This raises the dependability of these assertions and boosts user confidence.

(g) Consistency: The accountant's judgment and procedural decisions impact the financial accounts for a certain time. Opinions and techniques different from those used in general may cause the statement data to vary significantly. Accounting rules mandate that, once methods have been chosen, the accountant must closely adhere to them in subsequent periods, unless the case requires otherwise. Comparability is directly affected by consistency. If inventory are valued differently in various periods (LIFO, FIFO, and Replacement Cost), the data presented raise questions and make comparison difficult.

(h) Authenticity: To be considered as credible, financial accounts must be examined and validated by an independent and competent individual, often referred to as an auditor. Statements that have been audited and approved by recognized and established auditors are taken at face value and considered more dependable. Unaudited financial statements provide potential for uncertainty and inaccuracy.

(i) Compliance with Law: Financial statements must comply with any applicable legal requirements in terms of form, substance and disclosures, processes and techniques. Noncompliance with legal regulations, in addition to incurring fines, undermines public investor trust. Companies in India are obliged to disclose their financial accounts in accordance with Section 129 of the Companies Act, 2013.

11.4 Objectives of Financial Statements

In recent years, the number and sorts of individuals interested in financial statements have changed dramatically. In addition to management and creditors, financial statements are required for shareholders and prospective shareholders.

The following organizations have a direct stake in a company's financial statements: Providers and prospective suppliers of finances, such as shareholders, debentureholders, workers, consumers, credit suppliers, tax authorities, and so on. Furthermore, financial analysts and consultants, stock exchanges, academics, attorneys, regulatory agencies, trade organizations, and labor unions have an indirect stake in these comments.

It is self-evident that preparing sets of financial statements for the many parties interested in them is not practicable, and that preparing a financial statement that provides all of the information necessary by all of the interested parties is almost impossible. There must be a compromise in the preparation of financial statements - there will and can be only one set, and it must be oriented toward the needs of the shareholders, but it must provide as much significant and material information as is practicable for the benefit of other parties, particularly those who must make decisions about the future of the concerned firm, such as debenture holders, institutional lenders, stock exchange operators, and so on. Fortunately, information requirements may be classified as I profit and profitability; (ii) short-term financial situation (liquidity); and (iii) long-term financial position. Everyone who is interested in a company wants to know how much cash flow is predicted in the time frame that he is interested in. A shareholder, for example, wants to predict the cash dividend that his shares will bring as well as the amount that he may realize on sale of the shares - for the dividend, his time-frame is one year; a supplier of products on credit wants to know if his dues will be paid within a month or two. These broad information requirements may be met by a single set of financial statements.

The objectives of financial statements can be summarized as follows:

1. To give credible financial information regarding a business's economic resources and commitments.

2. To give credible information on an enterprise's net resources (resources minus commitments) as a result of its activities.

3. To give financial information that aids in predicting a company's earning potential.

4. To supply any further information required concerning changes in economic resources or obligations.

5. To the greatest degree practicable, provide additional financial statement information relevant to the interests of the readers of these statements.

To fulfill the aforementioned goals and to satisfy the demands of the many users, the accountant tasked with producing and presenting financial statements must adhere to a set of criteria to assure uniformity, completeness, and fairness of the statements. These rules are known as "generally

recognizedaccounting principles." In the absence of these 'generally accepted accounting standards,' produced statements may be unintelligible and deceptive to distinct groups of consumers. In addition, the created financial statements must be validated in terms of truth and fairness so that consumers may have faith in them. These statements must be evaluated and confirmed by an independent reviewer, sometimes known as an auditor, for this purpose.

Lab Exercise

Re-write the following sentence after filling-in the blank spaces withappropriate word:

(i) The _____ reports activity over a period of time.

(ii) The _____ reports activity on a specific point in time.

(iii) Accounts payable is reported as a _____ on the balance sheet.

(iv) All financial statements have _____ that display the company name, name of the report, and date of activity.

Correct answer: (i) income statement. **(ii) balance sheet (iii) Current Liability**

(iv) Headings

11.5 Importance of Financial Statements

The primary goal of financial statements is to offer information for several types of people, as listed below:

1. The Management: The scale of contemporary company and the complexity of elements influencing business operations need an increasingly scientific and analytical approach to business management. This is only achievable if the management team has access to up-to-date, accurate, and methodical financial records. Financial reports and statements are very useful in analyzing the company's development, status, and future in relation to the industry. Financial statements allow management to create suitable policies and courses of action for the future by assisting them in becoming familiar with the reasons of company performance. Not only do such financial statements, which are normally made public, play an essential role in policymaking and planning, but so do unpublished subsidiary accounts and statements. Subsidiary records give more thorough, honest, and enlightening information than financial statements. A comparative study of financial statements should allow management to recognize patterns in the enterprise's development and position and make appropriate policy changes to avoid unfavorable scenarios. The publishing of such financial statements allows management to convey their performance to other parties as well as explain their existence and actions.

2. The Public:A company is a social entity. Various groups in society are interested in the growth, status, and possibilities of a corporate firm, even if they are not directly involved with it. These organizations include financial analysts, attorneys, trade associations, labor unions, the financial press, students and teachers, and so on. These individuals may only analyze, appraise, and remark on the commercial enterprise via the public financial accounts. It should be emphasized that in the event of joint stock corporations, these financial statements are open to the public. No such disclosures are published or made accessible to the public in the case of sole proprietorships, partnerships, or other forms of ownership.

3. The Shareholders and the Lenders:A company's financial statements serve as a valuable reference for its shareholders and potential shareholders, suppliers, and lenders and potential lenders. These groups may learn about the efficiency and effectiveness of management, as well as the company's status, development, and prospects, by conducting a critical review of its financial statements. To that end, the financial statements must provide accurate, thorough, and systematic data and numbers so that these individuals may have a complete and accurate understanding of the company's current status and future prospects. Because published financial statements are the primary basis for such a group of people to judge the company's affairs, it has been discovered that some managements have been resorting to 'window dressing' in the presentation of these statements, in order to project a "better" than "what is" the company's position.

4. The Labor and Trade Unions: Workers in India are entitled to bonuses under the Payment of Bonus Act, which is based on the magnitude of the profit as declared by an audited Statement of Profit and Loss. As a result, profit and loss statements become very significant to employees. Profitability and profit margins are also important factors in pay negotiations.

5. The Country and Economy: The creation and expansion of joint stock corporations is closely related to the country's economic prosperity. However, unethical behavior has a tremendous impact on the sector and the people in the area where the firm works. Such fraudulent operations undermine the general public's trust in joint stock businesses as harbingers of economic prosperity, stifling the country's economic growth. The answer is to raise the degree of business and financial morality of the promoters and managements, as well as to educate the public about financial accounts, so that they may study and evaluate the true value of the firm and prevent being duped by unscrupulous individuals. The legislation seeks to improve company morale by requiring corporations to prepare financial accounts in a clear, methodical manner and to reveal specified minimal information. Such laws boost public trust in joint stock enterprises, allowing the country's economy to grow more quickly. This is especially important in emerging and underdeveloped nations. Capital is not just scarce but also hesitant in such nations. Malpractices on the side of promoters and management only serve to enhance capital scarcity and timidity, stifling economic advancement. Published financial statements allow for a critical evaluation of a company's value, protecting the innocent public, increasing their trust, and facilitating speedier economic advancement.

Financial statements are also useful to numerous regulatory bodies. By examining the financial accounts produced by the firms, they may determine if the restrictions are being followed in letter and spirit, as well as whether the regulations are having the intended impact.

11.6 Limitations of Financial Statements

(1) Financial statements are typically generated using accounting rules, conventions, and prior experience. As a result, they do not convey much about the undertakers' profitability, solvency, stability, liquidity, and so on to the consumers of the statements.

(2) Financial statements emphasize the importance of disclosing solely monetary facts, i.e., quantitative data, while ignoring qualitative data.

(3) Financial statements only provide historical information. It does not take into account changes in the worth of money, price variations, and so on. As a result, accurate predicting for the future is impossible.

(4) The influence of human judgments creates potential for financial statement manipulation.

(5) Financial statement information based on accounting ideas and standards. It is implausible owing to differences in terms and circumstances, as well as changes in economic situations.

11.7 Recent Trends in Presenting Financial Statements

Every firm in India is required to produce its financial statements in the form and content defined by Section 129 of the Companies Act, 2013. Given the complexities of statutory forms in the Companies Act, it is now usual practice to include, in addition to the Statement of Profit and Loss and Balance Sheet written in statutory forms, certain optional supplemental information in a straightforward way that a layperson would understand. This optional information might contain the following:

(i) Statement of Profit and Loss and Balance Sheet: Every business registered under the Companies Act must compile its Balance Sheet, Profit and Loss Statement, and related notes in the manner provided in Schedule III to the Companies Act, 2013. The requirements of Schedule III, on the other hand, do not apply to companies as defined in the proviso to Section 129 (1) of the Act, namely, any insurance or banking company, or any company engaged in the generation or supply of electricity, or any other class of company for which a form of Balance Sheet and Statement of Profit and Loss has been specified in or under any other Act governing such class of company.

(ii) Highlights: Highlights are often included at the beginning of an annual report so that consumers may quickly identify the most essential information about the organization when they start the report. It may typically include information on sales, production, profit before and after

taxes, capital projects, working capital, fixed assets, share capital, significant milestones of the year, and so forth.

(iii) Cash flow statements: The production of a cash flow statement is now required. A cash flow statement shows the cash receipts, cash payments, and net cash charges arising from an enterprise's operating, investing, and financing activities for a period in a manner that reconciles the starting and ending cash balances. It shows a net cash inflow or outflow for each operation as well as for the whole firm.

(iv) Provision of important accounting ratios: Accounting ratios demonstrate the interdependence of different accounting variables. The balance sheet is supported by the key ratios for the current year and the previous two years.

(v) Disclosure of accounting policies: Currently, forward-thinking organizations reveal the accounting rules that they use to create their financial statements in their published reports. This is done in order to provide the public with a better understanding of the financial statements.

(vi) Use of charts, graphs and diagrams: Many businesses use charts, graphs, and diagrams in their reported financial statements. It is a visual means of presenting information. It draws users' attention more immediately and forcefully. Graphs and diagrams have recently gained popularity as the most effective medium for revealing trends and drawing comparisons over relatively lengthy time periods in a limited area. The information presentation approach may effectively illustrate production costs, changes in output and sales, components of production and revenue, usage of divisible profits as taxes, dividends, other appropriations, and retained profits, and so on.

(vii) Use of schedules: Separate schedules for different heads (e.g. share capital, reserves and surplus, secured loans, unsecured loans, current liabilities and provisions, fixed assets, investments, current assets, loans and advances, miscellaneous expenditure, etc.) are prepared to make the balance sheet and Statement of Profit and Loss as compact as possible, and details regarding these heads as prescribed in the Companies Act are given in these schedules. This is done to make the balance sheet and profit and loss statement fit into the available space. These schedules are correctly numbered and referenced in the balance sheet and Profit and Loss Statement.

(viii) Impact of price level changes: Because prices fluctuate on a daily basis, financial statements based on previous costs do not represent the impact of price level changes on the company's financial situation and profitability. To accommodate the impact of price level changes in financial statements, many firms have begun to reflect this effect in supplemental statements in addition to the traditional statements generated on a historical basis.

(ix) Rounding off of figures: The Sachhar Committee proposed that corporations be allowed to round off financial statement values to the nearest thousand, hundred, or ten rupees. This proposal has been adopted, and firms are now using rounding off values.

11.8 Analysis of Financial Statements

The presentation of financial statements is an essential aspect of the accounting process. To give more relevant information so that owners, investors, creditors, or readers of financial statements may assess the operational effectiveness of the company during a certain time. More valuable information is necessary from the financial accounts in order to make informed judgments regarding the company's profitability and financial stability. To meet the requirements of the preceding. It is critical to examine financial statement analysis and interpretation.

Meaning of Analysis and Interpretations

The word "Analysis" refers to the reorganization of data from financial accounts. In other words, data simplification by rigorous categorization of financial statement data.

"Interpretation" refers to "explaining the meaning and relevance of the facts in such a simple manner." Both analysis and interpretation are interconnected and interdependent. They are not mutually exclusive. As a result, information presentation becomes more deliberate and meaningful—both analyses and interpretations must be addressed.

Financial statement analysis and interpretation, according to Metcalf and Tigard, is the process of assessing the connection between component components of a financial statement in order to have a better understanding of a firm's situation and performance.

Through a process known as "Analysis and Interpretations," the facts and statistics in financial statements may be turned into meaningful and helpful figures.

In other words, financial statement analysis and interpretation refers to the act of developing a meaningful link between the elements in two financial statements in order to uncover financial and operational strengths and shortcomings.

11.9 Objectives of Financial Statement Analysis

Financial statement analysis is very useful in determining a company's financial situation and profitability. The following are the primary goals of financial statement analysis:

(i) The study would reveal the company's current and future earning capabilities, as well as its profitability.

(ii) The overall and departmental operating efficiency of the company may be evaluated. As a result, management can immediately identify areas of inefficiency and efficiency.

(iii) Financial statement analysis may be used to assess the firm's solvency, both short-term and long-term, which is advantageous to trade creditors and debenture holders.

(iv) Financial statement analysis allows for a comparison evaluation of one business with another firm or one department with another department.

(v) Analyzing historical outcomes in terms of earnings and financial condition of the firm is quite useful in anticipating future results. As a result, it aids in budget preparation.

(vi) It permits analyses of the company's financial soundness.

(vii) Financial statement analysis may be used to examine a fund's long-term liquidity status.

11.10 Limitations of Financial Statement Analysis

(i) Because financial statements are generated on the basis of past costs, when the market value of the monetary unit falls and prices increase, the numbers in the financial statement lose their role as an indication of current economic reality. Again, both amounts are included in the financial statements. As a result, financial statement analysis cannot be used to foresee or prepare for the future.

(ii) Financial statement analysis is a technique that may be utilized successfully by an expert analyst but can lead to incorrect conclusions if employed by an inexperienced analyst. As a consequence, the results cannot be interpreted as judgments or conclusions.

(iii) Because financial statements are interim reports, they cannot be final because the total gain or loss can only be calculated at the end of the business. Financial statements represent the evolution of the company's situation, thus analyzing them will not provide convincing proof of the company's success.

(iv) Financial statements, although stated in precise monetary terms, are not totally final and correct, and rely on management's judgment in regard to different accounting techniques. If accounting procedures change, the analysis may no longer have a comparable foundation, resulting in a biased outcome.

(v) The correctness of the numbers used in the financial accounts determines the dependability of the analysis. Manipulations in the income statement or balance sheet, as well as the accounting process used by the accountant for recording, will taint the analysis.

(vi) The findings for indications produced from financial statement analysis may be interpreted differently by various users.

(vii) Financial statement analysis for a single year will be of little use. As a consequence, the investigation may be prolonged across a number of years and the findings compared to get a relevant conclusion.

(viii) Comparison becomes more difficult when various businesses use different accounting techniques, records, policies, and different items under comparable headings in the financial statements. It will not give a valid foundation for comparing the firm's performance, efficiency, profitability, and financial position to the industry as a whole.

(ix) The analyst has access to a variety of analytical tools. However, whether tool should be utilised in a given case is determined by the analyst's talent, training, and competence, and the outcome will differ correspondingly.

11.11 Types of Analysis and Interpretations

The analysis and interpretation of financial statements can be classified into different categoriesdepending upon:

I. The Materials Used

II. Modus Operandi (Methods of Operations to be followed)

I. On the basis of Materials Used:

(a) External Analysis.

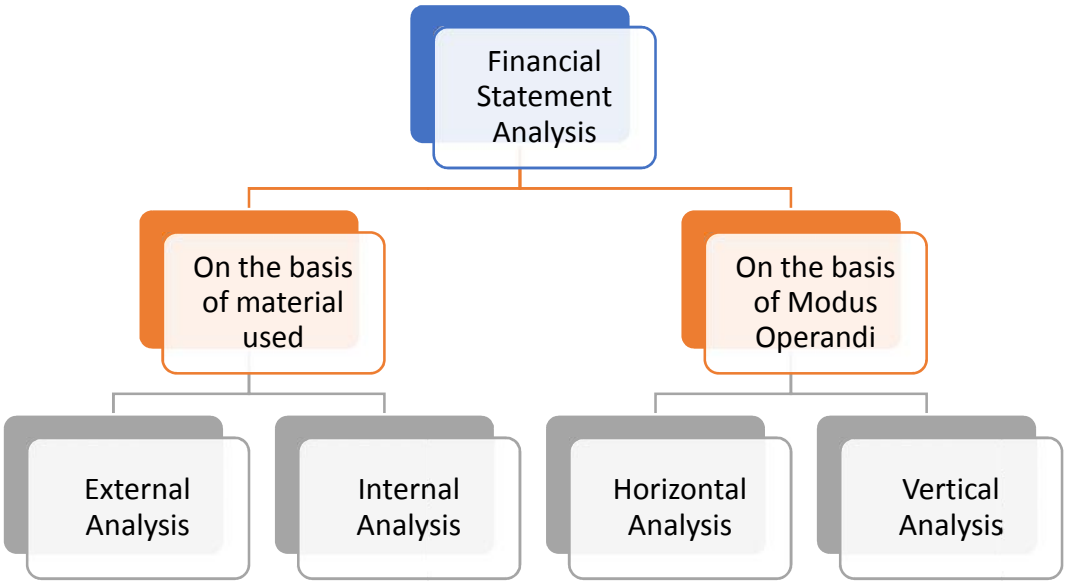
(b) Internal Analysis.

II. On the basis of Modus Operandi

(a) Vertical Analysis.

(b) Horizontal Analysis.

The following chart shows the classification of financial analysis:



I. On the Basis of Materials Used

The analysis and interpretation of financial statements may be divided into two categories based on the resources used: (a) external analysis and (b) internal analysis.

(a) External Analysis: This analysis is intended for those who are not affiliated with the company. Outsiders might include investors, creditors, vendors, government agencies, shareholders, and so forth. For key decisions, these external parties must depend only on these disclosed financial accounts. Due to the lack of specific information, this study serves only a limited use.

(b) Internal Analysis: Internal analysis undertaken by individuals inside the organisation. Internal employees who have access to the company's books of accounts and other business information. Such analysis may be performed to aid management employees in taking remedial action and making suitable choices.

II. On the basis of Modus Operandi

The analysis and interpretation of financial accounts may be divided into two categories based on their modus operandi: (a) horizontal analysis and (b) vertical analysis.

(a) Horizontal Analysis: Also known as Dynamic Analysis, horizontal analysis is a kind of analysis that looks at the world from the top down. A comparison of the trend of each item in the financial statements over a number of years is examined or studied in this form of study. This sort of comparison aids in identifying trends in different performance measures. Current year numbers are compared with base year figures in this sort of analysis, and figures are displayed horizontally over a number of columns.

(b) Vertical Analysis: Static Analysis is another name for Vertical Analysis. A variety of ratios are employed in this form of analysis to measure the significant quantitative connection between the components of financial statements during the specific time. This sort of study may be used to compare the performance, efficiency, and profitability of multiple firms in the same group or divisions within the same company.

11.12 Methods or Tools of analysing financial statements

The analysis of financial accounts entails a study of relationships and patterns to assess if the company's financial situation, results of operations, and financial development are acceptable or unsatisfactory. The analytical tools or devices described below are used to determine or assess the links between financial statement items in a single set of statements and changes in these items as shown in subsequent financial statements. The primary goal of every analytical procedure is to simplify or reduce the facts under consideration to more intelligible terms.

Analytical methods and devices used in analyzing financial statements are as follows:

1. Comparative Financial Statements

2. Common Size Financial Statements

3. Trend Ratios

4. Ratio Analysis

5. Cash Flow statement

6. Fund Flow statement

(1) Comparative Financial Statements

Both the comparative Profit and Loss Account and the comparable Balance Sheet are included in this type of comparative financial statements. Such comparative statements are generated not only to compare the varying statistics of two or more periods, but also to demonstrate the link between different aspects incorporated in the profit and loss account and balance sheet. It allows for the measurement of operational efficiency and financial soundness of a company for analysis and interpretation. The comparison statements may include the following information:

(a) Figures are presented in the comparative statements side by side for two or more years.

(b) Absolute data in money value.

(c) Increase or Decrease between the absolute figures in money value.

(d) Changes or trend in various figures in terms of percentage.

Particulars	First Year	Second Year	Absolute Increase (+) or Decrease (–)	Percentage Increase (+) or Decrease (–)
1	2	3	4	5
	Rs.	Rs.	Rs.	%.

Illustration 1:

Convert the following statement of profit and loss into the comparative statementof profit and loss of BCR Co. Ltd.:

Particulars	Note no.	2021 (Rs.)	2022 (Rs.)
(i) Revenue from operations		60,00,000	75,00,000
(ii) Other incomes		1,50,000	1,20,000
(iii) Expenses		44,00,000	50,60,000
(iv) Income tax		35%	40%

Solution:

Particulars	2021	2022	Absolute increase or decrease	Percentage increase or decrease
	(Rs.)	(Rs.)	(Rs.)	(%)
(i) Revenue from operations	60,00,000	75,00,000	15,00,000	25
(ii) Add: Other incomes	1,50,000	1,20,000	(30,000)	(20)
Total Income	61,50,000	76,20,000	14,70,000	23.90
(iii) Less: Expenses	44,00,000	50,60,000	6,60,000	15
Profit before tax	17,50,000	25,60,000	8,10,000	26.29
(iv) Less: Income tax	6,12,500	10,24,000	4,11,500	67.18
Profit after tax	11,37,500	15,36,000	3,98,500	35.03

Illustration 2:

From the following statement of profit and loss of Madhu Co. Ltd., preparecomparative statement of profit and loss for the year ended March 31, 2021 and2022:

Particulars	Note no.	2021 (Rs.)	2022 (Rs.)
Revenue from operations		16,00,000	20,00,000
Employee benefit expenses		8,00,000	10,00,000
Other Expenses		2,00,000	1,00,000
tax rate		40%	40%

Solution:

Particulars	2021	2022	Absolute increase or decrease	Percentage increase or decrease
	(Rs.)	(Rs.)	(Rs.)	(%)
Revenue from operations	16,00,000	20,00,000	4,00,000	25

Less: Expenses				
a) employee benefit expenses	8,00,000	10,00,000	2,00,000	25
b) other expenses	2,00,000	1,00,000	(1,00,000)	(50)
Profit before tax	6,00,000	9,00,000	3,00,000	50
(iv) Less: Income tax 40%	2,40,000	3,50,000	1,20,000	50
Profit after tax	3,60,000	5,40,000	1,80,000	50

Illustration 3:

ABC Limited has provided the following information about its two accounting periods, i.e., 2016 and 2017.Prepare a Comparative Income Statement and interpret the basic findings.

