Study Note - 6

FUNDAMENTALS OF COST ACCOUNTING

This Study Note includes

6.1 INTRODUCTION

Can the business be run without making decisions? Even doing nothing is a decision! *Decision is 'making a choice from among the available alternative courses of action'*. How is this choice made? Why a particular alternative is chosen and the others are not? What is the basis for this choice? The most obvious basis is an economic evaluation of the alternatives available. Economic evaluation means comparing benefits with costs. The alternative that brings more benefit than the cost will be the obvious choice. As such measurement of both, benefits and costs, becomes very crucial. Managers must evaluate the financial implications of decisions that require trade-offs between costs and benefits of different alternatives.

A decision maker will definitely need information to be able to decide. This information is both quantitative as well as qualitative. The financial accounting information will not serve this purpose as it talks about '*how to deal with transaction when they occur*'. The information needed will be more specific and relevant to the decision to be made. Let us consider some decisions taken in managing or running a business:

(a) How much quantity should be produced during the coming year?

(b) At what price should the product be sold in various markets?

(c) In what quantities should the material be procured?

(d) How much should be paid to the workers and how to control their performance?

(e) What level of capacity should be used?

(f) Whether a particular order should be taken or not?

(g) Whether to expand or close a particular line of business?

(h) Assessing the performance of different divisions

The basic aim of business is to make profit. In other words, it must ensure that the business transactions are profitable. This would mean that decision to do a business transaction must be as accurate as possible. It is therefore logical that the decisions must be taken on the basis of correct and timely information pertaining only to the issue under consideration. A very basic definition of profit is the difference between revenue (i.e. selling price) and costs. In today's market driven world economy, selling price is almost decided by the market forces viz. demand and supply. If that be so, how does one increase profits? There's only one way and that is to keep costs to absolute minimum possible. Knowledge of costs therefore is imperative. Costs and information do go hand in hand. The art and science of Cost and Management Accounting provides knowledge to effective decisions for cost control, enhancement

of profitability and internal reporting.

Cost and Management Accounting is internal to the business. It is a very potent tool in the hands of management to achieve goals by making effective decisions with the aid of well developed cost accounting techniques and management accounting tools. These enable the management to answer "*why*" than merely understanding "*what*". The evolution of Cost & Management Accounting is as old as the business activity in the world. Let us get a perspective of the same. Remember, Cost and Management Accounting has developed on the platform of very strong science of Financial Accounting.

6.2 GENERALLY ACCEPTED COST ACCOUNTING PRINCIPLES (GACAP) & COST ACCOUNTING STANDARDS (CASs)

Like Generally Accepted Accounting Principles (GAAP) for Financial Accounting, the Cost accounting has the Generally Accepted Cost Accounting Principle (GACAP) which are followed by the Indian industry are summarized as below.

Before proceeding with element wise cost accounting principles, let us see the principles applicable to all the elements.

(a) When an element of cost is accounted at standard cost, variances due to normal reasons are treated as a part of the element wise cost. Variances due to abnormal reasons will not form part of the cost.

(b) Any subsidy / grant / incentive and any such payment received / receivable with respect to the input cost is reduced from the cost of the cost object to which such amount pertains.

(c) Any abnormal cost where it is material and quantifiable will not form part of the cost.

(d) Penalties, damages paid to statutory authorities or other third parties will not form part of the Total cost.

(e) Cost reported under various elements of cost will not include imputed costs.

(f) Finance costs incurred in connection with the acquisition of resources such as material, utilities and the like will not form part of the cost of such resources

(g) Any credits or recoveries from employees or suppliers or other parties towards the costs incurred by the entity for a resource will be netted against such cost.

(h) Except otherwise stated, the measurement of costs for cost accounting purposes will follow the same principles as set out in Generally Accepted Cost Accounting Principles applicable to the concerned entity.

Generally Accepted Cost Accounting Principles – Element wise

(i) Material Cost:

(a) Material cost usually includes all costs required to bring the materials to the present condition and location.

(b) Material receipt is valued at purchase price including duties and taxes, freight inwards, insurance and other expenditure directly attributable to procurement (net of trade discounts, rebates, taxes and duties refundable or to be credited by taxing authorities) that can be quantified with reasonable accuracy at the time of acquisition.

(c) Normal loss due to shrinkage or evaporation and gain due to elongation or absorption or moisture ...etc before the material is received is absorbed in material cost to the extent they are normal, with corresponding adjustment in quantity.

(d) Normal loss or spoilage of material prior to reaching the factory or at places where the services are provided is absorbed in the cost of balance of materials net of amounts recoverable from suppliers, insurers, transporters or recoveries from disposal.

(e) The foreign exchange component of imported material cost is converted at the rate on the date

of transaction. Any subsequent change in the exchange rate till payment or otherwise will not form part of the material cost.

(f) Self manufactured materials are valued at cost including direct material cost, direct employee cost, direct expenses, factory overheads and share of administrative overheads relating to production. Share of other administrative overheads, finance cost and marketing overheads are excluded.

(g) Material cost of abnormal scrap/defectives should not be included in the material cost, but treated as loss after giving credit to the realizable value of such scrap/defectives.

(h) When material is processed or part is manufactured by a third party according to the specifications provided by the buyer, the processing / manufacturing charges payable to third party is treated as part of the material cost.

(i) Material costs are assigned to cost objects on the basis of material quantity consumed where traceable and technical norms or estimates may be taken as basis where the quantity consumed cannot be traced.

(ii) Employee Cost:

(a) Employee Cost or labour cost is ascertained taking into account the gross pay including all allowances payable along with the cost to the employer of all benefits

(b) Bonus whether payable as a statutory minimum or on a sharing of surplus and ex gratia payable in lieu of or in addition to bonus is treated as part of the employee cost

(c) Remuneration payable to managerial personnel including executive directors on the board and other officers of a corporate body under a statute is considered as part of the employee cost of the year under reference, whether whole or part is computed as a percentage of profits.

(d) Gratuity, Superannuation, and other benefits measured using actuarial valuation method or any other methods are part of employee cost.

(e) Separation costs related to voluntary retirement, retrenchment, termination etc. should be amortized over the period benefiting from such costs.

(f) Recruitment costs, training costs and other such costs is treated as overheads and dealt with accordingly

(iii) Direct Expenses:

(a) The identification of direct expenses is based on the traceability in an economically feasible manner and if an item of expense does not meet the test of materiality, it can be treated as part of overheads.

(b) Expenses paid or incurred in lump sum or which is in the nature of 'one-time' payment is amortized on the basis of the estimated output or benefit to be derived from such expenses.

(c) Direct expenses are by definition directly traceable to cost objects and hence no special principles are involved for them to be assigned to cost object.

(iv) Utilities:

(a) The cost of utilities purchased is measured at cost of purchase including duties and taxes, transportation cost, insurance and other expenditure directly attributable to procurement.

(b) The cost of generated utilities includes direct materials, direct labour , direct expenses and factory overheads.

(c) Cost of utilities generated for the purpose of inter unit transfers is arrived as cost of self generated utilities with distribution cost added.

(d) Cost of utilities generated for the purpose of intercompany transfers is arrived as cost of self generated utilities with distribution costs plus share of administrative overheads.

(e) Cost of utilities generated for sale to outside parties is arrived as cost of self generated utilities with distribution cost plus share of administrative and marketing overheads.

(f) Cost of standby utilities includes the committed cost of maintaining such utility.

(g) The most appropriate basis for distribution of cost of a utility to the departments consuming services is to be derived from usage parameters.

(v) Repairs & Maintenance Cost:

(a) The Cost of repairs and maintenance is the aggregate of direct and indirect cost relating to repairs and maintenance activity.

(b) Cost of in-house repairs and maintenance activity will include cost of materials, consumable stores, spares manpower, equipment usage, utilities and other resources used in the activity.

(c) Cost of repairs and maintenance activity carried out by outside contractors within the factory / entity, will include the charges payable to the contractor in addition to the in-house materials / spares cost issued.

(d) When a high value spare is replaced and the replaced spare is reconditioned and such spare is expected to result in future economic benefit & it is taken into stock, then such spare is valued at an amount that measures its service potential in relation to the new spare, the amount of which will not exceed the cost of reconditioning the spare. The difference between the total of the cost of new spare and the reconditioning cost and the value of reconditioned spare should be treated as Repairs and Maintenance.

(e) Cost of major overhaul is to be amortized on a rational basis.

(vi) Production Overheads:

(a) Production overheads are indirect costs involved in the production process or in rendering services. Production overheads include administration cost relating to production, factory, works or manufacturing. Production related expenses incurred at administrative office for example Design office expenses, industrial relations dept, materials management dept...etc.

(b) While assigning the overheads, traceability to a cost object in an economically feasible manner shall be the guiding principle. The costs which can be traced directly to a cost object shall be directly assigned.

(c) Assignment of overheads to cost objects shall be based on either of the following principles.

(d) *Cause & Effect*: Cause is the process or operation or activity and effect is the incurrence of cost.

(e) *Benefits Received:* Overheads are to be apportioned to the various cost objects in proportion to the benefits received by them.

(f) It is not good practice to allocate overheads to Cost centres / Cost objects on the basis of what the traffic will bear – That is by size of the user.

(g) Production overheads of production cost centres have to be segregated between fixed overheads and variable overheads. The fixed overheads are to be absorbed by products based on the normal capacity or actual capacity utilization whichever is higher. Variable overheads are absorbed by products based on actual capacity utilized. Under absorbed fixed overheads are charged off to Costing Profit and Loss account.

(vii) Administrative Overheads:

Administrative overheads are the aggregate cost of resources consumed in activities relating to general management and administration of an organization.

Since most of the administrative overheads are fixed in nature, it is preferable to charge them to users on 'readiness to serve' basis such as installed capacity, budgeted sales etc. rather than actual production or actual sales.

In case of leased assets, if it is on operating lease then entire rental will be treated as a part of administrative overheads, while in case of financial lease, the finance cost portion will be segregated and treated as a part of finance cost. The assignment of administrative overheads to cost objects is based on either of the principles of Cause & Effect or Benefits received, if it is not traceable.

(viii) Selling and Distribution Overheads:

The acceptable basis for apportionment of selling costs to customers/ products are:

(a) Weight
(b) Units/ Equivalent Units
(c) Value of goods
(d) Any other appropriate and equitable basis

The acceptable bases for assigning common transport cost to products are:

(a) Weight
(b) Volume of Goods
(c) Tonne Kilometre
(d) Value of goods
(e) Units / Equivalent units

(ix) Interest and Finance Charges:

Many entities started including the financing charges in computing the Cost of Sales. Normally these costs are assigned to products before arriving margin by product/ product line.

Normally interest charges are grouped under two categories i.e, interest on long-term borrowings and interest on working capital. The interest on long-term funds is assigned to products based on the fixed capital investment in such products. Interest on working capital may be assigned based on the net working capital of the product lines.

Cost Accounting Standards

(i) Preface to Cost Accounting Standards:

The council of the Institute of Cost Accountants of India, has constituted 'Cost Accounting Standards Board' (CASB) with the objective of formulating cost accounting standards, after recognizing the need for structured approach to the measurement of cost so as to provide guidance to the user organizations, government bodies, regulators, research agencies, academic institutions and others to achieve uniformity and consistency in classification, measurement and assignment of costs.

The composition of the CASB will be broad based and ensure participation of all interest groups in the standard setting process. The chairman of the CASB will be nominated by the council of the Institute. Apart from six members of the council nominated on the CASB the following will be represented on the CASB:

(1) A nominee of the central government representing Ministry of Corporate Affairs
(2) Adviser (Cost), cost audit branch, Ministry of Corporate Affairs, Government of India
(3) A nominee of the central government representing the Central Board of Excise and Customs, Government of India
(4) A nominee of the central government representing the Central Board of Direct Taxes
(5) Two members of the institute representing leading companies
(6) Four nominees from regulators i.e. CAG, RBI, SEBI, IRDA,TRAI...etc
(7) Two nominees from professional institutions i.e. ICAI and ICSI
(8) Three nominees of industry associations viz ASSOCHAM, CII, FICCI....etc
(9) Two nominees from academic institutions like IIM, MDI, Universities...etc

(10) Four eminent practicing members of the institute

(11) President is authorized to include a maximum of two eminent persons having knowledge and expertise in the cost and management accounting / Accounting standards not falling under the categories as defined in the constitution

(ii) Objectives and Functions of the Cost Accounting Standards Board:

The objectives of the CASB are to develop high quality Cost Accounting Standards to enable the management to take informed decisions and to enable regulators to function more effectively by integrating, harmonizing and standardizing cost accounting principles and practices.

The following will be the functions of the CASB:

(a) To issue the framework for the Cost Accounting Standards

(b) To equip the cost & management accounting professionals with better guide lines on cost accounting principles

(c) To assists the members in preparation of uniform cost statements under various statutes

(d) To provide from time to time interpretations on Cost Accounting Standards

(e) To issue application guidance relating to particular standard

(f) To propagate the Cost Accounting Standards and to persuade the users to adopt them in the preparation and presentation of general purpose cost statement

(g) To persuade the government and appropriate authorities to enforce Cost Accounting Standards, to facilitate the adoption thereof, by industry and corporate entities in order to achieve the desired objectives of standardization of cost accounting practices

(h) To educate the users about the utility and the need for compliance of Cost Accounting Standards

Overview of Cost Accounting Standards issued till date are as follows:

Cost Accounting Standards

CAS No	Title	Objective
CAS1	Classification of Cost	For preparation of Cost Statements
CAS2	Capacity Determination	For determination of capacity
CAS2 (Revised 2012)	Capacity Determination	To bring uniformity and consistency in the principles and methods of determination of capacity with reasonable accuracy.
CAS3	Overheads	For Collection, Allocation, Apportionment and Absorption of overheads
CAS3 (Revised 2011)	Overheads	To bring uniformity and consistency in the principles and methods of determining the Overheads with reasonable accuracy.
CAS4	Cost of Production for Captive Consumption	To determine the assessable value of excisable goods used for captive consumption.
Annexure to Appendix 1 (CAS-4)		
CAS5	Average (equalized) Cost of Transportation	To determine averaged/equalized transportation cost
CAS6	Material Cost	To bring uniformity and consistency in the principles and methods of determining the material cost with reasonable accuracy in an economically feasible manner.
CAS7	Employee Cost	To bring uniformity and consistency in the principles and methods of determining the Employee cost with reasonable accuracy.

CAS8	Cost of Utilities	To bring uniformity and consistency in the principles and methods of determining the Cost of Utilities with reasonable accuracy.
CAS9	Packing Material Cost	To bring uniformity and consistency in the principles and methods of determining the Packing Material Cost with reasonable accuracy.
CAS10	Direct Expenses	To bring uniformity and consistency in the principles and methods of determining the Direct Expenses with reasonable accuracy.
CAS11	Administrative Overheads	To bring uniformity and consistency in the principles and methods of determining the Administrative Overheads with reasonable accuracy.
CAS12	Repairs And Maintenance Cost	To bring uniformity and consistency in the principles and methods of determining the Repairs and Maintenance Cost with reasonable accuracy.
CAS13	Cost of Service Cost Centre	To bring uniformity and consistency in the principles and methods of determining the Cost of Service Cost Centre with reasonable accuracy.
CAS14	Pollution Control Cost	To bring uniformity and consistency in the principles and methods of determining the Pollution Control Costs with reasonable accuracy.
CAS15	Selling and Distribution Overheads	To bring uniformity and consistency in the principles and methods of determining the Selling and Distribution Overheads with reasonable accuracy.
CAS16	Depreciation and Amortisation	To bring uniformity and consistency in the principles and methods of determining the Depreciation and Amortisation with reasonable accuracy.
CAS17	Interest and Financing Charges.	To bring uniformity and consistency in the principles ,methods of determining and assigning the Interest and Financing Charges with reasonable accuracy.
CAS18	Research and Development Costs	To bring uniformity and consistency in the principles and methods of determining the Research, and Development Costs with reasonable accuracy and presentation of the same.
CAS19	Joint Costs	To bring uniformity and consistency in the principles and methods of determining the Joint Costs.
CAS20	Cost Accounting Standard on Royalty and Technical Know-How Fee	To bring uniformity and consistency in the principles and methods of determining the amount of Royalty and Technical Know-how Fee with reasonable accuracy.
CAS21	Cost Accounting Standard on Quality Control	To bring uniformity, consistency in the principles, methods of determining and assigning Quality Control cost with reasonable accuracy.
CAS22	Cost Accounting Standard on Manufacturing Cost	To bring uniformity and consistency in the principles and methods of determining the Manufacturing Cost of excisable goods

Each of the Cost Accounting Standard has been explained in brief as follows.