Particulars	2016 (Amount in USD)	2017 (Amount in USD)
Net Sales	200000	250000
Cost of Goods Sold	150000	180000
Selling, General and Administrative Expenses	25000	30000
Other Income	12000	18000
Taxes	8000	16000
Interest	17000	18000

Solution:

Particulars	2016 (Amount in USD)	2017 (Amount in USD)	Absolute Change	Percentage Change
Net Sales	200000	250000	50000	25%
Less: Cost of Goods Sold	150000	180000	30000	20%
Gross Profit	50000	70000	20000	40%
Less: Selling, General and Administrative Expenses	25000	30000	5000	20%
Net Operating Profit	25000	40000	15000	60%
Add: Other Income	12000	18000	6000	50%
Earnings before Interest and Taxes	37000	58000	21000	56.76%
Less: Interest	17000	18000	1000	5.88%
Earnings before Taxes	20000	40000	20000	100%
Less: Taxes	8000	16000	8000	100%
Net Profit	12000	24000	12000	100%

Illustration 4:

From the following Profit and Loss Account AVS Ltd., for the years 2021 and 2022, you are requiredto prepare a Comparative Income Statement.

Statements of Profit and Loss Account

Particulars	2021	2022
	Rs.	Rs.
Net sales	4,000	5,000
Less :Cost of goods sold	3,000	3,750
Gross Profit	1,000	1,250
Less :Operating Expenses		
Office and Administrative Expenses	200	250
Selling and Distribution Expenses	225	300
Total Operating Expenses	425	550
Net Profit	575	700

Solution:

Particulars	***2021***	***2022***	***Increase or Decrease***	***Percentage***
	Rs.	***Rs.***	***Absolute change***	**(%)**
Net sales	4,000	5,000	+ 1,000	+ 25
Less: Cost of Goods Sold	5,000	3,750	+ 1,500	+ 25
Gross Profit	1,000	1,250	+ 250	+ 25
Less : Operating Expenses :				
Office and Administrative Expenses	200	250	+ 50	+ 25
Selling and Distribution Expenses	225	300	+ 75	+ 33.33
Total Operating Expenses	425	550	+ 125	+ 29.41

Illustration 5:

The following are the Balance Sheets of J. Ltd. as at March 31, 2021 and 2022.Prepare a Comparative balance sheet.

Particulars	Note no.	2022 (Rs.)	2021 (Rs.)
I. Equity and Liabilities 1. Shareholders' Funds			

a) Share capital		20,00,000	15,00,000
b) Reserve and surplus		3,00,000	4,00,000
2. Non-current Liabilities			
Long-term borrowings		9,00,000	6,00,000
3. Current liabilities			
Trade payables		3,00,000	2,00,000
Total		35,00,000	27,00,000
II. Assets 1. Non-current assets			
a) Fixed assets			
Tangible assets		20,00,000	15,00,000
Intangible assets		9,00,000	6,00,000
2. Current assets			
Inventories		3,00,000	4,00,000
Cash and cash equivalents		3,00,000	2,00,000
Total		35,00,000	27,00,000

Solution:

Comparative Balance Sheet of J. Limited

as at March 31, 2021 and March 2022

(Rs. in Lakhs)

Particulars	2021	2022	Absolute Change	Percentage Change
I. Equity and Liabilities **1. Shareholders' Funds**				
a) Share capital	15	20	5	33.33
b) Reserve and surplus	4	3	(1)	(25)
2. Non-current Liabilities				
Long-term borrowings	6	9	3	50
3. Current liabilities				
Trade payables	2	3	1	50
Total	**27**	**35**	**8**	**29.63**

II. Assets **1. Non-current assets**				
a) Fixed assets				
Tangible assets	15	20	5	33.33
Intangible assets	6	9	3	50
2. Current assets				
Inventories	4	3	(1)	(25)
Cash and cash equivalents	2	3	1	50
Total	**27**	**35**	**8**	**29.63**

(2) Common Size Statement

The Common Size Statement, also known as the component percentage statement, is a financial instrument used to analyze major changes and trends in a company's financial situation and operational results. Each item in the statement is expressed as a percentage of the total, of which it is a component. A typical size balance sheet, for example, displays the proportion of each asset to total assets and the percentage of each obligation to total liabilities. Similarly, in the typical size profit and loss statement, expenses are reported as a proportion of net revenue from operations. When such a statement is created for consecutive periods, it demonstrates the changes in the corresponding percentages over time. Common size analysis is very useful for comparing firms of different sizes since it gives insight into the structure of financial statements. The use of common size statement analysis allows for inter-firm comparison or comparison of the company's position with the associated industry as a whole.

1. List out absolute figures in rupees at two points of time, say year 1,and year 2

2. Choose a common base (as 100). For example, revenue from operationsmay be taken as base (100) in case of statement of profit and loss andtotal assets or total liabilities (100) in case of balance sheet.

3. For all items of Col. 2 and 3 work out the percentage of that total.Column 4 and 5 shows these percentages

Particulars	Year one	Year two	Percentage of year 1	Percentage of year 2
1	2	3	4	5

Illustration 6:

From the following information, prepare a Common size Income Statement forthe year ended March 31, 2021 and 2022:

Particulars	2022	2021
Net sales	18,00,000	25,00,000
Cost of good sold	10,00,000	12,00,000
Operating expenses	80,000	1,20,000
Non-operating expenses	12,000	15,000
Depreciation	20,000	40,000

Wages	10,000	20,000

Solution:

Particulars	2021	2022	% of net sales 2021	% of net sales 2022
Net sales	25,00,000	18,00,000	100	100
Cost of good sold	12,00,000	10,00,000	48	55.56
Gross Profit	13,00,000	8,00,000	52	44.44
Operating expenses	1,20,000	80,000	4.80	4.44
Operating Income	11,80,000	7,20,000	47.20	40
Non-operating expenses	15,000	12,000	0.60	0.67
Profit	11,65,000	7,08,000	46.60	39.33

* Wages is the part of cost of goods sold;

** Depreciation is the part of operating expenses.

Illustration 7:

Prepare common size Balance Sheet of XRI Ltd. from the following information:

Particulars	Note no.	2021 (Rs.)	2022 (Rs.)
I. Equity and Liabilities **1. Shareholders' Funds**			
a) Share capital		15,00,000	12,00,000
b) Reserve and surplus		5,00,000	5,00,000
2. Non-current Liabilities			
Long-term borrowings		6,00,000	5,00,000
3. Current liabilities			
Trade payables		15,50,000	10,50,000
Total		**41,50,000**	**32,50,000**
II. Assets **1. Non-current assets**			
a) Fixed assets			
Tangible assets		14,00,000	8,00,000
Intangible assets		16,00,000	12,00,000

Non-current investment		10,00,000	10,00,000
2. Current assets			
Inventories		1,50,000	2,50,000
Total		**41,50,000**	**32,50,000**

Solution:

Common size Balance Sheet of XRI limited

as at March 31, 2021 and March 2022

Particulars	2021	2022	Absolute Change	Percentage Change
I. Equity and Liabilities **1. Shareholders' Funds**				
a) Share capital	15,00,000	12,00,000	36.14	36.93
b) Reserve and surplus	5,00,000	5,00,000	12.05	15.38
2. Non-current Liabilities				
Long-term borrowings	6,00,000	5,00,000	14.46	15.38
3. Current liabilities				
Trade payables	15,50,000	10,50,000	37.35	32.31
Total	**41,50,000**	**32,50,000**	**100**	**100**
II. Assets **1. Non-current assets**				
a) Fixed assets				
Tangible assets	14,00,000	8,00,000	33.73	24.62
Intangible assets	16,00,000	12,00,000	38.55	36.92
Noncurrent investment	10,00,000	10,00,000	24.10	30.77
2. Current assets				
Inventories	1,50,000	2,50,000	3.62	7.69
Total	**41,50,000**	**32,50,000**	**100**	**100**

(3) Trend Analysis

Financial statements may be analyzed by calculating trends of a set of data. Trend analysis analyses whether an item is trending higher or downwards by computing the percentage connection that each item has to the same item in the base year. A comparative statement compares an item to itself from the previous year to see if it has risen, decreased, or stayed steady. The purpose of common size analysis is to determine if the percentage of an item (say, cost of revenue from operations) in the common base is rising or decreasing (say revenue from operations). In the case of trend analysis, however, we learn about the behavior of the same item over a certain time period, such as

the previous five years. Take administrative expenditures, for example, and consider if they are rising, reducing, or holding constant during the comparative period. In general, trend analysis is performed over a rather lengthy period of time. Many firms disclose their financial data in different formats over a period of 5 or 10 years in their annual reports.

Procedure for Calculating Trend Percentage

One year is used as the starting point. In most cases, the first year is used as the base year. The base year is assumed to be 100. The trend percentages are computed using this base year. If a number in another year is less than the figure in the base year, the trend % will be less than 100, and it will be more than 100 if the figure is greater than the figure in the base year. The figure for each year is divided by the figure for the base year.

$$\text{Trend Percentage} = \frac{\text{Present year value}}{\text{Base year value}} \times 100$$

The accounting procedures and conventions used for collecting data andpreparation of financial statements should be similar; otherwise the figures willnot be comparable.

Illustration 8:

Calculate the trend percentages from the following figures of sales, stock andprofit of X Ltd., taking 2017 as the base year and interpret them.

Year	Sales	Stock	Profit before tax
2017	1,881	709	321
2018	2,340	781	435
2019	2,655	816	458
2020	3,021	944	527
2021	3,768	1,154	627

Solution**:**

Year	Sales	Trend %	Stock	Trend %	Profit before tax	Trend %
2017	1,881	100	709	100	321	100
2018	2,340	124	781	110	435	136
2019	2,655	141	816	115	458	143
2020	3,021	161	944	133	527	164
2021	3,768	200	1,154	163	627	195

Interpretation:

1. The sales have continuously increased in all the years up to 2014, though indifferent proportions. The percentage in 2021 is 200 as compared to 100 in2017. The increase in sales is quite satisfactory.

2. The figures of stock have also increased over a period of five years. The increasein stock is more in 2020 and 2021 as compared to earlier years.

3. Profit has substantially increased. The profits have increased in greaterproportion than sales which implies that the company has been able to reducetheir cost of goods sold and control the operating expenses.

Summary

- The two most common types of financial statements are the balance sheet/position statement and the income statement/profit and loss statement. A company may also draw out a statement of retained profits and a statement of cash flows if it so chooses.
- Financial statements are based on I documented facts, (ii) accepted accounting practices, (iii) assumptions, (iv) professional and expert opinion, and (v) generally accepted accounting principles and related pronouncements.
- Relevance, correctness, objectivity, comparability, analysis, presentation, timeliness, widely recognized standards, consistency, authenticity, and legality are all characteristics of reliable financial statements.
  - Management, the general public, shareholders and lenders, workers and unions, and the national and international economy may all benefit from a thorough understanding of the company's financial records.
  - Recent practices in financial statement presentation may include, but are not limited to, the following: a condensed Statement of Profit and Loss and Balance Sheet; highlights; cash flow statements; key accounting ratios; disclosure of accounting policies; charts, graphs, and diagrams; schedules; the effect of changes in price levels; the effect of rounding off figures; etc.
  - According to modus operandi of analysis financial statement, analysis may be horizontal and vertical.
  - According to the objective of the analysis financial statement, analysis can be long-term and short-term.
  - Financial statement analysis makes use of a variety of tools and techniques, such as comparative statements, common size statements, trend ratios, ratio analysis, and cash flow statements.

Keywords

- Financial statement
- Financial statement Analysis
- Common-size statements
- Comparative statements
- Trend analysis
- Balance sheet
- Graph
- Trend analysis

SelfAssessment

1. The financial statements of a business enterprise include cash flow statement.

A. True

B. False

2. Comparative statements are the form of horizontal analysis.

A. True

B. False

3. Common size statements and financial ratios are the two tools employed invertical analysis.

A. True

B. False

4. Financial analysis is used only by the creditors.

A. True

B. False

5. Statement of profit and loss account shows the operating performance of anenterprise for a period of time.

A. True

B. False

6. Financial analysis helps an analyst to arrive at a decision.

A. True

B. False

7. In a Common size statement each item is expressed as a percentage of somecommon bases.

A. True

B. False

8. The financial statements of a business enterprise include:

A. Balance sheet

B. Statement of Profit and loss account

C. Cash flow statement

D. All the above

9. The most commonly used tools for financial analysis are:

A. Horizontal analysis

B. Vertical analysis

C. Ratio analysis

D. All the above

10. An Annual Report is issued by a company to its:

A. Directors

B. Auditors

C. Shareholders

D. Management

11. Balance Sheet provides information about financial position of the enterprise:
A. At a point in time
B. Over a period of time
C. For a period of time
D. None of the above

12. Comparative statements are also known as:
A. Dynamic analysis
B. Horizontal analysis
C. Vertical analysis
D. External analysis

13. Horizontal analysis is done by analyzing:
A. Financial statements of more than one year
B. Financial statements of one year
C. Quarterly financial statements
D. Half yearly financial statements

14. In performing a vertical analysis, the base for prepaid expenses is:
A. Total of balance sheet
B. Total of current assets
C. Total of fixed assets
D. Total sales

15. All of the following statements regarding horizontal analysis are true except:
A. Horizontal analysis is also known as dynamic analysis.
B. Comparative statements are the form of horizontal analysis.
C. Horizontal analysis is done by analyzing financial statements of more than one year.
D. Each particular of financial statements are shown as a percentage of total of some common base.

Answers for SelfAssessment

1.	A	2.	A	3.	A	4.	B	5.	A
6.	A	7.	A	8.	D	9.	D	10.	C
11.	A	12.	B	13.	A	14.	A	15.	D

Review Questions

1. Explain the concept of interpretation and criticism of financial statements?

2.What are the objectives of financial statements?

3. Discuss the limitations of financial statements and point out how these limitations can be removedthrough management accounting.

4. Explain the various ways of presentation of financial statements.

5. What is the common size balance sheet and income statement? Explain the technique of preparingcommon size balance sheet.

6. What are the trend ratios? Explain the technique of computing trend ratios.

7. How will you interpret and analyze financial statement presented to you?

8. What is the importance of comparative statements? Illustrate youranswer with particular reference to comparative income statement.

9. Following are the balance sheets of Alpha Ltd., as at March 31, 2021 and 2022:

Particulars	2021	2022
I. Equity and Liabilities		
Equity share capital	2,00,000	4,00,000
Reserves and surplus	1,00,000	1,50,000
Long-term borrowings	2,00,000	3,00,000
Short-term borrowings	50,000	70,000
Trade payables	30,000	60,000
Short-term provisions	20,000	10,000
Other current liabilities	20,000	30,000
Total	6,20,000	10,20,000
II. Assets		
Fixed assets	2,00,000	5,00,000
Non-current investments	1,00,000	1,25,000
Current investments	60,000	80,000
Inventories	1,35,000	1,55,000
Trade receivables	60,000	90,000
Short term loans and advances	40,000	60,000
Cash at bank	25,000	10,000
Total	6,20,000	10,20,000

You are required to prepare a Comparative Balance Sheet.

Further Readings

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Unit 12: Ratio Analysis

CONTENTS

Objectives

After studying this unit, you will be able to:

- understand the nature, Attributes, Objectives, Importance, Limitations of ratio analysis.
- identify the various types of ratios commonly used
- use ratio analysis in the working capital management.
- interpret financial ratios and their significance.
- calculate various ratios to assess solvency, liquidity, efficiency and profitability of the firm
- interpret the various ratios calculated for intra-firm and interfirm comparisons

Introduction

The examination of financial statements and interpretations of financial outcomes for a certain period of operations using 'ratio' is known as "ratio analysis." A ratio analysis is performed to assess a company's financial stability. In the year 1909, Alexander Wall developed a technique of ratio analysis and published it in usable form.

Ratio analysis provides a meaningful link between individual items or groups of things in the organization's financial statements. It depicts the relationship between two interconnected accounting data, such as current assets and current liabilities, debtors and sales, debt to equity, and so on.

10.1 Ratio analysis

The ratio analysis method is used to assess the connections between financial statement components. The ratios are used to discover patterns for one organisation over time or to compare

two or more companies at one moment in time. Ratio analysis focuses on three critical components of a company: liquidity, profitability, and solvency.

Ratio analysis is an essential tool for every organisation. The computation of ratios allows for the comparison of enterprises of varying sizes. Ratios can be used to compare a company's financial performance to that of the industry. Furthermore, ratios may be utilised in trend analysis to discover areas where performance has improved or declined over time.

Individual symptoms such as blood pressure, pulse, and temperature are examples of ratios. Just as a doctor or a valid can diagnose the cause of a patient's ailment by reading his pulse or studying his blood pressure or temperature, a financial analyst can do the same through ration analysis of resource utilisation and overall financial position. Just as symptoms are passive components in medical science, and successful diagnosis rely on the efficiency and skill of the doctor, correct conclusions from ratio analysis will depend on the efficiency and depth of understanding of the financial analyst.

10.2 Accounting ratio

An absolute figure does not often communicate much significance. In general, the meaning of a figure is realized only in the context of additional information. A is 70 kg in weight. Is he overweight? This question cannot be answered unless A's age and height are known. Similarly, a company's profitability cannot be determined until it is combined with the quantity of profit and capital utilized. A ratio is a mathematical expression of the relationship between two figures. The ratio of 4 to 10 is 0.4 or 40% or 2:5. The ratios "0.4", "40%", and "2:5" Accounting ratios are numerical correlations between numbers that have a cause and effect relationship or are related in some other way.

Accounting ratios are an extremely valuable tool for acquiring and comprehending the underlying meaning of financial statements. Ratios should be calculated between figures that are strongly connected to one another. Working out ratios between two completely unrelated statistics, such as discount on debentures and sales, serves no value. Ratios can be calculated using the figures in the financial accounts.

Ratios reveal signs and symptoms of underlying illnesses. They serve as indications of a company's financial stability, strength, position, and status.

The interpretation of ratios is essential to ratio analysis. The calculating of ratio is merely clerical labour, however the interpretation is a matter of taste requiring art and talent. The usefulness of ratios is determined by careful interpretation.

10.3 Uses of Ratio Analysis

The profitability, liquidity, solvency, and overall financial status of businesses may be determined by comparing the ratios that represent the relationships between the different elements of financial statements.

A company's historical performance may be used in conjunction with ratio analysis to develop educated predictions about the company's future state of affairs. The approach facilitates comparisons among firms and within a single business. The ratio analysis made it simple to look back on past performance and forward forecasts. Ratio analysis is used by management to exercise control over a variety of areas, including budgeting, inventories, finances, etc., and to establish accountability and responsibility among various department heads in order to expedite and plan performance. It's a win-win for the whole firm, as we'll see below.

1. Management: In order to formulate policies, make decisions, and assess the performance and trends of the firm and its many parts, management finds ratios useful.

2. Shareholders: By applying ratio analysis to financial statements, shareholders get insight into not only the working and operational efficiency of their firm but also the expected influence such efficiency would have on the net worth and, in turn, the price of their shares on the Stock Exchange. They may evaluate the efficiency of management procedures this way.

3. Investors: Third, investors: Investors care about how well the firm runs, how much money it makes, and how healthy the business is financially. Profitability, debt-equity, fixed-assets-to-net-

worth, assets-turnover, and other similar criteria help investors choose between different types of securities and sectors.

4. Creditors: Creditors, using ratio analysis, may rest certain that their money is safe, since the company is solvent and has access to liquid resources. A business's repayment strategy and capacity may be better understood with the use of this kind of study.

5. Government: When it comes to a company's "financial health," the government takes notice. Ratios that are carefully calculated will show whether or not management strategy is in line with regional and national economic strategies. Such comparisons aid in comprehending cost structures and may provide government justification for price regulations that save consumers.

6. Analysts: To compare the growth and standing of different companies with one another and the industry as a whole, financial analysts use a method called ratio analysis.

10.4 Principles of Ratio Selection

Before deciding on a ratio, keep the following concepts in mind:

(1) Ratios must be rationally connected.

(2) Avoid using pseudo ratios.

(3) The ratio must measure a significant business element.

(4) The cost of collecting information should be considered.

(5) The ratio should be kept to a bare minimum.

(6) The ratio should be consistent among facilities.

Example:

Re-write the following sentence after filling-in the blank spaces with appropriate word:
(i) The _____ reports activity over a period of time.
(ii) The _____ reports activity on a specific point in time.
(iii) Accounts payable is reported as a _____ on the balance sheet.
(iv) All financial statements have _____ that display the company name, name of the report, and date of activity.
Correct answer: (i) income statement. **(ii) balance sheet (iii) Current Liability (iv) Headings**

10.5 Advantages of Ratio Analysis

Ratio analysis is required to establish the link between two accounting numbers in order to highlight important information to management or users who may analyse the company environment and track their performance in a relevant manner. The following are some of the benefits of ratio analysis:

(1) It makes it easier to summarise and simplify accounting information in the needed manner.