CAS -1: Classification of Costs

Objective:

(a) The objective of this standard is to prescribe the classification of costs for ascertainment of cost of a product or service and preparation of cost statements on a consistent and uniform basis with a view to effect the comparability of the same of an enterprise with that of previous periods and of other enterprises

(b) The classification and its disclosure are aimed at providing better transparency in the cost statement

(c) The standard is also for better adoption of uniform costing and inter-firm comparison

Scope:

The standard on classification of cost should be applied in assessment of cost of a product or service, application of costing technique and in case of management decision making by the manufacturing industries in India.

The standard is to be followed by an enterprise, whether covered under section 209(1)(d) of the Companies Act,1956 or not, to classify cost in order to prepare cost statement on uniform basis to make it relevant and understandable for effective cost management.

The standard has also to be followed for the purpose of assessment of cost of production or valuation of product or the valuation of stock to be certified for calculation of duties and taxes, tariffs and other purposes as the case may be. The cost statement prepared based on standard will be used for assessment of excise duty and other taxes, anti-dumping measures, transfer pricing etc.

CAS -2: Capacity Determination

This standard deals with the principles and methods of determining the capacity of a manufacturing facility of an entity. Capacity is determined for assignment of overheads to cost objects. Principles of assignment of overheads have been stipulated in Cost Accounting Standard – 3 (Revised 2011) on Overheads. This standard deals with the principles and methods of classification and determination of capacity of a plant of an entity for ascertainment of the cost of product, and the presentation and disclosure in cost statements.

Objective:

The objective of this standard is to bring uniformity and consistency in the principles and methods of determination of capacity with reasonable accuracy.

Scope:

This standard shall be applied to the cost statements, including those requiring attestation, which require determination of capacity for assignment of overheads.

CAS-3: Cost Accounting Standard on Overheads

This standard deals with the principles and methods of determining the Overheads. This standard deals with the principles and methods of classification, measurement and assignment of Overheads, for determination of the cost of product or service, and for the presentation and disclosure in cost statements.

Objectives:

The objective of this standard is to bring uniformity and consistency in the principles and methods of determining the Overheads with reasonable accuracy.

Scope:

This standard shall be applied to cost statements, which require classification, measurement, assignment, presentation and disclosure of Overheads including those requiring attestation.

CAS-4: Cost Accounting Standard on Cost of Production for Captive Consumption

The Cost Accounting principle for determination of cost of production is well established. Similarly, rules for levy of excise duty on goods used for captive consumption are also well defined. Captive Consumption means the consumption of goods manufactured by one division and consumed by another division(s) of the same organization or related undertaking for manufacturing another product(s). Liability of excise duty arises as soon as the goods covered under excise duty are manufactured but excise duty is collected at the time of removal or clearance from the place of manufacture even if such removal does not amount to sale. Assessable value of goods used for captive consumption is based on cost of production. According to the Central Excise Valuation (Determination of Price of Excisable Goods) Rules 2000, the assessable value of goods used for captive consumption is 115% **(110% w.e.f. 05-08- 2003)**of cost of production of such goods, and as may be prescribed by the Government from time to time.

Objective

(a) The purpose of this standard is to bring uniformity in the principles and methods used for determining the cost of production of excisable goods used for captive consumption.

(b) The cost statement prepared based on standard will be used for determination of assessable value of excisable goods used for captive consumption.

(c) The standard and its disclosure requirement will provide better transparency in the valuation of excisable goods used for captive consumption.

Scope

The standard is to be followed for determining the cost of production to arrive at an assessable value of excisable goods used for captive consumption.

Cost of production will include various cost components. They are already defined in Cost Accounting Standard-1 ('Classification of Cost' – CAS-1). Thus, this standard has to be read in conjunction with CAS 1.

CAS-5: Cost Accounting Standard on Determination of Average (Equalized) Cost of Transportation

The cost accounting principles for tracing/identifying an element of cost, its allocation/apportionment to a product or service are well established. Transportation cost is an important element of cost for procurement of materials for production and for distribution of product for sale. Therefore, Cost Accounting Records should present transportation cost separately from the other cost of inward materials or cost of sales of finished goods. The Finance Act 2003 also specifies the certification requirement of transportation cost for claiming deduction while arriving at the assessable value of excisable goods cleared for home consumption/ export. There is a need to standardize the record keeping of expenses relating to transportation and computation of transportation cost.

Objective

(a) To bring uniformity in the application of principles and methods used in the determination of averaged/equalized transportation cost.

(b) To prescribe the system to be followed for maintenance of records for collection of cost of transportation, its allocation/apportionment to cost centres locations or products.

(c) To provide transparency in the determination of cost of transportation.

Scope:

This standard should be applied for calculation of cost of transportation required under any statute or regulations or for any other purpose. For example, this standard can be used for :

(a) Determination of average transportation cost for claiming the deduction for arriving at the assessable value of excisable goods

(b) Insurance claim valuation

(c) Working out claim for freight subsidy under Fertilizer Industry Coordination Committee

(d) Administered price mechanism of freight cost element

(e) Determination of inward freight costs included or to be included in the cost of purchases attributable to the acquisition.

(f) Computation of freight included in the value of inventory for accounting on inventory or valuation of stock hypothecated with Banks / Financial Institution ...etc

CAS-6: Cost Accounting Standard on Material Cost

This standard deals with principles and methods of determining the Material Cost. Material for the purpose of this standard includes raw materials, process materials, additives, manufactured / bought out components, sub-assemblies, accessories, semi finished goods, consumable stores, spares and other indirect materials. This standard does not deal with Packing Materials as a separate standard is being issued on the subject.

This standard deals with the principles and methods of classification, measurement and assignment of material cost, for determination of the Cost of product or service, and the presentation and disclosure in cost statements.

Objective:

The objective of this standard is to bring uniformity and consistency in the principles and methods of determining the material cost with reasonable accuracy.

Scope:

This standard should be applied to cost statements which require classification, measurement, assignment, presentation and disclosure of material costs including those requiring attestation.

CAS-7: Cost Accounting Standard on Employee Cost

This standard deals with the principles and methods of determining the employee cost. This standard deals with the principles and methods of classification, measurement and assignment of employee cost, for determination of the cost of product or service and the presentation and disclosure in cost statements.

Objective:

The objective of this standard is to bring uniformity and consistency in the principles and methods of determining the employee cost with reasonable accuracy.

Scope:

This standard should be applied to cost statements which require classification, measurement, assignment, presentation and disclosure of employee cost including those requiring attestation.

CAS-8: Cost Accounting Standard on Cost of Utilities

This standard deals with the principles and methods of determining the cost of Utilities. This standard deals with the principles and methods of classification, measurement and assignment of cost of utilities, for determination of the cost of product or service and the presentation and disclosure in cost statements.

Objective:

The objective of this standard is to bring uniformity and consistency in the principles and methods of determining the cost of utilities with reasonable accuracy.

Scope:

This standard shall be applied to cost statements which require classification, measurement, assignment, presentation and disclosure of cost of utilities including those requiring attestation.

For determining the cost of production to arrive at an assessable value of excisable utilities used for captive consumption, Cost Accounting Standard 4 on Cost of Production for Captive Consumption (CAS 4) shall apply. This standard shall not be applicable to the organizations primarily engaged in generation and sale of utilities. This standard does not cover issues related to the ascertainment and treatment of carbon credits, which shall be dealt with in a separate standard.

CAS-9: Cost Accounting Standard on Packing Material Cost

This standard deals with the principles and methods of determining the Packing Material Cost. This standard deals with the principles and methods of classification, measurement and assignment of Packing Material Cost, for determination of the cost of product, and the presentation and disclosure in cost statements. Packing Materials for the purpose of this standard are classified into primary and secondary packing materials.

Objective:

The objective of this standard is to bring uniformity and consistency in the principles and methods of determining the packing material cost with reasonable accuracy.

Scope:

This standard should be applied to cost statements, which require classification, measurement, assignment, presentation and disclosure of Packing Material Cost including those requiring attestation.

CAS-10: Cost Accounting Standard on Direct Expenses

This standard deals with the principles and methods of determining the Direct Expenses. This standard deals with the principles and methods of classification, measurement and assignment of Direct Expenses, for determination of the cost of product or service, and the presentation and disclosure in cost statements.

Objectives:

The objective of this standard is to bring uniformity and consistency in the principles and methods of determining the Direct Expenses with reasonable accuracy.

Scope:

This standard should be applied to cost statements, which require classification, measurement, assignment, presentation and disclosure of Direct Expenses including those requiring attestation.

CAS-11: Cost Accounting Standard on Administrative Overheads

This standard deals with the principles and methods of determining the administrative overheads.

This standard deals with the principles and methods of classification, measurement and assignment of administrative overheads, for determination of the cost of product or service, and the presentation and disclosure in cost statements.

Objective:

The objective of this standard is to bring uniformity and consistency in the principles and methods of determining the administrative overheads with reasonable accuracy.

Scope:

The standard should be applied to cost statements, which require classification, measurement, assignment, presentation and disclosure of administrative overheads including those requiring attestation.

CAS-12: Cost Accounting Standard on Repairs and Maintenance

This standard deals with the principles and methods of determining the repairs and maintenance cost.

This standard deals with the principles and methods of classification, measurement and assignment of repairs and maintenance cost, for determination of the cost of product or service, and the presentation and disclosure in cost statements.

Objective:

The objective of this standard is to bring uniformity and consistency in the principles and methods of determining the repairs and maintenance cost with reasonable accuracy.

Scope:

The standard should be applied to cost statements, which require classification, measurement, assignment, presentation and disclosure of repairs and maintenance cost including those requiring attestation.

CAS-13: Cost Accounting Standard on Cost of Service Cost Centre

This standard deals with the principles and methods of determining cost of service cost centres. This standard deals with the principles and methods of classification, measurement and assignment of cost of service cost centre, for determination of the cost of product or service, and the presentation and disclosure in cost statements.

Objective:

The objective of this standard is to bring uniformity and consistency in the principles and methods of determining the cost of service cost centre with reasonable accuracy.

Scope:

The standard should be applied to cost statements, which require classification, measurement, assignment, presentation and disclosure of cost of service cost centres including those requiring attestation. It excludes Utilities and Repairs & Maintenance Services dealt with in CAS-8 and CAS-12 respectively.

CAS-14: Cost Accounting Standard on Pollution Control Cost

This standard deals with the principles and methods of determining Pollution Control Cost. This standard deals with the principles and methods of classification, measurement and assignment of pollution control costs, for determination of the cost of product or service, and the presentation and disclosure in cost statements.

Objective:

The objective of this standard is to bring uniformity and consistency in the principles and methods of determining the pollution control costs with reasonable accuracy.

Scope:

The standard should be applied to cost statements, which require classification, measurement, assignment, presentation and disclosure of pollution control costs including those requiring attestation.

CAS-15: Cost Accounting Standard on selling and Distribution overheads

This standard deals with the principles and methods of determining the Selling and Distribution Overheads.

This standard deals with the principles and methods of classification, measurement and assignment of Selling and Distribution Overheads, for determination of the cost of sales of product or service, and the presentation and disclosure in cost statements.

Objective:

The objective of this standard is to bring uniformity and consistency in the principles and methods of determining the Selling and Distribution Overheads with reasonable accuracy.

Scope:

This standard should be applied to cost statements, which require classification, measurement, assignment, presentation and disclosure of Selling and Distribution Overheads including those requiring attestation.

CAS – 16 : Cost Accounting Standard on Depreciation and Amortization

This Standard deals with the principles and methods of measurement and assignment of Depreciation and Amortization for determination of the cost of product or service, and the presentation and disclosure in cost statements.

Objective:

The objective of this standard is to bring uniformity and consistency in the principles and methods of determining the depreciation and amortization with reasonable accuracy.

Scope:

This standard shall be applied to cost statements which require measurement, assignment, presentation and disclosure of Depreciation and amortization, including those requiring attestation.

CAS - 17 : Cost Accounting Standard on Interest and financing Charges

This standard deals with the principles and methods of classification, measurement and assignment of Interest and Financing charges.

Objective:

The objective of this standard is to bring uniformity and consistency in the principles, methods of determining and assigning the interest and Financing charges with reasonable accuracy.

Scope:

This standard should be applied to cost statements which require classification, measurement, assignment, presentation and disclosure of Interest and Financing charges including those requiring attestation. This standard does not deal with costs relating to risk management through derivatives.

CAS - 18 : Cost Accounting Standard on Research and Development Costs.

This standard deals with the principles and methods of determining the Research and Development costs and their classification, measurement and assignment for determination of the cost of product or service, and the presentation and disclosure in cost statements.

Objective

The objective of this standard is to bring uniformity and consistency in the principles and methods of determining the Research and Development Costs with reasonable accuracy and presentation of the same.

Scope

This standard should be applied to cost statements that require classification, measurement, assignment, presentation and disclosure of Research and Development costs including those requiring attestation.

CAS – 19 : Cost Accounting Standard on Joint Costs.

The standard deals with the principles and methods of measurement and assignment of Joint Costs and the presentation and disclosure in cost statement.

Objective:

The objective of this standard is to bring uniformity, consistency in the principles, methods of determining and assigning Joint Costs with reasonable accuracy.

Scope:

The standard shall be applied to cost statements which require classification, measurement, assignment presentation and disclosure of Joint Costs including those requiring attestation.

CAS – 20 : Cost Accounting Standard on royalty and technical know-how fee.

This standard deals with the principles and methods of determining the amount of Royalty and Technical know-how fee. This standard deals with the principles and methods of classification, measurement and

assignment of the amount of Royalty and Technical know-how fee, for determination of the cost of product or service, and their presentation and disclosure in cost statements.

Objective

The objective of this standard is to bring uniformity and consistency in the principles and methods of determining the amount of Royalty and Technical know-how fee with reasonable accuracy.

Scope:

This standard should be applied to cost statements which require classification, measurement, assignment presentation and disclosure of the amount of Royalty and Technical know- how fee including those requiring attestation.

CAS – 21 : Cost Accounting Standard on Quality Control.

The standard deals with the principles and methods of measurement and assignment of quality control cost and the presentation and disclosure in cost statement.

Objective:

The objective of this standard is to bring uniformity consistency in the principles, methods of determining and assigning quality control and cost with reasonable accuracy.

Scope:

The standard should be applied to cost statements which require classification, measurement assignment, presentation and disclosure of Quality control cost including those requiring attestation.

CAS – 22 : Cost Accounting Standard on Manufacturing Cost.

This standard deals with the principles and methods of determining the manufacturing cost of excisable goods.

This standard deals with the principles and methods of classification, measurement and assignment for determination of the manufacturing cost of excisable goods and the presentation and disclosure in cost statements.

Objective:

The objective of this standard is to bring uniformity and consistency in the principles and methods of determining the manufacturing cost of excisable goods.

Scope:

This standard should be applied to cost statements which require classification, measurement, assignment presentation and disclosure of manufacturing cost of excisable goods.

6.3 DEFINITIONS

Some basic definitions are as follows:

(a) Cost – *It is a measurement, in monetary terms, of resources used for some purpose*. The resources may be tangible (material or machinery) or intangible (wages, power, time spent). The use of resources is implicit in the term 'cost'. The measurement is in monetary terms obviously because money is common denominator. Further, cost always relates to a *purpose*. The purpose could be products, departments, projects, services or any activity for which monetary measurement of resources is needed. Here also could mean a context, without which cost does not convey anything. The word 'cost' cannot be used in isolation and has to be always with a reference to a context. With change in context, the interpretation of 'cost' will change.

(b) Costing – *It is defined as the technique and process of ascertaining cost*. The cost may have to be ascertained for a product or service or a department or any activity carried out by the business. It denotes accumulating all such expenses incurred for producing a product or rendering a service or carrying out business activity. These expenses are mainly in the form of material, labour and other expenses. Many methods of costing exist depending on the nature of product, type of business. These are Job Costing, Contract Costing, Process Costing, Service Costing etc. These are explained in the coming sections.