(2) It emphasises the interdependence of information and numbers from multiple business areas.

(3) Ratio analysis aids in the elimination of all types of waste and inefficiencies.

(4) It gives managers with the knowledge they need to make timely business decisions.

(5) It assists management in carrying out its tasks such as planning, organising, managing, directing, and predicting more successfully.

(6) Ratio analysis identifies lucrative and inefficient operations. As a result, management may focus on unprofitable tasks and discuss ways to enhance efficiency.

(7) Ratio analysis is employed as a measuring stick for effective management of business activity performance.

(8) Ratios are an excellent technique of communicating and alerting owners, investors, creditors, and other parties about the financial health of the company concern.

(9) Ratio analysis is an excellent method for assessing the operational outcomes of businesses.

(10) It improves control over the business's operations and resources.

(11) Ratio analysis may help you develop effective collaboration.

(12) Ratio analysis assists management in determining duties.

(13) Ratio analysis aids in determining the performance of a company's liquidity, profitability, and solvency condition.

10.6 Limitations of ratio analysis

Ratio analysis is one of the most essential approaches for identifying a firm's financial health and weakness. Though ratio analysis is an important and valuable tool for commercial concerns, it is reliant on information from financial statements. In certain cases, when ratios are employed incorrectly, they might lead management astray. The ratio analysis has the following drawbacks:

1. Ratio analysis is performed using financial statements. A number of financial statement restrictions may have an impact on the accuracy or quality of ratio analysis.
2. Ratio analysis is largely reliant on quantitative data and overlooks qualitative data. As a result, precision may be limited.
3. Due to a lack of acceptable criteria for ideal ratios, ratio analysis is a poor gauge of a firm's success.
4. It is not a replacement for financial statement analysis. It is just a technique for assessing the effectiveness of company activity.
5. Ratio analysis certainly allows for some window dressing.
6. It compares ratios across firms, which is problematic owing to variances in accounting and finance processes.
7. Because ratio analysis does not take into account price level changes, these ratios will not assist in drawing relevant conclusions.

10.7 Classification of Ratios

Accounting Ratios are categorised according to the many parties interested in using the ratios. A vast number of accounting ratios are used to determine a company's financial situation for a variety of reasons. Ratios may be generically categorised as follows:

(1) Balance Sheet Ratio Classification

(2) Ratio classification based on profit and loss account.

(3) Ratio classification based on the Mixed Statement (or) Balance Sheet and Profit and Loss Account.

This classification further grouped in to:

I. Liquidity Ratios

II. Profitability Ratios

III. Turnover Ratios

IV. Solvency Ratios

V. Overall Profitability Ratios

These classifications are discussed hereunder:

1. Ratio Classification Based on Balance Sheet: Balance sheet ratios define the connection between two balance sheet elements. Current ratios, fixed asset ratios, capital gearing ratios, liquidity ratios, and so on.

2. Income Statements-Based Classification: These ratios are concerned with the connection between two or more items on the income statement or profit and loss account. For instance, Gross Profit Ratio, Operating Ratio, Operating Profit Ratio, Net Profit Ratio, and so on.

3. Mixed Statement Classification: These ratios are also known as Composite or Mixed Ratios or Inter Statement Ratios. The interstate ratios deal with the link between the profit and loss account and the balance sheet item. Return on Investment Ratio, Net Profit to Total Asset Ratio, Creditor's Turnover Ratio, Earnings Per Share Ratio, and Price Earning Ratio are a few examples.

I. Liquidity Ratios

Short-Term Solvency Ratios are another name for liquidity ratios. The phrase liquidity refers to the ease with which assets may be converted into cash to satisfy short-term obligations. As a result, although liquidity ratios are important in determining a firm's capacity to satisfy its present obligations, they do not disclose how efficiently cash resources may be handled. The following ratios are widely used to assess a firm's liquidity:

(1) Current Ratio.

(2) Quick Ratio (or) Acid Test or Liquid Ratio.

(3) Absolute Liquid Ratio (or) Cash Position Ratio.

(1) Current Ratio

The current ratio represents the connection between current assets and current liabilities. It aims to assess a company's capacity to fulfil its present commitments. The following formula is used to calculate this ratio:

$$\text{Current Ratio} = \frac{\text{Current Assets}}{\text{Current Liabilities}}$$

This ratio's two primary components are current assets and current liabilities. Current assets are assets that can be readily turned into cash within a year. Current obligations, on the other hand, are liabilities that are due within a year. The components of current assets and current liabilities used tocalculate current ratios are shown in the table below:

Components of Current Assets and Current Liabilities

Current Asset		Current Liabilities	
1.	Cash in hand	1.	Sundry Creditors
2.	Cash at bank	2.	Bills Payable
3.	Sundry debtor	3.	Outstanding and Accrued Expenses
4.	Bill receivable	4.	Income Tax Payable
5.	Marketable securities	5.	Short-Term Advances
6.	Other short-term investments	6.	Unpaid or Unclaimed Dividend
7.	Inventory:	7.	Bank Overdraft
	Stock of raw material		
	Stock of work in progress		
	Stock of finished goods		

Interpretation of Current Ratio: The optimal current to voltage ratio is 2: 1. It signifies that current assets twice current liabilities are deemed sufficient. A higher current ratio score reflects the firm's capacity to fulfil its current obligations on schedule. A low current ratio value, on the other hand, indicates that the firm may struggle to pay its current ratio, which is widely regarded as the patriarch of ratios.

Advantages of Current Ratios:

1. The current ratio is used to assess a company's liquidity.
2. It gives an overall view of a company's working capital status.
3. It denotes a company's liquidity.
4. It is a margin of safety, or a buffer of protection against existing creditors.
5. It aids in determining a company's short-term financial situation or short-term solvency.

Disadvantages of Current Ratio:

1. Current ratios are not applicable to all businesses since they are dependent on a variety of other variables.

2. Another current ratio issue is window dressing, such as overvaluation of closing stock.

3. It is a rough measure of a firm's liquidity based only on the number and not the quality of current assets.

Illustration 1:

The following information relates to Mishra & Co. for the year 2003, calculate current ratio:

Current Assets Rs. 5,00,000

Current LiabilitiesRs. 2,00,000

Solution:

$$\text{Current Ratio} = \frac{\text{Current Assets}}{\text{Current Liabilities}}$$

$$= \frac{5,00,000}{2,00,000}$$

$$= 2.5$$

The current ratio of 2.5 means that current assets are 2.5 times of current liabilities.

Illustration 2:

Components of Current Assets and Current Liabilities

Current Liabilities		Current Assets	
Sundry Creditors	40,000	Inventories	1,20,000
Bills Payable	30,000	Sundry debtor	1,40,000
Dividend Payable	36,000	Cash at bank	40,000
Accrued Expenses	14,000	Bill receivable	60,000
Short-Term Advances	50,000	Prepaid expenses	20,000
Share-capital	1,50,000	Machinery	2,00,000
Debentures	2,00,000	Patents	50,000
		Land and Building	1,50,000

Solution:

$$\text{Current Ratio} = \frac{\text{Current Assets}}{\text{Current Liabilities}}$$

Current Assets = Rs. 1,20,000 + 1,40,000 + 40,000 + 60,000 + 20,000

	=	Rs. 3,80,000
Current Liabilities	=	Rs. 40,000 + 30,000 + 36,000 + 14,000 + 50,000
	=	Rs. 1,70,000
Current Ratio	=	3,80,000/ 1,70,00
	=	2.24

(2) Quick Ratio (or) Acid Test or Liquid Ratio

Quick ratio is also known as the Acid Test or Liquid Ratio. It is in addition to the present ratio. The acid test ratio is a more severe and demanding evaluation of a company's capacity to pay its short-term debts when they come due. The Quick Ratio defines the link between quick assets and current liabilities. This ratio is calculated using the formula shown below:

$$\text{Liquid Ratio} = \frac{\text{Current Assets} - \text{Stock} - \text{Prepaid expenses}}{\text{Current Liabilities}}$$

The ideal Quick Ratio of I: I is regarded as adequate. A high Acid Test Ratio indicates that the company is in a comparatively better position to satisfy its present obligations on schedule. A low quick ratio, on the other hand, indicates that the firm's liquidity situation is poor.

Advantages

1. The Quick Ratio is used to assess a company's liquidity condition.
2. It is utilised in addition to the existing ratio.
3. It is utilised to eliminate current ratio flaws.

Illustration 3:

Calculate Quick Ratio from the information given below:

Current Assets	4,00,000
Current Liabilities	2,00,000
Inventories (stock)	25,000
Prepaid Expenses	25,000
Land and Building	4,00,000
Share Capital	3,00,000
Good Will	2,00,000

Solution:

$$\text{Quick Ratio} = \frac{\text{Quick Assets}}{\text{Current Liabilities}}$$

$$= \frac{\text{Rs. } 4{,}00{,}000 - (25{,}000 + 25{,}000)}{\text{Rs. } 2{,}00{,}000}$$

$$= \frac{\text{Rs. } 3{,}50{,}000}{\text{Rs. } 2{,}00{,}000}$$

$$= \frac{1.75}{1}$$

(3) Absolute Liquid Ratio

The Absolute Liquid Ratio is also known as the Cash Position Ratio (or) the Over Due Liability Ratio. The link between absolute liquid assets and current liabilities was established by this ratio.

Absolute liquid assets comprise cash on hand, cash on deposit, and marketable securities or short-term investments. The ideal value for this ratio should be one, or 1: 2. It denotes that 50% of absolute liquid assets are deemed sufficient to satisfy 100% of current commitments on schedule. If the ratio is less than one, it indicates that the company's day-to-day cash management is weak. If the ratio is much more than one, the absolute liquid ratio indicates adequate cash to satisfy the company's short-term commitments on time. The Absolute Liquid ratio is computed by dividing the Absolute Liquid Assets total by the Total Current Liabilities total. Thus,

$$\text{Absolute Liquid Ratio} = \frac{\text{Absolute Liquid Assets}}{\text{Current Liabilities}}$$

Illustration 4:

Calculate Absolute Liquid Ratio from the following Information

Current Liabilities		Current Assets	
Bills Payable	30,000	Goodwill	2,00,000
Sundry Creditors	20,000	Land and Building	2,00,000
Share-capital	1,00,000	Inventories	50,000
Debentures	2,00,000	Cash at hand	30,000
Bank overdraft	25,000	Cash at bank	20,000
		Sundry debtors	50,000
		Bill payable	75,000
		Marketable securities	10,000

Solution:

Absolute Liquid Ratio = $\frac{\text{Absolute Liquid Assets}}{\text{Current Liabilities}}$

Absolute Liquid Assets = Cash in Hand + Cash at Bank + Marketable Securities

= Rs. 30,000 + 20,000 + 10,000 = Rs.60,000

Current Liabilities = Rs. 30,000 + 20,000 + 25,000 = Rs.75,000

Absolute Liquid Ratio = 60,000/75000

= 0.8

The ratio of 0.8 is quite satisfactory because, it is much higher than the optimum value of 50%.

II. Profitability ratios

Profitability refers to the ability of a commercial activity to generate profits. Profit earning may therefore be appraised based on the volume of profit margin of any activity, which is computed by deducting expenses from total revenue coming to a corporation over a certain time. Profitability A ratio is used to assess a company's overall efficiency or performance. In general, a huge variety of ratios may be employed to determine profitability when it comes to sales or investments.

The following important profitability ratios are discussed below:

1. Gross Profit Ratio.
2. Operating Ratio.
3. Operating Profit Ratio.
5. Return on Investment Ratio.
6. Return on Capital Employed Ratio.
7. Earning Per Share Ratio.
9. Dividend Yield Ratio.
10. Price Earnings Ratio.
11. Net Profit to Net Worth Ratio.

4. Net Profit Ratio. 8. Dividend Pay-out Ratio.

(1) Gross Profit Ratio

The Gross Profit Ratio defined the connection between gross profit and net sales. This figure is arrived at simply dividing Gross Profit by Sales. It is always expressed as a percentage.

$$\text{Gross Profi Ratio} = \frac{\text{Gross Profi}}{\text{Net Sales}} \text{x } 100$$

$$\text{Gross Profi} = \text{Sales} - \text{Cost of Goods Sold}$$

$$\text{Net Sales} = \text{Gross Sales} - \text{Sales Return (or) Return Inwards}$$

A larger Gross Profit Ratio indicates that the company is more profitable. It also shows the firm's effective level of performance. The following elements will result in a higher Gross Profit Ratio.

1. Increase in selling price, i.e., sales that exceed the cost of products sold.
2. A decrease in the cost of items sold while keeping the selling price constant.
3. An rise in selling price without a comparable increase in cost.
4. Improve the sales mix.

A low gross profit ratio generally indicates the result of the following factors:

1. Increase in cost of goods sold.
2. Decrease in selling price.
3. Decrease in sales volume.
4. High competition.
5. Decrease in sales mix.

Advantages

1. It helps in determining the link between gross profit and net sales.
2. It displays the efficiency with which a company manufactures its goods.
3. A low gross profit ratio may imply unfavourable buying and mark-up strategies, according to this ratio.
4. A low gross profit ratio also demonstrates management's failure to expand sales.

Illustration 5:

Calculate Gross Profit Ratio from the following figures (Rs.):

Sales	5,00,000
Sales Return	50,000
Closing Stock	35,000
Opening Stock	70,000
Purchases	3,50,000

Solution:

Gross Profit Ratio = $\frac{\text{Gross}}{\text{Net Sales}}$ x 100

Net Sales = Sales - Sales Return

= Rs. 5,00,000 - 50,000 = Rs. 4,50,000

Gross Profit = Sales - Cost of Goods Sold

Cost of goods sold	=	Opening Stock + Purchase - Closing Stock
	=	Rs. 70,000 + 3,50,000 - 35,000
	=	Rs. 4,20,000 - 35,000 = Rs. 3,85,000
Gross Profit	=	Rs. 4,50,000 - 3,85,000 = Rs. 65,000
Gross Profit Ratio	=	65000*100/4,50,000
	=	14.44%

(2) Operating Ratio

The operational ratio is used to determine the connection between total operating expenditures and revenues. Total operational expenditures include cost of products sold, office and administrative expenses, and selling and distribution charges. This ratio, in other words, reflects a company's capacity to pay overall operating expenditures. The following formula is used to calculate this ratio:

$$\text{Operating Ratio} = \frac{\text{Operating Cost}}{\text{Net Sales}} \text{x } 100$$

Operating Cost = Cost of goods sold + Administrative Expenses+ Selling and Distribution Expenses

Net Sales = Sales - Sales Return (or) Return Inwards.

Illustration 6:

Find out Operating Ratio:

Cost of goods sold	Rs. 4,00,000
Office and Administrative Expenses	Rs. 30,000
Selling and Distribution Expenses	Rs. 20,000
Sales	Rs. 6,00,000
Sales Return	Rs. 20,000

Solution:

Operating Ratio	=	$\frac{\text{Operating Cost}}{\text{Net Sales}} \text{x } 100$
Operating Cost	=	Cost of goods sold + Administrative Expenses+ Selling and Distribution Expenses
	=	Rs. 4,00,000 + 30,000 + 20,000 = Rs. 4,50,000
Net sales	=	Rs. 6,00,000 - 20,000 = Rs. 5,80,000
Operating Ratio	=	4,50,000*100/5,80,000
	=	77.58%

This ratio indicated that 77.58% of the net sales have been consumed by cost of goods sold, administrativeexpenses and selling and distribution expenses. The remaining. 23.42% indicates a firm's ability to cover the interestcharges, income tax payable and dividend payable.

(3) Operating Profit Ratio

Operating Profit Ratio measures the firm's capacity to pay overall operating expenditures and demonstrates its operational efficiency. The Operating Profit Ratio may be computed as follows:

$$\text{Operating Profi Ratio} = \frac{\text{Operating Profi}}{\text{Net Sales}} \times 100$$

Operating Profit = Net Sales - Operating Cost

Or

= Net Sales - (Cost of Goods Sold + Officeand Administrative Expenses + Selling and Distribution Expenses)

Or

= Gross Profit - Operating Expenses

Or

= Net Profit + Non-Operating Expenses -Non-Operating Income.

Net Sales = Sales - Sales Return (or) Return Inwards

Illustration 7:

From the following information given below, you are required to calculate Operating Profit Ratio (Rs):

Gross Sales	6,50,000
Sales Return	50,000
Opening Stock	25,000
Closing Stock	30,000
Purchases	4,10,000
Office and Administrative Expenses	50,000
Selling and Distribution Expenses	40,000

Solution:

Operating Profit Ratio = $\frac{\text{Operating Profi}}{\text{Net Sales}} \times 100$

Operating Profit = Net Sales - Total Operating Cost

Net Sales = Gross Sales - Sales Return

= Rs. 6,50,000 - 50,000 = Rs. 6,00,000

Total Operating Cost = Cost of Goods Sold + Office and AdministrativeExpenses + Selling and Distribution Expenses

Cost of Goods sold = Opening Stock + Purchase - Closing Stock

= Rs. 25,000 + 4,10,000 - 30,000 = Rs. 4,05,000

Total Operating Expenses = Rs. 4,05,000 + 50,000 + 40,000 = Rs. 4,95,000

Operating Profit = Net Sales - Total Operating Expenses

= Rs. 6,00,000 - 4,95,000 = Rs. 1,05,000

Operating Profit Ratio = 1,05,000*100/ 6,00,000

= 17.5

(4) Net Profit Ratio

The Net Profit Ratio is also known as the Sales Margin Ratio, the Profit Margin Ratio, and the Net Profit to Sales Ratio. This ratio reflects the firm's overall efficiency in business operations. The net profit ratio measures the connection between net profit (before or after taxes) and sales. The following formula may be used to compute this ratio:

$$\text{Net Profi Ratio} = \frac{\text{Net Profi After Tax}}{\text{Net Sales}} \times 100$$

Non-operating income and profits are included in net profit. Non-operating income includes dividends, interest on investments, profit on fixed asset sales, commissions, discounts, and so forth. Profit or Sales Margin denotes the margin available after deducting manufacturing costs, other operational expenditures, and income tax from sales revenue. A higher Net Profit Ratio implies that the firm is doing well.

Advantages

1. This is the most accurate indicator of profitability and liquidity.
2. It aids in determining the overall operational effectiveness of the company concern.
3. It makes it easier to make or purchase choices.
4. It aids in determining the management efficiency with which a firm's resources are used to createrevenue on its invested capital.
5. The net profit ratio is an excellent tool for evaluating investment opportunities.

(5) Return on Investment Ratio

This ratio is also known as ROL. This ratio calculates the return on the investment of the owner or shareholders. This ratio provides the connection between net profit after taxes and the owner's investment. This is usually expressed as a percentage. As a result, this ratio may be computed as follows:

$$\text{Return on Investment Ratio} = \frac{\text{Net Profi (after interest and tax)}}{\text{Shareholders' Fund (or) Investments}} \times 100$$

Shareholder's Investments = Equity Share Capital + PreferenceShare Capital + Reserves and Surplus- Accumulated Losses

Net Profit = Net Profit - Interest and Taxes

Advantages:

1. This ratio highlights the success of the business from the owner's point of view.
2. It helps to measure an income on the shareholders' or proprietor's investments.
3. This ratio helps to the management for important decisions making.
4. It facilitates in determining efficiently handling of owner's investment.

Illustration 8:

Calculate Return on Investment Ratio from the following information :

1000 Equity shares @ of Rs.lO each	10,000
2000, 5% preference share @ of Rs. lO each	20,000
Reserve	5,000
Net profit before interest and Tax	10,000
Interest	2,000
Taxes	3,000

Solution:

Return on Investment Ratio = $\frac{\text{Net Profi (after interest and tax)}}{\text{Shareholders' Fund (or) Investments}} \times 100$

Shareholders' Investment	=	Equity Share Capital + Preference ShareCapital + Reserves and Surplus- Accumulated Losses
Shareholders' Investment	=	Rs.I0,000+ 20,000 + 5,000 – Nil = Rs. 35,000
Net Profit after Interest and Taxes	=	Rs. 10,000 - (2,000 + 3,000) = Rs. 5,000
Return on Investment Ratio	=	5000*100/ 35,000
	=	14.28%

(6) Return on Capital Employed Ratio

The Return on Capital Employed Ratio is a ratio that calculates the connection between profit and capital employed. This ratio is also called as Return on Investment Ratio. Profits or net profits are referred to as return. The word Capital Employed refers to the entire amount of money invested in the firm. The concept of capital employed can be expanded in the following ways:

(a) Gross Capital Employed

(b) Net Capital Employed

(c) Average Capital Employed

(d) Proprietor's Net Capital Employed

Gross Capital Employed	=	Fixed Assets + Current Assets
Net Capital Employed	=	Total Assets - Current Liabilities
Average Capital Employed	=	$\frac{\text{Opening Capital Employed} + \text{Closing Capital Employed}}{2}$
Proprietor's Net Capital Employed	=	Fixed Assets + Current Assets- Outside Liabilities (both long-term and short-term)

In order to compute this ratio, the below presented formulas are used:

Return on Capital Employed = $\frac{\text{Net Profit After Taxes}}{\text{Gross Capital Employed}} \times 100$

Or

Return on Capital Employed = $\frac{\text{Net Profit After Taxes Before Interest}}{\text{Gross Capital Employed}} \times 100$

Or

Return on Capital Employed = $\frac{\text{Net Profit After Taxes Before Interest}}{\text{Average Capital Employed or Net Capital Employed}} \times 100$

(7) Earning Per Share Ratio

Earnings Per Share Ratio (EPS) assesses the earning capability of a company from the perspective of the owner and is useful in evaluating the market price of an equity share. The Earnings Per Share Ratio can be calculated as follows:

$$\text{Earning Per Share Ratio} = \frac{\text{Net Profit After Tax and Preference Dividend}}{\text{No. of Equity Shares}}$$

Advantages

(1) This ratio is used to calculate the market price of a stock.