(c) Cost Accounting – *It involves the process of classifying, identifying and recording of expenditure with the intention of ascertaining cost of a cost centre or cost unit for the purpose of cost control*. Cost accounting attempts to look at individual components of the organisation like a department, a job, or a process etc. It tries to compare the cost of these individual components vis-à-vis the benefits they offer in order to determine the efficiency and effectiveness of each resource used in the business. The Broad process of Costing or Cost Accounting Comprises of:

- *Cost Book-keeping* is recording of costs according to preset classification. Cost classification is done on the basis of nature of organisation, nature of product or service it deals in and requirements of management. At present, cost book keeping is done concurrently with financial accounting. ERP accounting systems provide facility of recording financial as well as costing aspect of a transaction. This is called an integrated accounting. A transaction is recorded with respect not only to the double entry effects, but also as per classification of costs and link with the respective cost centre or cost object.
- *Cost Control* is evaluating what level of cost is the most ideal for a given activity. It provides mechanism to keep costs within those predetermined limits. The word control is not used with its restrictive meaning, but also to ensure to maintain cost to the levels what ought to be. Organisations can sustain competition only if they understand the cost structure very well. Based on this understanding, companies are able to innovate to offer more value to the customer.
- *Cost Analysis* tries to link costs with their determinants or drivers and also provides tools to measure reasons of why costs are out of sync and fix responsibility there for. It comprises of techniques of standardizing costs or estimating costs which could be effectively used to take managerial decisions. Hence, the primary emphasis is cost and its determination, analysis, interpretation and reporting.

(d) Cost Accountancy – *This is a broader and comprehensive term. The Chartered Institute of Management Accountants (CIMA) London defines it as "The application of costing and cost accounting principles, methods and techniques to the science, art and practice of cost control and the ascertainment of profitability. It includes the presentation of information, derived there from for the purpose of managerial decision making."*

(e) Management Accountancy – *It is an integral part of management that is concerned with identifying, presenting and interpreting information for formulating strategy, planning & controlling activities, decision making, optimizing use of resources, and reporting to external and internal stakeholders*. It is the process of analysis and interpretation of financial data collected with the help of financial accounting and cost accounting, with the intention to draw inferences there from, in order to assist management in the process of decision making. Management Accounting is a relatively younger field. The main facets of management accounting are:

(1) The focus is on analysis of information. It is done with the help of concepts or techniques that emerge from financial accounting, cost accounting, economics, mathematics, statistics and more importantly information technology.

(2) Accumulation, synthesis and analysis of the quantitative and qualitative data are an integral part of management accounting.

(3) The thrust is measuring performance of various facets of business and comparing it with the targets set to enable management to take corrective actions in time to meet the objectives. There is a continuous monitoring of deviations from the standards or plans.

(4) It equips management for strategy formulation by providing decision making tools for short term and long term.

(5) Management accounting helps in optimizing the resource mobilization and utilization. Remember resources are limited and the uses to which they could be put are unlimited. Effective resource utilization is important for a consistent and profitable running of business.

Difference between Cost Accounting and Financial Accounting :

The difference between Cost Accounting and Financial Accounting are enumerated below :

Sl No.	Point of Difference	Cost Accounting	Financial Accounting
1	Meaning	Cost accounting records the different techniques of cost, principles and also the various methods for determining costs. It also presents the variance in comparison with the standards. It also explains their reasons.	Financial accounting, on the other hand, keeps records for all monetary transactions and presents the operating result and financial position.
2	Scope	Cost accounting presents to the management the required information which are useful for decision-making purposes.	Financial accounting supplies information about the results of the firm i.e. profit or loss and the financial position at a particular date.
3	Aims	The main purpose of cost accounting is to ascertain and allocates the different types of cost at their respective places.	The main purpose of financial accounting is to maintain records for ascertaining profit or loss by preparing income statement and Balance sheet.
4	Valuation of Stock	Stocks should always be valued as per cost price. Market price is ignored here.	Stocks are valued as per cost price or market price whichever is lower.
5	Applicability	Cost accounting is applicable in various manufacturing firms and service industries at the same time.	Financial accounting is applicable irrespective of caste and creed i.e. everywhere.

Difference between Cost Accounting and Management Accounting :

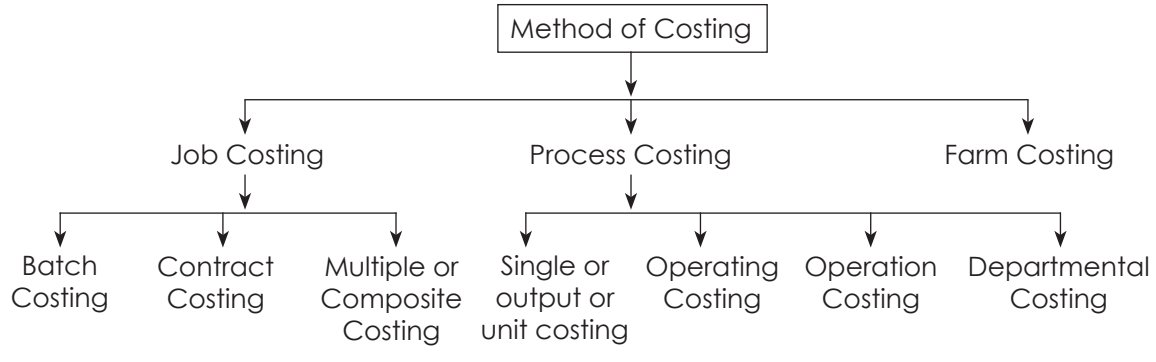
The significant points of difference between Cost Accounting and Management Accounting are :

Sl No.	Point of Difference	Cost Accounting	Management Accounting
1	Meaning	Cost accounting records the different techniques of cost, principles and also the various methods for determining costs. It also present the variance in comparison with the standards. It also explains the reasons therefor.	Management accounting on the other hand, is the presentation of accounting information to formulate the various policies to be adopted by the management.
2	Areas	The area of cost accounting is limited. It does neither record the matters relating to management accounting and nor the financial accounting.	Management accounting covers a wide range of activities i.e., matters relating to financial activities.

3	Techniques	Cost accounting supplies required information by applying Marginal Costing, Standard Costing etc.	Management accounting supplies required information to the management relating to financial decisions by taking the required data from financial accounting.
4	Periods	It takes a specific accounting period.	It does not relate to a specific accounting period.
5	Applicability	The area of cost accounting is limited.	It covers a wide range of activities.
6	Aims	The aim of cost accounting is to ascertain and allocate costs.	The aim of management accounting is to provide the required information to the management for decisions making purposes.
7	Maintenance of Records	Cost accounting keeps various sets of accounting records which are necessary for ascertaining cost.	Management accounting taken the date from financial accounting, as such, no accounting records are maintained.

6.4 METHODS OF COSTING

There are different methods of costing. The methods can be divided into :



These are detailed as below:

A. Job Costing

The main objective of Job Costing is to determine the cost and profit or loss for each job which are undertaken by the firm. It may be mentioned here that the job may consist of one item or a group of items. Cost of each job is separately determined. This method of costing is applicable in case where a specific job is done against a fixed price, viz. Printing Press, Machine tools etc.

Now, the job costing is sub-divided into :

(a) Batch Costing;

(b) Contract Costing; and

(c) Multiple or Composite Costing

These are explained as below:

(a) Batch Costing – It is a method of accounting in which costs are accumulated by batches. Costs are collected as per Batch order number and total costs are divided by the total number in a batch to find out the cost per unit of each batch. It is applicable to toy making industries, biscuit factories, medicine industries etc.

(b) Contract Costing – According to CIMA, "That form of specific order costing which applies where work is undertaken to customer's special requirement and each order is of long duration (compared with those to which job costing applies). The work is usually constructions and, in general, the method is similar to Job Costing." That is, it is a special type of job costing. It deals with the business relating to constructions of building or engineering projects etc.

(c) Multiple or Composite Costing – This costing applies where both job costing and process costing are jointly used. This costing is applicable where neither job costing nor process costing is successfully used, e.g. in a motor car industries, a variety of components are produced and assembled subsequently. So, this costing is applicable in Motor car industries, T. V. producing industries etc.

B. Process Costing

Process costing is a method of cost accounting whereby costs are charged to process and not charged over units produced. It is primarily employed where a finished product is the result of a more or less continuous operations, e.g. paper mills, refineries, chemical plants etc.

Process costing is sub-divided into :

(a) Single or output or unit costing;

(b) Operating costing;

(c) Operation costing; and

(d) Departmental costing

These are explained as below:

(a) Single or Output or Unit Costing – where there is a continuous manufacturing process and units which are produced are identical, this costing is used. The total cost of production is divided by the total number of units produced to get the cost of production per unit i.e., single output cost. This costing is applicable in mines, paper mills etc.