(2) This ratio emphasises the company's ability to pay dividends to its shareholders.

(3) This ratio is used as a benchmark to assess the company's overall performance.

Illustration 9:

Calculate the Earnings Per Share from the following data:

Net Profit before tax Rs. 2,00,000.Taxation at 50% of Net Profit.10 % Preference share capital (Rs. 10 each) Rs. 2,00,000, Equity share capital (Rs. 10 each)Rs. 2,00,000.

Solution:

Earning Per Equity Share = $\frac{\text{Net Profit After Tax and Preference Dividend}}{\text{No. of Equity Shares}}$

Net Profit before Tax = Rs. 2,00,000

Taxation at 50 % of Net Profit = $2,00,000 \times \frac{50}{100} = Rs.\ 1,00,000$

Net Profit after Tax = Rs. 2,00,000 - 1,00,000 = Rs 1,00,000

10 % of Preference Dividend = $2,00,000 \times \frac{10}{100}$

= 20,000

Net Profit after Tax and = Rs. 1.00,000 - 20,000

Preference Dividend = Rs. 80,000

No. of Equity Shares = $\frac{2,00,000}{10}$

= 20,000

Earning Per Equity Share = $\frac{80,000}{20,000}$

= Rs. 4 per share

(8) Dividend Payout Ratio

This ratio emphasises the link between dividend payments on equity share capital and profits available after deducting taxes and preference dividends. This ratio reflects senior management's dividend policy about the use of divisible earnings to pay dividends, retain, or both. As a result, the ratio can be calculated as follows:

$$\text{Dividend Payout Ratio} = \frac{\text{Equity Dividend}}{\text{Net Profit After Tax and Preference Dividend}} \times 100$$

Illustration 10:

Compute Dividend Payout Ratio from the following data:

Net Profit	Rs. 60,000
Provision for tax	Rs. 15,000
Preference dividend	Rs. 15,000
No. of Equity Shares	Rs. 6,000

Dividend Per Equity Share = 0.30

Solution:

$$\text{Dividend Payout Ratio} = \frac{\text{Equity Dividend}}{\text{Net Profi After Tax and Preference Dividend}} \times 100$$

Equity Dividend = No. of Equity Shares x Dividend Per Equity Share

= 6,000 x 0.30 = Rs. 1800

Net Profit After Tax = Rs. 60,000 - (15,000 + 15,000)

Preference Dividend = Rs. 60,000 - 30,000 = Rs. 30,000

(9) Dividend Yield Ratio:

Dividend Yield Ratio denotes the established link between dividend per share and market value per share. From the perspective of the investor, this ratio is a crucial determinant in determining dividend income. The following formula may be used to compute it:

$$\text{Dividend Yield Ratio} = \frac{\text{Dividend Per Share}}{\text{Market Value Per Share}} \times 100$$

(10) Price Earning Ratio

This ratio emphasises earnings per share as reflected by market share. The Price Earning Ratio establishes the link between an equity share's market price and its earnings per share. This ratio may be used to determine if a company's equity shares are cheap or not. This ratio may also be used for financial forecasting. This ratio is determined as follows::

$$\text{Price Earning Ratio} = \frac{\text{Market Price Per Equity Share}}{\text{Earning per share}}$$

(11) Net Profit to Net Worth Ratio

The profit return on investment is calculated using this ratio. This ratio represents the pre-existing link between net profit and shareholder net wealth. It is a payoff for taking on ownership risk. This ratio is determined as follows:

$$\text{Net Profi to Net Worth} = \frac{\text{Net Profi After Taxes}}{\text{Shareholders' Net Worth}} \times 100$$

Shareholder Net Worth = Total Tangible Net Worth

Total Tangible Net Worth = Company's Net Assets - Long-Term Liabilities

(or)

= Shareholders' Funds + Profits Retained in business

III. Turnover ratios

Turnover ratios are also known as efficiency ratios, performance ratios, and activity ratios. Turnover Ratios emphasise various aspects of financial statements to meet the needs of various stakeholders interested in the firm. It also indicates the efficiency with which various assets in a business are vitalized. Turnover refers to the number of times assets are converted or sold. The activity ratios show how quickly certain assets are turned over.

Depending upon the purpose, the following activities or turnover ratios can be calculated:

1. Inventory Ratio or Stock Turnover Ratio (Stock Velocity)
2. Debtor's Turnover Ratio or Receivable Turnover Ratio (Debtor's Velocity)

   Debtor's Collection Period Ratio
3. Creditor's Turnover Ratio or Payable Turnover Ratio (Creditor's Velocity)

   Debt Payment Period Rati
4. Working Capital Turnover Ratio
5. Fixed Assets Turnover Ratio
6. Capital Turnover Ratio.

(1) Stock Turnover Ratio

This ratio is often referred to as the Inventory Ratio or the Stock Velocity Ratio. Inventory includes raw materials, work in progress, and completed commodities. This ratio is used to determine whether or not an investment in stock in trade is being used properly. It reveals the relationship between sales and cost of goods sold or average inventory at cost price or average inventory at selling price. Stock Turnover Ratio denotes the number of times stock has been turned over in a certain period of time. When applying this ratio, keep in mind the season and the condition. Price trend, supply situation, and so forth. The following equations are used to calculate this ratio:

$$\text{Stock Turnover Ratio} = \frac{\text{Cost of Goods Sold}}{\text{Average Inventory at Cost}}$$

Cost of Goods Sold = Opening Stock + Purchases + DirectExpenses - Closing Stock

Or

= Total Cost of Production + Opening Stockof Finished Goods - Closing Stock of FinishedGoods

Total Cost of Production = Cost of Raw Material Consumed+ Wages + Factory Cost

Or

= Sales - Gross Profit

$$\text{Average Stock} = \frac{\text{Opening Stock} + \text{Closing Stock}}{2}$$

$$\text{Stock Turnover Ratio} = \frac{\text{Net Sales}}{\text{Average Inventory at Cost}}$$

$$\text{Stock Turnover Ratio} = \frac{\text{Net Sales}}{\text{Average Inventory at Selling Price}}$$

$$\text{Stock Turnover Ratio} = \frac{\text{Net Sales}}{\text{Inventory}}$$

Advantages

(1) This ratio reveals whether or not investment in stock in trade is being utilised effectively.

(2) This ratio is widely used as a measure of whether or not a stock investment is within acceptable limits.

(3) This ratio emphasises the company's operational efficiency.

(4) This ratio is useful in assessing stock usage.

Illustration 11:

From the following information calculate stock turnover ,ratio:

Gross Sales	Rs. 5,00,000
Sales Return	Rs. 25,000
Opening Stock	Rs. 70,000
Closing Stock at Cost	Rs. 85,000
Purchase	Rs. 3,00,000
Direct Expenses	Rs. 1,00.000

Solution:

Inventory Turnover Ratio = $\frac{\text{Cost of Goods Sold}}{\text{Average Inventory at Cost}}$

Cost of Goods Sold = Opening Stock + Purchases + Direct Expenses - Closing Stock

= Rs. 70,000 + 3,00,000 + 1,00,000 - 85,000 = Rs. 3,85,000

Average Stock = $\frac{\text{Opening Stock} + \text{Closing Stock}}{2}$

= (70,000 + 85,000)/2 = Rs. 77,500

Inventory Turnover Ratio = 3,85,000/77,500 = 4.97 times

(2) Debtor's Turnover Ratio

Receivable Turnover Ratio or Debtor's Velocity are other names for Debtor's Turnover Ratio. Receivables and debtors are the unpaid fraction of credit sales. The debtor's velocity is the number of times receivables are handed over in business within a certain period. In other words, it shows the speed with which debtors are transformed into cash. It is used to assess a company's liquidity condition. The link between receivables and sales is established by this ratio. On the basis of credit collection efficiency and credit policy, two types of ratios may be used to assess a firm's liquidity status. They are as follows: (A) Debtor Turnover Ratio and (B) Debt Collection Period. These ratios may be calculated as follows:

Debtor's Turnover Ratio = $\frac{\text{Net Credit Sales}}{\text{Average Receivables}}$

Net Credit Sales = Total Sales - (Cash Sales + Sales Return)

Accounts Receivable = Sundry Debtors or Trade Debtors + Bills Receivable

Average Accounts Receivable = $\frac{\text{Opening Receivable} + \text{Closing Receivable}}{2}$

2 (A) Debt Collection Period Ratio

This ratio reflects the efficiency of the debt collection period as well as the extent to which the debt has been converted into cash. This ratio works in tandem with the Debtor Turnover Ratio. It is extremely useful to management because it represents the typical debt collection period. The following formula may be used to compute the ratio:

Debt Collection Period Ratio = $\frac{\text{Months (or)Days in a year}}{\text{Debtor's Turnover}}$

Or

Debt Collection Period Ratio = $\frac{\text{Average Accounts Receivable x Months (or) Days in a year}}{\text{Net Credit Sales for the year}}$

Advantages of Debtor's Turnover Ratio

(1) This percentage reflects the efficiency of the firm's credit collection and credit strategy.

(2) This ratio assesses the creditworthiness of borrowers.

(3) It helps a business to assess the sufficiency of a company's liquidity condition.

(4) This ratio emphasises the likelihood of bad loans hidden among trade debtors.

(5) This ratio counts the number of times receivables are handed over in a firm within a certain time period.

Illustration 12:

From the following information calculate:

(a) Debtor's Turnover Ratio and(b) Debt Collection Period Ratio

Total Sales	Rs. 1,00,000
Cash Sales	Rs. 25,000
Sales Return	Rs. 5,000
Opening Accounts Receivable	Rs. 10,000
Closing Accounts Receivable	Rs. 15,000

Solution:

a)

$$\text{Debtor's Turnover Ratio} = \frac{\text{Net Credit Sales}}{\text{Average Receivables}}$$

Net Credit Sales = Total Sales - (Cash Sales + Sales Return)

= Rs. 1,00,000 - (25,000 + 5,000) = Rs. 70,000

$$\text{Average Receivables} = \frac{\text{Opening Receivables} + \text{Closing Receivables}}{2}$$

= 25000/2 = Rs. 12,500

$$\text{Debtor's Turnover Ratio} = \frac{70,000}{12,500}$$

= 5.6 times

b)

$$\text{Debt Collection Period Ratio} = \frac{\text{Month (or) Days in a year}}{\text{Debtor's Turnover}}$$

$$\text{Net Credit Sales} = \frac{12}{5.6} = 2.14 \text{ month}$$

(3) Creditor's Turnover Ratio

The creditor turnover ratio is also known as the payable turnover ratio or the creditor's velocity. Credit purchases are reflected in the purchasing company' accounts as Creditors to Accounts Payable. Accounts Payable or Trade Creditors refers to various creditors and invoices payable. The link between net credit purchases and average trade creditors is established by this ratio. The creditor's velocity ratio displays the frequency with which payments are made to the supplier in relation to credit purchases. Two types of ratios may be used to assess a company's payable efficiency in relation to credit purchases. They are as follows: (1) Creditor Turnover Ratio (2) Creditor Payment Period or Average Payment Period The following formulae may be used to compute the ratios:

$$\text{Creditor's Turnover Ratio} = \frac{\text{Net Credit Purchases}}{\text{Average Accounts Payable}}$$

Net Credit Purchases = Total Purchases - Cash Purchases

$$\text{Average Accounts Payable} = \frac{\text{Opening Payable} + \text{Closing Payable}}{2}$$

Average Payment Period $= \frac{\text{Month (or) Days in a year}}{\text{Creditors Turnover Ratio}}$

or

$= \frac{\text{Average Trade Creditors}}{\text{Net Credit Purchases}} \times 365$

(4) Working Capital Turnover Ratio

This ratio emphasises the efficient use of working capital in relation to sales. This ratio reflects the firm's liquidity situation. It provides a link between the cost of sales and the cost of networking capital. The following formula is used to compute this ratio:

pute this ratio:

Working Capital Turnover Ratio $= \frac{\text{Net Sales}}{Working\ capital}$

Net Sales = Gross Sales - Sales Return

Work Capital = Current Assets - Current Liabilities

Illustration 13:

Calculate Working Capital Turnover Ratio :

Current Assets	Rs. 3,20,000
Current Liabilities	Rs. 1,10,000
Gross Sales	Rs. 4,00,000
Sales Return	Rs. 20,000

Solution:

Working Capital Turnover Ratio $= \frac{\text{Net Sales}}{Working\ Capital}$

Net Sales = Gross Sales - Sales Return

= Rs. 4,00,000 - 20,000 = Rs. 3,80,000

Working Capital = Current Assets - Current Liabilities

= Rs. 3,20,000 - 1,10,000 = Rs. 2,10,000

Working Capital Turnover Ratio = 3,80,000/ 210000= 1.80 times

(5) Fixed Assets Turnover Ratio

This ratio measures the effectiveness of asset management. The Fixed Assets Turnover Ratio is a metric used to assess the usage of fixed assets. This ratio defines the link between total fixed assets and cost of goods sold. A higher ratio indicates that a company has effectively used its fixed assets. If the ratio is low, it suggests that fixed assets are underutilised. The ratio may alternatively be computed as follows:

Fixed Assets Turnover Ratio $= \frac{\text{Cost of Goods Sold}}{\text{Total Fixed Assets}}$

Or

$= \frac{Sales}{\text{Net Fixed Assets}}$

(6) Capital Turnover Ratio

This ratio assesses the effectiveness of a company's capital usage. This ratio creates the link between sales and capital employed or shareholders' money and cost of sales. This ratio may alternatively be computed as follows:

$$\text{Capital Turnover Ratio} = \frac{\text{Cost of Sales}}{\text{Capital Employed}} \text{ or } \frac{\text{Sales}}{\text{Capital Employed}}$$

$$\text{Capital Employed} = \text{Shareholders' Funds} + \text{Long-Term Loans} \text{ or}$$

$$= \text{Total Assets - Current Liabilities}$$

$$\text{Capital Turnover Ratio} = \frac{\text{Cost of Sales}}{\text{Shareholders' Fund}} \text{ or } \frac{\text{Sales}}{\text{Shareholders' Fund}}$$

Components of Capital Employed (Shareholders' Fund + Long-Term Loans)

(1) Equity Share Capital

(2) Preference Share Capital

(3) Debentures

(4) Long-Tenn Loans

(5) Share Premium

(6) Credit Balance of Profit and Loss Account

(7) Capital Reserve

(8) General Reserve

(9) Provisions

(10) Appropriation of Profits

IV. Solvency ratios

The word "solvency" often refers to a company's ability to satisfy its short-term and long-term commitments. Creditors, bank loans, and invoices due are examples of short-term responsibilities. Long-term commitments include debentures, long-term loans, and long-term creditors, among other things. The Solvency Ratio measures a company's ability to run its operations successfully and satisfy all of its commitments. The importance of liquidity and turnover ratios in determining a company's short-term solvency has previously been discussed. Only the long-term solvency ratios are discussed in this section of the chapter. Some of the key ratios to consider when determining a company's solvency are as follows:

(1) Debt - Equity Ratio

(2) Proprietary Ratio

(3) Capital Gearing Ratio

(4) Debt Service Ratio or Interest Coverage Ratio

(1) Debt Equity Ratio

This ratio is also known as the External-Internal Equity Ratio. This ratio is used to determine the firm's liabilities to creditors in proportion to the amount of money invested by the owners. The optimal debt-to-equity ratio is one to one. This ratio also shows all external liabilities in relation to owner-recorded claims. It can be calculated as follows:

$$\text{Debt - Equity Ratio} = \frac{\text{External Equities}}{\text{Internal Equities}}$$

Or

Debt - Equity Ratio $= \frac{\text{Outsider's Funds}}{\text{Shareholders' Funds}}$

The term External Equities refers to total outside liabilities and the term Internal Equities refers to allclaims of preference shareholders and equity shareholders' and reserve and surpluses.

Debt - Equity Ratio $= \frac{\text{Total Long} - \text{Term Dept}}{\text{Total Long} - \text{Term Funds}}$

Or

Debt - Equity Ratio $= \frac{\text{Total Long} - \text{Term Debt}}{\text{Shareholders' Funds}}$

The term Total Long-Term Debt refers to outside debt including debenture and long-term loans raisedfrom banks.

Illustration 14:

From the following figures calculate Debt Equity Ratio:

Preference Share Capital	1,50,000
Equity Share Capital	5,50,000
Capital Reserve	2,00,000
Profit and Loss Account	1,00,000
6 % Debenture	2,50,000
Sundry Creditors	1,20,000
Bills Payable	60,000
Provision for taxation	90,000
Outstanding Creditors	80,000

Solution:

a) Debt Equity Ratio $= \frac{\text{External Equities}}{\textit{Internal} \text{ Equities}}$

External Equities = Debenture + Sundry Creditors+ Bills Payable + Provision for taxation+ Outstanding Creditors

= Rs. 2,50,000 + 1,20,000 + 60,000 + 90,000 + 80,000

= Rs. 6,00,000

Internal Equities = Preference Share Capital + Equity Share Capital+ Capital Reserve + Profit and Loss A/c

= Rs. 1,50,000 + 5,50,000 + 2,00,000 + 1,00.000

= Rs. 10,00,000

Debt Equity Ratio = 6,00,000/ 10,00,000 = 0.6 (or) 3 : 5

(b) Dept Equity Ratio $= \frac{\text{Total Long} - \text{Term Debt}}{\text{Shareholders' Funds}}$

Total Long-Term Debt = Rs. 2,50,000

Shareholders' Fund = Rs. 10,00,000

Debt-Equity Ratio = Rs. 2,50,000/ Rs. 10,00,000 = 0.25

(c) Debt Equity Ratio $= \frac{\text{Total Long} - \text{term Debt}}{\text{Total Long} - \text{term Funds}}$

= 2,50,000/ 12,50,000 = 0.2

(d) Debt Equity Ratio $= \frac{\text{Outsider's Fund}}{\text{Shareholders' Fund}}$

Outsider's Fund = Total Outside Liabilities = Rs. 6,00,000

Debt Equity Ratio = Rs. 6,00,000/ Rs. 10,00,000 = 0.6

(2) Proprietary Ratio

The proprietary ratio is often referred to as the capital ratio or the net worth to total asset ratio. This is one of the Debt-Equity Ratio variations. Net Worth is another phrase for private fund. This ratio depicts the link between the fund of shareholders and total assets. It may be computed as follows:

Proprietary Ratio $= \frac{\text{Shareholders' Fund}}{\text{Total Assets}}$

Shareholders' Fund = Preference Share Capital + Equity Share Capital+ All Reserves and Surplus

Total Assets = Tangible Assets + Non-Tangible Assets+ Current Assets (or) All Assets including Goodwill

(3) Capital Gearing Ratio

This is also known as the Capitalization or Leverage Ratio. This is an example of a Solvency Ratio. The link between fixed interest and/or fixed dividend bearing securities and the equity shareholders' money is referred to as capital gearing. It may be computed as follows:

Capital Gearing Ratio $= \frac{\text{Equity Share Capital}}{\text{Fixed Interest Bearing Funds}}$

Equity Share Capital = Equity Share Capital + Reserves and Surplus

Fixed Interest Bearing Funds = Debentures + Preference Share Capital+ Other Long-Term Loans

A high capital gearing ratio shows that a corporation has a substantial amount of cash bearing fixed interest and/or dividends in comparison to equity share capital. A low capital gearing ratio indicates that preference share capital and other fixed-income loans are smaller than equity share capital.

(4) Debt Service Ratio

The debt service ratio is also known as the interest coverage ratio or the fixed charges coverage ratio. This ratio provides the link between the net profit before interest and tax and the fixed interest costs. It is used as a benchmark by lenders to determine whether or not a firm will be able to pay its interest on a regular basis. The debt service ratio is determined using the following formula:

$$\text{Interest Coverage Ratio} = \frac{\text{Net Profi before Interest and Income Tax}}{\text{Fixed Interest Charges}} \times 100$$

V. Overall profitability ratio

This ratio is used to assess a company's total profitability based on its level of operational efficiency. This ratio creates the connection between profit on sales and profit on investment turnover. All Profitability Ratios may be determined in the following ways:

$$\text{Overall Profitability Ratio} = \frac{\text{Net Profit}}{Sales} \times \frac{Sales}{\text{Total Assets}}$$

Summary

• Accounting ratios are numerical correlations between numbers that have a cause and effect relationship or are related in some other way.

• Ratios may be characterised depending on the assertion upon which they are founded, their purpose, and their significance.

• Profitability ratios, turnover ratios or activity ratios, financial ratios or solvency ratios, and market test ratios are the several types of functional ratios.

Keywords

- Liquidity Ratios
- Profitability Ratios
- Turnover Ratios
- Solvency Ratios
- Current ratio
- Net Profit to Net Worth Ratio
- Return on Capital Employed Ratio
- Net Profit Ratio

SelfAssessment

1. Ratio Analysis is useful for inter-firm comparison.

A. True

B. False

2. Activity Ratios Turnover Ratios are the same

A. True

B. False

3. Current Ratio measures the liquidity of the business.

A. True

B. False

4. Ratio analysis measures profitability efficiency and financial soundness of the business.

A. True

B. False

5. Usually the current ratio should be 3:1.

A. True

B. False

6. The working capital ratio is regarded as fundamental measurement of a company's liquidity.

A. True

B. False

7. The acid test ratio is regarded primarily as a measure of a company's long term liquidity situation.

A. True

B. False

8A small business looking to acquire a short-term loan is most concerned with which type of ratio?

A. Solvency

B. Profitability

C. Liquidity

D. Comparative

9. Goodman's has current assets of $2,500,000 and current liabilities of $1,000,000. If Goodman pays $250,000 of its accounts payable, what will the firm's new current ratio be?

A. 2:1

B. 1.2:1

C. 3:1

D. 5:1

10. When a firm's current assets exceed its current liabilities, the firm's _____ if the firm pays off a short-term liability

A. current ratio will increase

B. current ratio will decrease

C. current ratio will remain the same

D. working capital will increase

11. The financial statements of the Otter Company report net sales of $800,000 and accounts receivable of $40,000 and $20,000 at the beginning of the year and end of the year, respectively. What is the accounts receivable turnover for the Otter Company?

A. 13.3 times

B. 26.7 times

C. 21 times

D. 17.4 times

12. On its 20x7 balance sheet, Wenger Corporation reported assets of $4,370,000, current liabilities of $589,000, noncurrent liabilities of $1,286,000, and owner's equity of $2,495,000. Based on this, the company's debt to asset ratio is

A. 13.5%

B. 42.9%

C. 33.7%

D. 21.9%

13. Which stakeholder would be most interested in the liquidity of a company?

A. Investor

B. competitor

C. supplier

D. bondholder

14. Given no other changes, which of the following actions would effectively increase a firm's financial leverage index?

A. The firm issues new common stock and retires some of its long-term debt

B. The firm purchases new long-term assets and pays for the purchase with long-term debt.

C. The firm reduces operating expenses by cutting employee benefits.

D. The firm refinances its existing long-term debt at a lower interest rate.

15.Carlos Company had beginning inventory of $80,000, ending inventory of $110,000, cost of goods sold of $285,000, and sales revenue of $475,000. Carlos's days in inventory is

A. 70.1 Days

B. 121.7 Days

C. 85.9 Days

D. 63.4 Days

Answer for SelfAssessment

1.	A	2.	A	3.	A	4.	A	5.	A
6.	A	7.	B	8.	C	9.	C	10.	A
11.	B	12.	B	13.	C	14.	B	15.	B

Review Questions

1. Explain the significance of ratio analysis in financial management.

2.Explain briefly the different ratios that are commonly used and show how they are useful in financialanalysis.

3. Explain different ratios coming under:

(a) Profitability ratios

(b) Overall measure of efficiency ratio

4. Write short notes on:

(a) Liquidity test ratio

(b) Acid test ratio

(c) Profitability test ratios

(d) Turnover ratios.

5. "Inter-firm comparison is carried out with the help of ratios although they are not exclusive andconclusive indicators of performance". Examine.

6. What are the trend ratios? Explain the technique of computing trend ratios.

7. Ratio analysis is widely used as a tool of financial analysis, yet it suffers from various limitations. Explain.

8. What you understand by Liquidity ratios? Discuss their significance.

9. You are given the following information:

Cash in Hand	10,000
Cash at Bank	15,000
Sundry Debtors	75,000
Stock	60,000
Bills Payable	25,000
Bills Receivable	30,000
Sundry Creditors	40,000
Outstanding Expenses	20,000
Prepaid Expenses	10,000
Dividend Payable	15,000
Land and Building	2,00,000
Goodwill	1,00,000

Calculate: (a) Current Ratio (b) Liquid Ratio (c) Absolute Liquidity Ratio

10. Given:

Current Ratio	=	2.6
Liquid Ratio	=	1.4
Working Capital	=	Rs. 1,10,000

Calculate: (I) Current Assets (2) Current Liabilities (3) Liquid Assets and (4) Stock.

11. Calculate Operating profit Ratio from the following figures:

Net Sales	=	Rs. 4,00,000
Cost of Goods Sold	=	Rs. 3,00,000
Office and Administrative Expenses	=	Rs. 20,000
Selling and Distribution Expenses	=	Rs. 15,000

12. The following details have been given to you for MIs I.M. Pandey Ltd., you are required to find out(1) Dividend Yield Ratio (2) Dividend Payout Ratio and (3) Earning Per Share Ratio.

10 % Preference Shares of Rs. 10 each	Rs. 5,00,000

60,000 Equity Shares of Rs. 10 each	Rs. 6,00,000
	Rs. 11,00,000

Additional Information

Profit after tax at 50 %

Equity Dividend Paid 20 %

Market Price of Equity Share Rs. 30

13. Compute: (1) Earning Per Share (2) Dividend Yield Ratio from the following information:

Net Profit = Rs. 3,00,000

Market Price Per Equity Share = Rs. 40

No. of Equity Shares = 30,000

Provision for Tax = Rs. 50,000

Preference Dividend = Rs. 30,000

14. Compute Net Profit to Net Worth Ratio from the following data:

Net Profit	80,000
Provision for Tax	15,000
Shareholders' Fund	8,00,000
Dividend to Equity Shares	20,000
Dividend to Preference Shares @ 10 %	10,000

15. Calculate Debtor's Turnover Ratio, from the following data:

Sundry Debtors as on	1.1.2022	70,000
Sundry Debtors as on	31.12.2022	90,000
Bills Receivable as on	1.1.2022	20,000
Bills Receivable as on	31.12.2022	30,000
Total Sales for the year 2022		7,00,000
Sales Return		20,000
Cash sales for the year 2022		1,00,000

16. The following information is given about MIs Gowda Ltd. for the year ending Dec. 31't 2022:

(a) Share Capital	Rs. 8,40,000
(b) Bank Overdraft	Rs. 50,000
(c) Working Capital	Rs. 2,52,000
(d) Current Ratio	= 2.5 :1
(e) Quick Ratio	= 1.5 : 1
(t) Gross Profit Ratio	= 20 % on sales
(g) Stock Turnover Ratio	= 5 times
(h) Sales for 2022	Rs. 5,00,000
(i) Trade Debtors	Rs. 70,000
(j) Opening Creditors	Rs. 40,000
(k) Closing Creditors	Rs. 30,000

(I) Closing Stock is Rs. 20,000 higher than the opening stock

Find out:

(a) Current Assets and Current Liabilities.

(b) Cost of goods sold, Average stock and Purchases.

(c) Creditor's Turnover Ratio.

(d) Creditor's Payment Period.

(e) Debtor's Turnover Period.

(t) Debtor's Collection Period.

(g) Working Capital Turnover Ratio.

17. Find out Fixed Assets Turnover Ratio from the following information :

Total Fixed Assets	Rs. 6,00,000
Gross Profit	20 % on sales
Net Sales	Rs. 8,00,000
Debenture	Rs. 2,00,000
Share Capital	Rs. 3,00,000

18. Find out Fixed Assets Gross Profit and Cost of Sales from the following information:

Sales Rs. 5,00,000

Gross Profit Ratio 20 %

Fixed Assets Turnover Ratio (on cost of sales) 4 times.

19. From the following information, you are required to find out Capital Gearing Ratio:

Preference Share Capital	5,00,000
Equity Share Capital	6,00,000
Capital Reserve	3,00,000
Profit and Loss Account	1,00,000
12% Debenture	3,00,000
Secured loan	1,00,000

20. From the following information, calculate the following ratios: (a) Debt Equity Ratio

(b) Interest Coverage Ratio (c) Debt to Total Fund Ratio (d) Return on Investment Ratio and (e)Capital Turnover Ratio

Share Capital	3,20,000
General Reserve	1,20,000
Profit and Loss a/c	2,00,000
Loan @ 15% interest	4,00,000
Sales for the year	11,20,000
Tax Paid during the year	80,000
Profit for the year after interest and tax	1,60,000

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Unit 13: Cash Flow Statement

CONTENTS

Objectives

After studying this unit, you will be able to:

- Understand Cash Flow Statement and its Classification
- Prepare the cash flow (Direct & Indirect) statement
- Analyze usefulness of Cash Flow Statement.

Introduction

The cash flow statement is important in providing consumers of financial statements with a foundation to analyze the organization's capabilities to create cash and the organization's requirements to use those cash flows. The money flow statement reveals the movement of funds during the year, i.e. how the organization received funds and how it used its cash.

13.1 Cash Flow Statement

Cash flow is the lifeblood of a firm and plays an important part in the overall economic life. As mentioned in the preceding chapter, the term "fund" refers to "currency" in a narrower meaning. When cash is employed as a 'fund,' the study focuses on cash mobility. The actual movement of cash into and out of a company is referred to as cash flows. In other words, cash mobility includes both cash inflows and cash outflows. When money enters an organization, it is referred to as a 'Inflow of Cash.' Similarly, when cash flows out of a firm, it is referred to as "Cash Outflow."

To guarantee that cash flows are enough to fulfill current obligations such as tax payments, salaries, and sums owed to trade creditors, it is necessary to create a summary of changes in a firm's financial situation on a cash basis, known as a "Cash Flow Statement." This statement depicts the change in cash position from one period to the next.

13.2 Uses of Cash Flow Statement

The Cash Flow Statement is a crucial tool for management when making key financial decisions. This statement can be used in the following ways:

(I) This Statement is the most beneficial in formulating dividend and retention policies for management.

(2) It assists management in evaluating changes in cash situation.

(3) It briefs management on the performance of operational, financial, and investment operations in order for effective decision-making.

(4) It is useful to understand how cash moved and the variables that drove changes in cash flows.

(5) It directs management in making judgments concerning short-term responsibilities.

(6) It also includes information regarding the sources and uses of cash within the specified time period.

13.3 Difference Between Fund Flow Statement and Cash Flow Statement

The Fund Flow Statement and Cash Flow Statement are two essential instruments for financial analysis and financial statement interpretation. However, both assertions vary from one another in the following ways:

(1) The Fund Flow Statement assists in measuring the reasons of changes in working capital, while the Cash Flow Statement focuses on the causes of cash movement within a certain period.

(2) A fund flow statement is created on the basis of total financial resources, while a cash flow statement is prepared on the basis of cash.

(3) The Cash Flow Statement assists management with short-term financial planning, while Fund Flow Analysis assists management with intermediate and long-term financial planning.

(4) A statement of changes in working capital is necessary for the compilation of the Fund flow statement, but not for the cash flow statement.

Lab Exercise:

Re-write the following sentence after filling-in the blank spaces with appropriate word:

(i) The _____ that is prepared to indicate a company's cash situation is called a cash flow statement.

(ii) To know from where cash comes from in a business, a statement is prepared called a _____.

(iii) The statement that provides the information about cash and cash equivalents is called a _____.

(iv) The operating activities of an enterprise are its _____ revenue activity.

Correct answer: (i) statement. (ii) cash flow statement.(iii) cash flow statement.

(iv) principal

13.4 Limitations of Cash Flow Statement

(1) When compared to the Fund Flow Statement, the Cash Flow Statement has a restricted scope. Because it just reveals monetary inputs and outflows. It does not show the company's overall financial status.

(2) Because non-cash costs and profits are eliminated, the Cash Flow Statement cannot offer a complete view of a company's financial status.

(3) The cash flow statement balances should not be regarded as a company's true liquid position since they cannot be readily modified by deferring purchases and other payments.

13.5 Preparation of Cash Flow Statement

The Cash Flow Statement is created in the same way as the Fund Flow Statement is. This statement is prepared based on the movement of cash, which might be a real influx or outflow of cash, the Profit and Loss Account, and other pertinent information. When generating a cash flow statement, it begins with an opening balance of cash in hand and cash at bank, then adds all sources of cash minus cash applications, which is reconciled with the closing balance of cash. At the conclusion of the accounting period, the balance reflects cash and bank balances.

13.6 Sources and Applications of Cash

Sources of Cash (Inflow of Cash)

The following are the main sources of cash such as:

(1) Cash from Operations or Trading Profit.

(2) Sale of Fixed Assets for Cash.

(3) Sale of Investments for Cash.

(4) Raising Long-Term Loans from Banks and Financial Institutions.

(5) Issue of Shares and Debentures for Cash.

Application of Cash (Outflow of Cash)

Application of cash can be involved in the following forms:

(1) Cash Lost in Operations or Trading Losses.

(2) Redemption of Shares and Debentures by Cash.

(3) Purchase of Fixed Assets.

(4) Repayment of Long-Term Loans.

13.7 Computation of Cash Flow Statement

A detailed Cash Flow Statement is created in two stages:

(I) Cash from Operations, Le., internal cash sources estimated by compiling combined accounts of adjusted profit and loss.

(II) External Cash Sources and Applications, Le., Cash Flow consists of non-current items as determined by the Statement of Cash Sources and Applications.

Sources and Applications of Cash

Sources of Cash (Inflow of Cash)		Applications of Cash (Outflow of Cash)	
1.	Cash from Operations	1.	Cash Lost in Operations

2.	Sale of Fixed Assets	2.	Purchase of Fixed Assets
3.	Sale of Investments	3.	Purchase of Investment
4.	Issue of Shares	4.	Redemption of Preference Shares
5.	Issue of Debentures	5.	Redemption of Debentures
6.	Raising Long-Term Loans	6.	Decrease in any Liability
7.	Increase in any Liabilities	7.	Decrease in any Assets
8.	Decrease in any Assets		

13.8 Classification of Cash Flows Statement

During a period, the cash flow statement is divided into three major types of cash inflows and cash outflows, namely operational, investing, and financing operations.

(i) Cash Flows from Operating Activities

Operating operations are the primary revenue-generating activities of the firm, as well as other non-investment and finance activities. Operating operations involve the monetary consequences of transactions and events that contribute to net profit or loss.

Normal company activities generate both cash collections and cash payments. Cash receipts are generated through the sale of commodities and the provision of services. Cash outflows originate from the cost of products sold and other operational expenditures. However, since the income statement is prepared on an accrual basis, the revenues and costs do not match the cash receipts and payments. Cash collections and payments for these revenues and costs may occur sooner or later than the period for which we record the revenues and expenses.

The following are some instances of cash flows generated by operational activities:

(a) Cashreceipts from the sale of goods and services;

(b) Cash receipts from royalties, fees, commissions, and other revenues;

(c) Cash payments to suppliers for goods and services;

(d) Cash payments to and on behalf of employees;

(e) Cashreceipts and payments of an insurance enterprise for premiums and claims, annuities, and other policy benefits; and

(f) Cash payments or refunds of income taxes, unless they can be specifically identified with financing.

(ii) Cash Flows from Investing Activities

Investing operations include the purchase and sale of long-term assets and other investments that are not cash equivalents. In other words, investing activities include the acquisition and sale of long-term productive assets (e.g., land, building, equipment and machinery, etc.) that are not held for resale, as well as other investments. The following are some instances of cash flows generated by investment activities:

(a) Cash payments to acquire fixed assets (including intangibles). These payments include those relating to capitalized research and development costs and self-constructed fixed assets;

(b) Cash receipts from disposal of fixed assets (including intangibles);

(c) cash payments to acquire shares, warrants, or debt instruments of other enterprises and interests injoint ventures (other than payments for those instruments considered to be cash equivalents andthose held for dealing or trading purposes);

(d) cash receipts from disposal of shares, warrants, or debt instruments of other enterprises andinterests in joint ventures (other than receipts from those instruments considered to be cashequivalents and those held for dealing or trading purposes);

(e) cash advances and loans made to third parties (other than advances and loans made by a financialenterprise);

(f) cash receipts from the repayment of advances and loans made to third parties (other than advancesand loans of a financial enterprise);

(g) Cashreceipts and payments relating to future contracts, forward contracts, option contracts, and swap contracts except when the contracts are held for dealing or trading purposes, or the transactions are classified as financing activities.

(iii) Cash Flows from Financing Activities

Financing operations are those that result in changes in the quantity and composition of the owners' capital (including preferred share capital in the case of a corporation) and the enterprise's borrowings. The following are some instances of cash flows generated by financing activities:

(a) Cash proceeds from issuing shares or other similar instruments;

(b) Cash proceeds from issuing debentures, loans notes, bonds and other short term borrowing.

(c) Cash repayments of amounts borrowed i.e. redemption of debentures, bonds etc.

(d) Cash payments to redeem preference shares.

(e) Payment of dividend.

13.9 Special Items

Accounting Standard-3 (Revised) allows for the handling of cash flows of some specific items in addition to the usual categorization of three categories of cash flows:

(a) Foreign Currency Cash Flows

Cash flows resulting from foreign currency transactions should be documented in an enterprise's reporting currency by applying the exchange rate between the reporting currency and the foreign currency at the date of cash flow to the foreign currency amount. If the outcome is essentially the same as if the rates at the date of cash flows were utilized, a rate that approximates the real rate may be used. Unrealized profits and losses resulting from currency fluctuations are not cash flows. However, in order to reconcile cash and cash equivalents at the beginning and end of the period, the impact of exchange rate changes on cash and cash equivalents held or payable in foreign currency is recorded in the cash flow statement. This amount is shown separately from cash flows from operating, investing, and financing activities and includes any variations that would have occurred if those cash flows had been reported at end-of-period exchange rates.

(b) Extraordinary Items

The cash flows connected with extraordinary items, such as bad debts recovered, insurance company claims, winning a legal action or lottery, and so on, are shown individually in the cash flow statement as deriving from operating, investing, or financing operations, as the case may be.

(c) Interest and Dividends

According to Accounting Standard-3 (Revised), the handling of received and paid interest and dividends is determined by the type of the firm, i.e. financial enterprises against other companies.

(i) Cash flows from interest paid and interest and dividends received by financial firms should be considered as cash flows from operational operations.

(ii) For other enterprises, cash flows from interest paid should be classified as cash flows from financing activities; cash flows from interest and dividends received should be classified as cash flows from investing activities; and dividends paid should be classified as cash flows from financing activities.

Cash flows from interest and dividends received and paid should be recorded individually in all situations. Also included in the cash flow statement is the total amount of interest paid during the period, whether it was recognised as expenditure in the Statement of Profit and Loss or capitalised in line with AS-10, Accounting for Fixed Assets.

(d) Taxes on Income

Cash flows from income taxes should be stated separately and classed as cash flows from operational activities unless they can be expressly defined as financing and investing activities. Income taxes are levied on transactions that generate cash flows that are categorised in a cash flow

statement as operating, investing, or financing activities. While tax expenditure may be easily associated with investing or financing operations, the associated tax cash flows are sometimes difficult to detect and may occur at a different time than the cash flows of the underlying transactions. As a result, taxes are often considered as cash flows from operational operations. However, if the tax cash flow can be linked to an individual transaction that generates cash flows categorised as investing or financing activities, the tax cash flow should be classed as an investing or financing activity.

(e) Acquisition and Disposals of Subsidiaries and other Business Units

The aggregate cash flows resulting from subsidiary or other business unit acquisitions and disposals should be stated separately and classed as investment activities.

(f) Non-cash Transactions

Investing and financing activities that do not need the use of cash or cash equivalents should be removed from the cash flow statement. Such transactions should be declared elsewhere in the financial statements so that all relevant information about these investing and financing operations is available. Non-cash transactions are excluded from the cash flow statement since they do not entail cash flows in the current period, which is compatible with the goal of a cash flow statement. Noncash transactions include the following:

(i) The acquisition of assets by assuming directly related liabilities.

(ii) The acquisition of an enterprise by means of issue of shares.

(iii) Conversion of debt into equity**.**

13.10 Reporting of Cash Flows from Operating Activities

Net profit/loss as reported in the Statement of Profit and Loss differs from net cash flow from operating activities because financial statements are generally prepared on an accrual basis of accounting, which means that net income does not reflect net cash provided by or net cash used in operating activities. To compute net cash flows from operational operations, revenues and costs must be replaced with cash receipts and payments. This is accomplished by deducting non-cash revenues and/or non-cash costs from the specified earned revenues and incurred expenses. There are two ways to transform net profit into net cash flows from operations:

(i) Direct method, and

(ii) Indirect method.

1. Direct Method

The cash receipts from operating revenues and cash payments for operating expenses are arranged and presented in the cash flow statement using the direct method. The net cash flow from operational operations is the difference between cash collections and cash payments. It is, in essence, a profit and loss statement prepared on a cash basis. In this situation, each cash transaction is examined individually, and the total cash receipts and payments for the time are calculated. The financial statements and other information include summary statistics for revenue and costs. We may convert revenue and expenses on an accrual basis to cash receipts and payments. Ensure that a consistent approach for converting accrual base items to cash basis items is followed.

Here are some examples of typical cash receipts and cash payments from operating activities:

(i) Cash sales of goods and services;

(ii) Cash collected from debtors (customers);

(iii) Cash receipts of interest or dividends;

(iv) Cash receipts of royalties, fees, commission and other revenues;

(v) Cash payments to suppliers (creditors);

(vi) Cash payments for various operating expenses i.e. rent, rates, power etc.

(vii) Cash payments for wages and salaries to employees;

(viii) Cash payments for income tax etc.

Under direct method, information about major classes of gross cash receipts and gross cash payments may be obtained either:

(a) From the accounting records of the enterprise; or

(b) Byadjusting sales, cost of sales and other items in the statement of profit and loss for:

— Changes during the period in inventories and operating receivables and payables;

— Other non-cash items, and

— Other items for which the cash effects are investing or financing cash flows.

Some of the items to be shown in the cash flow statement are illustrated below:

Collections from Customers: If a company solely sells cash, the amount of sales revenue on the income statement is the cash received from clients. When the company sells credit, we must alter the amount of sales income to account for changes in debtors and bills receivable. The starting balance of debtors or bills receivable indicates uncollected funds from a prior period, with the assumption that cash was collected during the current accounting period. The closing balance of debtors or bills receivable shows the amount that was not collected during the current accounting period. In order to determine the cash collected from debtors, add the initial balance (debtors/bills receivable) to the amount of credit sales and remove the closing balance.

Cash Collected from Debtors may also be computed as shown below:

Cash Collected from Debtors = Credit Sales + Decrease in Accounts Receivable or – Increase in Accounts Receivable.