(b) Operating Costing – Operating costing refers to the costs of undertakings who do not manufacture any product but renders services, e.g., transport undertaking, hospitals, hotels etc. In other words, it is used to find out the cost of services which are rendered. In order to ascertain the unit cost, the total cost is divided by the units of service that are rendered by the particular transport.

(c) Operation Costing – This costing refers to the ascertainment of cost of operation and not the processes. Under the circumstances, each operation is considered as the cost centre. This costing is found where production is carried on by various distinctive operations. Cost of each operation is separately determined.

(d) Departmental Costing – Under this method of costing, in order to find out the cost per unit, the total cost of each department is determined first which is divided by the total number of units that are produced in that particular department. But if one particular product passes through various department for its completion, the cost of each department should be ascertained separately and the total cost per unit should be the price after adding the cost per unit of various departments, the product passes through for its completions. The cost so ascertained will be the cost per unit of the product.

(e) Farm Costing – Farm costing constitutes activities agriculture, dairy, nursery etc. This costing is the application of costing principles and techniques to farming activities. It is known to us that farms activity is largely affected by the natural activities, viz. water, air, sun etc. Thus, farm costing is totally different than other costing systems which are applicable to manufacturing industries. That is, a new method of costing should be applied to farm which will be found most suitable for farms and the same is taken as farm costing.

In addition to above, there are other methods of costing also like (a) Standard Costing, (b) Uniform Costing, (c) Marginal Costing etc.

6.5 COST AND COST OBJECT

Commonly understood 'Cost' is expenditure incurred for creation of a value. However, cost can very rarely stand alone and should always be qualified as to its nature and limitations. A number indicated as cost would mean differently under different circumstances. Further this number may be an approximation. It may not necessarily be an actual cost, but may be estimation.

The term cost may denote any of the following:

- an expense that is related to a product or service e.g. cost of material used to produce a TV set.
- an expense that may be related to time i.e. deferred cost, the benefit from which is yet to be received.
- an expense that is lost i.e. there won't be a benefit accruing out of the incurrence of the cost e.g. cost of stock damaged in a fire.

A cost accountant must be able to differentiate cost with respect to product or service, time and the benefit related to it. The purpose is to identify cost with a thing to which it is related to.

Therefore the term cost should always be linked with a cost object to be more meaningful. Cost object is the technical name for a product or a service, a project, a department or any activity to which a cost relates.

Establishing relevant cost object is very crucial for a sound cost accounting system. When costs are accounted for, they are to be booked (i.e. entered under) to a correct cost object. If at this first level of cost data collection, the entry is not made to correct cost object, it will affect the whole process of cost ascertainment and will not aid business decisions.

At a broader level a cost object may be named as a cost centre, whereas at a lowermost level it may be called as a cost unit.

Cost Centre

Commonly understood, cost centres are sub-units of an organisation. We use the terms such as departments, divisions, regions, and zones etc. that convey the same meaning of cost centre. Correct identification of these sub-units is essential for implementing cost accounting system as the costs are ascertained and controlled with respect to the cost centres. Cost centres are sometimes called as centres that add to costs of the organisation and only indirectly add to the profit of the organisation.

The official terminology of CIMA defines a cost centre as "*a location, a person or an item of equipment (or a group of them) in or connected with an undertaking, in relation to which costs ascertained and used for the purpose of cost control.*"

This definition clearly brings out a very wide connotation of the term. It can be explained as follows:

(a) A cost centre could be a location or locations like a branch, a region or zone of sales, etc.

(b) It could be identified as a person such as Chairman's office or MD's office

(c) It could be equipment or a group thereof such as lathe machines, Computers, etc.

(d) It may be a department carrying out a certain activity e.g. production departments like turning, fitting, welding, blending, assembly etc. The activity could be a service activity as well like a stores department, labour office, accounts department etc.

When different responsibility centres are properly set up, cost collection and use of cost information for control purposes can be done effectively.

Cost Unit

The cost unit is the narrowest possible level of a cost object for which costs are collected. Usually it represents the unit used to express the quantity in which the product or service offered by an organisation is measured. This is a normal selling unit or output for which costs are calculated.

The CIMA official terminology defines cost unit as "*a unit of product or service in relation to which costs are ascertained*".

Let us see some of the common examples of cost units in the following table.

Business	**Cost unit**	**Expressed as**
Automobile	A car, a scooter, a motor bike etc.	Number / each
Pharmaceuticals	A strip or a pack or a bottle of medicine	Number of strips of tablets or capsules of various potencies, a crate of bottles of different sizes
Sugar, fertilizer, chemicals	Kg / litres / tonnes	Number
Furniture	Article	Number of sofas, beds, chairs etc.
Power	Kilowatt hour	Number of Kwh
Professional service	Chargeable hours	Number of hours
Construction	A job or a contract	Number / each
Tele marketing	Customer calls made	Number of calls
BPO service	Accounts handled	Number of accounts
Gas	Cubic foot or cu mtr	Number

For service industry, the cost unit is usually a composite cost unit i.e. it's a combination of more than one cost unit. Examples of such composite units are shown below:

Business	**Composite Cost unit**
Goods carrying company	Tonne-miles / Tonne-kilometers
Hospital	Patient day
Hotel	Bed night
Education	Student year
Railways	Passenger kilometers

Classification of Costs

Meaning of costs vary with purpose for which it is incurred. There has to be a logical way to group the different types of costs in order to devise an efficient system collecting and analyzing costs. These costs are to be further analysed and interpreted so that the objective for which they are collected can be served in a better way.

The CIMA official terminology defines classification as "*the arrangement of items in logical groups having regard to their nature (subjective classification) or purpose (objective classification)*".

The cost classification can be done in the following ways:

Basis	**Cost types**
Nature of expenses i.e. element	Material costs Labour costs Other expenses
Traceability to object	Direct costs Indirect costs

Functional	Production cost Administration costs Selling costs Distribution costs Research & development costs
Behavioural	Fixed costs Variable costs Semi-fixed or semi-variable or mixed costs
Production process	Job / contract costs Process costs Operation costs Service costs
Decision making	Relevant costs Opportunity costs Target costs Standard costs Marginal costs Budgeted costs

A. Element-wise classification :

According to elements or nature of expenses costs can be classified as material costs, labour costs and other expenses. Any item of expense can fit into one of these three.

(i) **Material Costs** are costs of physical commodities used to make a final product. They obviously exist in case of manufacturing companies invariably and also in case of some service industries like restaurants. The material could be basic raw material, components, consumables, spares, packing material etc.

(ii) **Labour Costs** comprise of expenses in relation to salaries, wages, bonuses, expenses on staff welfare, statutory benefits like provident fund, gratuity etc. This is an intangible source of cost and one cannot physically see this element into the final product. Usually, it comes next to material cost with regard to its proportion to total costs. In case of service providing organisations, of course, labour costs will constitute greater proportion.

(iii) **Other Expenses** are incurred either to provide support to manufacturing or service activity or to ensure smooth running of business.

All elements put together are called as "Total cost" or "Full cost". Labour and other expenses put together may be called as 'conversion costs'. They help the conversion of raw material into finished product.

B. Classification based on traceability to cost object

The word traceability here means the connectivity of an item of cost to the cost object which could be either a cost centre or a cost unit. It's very important to know to what extent there is a direct relationship between costs and cost objects. On this basis costs can be classified into:

(i) **Direct Costs** are costs that can be easily identified with the unit of output. The meaning here is these cost owe their existence directly to the units produced. The direct costs could be direct material costs, direct labour costs or direct expenses. Hence all elements of costs could fit in as direct costs as the test is whether there is a direct linkage of them to the unit produced or service rendered. The Direct Costs (material plus labour plus expenses) together make a Prime Cost.

(ii) **Indirect Costs** are those which are not easily directly connected with the cost unit or cost centre. Here again one may see indirect material costs or indirect labour costs or indirect expenses. All

indirect costs (material plus labour plus expenses) together are termed as 'Overheads'. As there is no direct linkage with cost unit, such costs are either allocated or apportioned to the final product on some suitable basis.

C. Functional classification

The business activities, by and large, can be sub-divided into groups as production activities, administration activities, selling & distribution activities. Mostly any organisation will have these functions as cost centres. Non-manufacturing companies may not have factory or production, but they may use other functions.

(i) **Factory or Production Costs** comprise of items of expenses related directly to the factory or production activity. These could include all elements viz. material, labour and expenses.

(ii) **Administrative or Office Costs** are those incurred for overall administration of the organisation. This may includes items like stationery, office supplies, building maintenance, salaries of office people etc. This category may include material, labour & other expenses.

(iii) **Selling and Distribution Costs** are costs incurred after the production is over. These are related to efforts for selling and distributing the products. It may involve advertising, free samples, distribution van expenses, secondary packing material, carriage outwards, discounts and schemes offered to customers. Thus these costs also may include material, labour and expenses.

(iv) **Research & Development Costs** are costs associated with efforts undertaken by the organisation to innovate new products, new designs, and new processes. These costs cannot be related to the ultimate cost unit. Hence they are normally not included in the total cost. There may be various research projects going on simultaneously. Some of them may be commercially successful while the other may not. The cost of non-successful projects may be written off to the P & L A/c in the year in which they are incurred.

D. Behavioural classification of Costs

The word behaviour, here, denotes the relativity or variability of change in the cost with respect to change in the level of business activity. The level of business activity may be indicated in terms of volume of output, hours utilised, capacity operated etc. It is in this connection that the costs are classified into fixed, variable and semi-variable costs. This classification is a very powerful tool in the hands of management for the purpose of short term decision making.

(i) **Fixed Costs** are those cost which do not change with change in the level of activity within the relevant range (installed capacity). Consider the item of rent for factory. The rent payment is associated with time period. Once an organisation makes a rent agreement, the cost is payable irrespective of whether there is any activity or not. An interesting aspect about fixed costs is that while the total fixed costs remain constant, per unit fixed cost will go on decreasing. If production goes up it is clear that this concept helps management to understand the importance of capacity utilization.

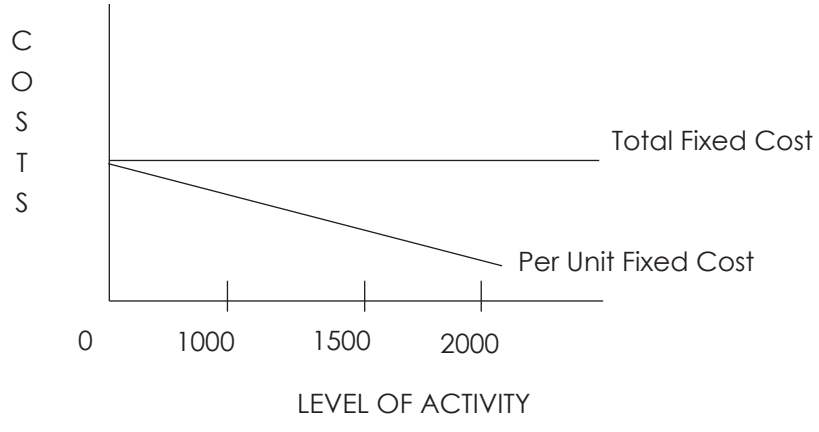
(ii) **Variable Costs** are costs that vary in direct proportion to the level of output. Any increase in the production volume will result in corresponding increase in these costs. Thus total variable costs will increase exactly in the same proportion of the volume of activity. The most common examples of such cost are material costs and costs of labour directly working on production. An interesting aspect about variable costs is that while total variable cost changes with production level, per unit cost remains the same.

(iii) **Semi-Fixed or Semi-Variable Costs** are those which change with change in activity level but not in the same proportion. In practice, the line of demarcation between fixed and variable is so thin that most of the cost items fall under this category. There cannot be exact linear relationship between most of the cost items and the levels of activity. Various statistical tools are used to establish a correlation and the degree of variability is measured.

The following example shows how perfectly variable or perfectly fixed cost would behave. Please understand these relations very well as it lays the foundation of a very popular technique of marginal costing which studies the cost-volume-profit relationship.

(a)	Level of activity		1000	1500	2000
(b)	Variable cost (say materials)		60000	90000	120000
(c)	Fixed costs (say rent)		30000	30000	30000
(d)	Per unit variable cost	(b ÷ a)	60	60	60
(e)	Per unit fixed cost	(c ÷ a)	30	20	15

This can also be shown as chart as follows:



From the view point of managerial decision making especially in the short term this classification acts as a very potent tool. It can help take decisions such as by how much should the production be increased or decreased or what will be the effect of volume changes on costs or vice versa.

E. Classification by Production Process

Based on the method of producing a product, the costs also need to be accumulated with regard thereto. Production method based classification of costs can be done as follows:

(i) **Job or Contract Costs** are associated with industries where the end product is a unique, non-standard item which is produced or built as per customer specification. Repeat production of the same item is highly unlikely. These costs are directly associated to a job or a contract which is the cost unit in these industries. The application of this method is seen in construction industry, ship building, machinery construction and projects. Most of the costs relate with an individual production order. It can be applied even in service industry.

(ii) **Process Costs** are related to production processes in industries like chemical, pharmaceuticals, fruit processing, cosmetics etc wherein raw material is input in a series of processes where different treatments are made to convert the form of raw material into a finished product. Output of one process becomes input for the next in the series.

(iii) **Operation Costs** are pertaining to performing an operation at each stage in the production process. This is a variant of process costing and finds its application in industries where large number of similar items is produced or also in industries where sub-assemblies are produced. Take case of bearing manufacturing which is assembly of inner rings, outer rings, balls and other components. Each component is produced in large quantities and then assembled to get a ball bearing.

(iv) **Service Costing** is used in the service industries and the costs are ascertained for generating services. The intention is to show cost of appropriate cost unit of a service e.g. passenger-kilometer for railways, KWH for power etc. This is generally used in hospitability, hospitals, etc.

F. Classification for decision making

The purpose of ascertaining costs is to help management in decision making process. As it involves evaluation of costs & benefits of various alternatives, costs which are relevant for a particular decision only should be considered.

(i) **Relevant Costs** are those which are relevant for situation under consideration. Costs which are future costs, involved a cash outflow and which differ between the various alternatives are called relevant costs.

(ii) **Opportunity Cost** is the benefit forgone as a result of pursuing one course of action rather than pursuing the best alternative course of action. The opportunity costs are always relevant. For, they reflect the choice of alternatives to arrive at a decision.

(iii) **Target Cost** is a product cost estimate derived from a competitive market price. The intention of target cost is to bring about continuous improvement in the cost. Consider a product the price of which is given by market. If the company wants to earn a desired profit on the product, there's no alternative but to produce it within the target cost calculated as (selling price – desired profit). It may sound simple, but achieving the results is very difficult.

(iv) **Standard Cost** is a pre-determined cost which is calculated from management's standard of efficient operations and the relevant necessary expenditure. The standard cost once established, acts as a benchmark against which the actual costs are compared. The deviation from the standard are measured, analysed and corrective actions are taken. Standards are based on scientific computations based on time & motion study, industrial engineering and other techniques. As the name suggests, it can be applied only in those industries where the products processes and operations are standardised.

(v) **Marginal Cost** is an amount by which aggregate costs change if volume of output is increased or decreased by one unit. It follows from this that the marginal cost resembles to a variable cost. If only one additional unit is to be produced, it is necessary to incur only variable costs as fixed costs do not change with the change in output levels. Thus marginal cost is also defined as cost of producing one additional unit.

(vi) **Budgeted Cost** is also a pre-determined cost like standard cost; but the later is set for a long term, whereas budgeted cost is usually for a year. The basic purpose of budgeted cost is to provide a benchmark for comparison of actual performance. The budgeted cost is like a target within which to operate.

Standard costing, budgetary controls and marginal costing are techniques used by management accountants as integral part of any performance management system in an organisation.

These different categories of cost can be interlinked. Costs could fall into more than one category simultaneously. There may be an overlapping when one tries to categorise cost as per one or more types as mentioned in preceding sections. A raw material cost is

(a) Material cost by elemental classification,

(b) Direct cost by traceability

(c) Production cost by function

(d) Variable cost by behaviour

(e) Relevant cost for decision making.

(f) Could fall into any of the types based on production process.