Payment to Suppliers: The examination of cash payments to suppliers starts with the cost of items sold from the Profit and Loss Statement. The quantity of purchases is determined by adding closing stock to the cost of goods sold and subtracting opening stock from the cost of goods sold. The cash payment to suppliers is computed by adjusting for changes in various creditors/bills owed.

Purchases = Cost of Goods Sold + Closing Stock - Opening Stock

OR

Purchases = Cost of Goods Sold + Increase in Stock or - Decrease in Stock

Cash Paid to Suppliers = Purchases + Opening Balance of Creditors (Bills Payable)- Closing Balance of Creditors (Bills Payable).

OR

Cash Paid to Suppliers = Purchases + Decrease in Accounts Payable or –Increase in Accounts Payable.

Payment to Employees:

Cash Paid for Wages and Salaries = Wages and Salaries Expenses + OpeningBalance of Outstanding Wages and Salaries - Closing Balance of OutstandingWages and Salaries.

OR

Cash Paid for Wages and Salaries = Wages and Salaries Expenses + Decrease inWages and Salaries Payable or - Increase in Wages and Salaries Payable.

Rent Received: The analysis of rent received is similar to cash collected from customers.

Rent Received = Rent Revenue + Opening Balance of Rent Receivable –Closing Balance of Rent Receivable.

OR

Rent Received = Rent Revenue + Decrease in Rent Receivable or –Increase in Rent Receivable.

Interest Paid: The analysis of interest paid is similar to the analysis of payments to employees.

Interest Paid = Interest Expenses + Opening Balance of Outstanding Interest –Closing Balance of Outstanding Interest.

OR

Interest Paid = Interest Expenses + Decrease in Interest Payable, or –Increase in Interest Payable.

A similar treatment is applied for various other income and expenses to find out the cash inflows or outflows.

Insurance: Different procedure is adopted for insurance expense because insurance is usually purchased (and recorded as an asset) before it becomes an expense. The treatment is as follows:

Cash Paid for Insurance = Insurance Expenses + Closing Balance of UnexpiredInsurance - Opening Balance of Unexpired Insurance.

OR

Cash Paid for Insurance = Insurance Expenses + Increase in Unexpired Insuranceor - Decrease in Unexpired Insurance.

Other prepaid costs get a similar approach.

The following things should be addressed when estimating cash flow from operations using the direct method:

(i)When calculating the amount received from consumers or paid to suppliers, the required adjustments for bad debts, sales returns, purchase returns, discount permitted, and discount received, and so on should be applied.

(ii) Non-cash items such as depreciation, amortisation of intangible assets (such as goodwill, patent, trademark, etc.) or debenture discount, preliminary expenses, premium on redemption of debentures and preference shares are excluded from the cash flow statement because the method analyses and includes only cash transactions.

(iii) Because operational cash receipts and payments are recorded directly on the cash flow statement, no adjustment is made for loss or gain on the sale of fixed assets and investments.

2. Indirect Method

The net profit (loss) is used as the basis for calculating net cash supplied by or utilized in operational activities in this technique. Non-cash and non-operating charges are added back to net profit in the Statement of Profit and Loss, whereas non-cash and non-operating credits are removed to compute operational profit before working capital changes. It is a portion of accrual basis earnings converted to cash basis profit. The required adjustments are then made to account for changes in current assets and current liabilities in order to derive net cash from operating activities.

The following is a breakdown of the adjustments necessary to convert net profit to net cash flow from operating activities using the indirect method:

A. Net profit before tax and extraordinary item

B. Adjustments for non-cash and non-operating items:

Add: Amount written off in respect of depreciation, goodwill, preliminary expenses, underwritingcommission etc.

Add/Less: Other non-operating items

C. Adjustment for gains and losses on sale of fixed assets and investments:

Add: Loss on sale of fixed assets/investments

Less: Profit on sale of fixed assets/investments

D. Adjustments for changes in current assets (except cash and cash equivalents) and currentliabilities (except bank overdraft)

Add: Decrease in accounts of current assets e.g. debtors, bill receivable, stock, prepaid expenses etc.

Less: Increase in accounts of current assets.
Add: Increase in accounts of current liabilities; e.g., creditors, bills payable, outstanding expenses, etc.
Less: Decrease in accounts of current liabilities.
E. Cash generated from operations
Less: Income tax paid.
F. Adjustments for extra-ordinary items if any
G. Net cash from (used in) operating activities

The logic behind the treatment of various items is explained as follows:

Adjustment for Depreciation and other Non-cash and Non-operating items

Depreciation, depletion, and amortization of costs (amortization of goodwill, preliminary expenses premium on redemption of debentures, underwriting commission, and so on) have no effect on cash and should therefore be put back to net profit in the cash flow statement. Depreciation has no impact on cash when it is supplied. Depreciation, on the other hand, is subtracted from receipts when calculating income. As a result, when converting net profit to cash flow from operations, we add depreciation back in. Similarly, in the cash flow statement, any costs with no cash consequences are added back to net profit. Similarly, revenues that do not generate cash are deducted from net profit.

Adjustment for Gains and Losses on Sale of Fixed Assets/Investments

When fixed assets or investments are sold, they may generate a profit or a loss. The amount of net profit is affected by such profit or loss. For example, if fixed assets with a book value of Rs. 75,000 are sold for Rs. 90,000, the actual cash inflow is Rs. 90,000, which is represented in the cash flow statement along with a profit of Rs. 15,000. However, the profit from the sale of fixed assets has already boosted the net profit, suggesting a cash inflow from operational operations. To prevent this repetition, the '15,000 profit must be removed from the net profit. Furthermore, since the sale of fixed assets is an investment activity, the impact of this profit on sale must be deducted from cash flow from operations. Similarly, a loss on the sale of fixed assets or investment necessitates an adjustment to the net profit in cash flow from operations. To calculate cash flow from operations, this loss is added back to the net profit.

Changes in Current Assets and Liabilities

The majority of current assets and current liabilities are the consequence of operational operations. Sales produce various debtors and bills receivable, inventory provides revenues, and prepaid costs are employed in operations. Sundry creditors and bills payable are often incurred to purchase merchandise, whereas outstanding obligations relate to salary, utilities, and other costs. On the cash flows statement, changes in these current assets and liabilities are shown as adjustments to net profit. The regulations are as follows:

(a) To calculate cash flow from operations, subtract an increase in current assets other than cash from net profit: When miscellaneous debtors (net) rise over the year, for example, this signifies that revenues on accrual basis are larger than revenues on cash basis, since products supplied on credit are recognized as sales on accrual basis. In other words, although the company activities over the covered period generated increased sales, not all of these revenues resulted in a matching rise in cash. Some of the proceeds were just used to increase debts. To convert net profit to net cash supplied by operational operations, subtract the rise in debtors from the reported net profit. A drop in current assets, on the other hand, has the reverse impact and must be added back to net profit to estimate cash given for the period.

(b) The cash from operations is calculated by adding an increase in current liabilities to net profit. For example, if sundry creditors rise throughout the time covered, it signifies that accrual expenditures are more than cash expenses since expenses are incurred for which no payment has been received. As a result, this increment must be included to the net profit. A reduction in a current obligation, on the other hand, is removed from net profit since more cash has been paid than costs recorded on an accrual basis.

13.11 Format of cash flow statement

Accounting Standard-3 (Revised) does not specify a structure for preparing cash flow statements, however the image supplied provides a broad concept. The presentation of cash flow figures seems to be flexible. However, a commonly recognized structure for both the direct and indirect methods is provided below:

Cash Flow Statement (Direct Method)

A. Cash flows from operating activities
Cash receipts from customers
Cash paid to suppliers and employees
Cash generated from operations
Income taxes paid
Cash flow before extraordinary item
Proceeds from earthquake disaster settlement
Net Cash from Operating Activities
B. Cash flows from investing activities
Purchase of fixed assets
Proceeds from sale of equipment
Interest received
Dividend received
Net Cash from Investing Activities
C. Cash flows from financing activities
Proceeds from issuance of share capital
Proceeds from long-term borrowings
Repayments of long-term borrowings
Interest paid
Dividend paid
Net Cash from Financing Activities
Net Increase (Decrease) in Cash and Cash Equivalents (A + B + C)
Cash and Cash Equivalents at Beginning of Period
Cash and Cash Equivalents at End of Period

Cash Flow Statement (Indirect Method)

A. Cash flows from operating activities
Net profit before tax and extraordinary items
Adjustments for:
Depreciation
Foreign exchange
Investments
Gain or loss on sale of fixed assets
Interest/dividend
Operating profit before working capital changes.

Adjustments for:
Trade & other receivables
Inventories
Trade payables
Cash generation from operations
Interest paid
Direct taxes
Cash before extraordinary items
Deferred revenue
Net Cash from Operating Activities.
B. Cash flows from investing activities
Purchase of fixed assets
Sale of fixed assets
Sale of investments
Purchase of investments
Interest received
Dividend received
Loans to subsidiaries
Net Cash from Investing Activities
C. Cash flows from financing activities
Proceeds from issue of share capital
Proceeds from long term borrowings
Repayment to finance/lease liabilities
Dividend paid
Net Cash from Financing Activities
Net Increase (Decrease) in Cash and Cash Equivalents (A + B + C)
Cash and Cash Equivalents at the Beginning of the Period
Cash and Cash Equivalents at the End of the Period

Illustration 1:

From the following Balance Sheet of ABC Ltd., you are required to calculate Cash from Operations:

Particulars	2021	2022
Capital and Liabilities:		
Share Capital	20,000	20,000
Profit made during the year	14,100	17,300
Provision for Depreciation	1,000	1,400
Long-Term Loans	2,000	3,000
Trade Creditors	6,450	5,300

Outstanding Expenses	850	150
	44,400	**47,150**
Assets:		
Plant and Machinery	28,500	30,000
Stocks	9,800	11,300
Stocks	9,800	11,300
Trade Debtors	3,950	2,850
Cash Balances	2,150	3,000
	44,400	**47,150**

Solution:

Calculation of Cash from Operations

Particulars	2021	2022
Profit made during the year		
(Closing Balance of P & L Nc)		17,300
Add:		
Provision for Depreciation	400	
Decrease in Debtors	1,100	1,500
		18,800
Less:		
Decrease in Creditors	1,150	
Decrease in Outstanding Expenses	700	
Increase in Stock	1,500	
Net Profit (Opening Balance of P & L Nc)	14,100	17,450
Cash from Operations		**1,350**

Illustration 2:

Anand Ltd., arrived at a net income of 5,00,000 for the year ended March 31, 2017. Depreciation for the year was 2,00,000. There was a profit of 50,000 on assets sold which was transferred to Statement of Profit and Loss account. Trade Receivables increased during the year 40,000 and Trade Payables also increased by 60,000. Compute the cash flow from operating activities by the indirect approach.

Solution:

Cash Flow Statement

Particulars		Amount ₹
Net Profit at the end of the year		5,00,000
Adjustment for Non-Cash and Non-Operating items:		
– Profit on Sale of Assets		(50,000)
Operating Profit before Working Capital changes		6,50,000
– Increase in Trade Receivables	(40,000)	
+ Decrease in Trade Payables	60,000	20,000
Cash Flow from Operating Activities		**6,70,000**

Illustration 3:

The following is the Profit and Loss Account of Yamuna Limited:

Particulars	NoteNo.	Amount( )
I) Revenue from Operations		10,00,000
II) Expenses		
Cost of Materials Consumed	1	50,000
Purchases of stock-in-trade		5,00,000
Other Expenses	2	3,00,000
Total Expenses		8,50,000
III) Profit before tax (I – II)		1,50,000

Additional Information:

(i) Trade receivables decrease by 30,000 during the year.

(ii) Prepaid expenses increase by 5,000 during the year.

(iii) Trade payables increase by 15,000 during the year.

(iv) Outstanding expenses payable increased by 3,000 during the year.

Compute net cash from operations for the year ended March 31, 2022 by the indirect method.

Solution:

Cash Flow from Operating Activities of Yamuna Limited as on March 31, 2022

Particulars		Amount ₹
Profit before tax		1,50,000
Adjustment for Non-cash and Non-operating items:		
+ Depreciaion		25,000
Operating Profit before Working Capital changes		1,75,000
Adjustments for Working Capital changes		
– Increase in Current Assets		
Prepaid Expenses	(5,000)	
+ Decrease in Current Assets		
Trade Receivables	30,000	
+ Increase in Current Liabilities		
Trade Payables	15,000	
Outstanding Expensese	3,000	43,000
Cash Flow from Operating activities		**2,18,000**

Illustration 4:

Particulars	Note No.	March 31, 2022( )	March 31, 2021( )
I) Equity and Liabilities			
1. Shareholders' Funds			
a) Equity share capital		3,00,000	2,00,000
b) Reserves and surplus		2,00,000	1,60,000
2. Non-current liabilities			
a) Long-term borrowings	1	80,000	1,00,000
3. Current liabilities			
Trade payables		1,20,000	1,40,000
Short-term provisions	2	70,000	60,000
Total		**7,70,000**	**6,60,000**
II) Assets			
1. Non-current assets			
Fixed assets	3	5,00,000	3,20,000
2. Current assets			
a) Inventories		1,50,000	1,30,000
b) Trade receivables	4	90,000	1,20,000

c) Cash and cash equivalents	5	30,000	90,000
Total		**7,70,000**	**6,60,000**

Notes to accounts:

	2022	**2021**
1. Long-term borrowings		
Bank Loan	80,000	1,00,000
2. Short-term provision		
Proposed dividend	70,000	60,000
3. Fixed assets	6,00,000	4,00,000
Less:AccumulatedDepreciation	1,00,000	80,000
(Net) Fixed Assets	5,00,000	3,20,000
4. Trade receivables		
Debtors	60,000	1,00,000
Bills receivables	30,000	20,000
	90,000	1,20,000
5. Cash and cash equivalents		
Bank	30,000	90,000

Additional Information:

Machine Costing . 80,000 on which accumulated depreciation was . 50,000 was sold for . 20,000.

Solution:

Cash Flow Statement of Mohan Ltd.

Particulars	**Amount( )**	**Amount( )**
A. Cash Flow from Operating Activities		
Profit as per the Balance Sheet (2,00,000 – 1,60,000)	40,000	
Proposed Dividend	70,000	
Net Profit before Taxation and Extraordinary items		1,10,000
Adjustments:		
Depreciation	70,000	
Loss on Sale of Machine	10,000	80,000
Operating Profit before Working Capital changes		

Add: Decrease in Current Assets		
Debtors	40,000	40,000
		2,30,000
Less: Increase in Current Assets		
Inventories	(20,000)	
Bills Receivable	(10,000)	
Less: Decrease in Current Liabilities		
Trade Payables	(20,000)	(50,000)
Net Cash from Operations		**1,80,000**
B. Cash Flow from Investing Activities		
Proceeds from Sale of Fixed Assets		20,000
Purchases of Fixed Assets		(2,80,000)
Net Cash outflow from Investing activity		**(2,60,000)**
C. Cash Flow from Financing Activities		
Issue of Shares		1,00,000
Bank Loan Paid		(20,000)
Dividend Paid		(60,000)
Net Cash from Financing Activities		**20,000**
D. Net Decrease in Cash and Cash Equivalents (A+B+C)		**(60,000)**
Add: Cash and Cash Equivalents in the beginning		90,000
E. Cash and Cash equivalents at the end		**30,000**

Fixed Assets Account

Dr.							**Cr.**
Date	**Particulars**	**J.F.**	**Amount**	**Date**	**Particulars**	**J.F.**	**Amount**
	Balance b/d		4,00,000		Bank		20,000
	Bank (Purchases- Balancing fig.)		2,80,000		Profit and Loss		10,000
					Accumulated Depreciation		50,000
					Balance c/d		6,00,000

			6,80,000				**6,80,000**

Accumulated Depreciation Account

Dr.							**Cr.**
Date	**Particulars**	**J.F.**	**Amount**	**Date**	**Particulars**	**J.F.**	**Amount**
	Fixed Assets		50,000		Balance b/d		80,000
	Balance c/d		1,00,000		Profit and Loss (Balance fig.)		70,000
			1,50,000				1,50,000

Summary

- The Statement of Cash Flows (also known as the cash flow statement) is one of the three basic financial statements that reports the cash earned and spent during a certain time period (e.g., a month, quarter, or year). The statement of cash flows serves as a link between the income statement and the balance sheet by displaying how money entered and exited the organization.
- Funds equivalents comprise cash kept as bank deposits, short-term investments, and other quickly cash-convertible assets, including overdrafts and cash equivalents with short maturities (less than three months).
- The sum of all individual occurrences of cash received or given out is the resultant cash flow in the direct approach.
- The indirect technique uses accounting line items such as net income, depreciation, and so on to calculate cash flow. The cash flow statement is always generated indirectly in financial modeling.

Keywords

- Operating Activities
- Investing Activities
- Financing Activities
- Cash Equivalents
- direct method
- indirect method

SelfAssessment

1. The statement of cash flows is the financial statement that is typically prepared last.

A. True

B. False

2. The total increase or decrease in cash shown on the statement of cash flows must agree with the "bottom line" (net income or net loss) reported on the income statement.

A. True

B. False

3. The ending cash balance shown on the statement of cash flows must agree with the amount shown on the balance sheet for the same fiscal period.

A. True

B. False

4. Operating cash flows generally include cash transactions for the purchase and sale of investments and productive long-term assets.

A. True

B. False

5. Issuance of common stock creates a financing activities cash inflow.

A. True

B. False

6. Investors and management use the statement of cash flows to evaluate a firm's profitability.

A. True

B. False

7. Investing activities involve the buying or selling of land, buildings, equipment, and other longer-term investments.

A. True

B. False

8. Cash deposit with the bank with a maturity date after two months belongs to which of the following in the cash flow statement?

A. Financing Activities.

B. Cash and Cash Equivalent.

C. Operating Activities.

D. Investing Activities.

9. Interest paid by an investment company will come under which kind of activity while preparing a cash flow statement?

A. Cash Flow from Investing Activities.

B. Cash Flow from Financing Activities.

C. No Cash Flow.

D. Cash Flow from Operating Activities.

10. Dividend paid by a manufacturing company is classified under which kind of activity while preparing cash flow statements?

A. Cash Flow from Investing Activities.
B. Cash Flow from Financing Activities.
C. No Cash Flow.
D. Cash Flow from Operating Activities.

11. A Mutual Fund Company receives a dividend of 20 Lakhs on its investments in another company's shares. Where will it appear in a cash flow statement?

A. Cash Flow from Investing Activities.
B. Cash Flow from Financing Activities.
C. No Cash Flow
D. Cash Flow from Operating Activities.

12. How will you deal with an increase in the balance of 'Securities Premium Reserve' while preparing a cash flow statement?

A. Cash Flow from Investing Activities.
B. Cash Flow from Financing Activities.
C. Cash Equivalent.
D. Cash Flow from Operating Activities.

13. Financing activities bring changes in _____.

A. Size and composition in owners' equities.
B. Borrowings of the enterprise
C. Size and composition of owners' equities and borrowings of the enterprise.
D. None of the options are correct.

14. According to Accounting standard 3 cash flows are classified into _____.

A. Operating Activities and Investing Activities.
B. Investing Activities and Financing Activities.
C. Operating Activities and Financing Activities.
D. Financing Activities, Operating Activities, and Investing Activities

15. Cash Flow Statements is based upon _____, while Fund Flow Statements recognises _____.

A. Accrual Basis of Accounting, and Cash Basis of Accounting.
B. Both are based on the Cash Basis of Accounting.
C. Cash Basis of Accounting, and Accrual Basis of Accounting.
D. All of the options are correct.

Answer for SelfAssessment

1.	A	2.	B	3.	A	4.	B	5.	A
6.	B	7.	A	8.	B	9.	D	10.	B
11.	D	12.	B	13.	C	14.	D	15.	C

Review Questions

1. What is meant by Cash Flow Statement?
2. Explain briefly the uses of Cash Flow Statement.
3. What are the differences between Cash Flow Statement and Fund Flow Statement?
4. What are the limitations of Cash Flow Statement?
5. Explain the procedure for preparing a Cash Flow Statement.
6. What are the components of Sources and Applications of Cash?
7. From the following Balance sheet of Gupta & Co. Ltd., as on 31st Dec. 2021 and 2022, you are required to prepareCash Flow Statement:

Particulars	**2021**	**2022**
Capital and Liabilities:		
Equity Share Capital	2,30,000	2,30,000
General Reserve	60,000	60,000
Profit and Loss Account	16,000	23,000
Debenture	90,000	70,000
Bills Payable	1,03,000	96,000
Outstanding Salary	13,000	12,000
Depreciation Fund	40,000	44,000
	5,52,000	**5,35,000**
Assets:		
Cash Balances	90,000	90,000
Trade Debtors	67,000	43,000
Bills Receivable	1,10,000	74,000
Stock	82,000	1,06,000
Prepaid Expenses	1,000	2,000
Land & Building	1,50,000	1,50,000
Machinery	52,000	70,000
	5,52,000	**5,35,000**

Additional Information:

(I) Now machinery for Rs. 30.000 was purchased but old machinery costing Rs. 6,000 was sold for Rs. 4,000;accumulated depreciation was Rs. 6,000.

(2) Rs. 20,000 8% Debenture were redeemed by purchase from open market @ Rs. 96 for a debenture of Rs. 100.

(3) Rs. 36,000 investments were sold at book value.

(4) 10% dividend was paid in cash.

Further Readings

- Deepak Jain, Cost & Management Accounting Taxmann Publications Pvt. Ltd.
- Khan and Jain, Management Accounting.
- N.S. Zad, Cost & Management Accounting Taxmann Publications Pvt. Ltd.
- Nitin Balwani, Accounting & Finance for Managers, Excel Books, New Delhi.
- S.P. Jain & K.L. Narang, Cost and Management Accounting; Kalyani Publishers, 23, Daryaganj, New Delhi-110 002.
- M.N. Arora, Cost and Management Accounting (Theory and Problems); Himalaya Publishing House, Ramdoot, Dr. BhaleraoMarg, Kelewadi, Girgaon, Mumbai-400 004.
- Ravi M. Kishore, Advanced Management Accounting; Taxmann's, Taxmann Publication (P) Ltd. 59/32, New Rohtak Road, New Delhi – 110 005.

Web Links

https://corporatefinanceinstitute.com/resources/knowledge/accounting/statement-of-cash-flows/

https://www.accountingcoach.com/cash-flow-statement/explanation

https://byjus.com/commerce/mcqs-on-cash-flow-statements-with-answers/

Unit 14: Budgetary Control

CONTENTS

Objectives

After studying this unit, you will be able to:

- Understand Budgeting process, benefits of Budgeting, advantage of Budgetary control, limitations of budget
- Prepare different types of Budget i.e. Cash Budget, Flexible Budget etc.
- Comparison of budgeted and actual expenses.

Introduction

A budget is a clear summary of the financial and quantitative consequences of the activities that management has chosen to take in the near future. The budget serves as a foundation for management to assess how the company has been doing, namely whether or not the management-set objectives have been met. It is a powerful control tool.

Budgeting is now widely recognized as an effective way of short-term planning and management. It is used in major corporations, without a doubt, but it is also used in small firms, at least informally. A company needs to know exactly what it intends to perform throughout an accounting period or a portion thereof via budgeting. The budgeting approach is a key application of

Management Accounting. The use of budgets and budgetary control is perhaps the greatest assistance to successful management that has ever been created. It is a flexible tool that has assisted managers in dealing with a variety of issues, including inflation.

14.1 Budget

In "A Dictionary for Accountants", Kohler defines budget as:

1. Any financial plan used to forecast and govern future operations.

2. As a result, any forecast of future expenses.

3. Any methodical strategy for using people, material, or other resources.

A budget, according to the Chartered Institute of Management Accountants in London (terminology), is "a strategy stated in money." It is developed and authorized before to the budget period and may include information on revenue, spending, and capital to be used. It can be drawn up with incremental effects on previously budgeted or actual figures, or it can be compiled using zero-based budgeting."

A budget is a clear summary of the financial and quantitative consequences of the course of action that management has determined to take in the near future (usually a year). Thus, the following are the basic characteristics of a budget:

(i) It is a declaration provided in monetary and/or physical units for the execution of management-formulated policy.

(ii) It is established prior to the fiscal term in which it is implemented.

(iii) It is planned for a certain future era.

(iv) Prior to preparing the budget, the policy to be followed in order to achieve the stated goal must be established.

14.2 Budgeting

Budgeting encompasses the whole process of creating, adopting, and operating budgets. The primary focus of this is the short-term budgeting process, which involves the supply of resources to support plans that are being executed.

14.3 Budgetary control

Budgetary control is inextricably linked to budgets. Budgetary control is defined by the Chartered Institute of Management Accountants in London as "the establishment of budgets, relating executive responsibilities to the requirements of a policy, and the continuous comparison of actual with budgeted results either to secure by individual action the objectives of that policy or to provide a firm basis for its revision." A budgetary control system ensures control over performance and costs in various sections of a company by

(i) Setting budgets,

(ii) Comparing actual attainments to the budgets, and

(iii) Taking corrective action and remedial measures, or revising the budgets, as appropriate.

The budget is a blueprint for the planned plan of action represented in numerical terms over a specific time period. Budgets concretize the plan and provide follow-up action to ensure that the plan is followed to complete the control system. In other words, budgeting is the art of planning, while budgetary control is the act of following through on the plan. In reality, budgetary management entails comparing actual outcomes to budgets on a regular basis and taking necessary corrective action as soon as possible.

A control system is generally understood to comprise the setting of objectives (in the form of specified tasks), the gathering of information about actual, and the continual comparison of actual with the targets with the goal of reporting for action. In this sense, a financial control system is

likewise a control system. It is a great approach for decentralizing power without losing control over the firm's activities.

Budgets and financial management should not be seen as inflexible or suffocating. It is one of the systems by which dynamism is infused into an organization through the process of targets, the achievement of which will mean progress; of allowing a great deal of freedom of action within the delegated field of executives and of ensuring that all involved will work together to achieve the firm's objectives. There is always room for initiative and desire, but not for recklessness or excessive caution.

De Paula has analogized the primary concept of budgetary management, stating that "the position may be likened to the passage of a ship over the sea." The skipper will acquire essential lessons from a study of the factor that caused the misfortunes in the past by keeping a journal of the ship's events and location from hour to hour. However, in order to properly sail his ship over the seven seas, the captain needed his navigating officer to plot the path ahead and regularly compare his ship's location to the preset one. If the ship deviates from its intended path, the navigating officer must inform it quickly so that the captain may take appropriate measures to rectify the ship's course."

"Exactly so with the industrial ship; prior records constitute the log, and the auditor is responsible for checking, to the best of his ability, that those records are accurate and reflect a genuine and fair assessment of the concern's financial status." But, for day-to-day operations, contemporary management needs projections that explain the expected path of business for (say) the next year. During the course of the year's activities, management needs rapid notifications of any major deviation from the intended trajectory, together with an explanation of why the deviation occurred."

In summary, budgetary control is putting out in immediate and quantitative terms what must be done and how it must be done during the next period, and then ensuring that actual outcomes do not deviate from the planned path more than required. The term "necessary" should not be taken carelessly. Divergence caused by inefficiency is unnecessary.

Rowland and William define budget, budgeting, and budgetary control as follows in their book Budgeting for Management Control: "Budgets are the particular goals of a department, etc., while budgeting may be defined as the process of constructing budgets." Budgetary Control encompasses all of this, as well as the science of budget preparation and the use of such budgets as an overall management tool for corporate planning and control."

Thus, a budget is a financial plan, and budgetary control is the consequence of financial plan management.

14.4 Forecast and Budget

Forecasting is primarily concerned with predicting possible future occurrences. A budget is a plan that an organization hopes to achieve. Forecasting comes before budget preparation since it is an essential aspect of the budgeting process. The budgeting procedure is regarded to be more of a test of predicting ability than anything else. A budget is both a profit planning instrument and an operational cost management approach. To create a budget, it is necessary to predict numerous crucial factors like as sales, selling prices, material availability, material costs, salary rates, and so on.

Budgets and forecasts both relate to expected actions and outcomes. However, there are significant disparities between budgets and predictions, as seen below:

Forecasts	Budgets
(1) Forecasting is primarily concerned with anticipated or probable events;	(1) A budget is associated with scheduled events;
(2) Forecasting may cover a longer period of time or years;	(2) a budget is planned or prepared for a shorter term; and
(3) Forecasting is only a rough estimate;	(3) a budget is a definite aim for a period.
(4) Forecasting results in planning;	(4) Budgeting is the result of planning.
(5) The function of forecasting concludes	(5) Budgeting begins where forecasting stops

with the forecast of likely events; (6) Forecasting usually covers a specific business function; and (7) Forecasting does not act as a tool of attempting to control measuring device.	and turns it into a budget. (6) Budget is produced for the whole firm. (7) Budget is not only a planning device but also a regulating instrument.

14.5 Objectives of Budgetary Control

Budgetary Control is intended to aid management in policy formation, planning, controlling, and coordinating the broad goals of budgetary control, which may be expressed as follows:

(1) Planning:A budget is a strategy. Budgeting guarantees a precise plan of action for a company throughout time.

(2) Coordination: Budgetary control coordinates the entity's or organizations varied operations and ensures everyone's cooperation toward a single objective.

(3) Control: Control is required to guarantee that plans and goals are met. Control comes after planning and coordination. Without set criteria, no control performance is feasible. Thus, budgetary control allows for control via continual measures taken against predefined goals. If there is a difference between the budgeted and actual performance, it is subject to examination and remedial action.

14.6 Scope and Techniques of Standard Costing and Budgetary Control

Scope:

(1) Budgets are created for various company operations such as production, sales, and so on. Actual outcomes are compared to budgeted figures, and control is conducted. Standards, on the other hand, are met by categorizing, documenting, and allocating costs to cost units. Actual and standard costs are contrasted.

(2) Budgets provide extensive coverage of the whole company. Each operation or process is separated into components, and standards are established for each of these parts.

(3) The origin of spending at functional levels is the focus of budgetary control. The criteria of each cost factor are addressed by standard costing.

(4) A budget is a financial account forecast, while conventional costing is a cost account projection.

Technique:

(1) Budgetary control is done by comparing budgets with actuals. Accounts do not generally indicate variances. Accounts demonstrate differences in standard costs.

(2) The budgetary control system may be used in segments. Budgets for advertising, research & development, and so forth. Standard pricing is not implemented in sections.

(3) Budgetary management of spending is wide in nature, but the standard costing system is a significantly more technically advanced system that analyses variations in depth.

14.7 Requisites for Effective Budgetary Control

The following conditions must be met for efficient budgetary control:

(1) Well-defined objectives and goals are required.

(2) The ultimate goal of maximizing benefits should constantly be kept in mind.

(3) There should be a budget document that covers all specifics about the strategy and methods for carrying it out. It should also include a timetable for budget preparation for approval, as well as information concerning responsibilities, cost centers, and so on.

(4) A budget committee should be formed to oversee budget development and plan implementation.

(5) A budget should always be linked to a time frame.

(6) Top management support is required to get the system of budgetary control's complete support and cooperation.

(7) Effective financial management requires adequate allocation of power and responsibilities.

(8) A proper accounting system is required for budgeting to be effective.

(9) Employees should be appropriately informed on the advantages of a budgeting system.

(10) The budgeting system should not be more expensive to run than it is worth.

(11) Any key or limiting element should be considered prior to budget development.

(12) In order for budgetary control to be successful, an appropriate monthly reporting system must be implemented.

14.8 Advantages of Budgetary Control

The difference between drifting in an uncharted sea and pursuing a well-planned route towards a defined distinction is all in the budget. It assists management by facilitating planning, coordination, and control.

The following are the primary benefits of a budgetary control system:

(1) The goal of budgetary management is to maximize profits via efficient revenue and spending planning and control - moving money and resources to the best and most lucrative channel.

(2) There is a systematic strategy to company spending and finance so that economy is effected in the use of money to the best advantage of the concern.

(3) It gives a clear statement of the concern's aim and policies, as well as a means for opposing to these policies during periodic review.

(4) Budgetary control facilitates the work of management coordination.

(5) Because each level of management is aware of the job and completely aware of the best approach to do it, maximum effective utilization of personnel, materials, and resources may be achieved.

(6) Reports are provided in accordance with the principles of management or control by exception. Only budget variances that highlight weak points and inefficiencies are thoroughly investigated.

(7) It instills in management the habit of anticipating difficulties and doing thorough research before making choices.

(8) A budgetary control system facilitates transfer of responsibilities and is an effective instrument for accountability accounting.

(9) Budgets are forerunners of standard costs in the sense that they generate the required circumstances for standard cost establishment.

(10) The process of measuring performance against budgets offers a solid foundation for building compensation by outcomes incentive structure as well as identifying persons with excellent leadership and management abilities.

(11) Because it entails anticipating different forms of challenges, it will result in their eradication in due course.

14.9 Limitations of Budgetary Control

(1) Budgetary control begins with the creation of budgets that are just estimates. As a result, the sufficiency or otherwise of the budgetary control system is heavily dependent on the adequacy or accuracy with which estimates are created.

(2) Budgets are designed to cope with ever-changing company situations. As a result of their rigidity, budget forecasts lose much of their utility under changing situations. The financial control system must be made as flexible as possible.

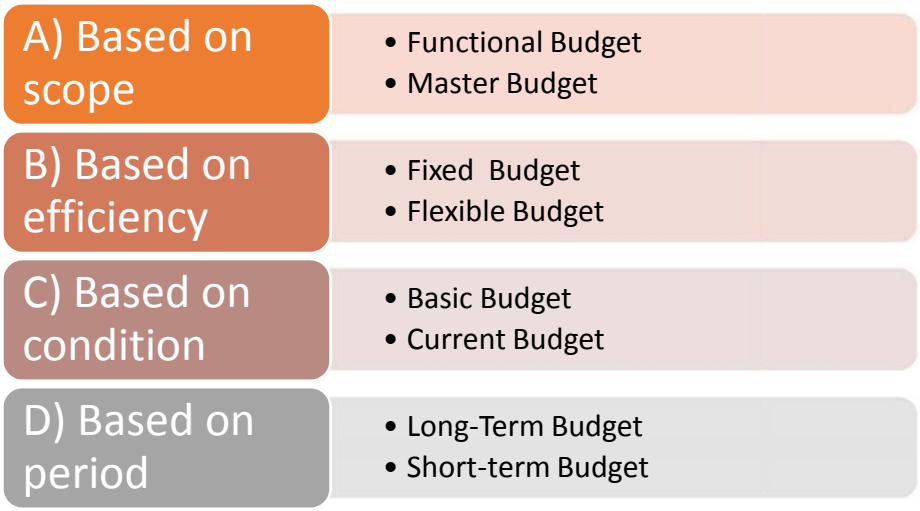
(3) The budgetary control system is based on quantitative data and represents just an impersonal evaluation of company activities unless it is backed by effective human administration management.

(4) It has often been discovered that, in reality, the organization of a budgetary management system becomes too heavy and, as a result, expensive, particularly from the perspective of a small concern.

(5) Budgets and budgetary management have created a very harmful propensity for budgets to be considered as the solution to all corporate issues. As a consequence, there has been a very lukewarm human effort to deal with such difficulties, which has resulted in the breakdown of the budgetary control system.

(6) It is human nature to be resistant to all restraints. Employees are also opposed to budgetary control, which limits the executive's power.

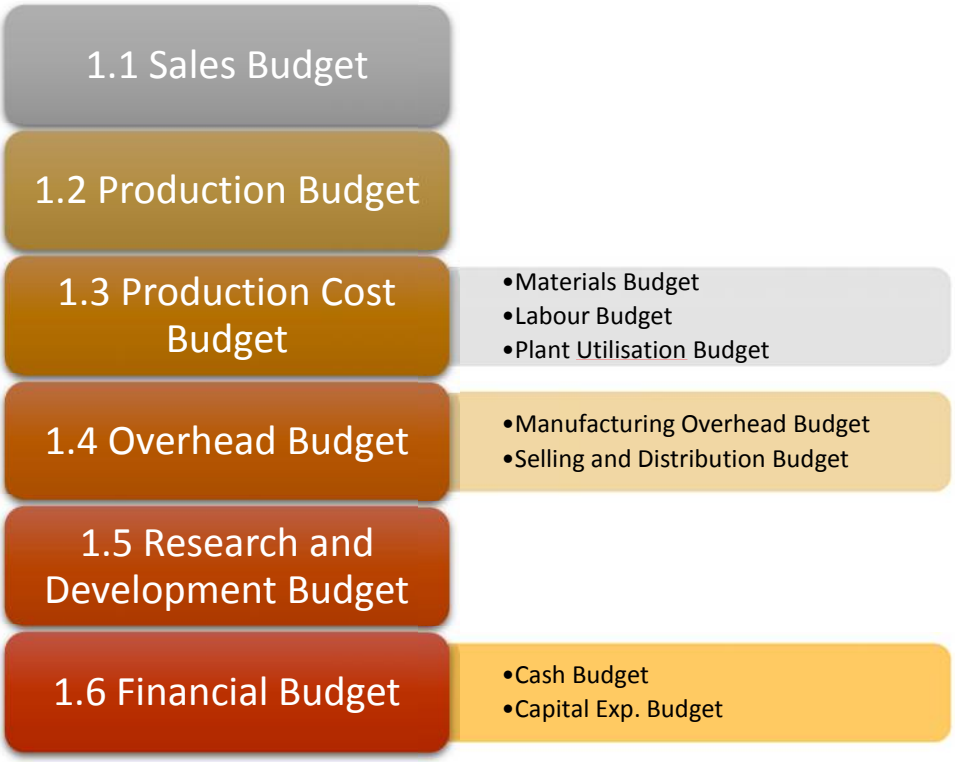
14.10 Types of Budgets



A) Based on scope

1. Functional budget

Budgets for a certain time are really categorized based on the numerous operations in the organization. All actions are linked. Individual activity projections are created and coordinated with those of other activities before being combined to represent the overall impact of all activities. "Functional budgets" are approved objectives for particular functions. The "Master Budget" is the combination of all functional budgets. This is the organization's intended profit and loss statement and balance sheet.



(1.1) Sales Budget:The sales budget is a prediction of total sales in terms of money and quantity. The first stage in preparing a sales budget is to predict sales as precisely as possible over the budget period. A range of external and internal variables impact sales estimates. External variables include overall economic circumstances, government policies, and so forth. Internal influences include sales pricing, sales trends, new items, and so on. The sales budget is based on sales forecasts, which the sales manager and market research personnel are in charge of. The sales budget is considered the cornerstone of budgeting.

(1.2) Production Budget:The production budget forecasts output for the budget period. It is divided into two sections: the production value budget for the physical units of the items to be created and the cost of manufacturing budget, which details the projected expenditures. The primary processes in preparing a production budget include production planning, capacity consideration, integration with sales predictions, inventory policies, and management's overall policies. The use of a production budget has many benefits, the most important of which are: optimal use of the enterprise's productive resources, manufacture of items on time, allowing the company to meet delivery deadlines, and effective scheduling of production elements.

(1.3) Production Cost Budget:It may be further classified as under:

*(1.3.1) Materials Budget:*Materials need budget, also known as materials budget, assists the purchasing department in properly planning purchases by establishing maximum and minimum quantities of materials, components, and so on. The materials budget also provides information on the time and quantity of monies required to make purchases.

(1.3.2) Labor Budget: According to the production budget, the labor content of each item of production is established by the grades and trades of the employees necessary, as well as the labor time for each task, operation, and process. The pay rates, allowances, bonuses, and so on for each category are then evaluated, and the labor cost to be established for each budget centre is computed by multiplying the wage rate by the number of units of product budgeted.

(1.3.3) Plant Utilization Budget: Plant Utilization Budgets are created to estimate plant capacity in order to satisfy budgeted output throughout the budgeted period. It is a projection of the plant capacity that will be available to meet production needs as defined in the production budget. This budget is stated in working hours or other units that are convenient for you.

(1.4) overhead Budget:It may be further classified as under:

*(1.4.1) Manufacturing Overhead Budget:*To construct the manufacturing overhead budget, the following actions must be taken:

(i) Classification of expenditure into fixed, variable, and semi-variable categories, and collection of such expenditure in accordance with a schedule of standing order numbers;

(ii) Departmentalization of expenditure;

(iii) Determination of the level of activity for setting overhead rates, which may be actual, budgeted, or normal capacity; and

(iv) Establishment of variable overhead rates per unit of production or productive hour.

*(1.4.2) Selling and Distribution Budget:*Selling expenditures comprise all costs associated with the marketing, management, and distribution of completed goods. This budget, which is linked to the sales budget, forecasts the cost of selling and distribution during the budgeted period. Marketing and distribution expenditures may be constant or variable depending on sales volume; different estimates are frequently prepared for fixed and variable selling and distribution expenses.

(1.5) Research and Development Budget:This is mostly determined by management choices on the research and development activity - both current and planned initiatives.

(1.6) Financial Budget:It may be further classified as under

*(1.6.1) Cash Budget:*A cash projection comes before a cash budget. A cash forecast is an estimate of the amount of cash that will be available in the future. This budget is often divided into two sections that provide specific estimates of (i) cash revenues and (ii) cash disbursements. Estimates of cash revenues are created on a monthly basis and are based on predicted cash sales, debtor collections, and anticipated receipts from other sources such as asset sales, borrowings, and so on. Projected financial disbursements are based on estimated cash purchases, payment to creditors, employee salary, bonus, supplier advances, planned capital investment for growth, and so forth.

*(1.6.2) Capital Expenditure Budget:*The capital expenditure budget, which is closely tied to the cash budget, is a plan for the anticipated expenditures on fixed assets. Capital expenditure forecasting is a continuous process, and it is a long-term function by definition. Capital projections should be prepared over many years. Along with the long-term prognosis, a short-term forecast covering the general budget period under discussion should be included. It is also critical that the capital expenditure budget be appropriately coordinated with all of the company's operating budgets in order to become an integrated element of the overall plan.

2. Master budget

The master budget is a synthesis of the many functional budgets. A master budget is a summary budget that includes its component functional budgets and is eventually authorized, accepted, and implemented. It is the conclusion of all other budgets, such as the sales budget, production budget, procurement budget, and so on. In actuality, it is made up of the budgeted profit and loss account, the balance sheet, and the planned funds flow statement.

When the master budget is eventually accepted, it becomes the company's aim throughout the budget period after being established by the budget committee on the basis of coordinated functional budgets. This budget serves as the company's unique key to effective financial planning and management. It serves as the foundation for calculating the impact of any changes in any phase of operations, such as sales volume, product mix, pricing, labor expenses, material costs, or facility modifications. It categorizes revenue, expenditures, and profits according to areas of responsibility. The master budget shows all of this information in the detail required for senior management action.

Costs are grouped and described in the master budget by categories of expenditures as well as departments. This information broadens the scope of the master budget's utility. It is regarded as the most effective method of comprehending the company's microeconomic status in relation to the next budget period. Master Budget is more than just a collection of theoretical computations. The data it includes are a representation of the company's genuine goals in several areas for the next budget term.

3. Fixed budgets

A budget may be designed as either a fixed or a flexible budget. A fixed budget is one that is intended to stay constant regardless of the amount of activity reached. A fixed budget is one that is created for a set projected output level and is not changed to the level of activity obtained when the budgeted and actual expenditures are compared. Obviously, fixed budgets can only be created for a short length of time when the actual production is not expected to change much from the planned output. A fixed budget, on the other hand, is subject to modification if actual operations vary

significantly from those intended in the set budget owing to fundamental changes in business circumstances or for other reasons. These budgets are best suited for fixed spending, but they have limited applications and are worthless as a cost-control tool.

4. Flexible budgets

The Chartered Institute of Management Accountants in London describes a flexible budget as one that is meant to alter when the amount of production varies by recognizing diverse cost behavior patterns. It is a budget designed in such a way that it provides the budgeted cost for every degree of activity. It is a budget that, by distinguishing between fixed, semi-fixed, and variable costs, is intended to fluctuate in response to the activity completed. It is intended to provide planned costs at whatever level of activity achieved. Budgeting flexibility is useful in the following situations:

(i) Where the amount of activity changes throughout the year, either owing to the seasonal character of the business or to variations in demand.

(ii) When the firm is young and it is difficult to predict demand.

(iii) When an important element of production, such as materials, labour, or plant capacity, is in low supply.

The key feature of a flexible budget is that it displays the spending that corresponds to varied levels of production. If the volume varies, the appropriate spending from the flexible budget may be created for comparison with actual expenditure as a measure of control. It allows for a rational comparison between budget allowances and actual cost. When a flexible budget is created, the actual cost at the time of the activity is compared to the budgeted cost at the time of the activity, i.e. two items to a similar basis. To prepare a flexible budget, cost items must be examined separately to discover how various cost items respond to changes in volume.

As a result, detailed cost analysis and expense identification are necessary for the creation of a flexible budget. The following are some of the most notable characteristics of flexible budgets:

(i) They are prepared for a variety of activities rather than a single level.

(ii) Because they are automatically oriented to variations in volume, they offer a particularly dynamic foundation for comparison.

(iii) They give a custom budget for a certain volume.

(iv) These are based on proper understanding of the cost behavior pattern.

5. Basic budgets

A basic budget is one that is created to be used unchanged over a lengthy period of time. This does not take into account current circumstances and is achievable under ordinary conditions.

6. Current budgets

A current budget is one that is tied to current situations and is prepared for usage over a short period of time. This budget is more beneficial than the basic budget since the targets it establishes will be adjusted to reflect current situations.

7. Long-term budgets

A long-term budget is one that is established for periods that are longer than a year. These budgets aid in anticipating and preparing for the future. Long-term budgets include capital expenditure budgets and research and development expenditures.

8. Short-term budgets

This budget is described as one that is created for a period of less than a year and is highly valuable for control reasons to lower levels of management. A short-term budget should, in an ideal world, fit seamlessly into a long-term budget.

14.11 Zero base budgeting

Zero Base Budgeting is a revolutionary budgeting method. It is intended to suit the demands of management in order to guarantee operational efficiency and optimal usage of a company's assigned resources. During 1969, Peter A. Phyhrr, Manager of Taxas Instrument, invented this technology. When Mr. Jimmy Carter was president of the United States, this approach was

frequently employed to restrict governmental spending. At the moment, the approach has gained worldwide reputation, with several nations putting it into practice.

According to Peter A. Phyhrr, ZBB is described as a "Operative Planning and Budgeting Process" that asks each Manager to explain his whole budget in detail from the beginning (thus the zero base) and puts the burden of evidence to each Manager to show why we should spend any money at all.

In zero-base budgeting, managers at all levels must explain the value of an activity and distribute resources based on priority.

14.12 Programme budgeting

A programme budget is one that is set aside for a certain activity or programme. This budget only contains income and costs for a single programme. Many institutions, including corporations and schools, employ programme budgets. Creating a budget by categorizing expenses and income as functional activities or programmes. Rather of having a budget item for capital equipment that may be distributed over many programmes (as in line-item budgeting), a programme budget would only contain anticipated capital expenditures for a single programme.

The programme budget provides funds to main programme areas based on the projected outcomes of services and activities. Government entities frequently use programme areas such as public safety, public works, human services, leisure services, and general government. The focus of programme projects is on achieving long-term local community objectives.

14.13 Performance budgeting

The notion of performance budgeting is associated with increased managerial efficiency, particularly in government operations. The notion of performance budgeting was established in order to introduce a system's approach, and as a result, there was a movement from financial categorization to 'cost' or 'objective' classification. As a result, performance budgeting is seen as a budget based on functions, activities, and projects that is connected to a budgetary system based on objective categorization of spending.

According to the National Institute of Bank Management, Bombay, performance budgeting is the process of analyzing, identifying, simplifying, and crystallizing specific performance objectives of a job to be achieved over a period of time within the framework of the organization's objectives, the job's purpose, and objectives. The approach is distinguished by its unique focus on the organization's commercial goals. Thus, performance budgeting places an urgent emphasis on the attainment of certain targets throughout time. It necessitates the creation of frequent performance reports. Such reports compare budget and actual data and highlight any discrepancies.

The goal of performance budgeting is to direct attention on the work to be done and the services to be provided rather than the objects to be spent on or obtained. The focus of performance budgeting shifts from input control to efficient and cost-effective management of activities and goals. Performance budgeting takes a system perspective of activities by attempting to link the spending inputs to the output of achievement in terms of services, benefits, and so on. Before budgetary allocations of inputs are established in performance budgeting, the budget makers' goals, as well as the task and sub-tasks for achieving the stated objectives, must be explicitly determined. Each homogeneous function is subdivided into many subordinate functions.

The primary goals of performance budgeting are as follows:

1. To conduct reviews at each stage and level of the organization in order to track progress toward short-term and long-term goals.

2. to link physical and financial components of any programme, initiative, or activity.

3. To enable more effective performance auditing.

4. To evaluate the impact of supervisory decision-making on intermediate and top-level managers.

5. To align yearly plans and budgets with the goals of the short and long-term plans.

6. To produce a thorough operational document outlining the whole planned fabric of the programmes and prospectus, as well as their goals interwoven with financial and physical components.

A performance budget estimates expenditures and revenues for services, programmes, activities, and projects. Financial criteria for establishing performance budgeting are posted in connection to:

(a) Programs and expenditures showing the scope of work to be performed by each classified agency.

(b) Object-wise categorization of expenditures, such as office setup, is often reflected in traditional budgets.

(c) Financing sources.

However, performance budgeting has several disadvantages, such as difficulty in defining programmes and activities, difficulties in evaluating alternative schemes, and relegation of vital programmes to the background. Furthermore, the approach only allows for a quantitative assessment system, and the required outcomes are not always measurable.

Lab Exercise:

Re-write the following sentence after filling-in the blank spaces with appropriate word:

(i) A budget is a detailed plan of operations for_____.

(ii) _____leads to budgeting and budgeting leads to budgetary control.

(iii) The starting point in developing the master budget is the preparation of the_____.

(iv) Budgeting refers to the _____of preparing the budgets.

Correct answer: (i) future periods. (ii) Forecasting (iii) sales budget. (iv) process

14.14 Cash Budget

This budget represents the expected cash revenues and payments during the budget period. The cash budget is also known as the Functional Budget. The cash budget is the most significant of the functional budgets since cash is needed to satisfy the organization's present financial commitments. A company will be technically insolvent if it fails to satisfy its commitments at any moment. As a result, this budget is based on specific cash revenues and cash payments. The expected cash receipts are as follows:

(1) Cash Sales

(2) Credit Sales

(3) Collection from Sundry Debtors

(4) Bills Receivable

(5) Interest Received

(6) Income from Sale of Investment

(7) Commission Received

(8) Dividend Received

(9) Income from Non-Trading Operations etc.

The estimated Cash Payments include the following:

(1) Cash Purchase

(2) Payment to Creditors

(3) Payment of Wages

(4) Payments relate to Production Expenses

(5) Payments relate to Office and Administrative Expenses

(6) Payments relate to Selling and Distribution Expenses

(7) Any other payments relate to Revenue and Capital Expenditure

(8) Income Tax Payable, Dividend Payable etc.

Illustration 1:

A company is expecting to have Rs. 25,000 cash in hand on 1st April 2022 and it requires you toprepare an estimate of cash position in respect of three months from April to June 2022, from theinformation given below:

	Sales	Purchase	Wages	Expenses
	Rs.	Rs.	Rs.	Rs.
February	70,000	40,000	8,000	6,000
March	80,000	50,000	8,000	7,000
April	92,000	52,000	9,000	7,000
May	1,00,000	60,000	10,000	8,000
June	1,20,000	55,000	12,000	9,000

Additional Information:

(a) Period of credit allowed by suppliers - two months.

(b) 25 % of sale is for cash and the period of credit allowed to customer for credit sale one month.

(c) Delay in payment of wages and expenses one month.

(d) Income Tax Rs. 25,000 is to be paid in June 2003.

Solution:

Particulars	April	May	June	Total
Opening balance of cash	25,000	53,000	81,000	1,59,000
Cash Respects:				
Cash Sales	23,000	25,000	30,000	78,000
Debtors	60,000	69,000	75,000	2,04,000
Total Cash Receipts - (l)	1,08,000	1,47,000	1,86,000	4,41,000
Cash Payments:				
Creditors	40,000	50,000	52,000	1,42,000
Wages	8,000	9,000	10,000	27,000
Expenses	7,000	7,000	8,000	22,000
Income tax	-	-	25,000	25,000
Total Payment - (2)	55,000	66,000	95,000	2,16,000
Closing Balance of Cash (1-2)	53,000	81,000	91,000	2,25,000

Illustration 2:

From the following data, forecast the cash position at the end of April, May and June 2022.

Month	Sales	Purchases	Wages	Miscellaneous
February	60,000	42,000	5,000	3,500
March	65,000	50,000	6,000	4,000

April	40,000	52,000	4,000	3,000
May	58,000	53,000	5,000	6,000
June	44,000	40,000	4,000	3,000

Additional Information

1. Sales: 10 % realized in the month of sales; balance realised equally in two subsequent months.

2. Purchases: These are paid in the month following the month of supply.

3. Wages: 10 % Paid in arrears following month.

4. Miscellaneous expenses: Paid a month in arrears.

5. Rent: Rs. 500 Per month paid Quarterly in advance due in April.

6. Income Tax: First instalment of advance tax Rs. 15,000 due on or before 15th June.

7. Income from Investment: Rs. 3,000 received quarterly in April, July etc.

8. Cash in hand: Rs. 3,000 on 1st April 2003.

Solution:

Cash Budget for the month of April, May and June

Particulars	April	May	June
Opening Balance of Cash	3,000	7,550	700
Add: Cash Receipts:			
Cash Sales	4,000	5,800	4,400
Receipts from Debtors			
(Credit Sales)			
Collection in 1st month	29,250	18,000	19,800
Collection in 2nd month	27,000	29,250	18,000
Income from Investment	3,000	-	-
Total Cash Receipts (1)	66,250	60,600	42,900
Less : Cash Payments :			
Creditors for Purchases	50,000	52,000	53,000
Wages; Current (90%)	3,600	4,500	3,600
Arrears (10%)	600	400	500
Rent	500	-	-
Miscellaneous Expenses	4,000	3,000	6,000
Income Tax	-	-	15,000
Total Payments (2)	58,700	59,900	78,100
Closing Balance of Cash (1- 2)	7,550	700	(-)35,200

Working Notes

(I) Out of total sales, 10 % are cash sales. Balance 90 % are credit sales. In any given month 50 % of creditsale of the previous two months are collected (See W.N.)

(2) In any given month, 90 % of the wages of the same month and 10 % of previous month's wages are paid.

(3)

Particulars	February	March	April	May	June
Total Sales	60,000	65,000	40,000	58,000	44,000
Less : Cash Sales					
(10%)	6,000	6,500	4,000	5,800	4,400
Credit Sales	54,000	58,500	36,000	52,200	39,600
Collection in					
1st month after					
Credit Sales	-	27,000	29,250	18,000	19,800
Collection in2ndmonth					
AfterCredit Sales	-	-	27,000	29,250	18,000
Total Credit			56,250	47,250	37,800

14.15 Fixed Budget and Flexible Budget

Fixed Budget

A budget is drawn for a particular level of activity is called fixed budget. "Fixed budget is a budget that is planned to stay constant regardless of the amount of activity actually accomplished," according to ICWA London. Fixed budget is usually prepared before the beginning of the financial year. This form of budget will not show expense fluctuations owing to differences in activity levels. Fixed budgets work well in static situations.

Flexible Budget

A variable or sliding scale budget is another name for a flexible budget "takes into account both fixed and variable expenses The antithesis of a static budget, which shows the estimated cost at a particular level of activity, is a flexible budget. According to leMA, England, a flexible budget is one that is meant to adapt based on the amount of activity actually achieved."

A succession of fixed budgets are developed for various levels of activity in accordance with the principles that underlie the production of the flexible budget. A flexible budget often displays the planned spending against each cost item relating to the various degrees of activity. This budget has been implemented to address the issues raised by the usage of the fixed budget.

Advantages of Flexible Budget

(1) A flexible budget may cover any feasible amount of production or degree of activity.

(2) Overhead expenses are classified as fixed variable and semi-variable.

(3) At various degrees of activity, expenditure may be projected.

(4) It allows for the comparison of all factors that are relevant to intelligent decision making at all times.

(5) A flexible budget may be established with or without conventional pricing, depending on what the company prefers.

(6) Flexible budget facilitates ascertainment of costs at different levels of activity, price fixation, placing tenders and Quotations.

(7) It aids in evaluating the work of all department heads since the degree of activity obtained by the company can be used to evaluate the same.

Illustration 3:

The expenses budgeted for production of 10,000 units in a factory are furnished below:

	Per unit

	Rs.
Materials	70
Labour	25
Variable factory overheads	20
Fixed factory overhead (Rs. 1,00,000)	10
Variable expenses (Direct)	5
Selling expenses (10 % Fixed)	13
Distribution expenses (20 % Fixed)	7
Administrative expenses (Rs. 50,000)	5
Total cost of sale per unit	155

You are required to prepare a budget for the production of 8,000 units.

Solution:

Particulars	Output 10,000 units		Output 8,000 units	
	Per unit	Amount	Per unit	Amount
Variable Expenses:				
Material cost	70	7,00,000	70	5,60,000
Labour cost	25	2,50,000	25	2,00,000
Direct expenses (variable)	5	50,000	5	40,000
Prime cost	100	10,00,000	100	8,00,000
Add: Factory overheads:				
Variable overheads	20	2,00,000	20	1,60,000
Fixed overheads	10	1,00,000	12.50	1,00,000
Works cost	130	13,00,000	132.50	10,60,000
Add: Administrative expenses				
Fixed (Assumed)	5	50,000	6.25	50,000
Cost of production	135	13,50,000	138.75	11,10,000
Add: Selling Expenses				
Fixed - 10 % of Rs. 13	1.30	13,000	1.63	13,000
Variable - 90 % of Rs. 13	11.70	1,17,000	11.70	93,600
Add: Distribution Expenses:				
Fixed - 20 % of Rs.7	1.40	14,000	1.75	14,000
Variable - 80 % of Rs.7	5.60	56,000	5.60	44,800
Total Cost of Sales	**155**	**15,50,000**	**159.43**	**12,75,400**

Illustration 4:

Budget estimates ofaplantservicing department:

Items of Cost	Planned at 6000 s h (Rs.)	Planned at 9000 s h (Rs.)
Salaries	28,000	28,000

Indirect Materials	42,000	63,000
Miscellaneous Costs	16,000	20,500

Prepare Aflexiblebudget for the department for 7,000, 8,000 and 9,500 service hours.

Solution:

7,000 S H (Rs.)		8,000 S H (Rs.)	9,500 S H (Rs.)
Salaries (fixed)	28,000	28,000	28,000
Indirect Materials (Variable at Rs. 7 per hour)	49,000	56,000	66,500
Miscellaneous Costs:			
Variable at Rs. 1.5 per hour	10,500	12,000	14,250
Fixed	7,000	7,000	7,000
	94,500	1,03,000	1,15,750

Working capital:

Indirect materials:	
Increase in cost	=Rs. 63,000 – Rs.42,000
Increase in Service Hours	=Rs. 21,000 =9000 – 6000
Variable portion of indirect material	= 3000 hours =Rs. 21,000 / 3000 hrs.
	=Rs 7 per hour
Indirect material at 6000 hrs.	=6000 × Rs. 7 =Rs. 42,000
Indirect materials at 9000 hrs.	=9000 × Rs. 7 =63,000

Summary

- A budget is a detailed summary of the financial and quantitative consequences of the course of action that management has chosen to take in the near future (usually a year).

- Budgetary control is the development of budgets, tying executive duties to policy needs, and the continual comparison of actual with budgeted outcomes, either to achieve the goals of that policy by individual action or to offer a strong foundation for its amendment.
- A fixed budget is one that is intended to stay constant regardless of the amount of activity reached.
- A flexible budget is one that is intended to adapt in response to the level of activity reached.
- Zero base budgeting is a budgeting strategy in which all activities are re-evaluated each time a budget is established. Various degrees of each activity are appraised, and a mix is determined to meet the available cash. It is a system in which every budget item, whether new or old, must be justified in its entirety each time a new budget is established.
- Performance budgeting entails evaluating an organization's performance in the context of both particular and broader organizational goals. Physical objectives are prioritized in performance budgeting.

Keywords

- Budget
- Budgetary control
- Budgeting
- Cash Budget
- Fixed Budget
- Flexible Budget

SelfAssessment

1. Budgeting may be said to be the art of building a budget.

A. True

B. False

2. Zero base budgeting will be appropriate in areas where output is not related to production.

A. True

B. False

3. Flexible budgets change with the level of activity.

A. True

B. False

4. Budgeting may be said to be an act of determining costing standards.

A. True

B. False

5. A budget centre is that part of the organization for which the budget is prepared.

A. True

B. False

6. Zero base budgets starts with previous year balance.
A. True
B. False

7. A flexible budget recognizes the difference between fixed, semi-fixed and variable cost and is designed to change in relation to the change in level of activity.
A. True
B. False

8. The basic difference between a flexible budget and fixed budget is that a fixed budget:
A. Is concerned with fixed expenses whereas flexible budget is on different activity levels.
B. Cannot be changed whereas flexible budget can be easily changed.
C. Is a budget for single measure of activity whereas flexible budget is on different activity levels.
D. None of the above

9. A flexible budget requires careful study and classification of expenses into:
A. Past and current expenses
B. Fixed, Semi-variable and variable expenses
C. Administrative, selling and factory expenses
D. None of the above

10. Which one of the following is a financial budget?
A. Cash Budget
B. Working Capital Budget
C. Capital budget
D. All of the above

11. Which one of the following is not a financial budget?
A. Cash budget
B. Capital budget
C. Budgeted funds flow statement
D. Sales budget

12. Which one the following are functional budget?
A. Production and sales budget
B. Raw material budget
C. Labour budget
D. All of the above

13. Which one of the following is not a functional budget?

A. Sales budget

B. Purchasing budget

C. Production budget

D. Budgeted balance sheet

14. Which from the options below is not a step from budgetary control?

A. Establishing a plan or target of performance

B. Recording of actual performance

C. Comparing the actual with budgeted figures to find out variances.

D. None of the above

15. Long term budgets are prepared for:

A. Capital Expenditure

B. Research and Development

C. Long Term Finances

D. All of the above

Answer for SelfAssessment

1.	True	2.	True	3.	True	4.	False	5.	True
6.	False	7.	True	8.	C	9.	B	10.	D
11.	D	12.	D	13.	D	14.	D	15.	D

Review Questions

1. What is budgetary control? Discuss the various preliminaries required for adoption of a system ofbudgetary control.

2.What are the main steps in budgetary control? State the main objectives of budgetary control.

3. What factors generally determine a budget period? Give examples?

4. Distinguish between 'fixed budget' and 'flexible budget'.

5. Name the different types of budgets that are built up for effective control.

6. Write a note on (i) zero base budget and (ii) performance budget.

7. ABC Ltd. a newly started company wishes to prepare cash budget from January. Prepare a cashbudget for the first six months from the following estimated revenue and expenses.

Month	Total Sales		Materials	Wages	Overheads	
					Production	Overheads Selling & Distribution
Jan.	20,000	20,000	4,000	3,200	800	
Feb.	22,000	14,000	4,400	3,300	900	
March	28,000	14,000	4,600	3,400	900	

April	36,000	22,000	4,600	3,500	1,000
May	30,000	20,000	4,000	3,200	900
June	40,000	25,000	5,000	3,600	1,200

Cash balance on 1st January was Rs. 10,000. New machinery is to be installed at Rs. 20,000 on credit, tobe repaid by two equal installments in March and April.

Sales commission at @ 5% on total sales is to be paid within a month following actual sales.

Rs. 10,000 being the amount of 2nd call may be received in March. Share premium amounting to Rs. 2,000 is also obtainable with the 2nd call.

Period of credit allowed by suppliers - 2 months

Period of credit allowed to customers - 1 month

Delay in payment of overheads - 1 month

Delay in payment of wages - 1/2 month

Assume cash sales to be 50% of total sales.

8. The cost of an article at capacity level of 5,000 units is given under A below. For a variation of 25%in capacity above or below this level, the individual expenses vary as indicated under B below:

	A	B
Material cost	25,000	(100% varying)
Labour cost	15,000	(100% varying)
Power	1,250	(80% varying)
Repairs and maintenance	2,000	(75% varying)
Stores	1,000	(100% varying)
Inspection	500	(20% varying)
Depreciation	10,000	(100% fixed)
Administration overheads	5,000	(25% varying)
Selling overheads	3,000	(50% varying)
Cost per unit	62,750	
	12.55	

Find the unit cost of the product under each individual expense at production levels of 4,000 unitsand 6,000 units.

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