6.6 COST ORGANIZATION

The costing department is an important player in the entire value chain of the organisation. It has to help the CEO in bringing about improvements in processes, cost reductions, and value enhancement. As the function encompasses all functional areas of the organisation, a cost and management accountant has work along with these departments as a facilitator and not only as a critique. The involvement of this department with others can be explained with an example:

Department	**Areas contributed**
MD's or CEO's office	Preparation of strategic plan Reporting on key variances Reporting on value additions Analysis of product or SBU wise results Capacity expansion or diversification Management audit Internal control
Production	Set up costing system Generate costing reports Inventory valuation Wastage reporting & monitoring Labour time utilisation Production budgets Make or buy decisions
Sales and Marketing	Product pricing Sales budgets & forecasts Cash flow estimations Impact of sales promotion Competition analysis Bidding for tenders Accept or reject an order
Procurement	Purchase budgets Vendor analysis Economic ordering quantity Stock levels Price variances
Information technology	Cost information ERP implementation

In addition to the above, the costing department also looks after cost audit in those organisations where cost audit is compulsory. It is also evident that the role of this department is functional as well as strategic.

6.7 COSTING SYSTEM

To determine costs correctly, an organisation must install proper system of costing. There is no standard system that can suit every organisation, but it will depend on the nature of business, the nature of product or service, the management's need for costing information and cost control. Typically a costing system is comprised of the following characteristics:

(a) It lays down basic procedures and functional routines. In its traditional form, costing process aligns itself with the flow of business activity. Hence a clearly defined logical flow of business activities will make the system stronger.

(b) It starts with a proper classification of costs, determination of cost centres and cost units. This base level activity is many times ignored which may create problems at a future date.

(c) It provides basic guidelines for segregation of fixed and variable costs.

(d) It will include the logic for allocation and apportionment of indirect costs.

(e) It also provides standard reports vending out regular flow of costing information to various levels of management.

(f) The system should provide for a cost accounting manual explaining how different items of costs will be treated in an organisation.

(g) It needs to take into consideration the cost audit record rules and cost audit report rules if applicable.

(h) The system should not be closed ended, but scalable to take care of future changes in the business requirement. If not taken care of in time, this will increase the cost of system itself.

(i) These days, the system is mostly an integrated system which takes care of financial and cost accounting simultaneously as the process is automated.

6.8 COST DETERMINATION

Determination of cost is embodied in a costing method within the costing system. Cost is always determined for a cost unit. Whatever may be the cost unit, costs are accumulated and attributed to that cost unit to ascertain the total cost. In Job costing, for example, all elements of costs are identified with "a job". In case of costs that cannot be directly so identified, they are allocated or apportioned using a suitable basis. In a service organisation, the composition of cost is dominated by indirect costs. The proportion of allocated costs in the total cost in such industries is higher.

The primary record of cost is done with respect to the element and cost centre. The secondary record relates to allocation of indirect costs. The next level is to relate it to the actual cost unit. In case the cost unit is not singular, the costs are averaged out. For example, if chocolates are made in batches of a particular quantity, cost unit is normally a batch and costs are ascertained for the batch. These costs are then divided by the number of chocolate in the batch to find out cost per chocolate.

The process of determination of cost of a pre-determined cost unit can be seen in the following chart:

Particulars	Basis of identification	Production departments			Service departments		
		Stage 1	Stage 2	Final stage	Dept 1	Dept 2	Dept 3
Direct Costs:							
Direct Material	Direct identification	------	------	------	------	------	------
Direct Labour		------	------	------	------	------	------
Direct Expenses		------	------	------	------	------	------
Primary distribution of Indirect Costs							
Indirect Material	Direct or allocated	------	------	------	------	------	------
Indirect Labour		------	------	------	------	------	------
Indirect Expenses		------	------	------	------	------	------
					------	------	------
Secondary distribution of Indirect Costs							
Apportionment of service department costs to production departments	Service rendered						
Total Cost of Production (a)			------				
Quantity of Cost Units (b)			------				
Per unit cost (a ÷ b)			------				

This is not a standard chart but only illustrative. Each organisation will form its own format depending on the need.

Accounting for Material Cost

Among all the three elements of direct cost material cost is the most significant element. The term material is a very broad term and could include:

(a) Direct material such as raw material which is converted into finished product. A product may be made out of single raw material item or multiple material items may be processed or blended together. It will also include the basic packing material without which a product cannot be stored or sold. e.g. fruit juice has to be offered either in a glass or plastic bottle or a sachet or tetra pack. Such packing material will be included as direct material as it can be easily identified with each litre of juice produced.

(b) Indirect material such as oil, grease, cleaning material, screws and nuts, secondary packing. This material does not form part of the final product. Technically even items like office supplies and stationery may be included as indirect material.

The classification of material cost into direct and indirect is important as the control mechanisms for both are different. Whereas efforts to control direct material costs will be directed to minimize the cost per unit, the indirect material costs may be controlled through other control measure. In different industries also material costs may be controlled in different ways e.g. in a chemical or pharmaceutical company the production is based on a fixed formula of mixing material, the costs are controlled through reduction in wastage and material rate negotiations.

Of late, there is an increased importance given to not only the control over physical being of a material item but also on the entire logistics of material movement. From the stage of planning till final usage

of material, there are costs attached to each activity which need to be controlled. Inventory controls measures like EOQ, ABC analysis, Pareto analysis also help keeping material costs to minimum levels.

Movement of Material

The flow of material routine may involve following:

(a) Planning for material

(b) Procurement of material

(c) Receiving and Inspection of material

(d) Storage of material till it's required for production and Issue of material at various stages of production

(e) Store Records

(a) Planning for Material

There is a continuous planning required to be done for making sure that material of the right quality, right quantity at right price are made available at right time for production activity. Companies may have planning cells to look after this activity. At times, the purchase department may be involved in the planning activity with production and industrial engineering. Computer aided packages like Material Requirement Planning (MRP) are used to do errorless plan for material. Codification of material items is the pre-requisite right from planning stage for easy identification of an item. A typical plan for material will indicate item-wise requirement of quantities for the planning period which may be a year.

(b) Procurement of Material

Based on the planning done, the purchase department may start buying material either on the basis of quantities that are to be procured as per stocking policy or on the basis of specific requisitions from stores department. There could be a requisition made directly by production department as well for a specific item required for a job or contract or a process. Depending on the size of organisation and nature of business, the purchase activity could either be centralized or decentralized. The purchase requisition acts as an authority for the purchase department to buy the required material.

For non-specific items of material, the crucial decisions to be made are:

(i) How much quantity should be bought at a time?

(ii) When should the stocks be replenished?

(iii) What should be the source of supply? Should there be single or multiple sources?

(iv) How many quotations should be called for?

The aim should be to order in just the right quantities so that the situation of over-stocking or under-stocking is avoided.

Overstocking may result into

- Locking up of working capital and higher interest costs
- Locking up of storage space
- Benefits of drop in prices of material may not be available
- Increased risk of obsolescence or deterioration
- More material handling and upkeep

Under stocking, on the other hand, could lead to:

- Production holdups causing disturbances in delivery schedules
- Unfavourable price and credit terms for last minute distress buying
- Payment for idle time to workers due to production holdups

For specific items purchase actions are initiated based on purchase requisition or indent, which is a request by the generating department to purchase department to procure items as indented. These indents could be made on the basis of Bill of Material prepared by the engineering department.

The Bill of Material (BOM) lists all material items required for making a complete product unit inclusive of all components or sub-assemblies. It is easy for the purchase department to act on such advance intimation about future requirements. Internal control can be established as the material can be issued for production only as per the BOM. Thus a stores person will not issue less or more material. The specimens of BOM and purchase requisition are illustrated below. The formats may differ from company to company.

Bill of Material

Specimen Bill of Material (BOM)

Number _____ Date _____ Job / Order Number _____

Department Code _____ Assembly Drawing no. _____

Part No.	Component Code	Component Description	Material Code	Gross Material Quantity	Normal Wastage	Net Material Quantity

Signed by: Engineering Head Approved by _____

For use by Purchase Department only

Date	P.O. Number	Name of Supplier	Delivery Date	Remarks

Signed by: Buyer or Purchase Manager

Purchase Requisition

Specimen Purchase Requisition or Indent

Requisition Number _____ Date _____ Job / Order Number _____

Department Code _____

Sr. No.	Item Code	Description	Quantity	Units	Quantity on Hand	Remarks

Signed by: Stores-in-Charge / Planning Engineer Approved by _____

For use by Purchase Department only

Date	P.O. Number	Name of Supplier	Delivery Date	Remarks

Signed by: Buyer or Purchase Manager

The purchase department may have list of approved vendors with it. It is a good practice to keep updating the new sources of supply so that running around at eleventh hour could be avoided. If there are more vendors approved for similar items it is necessary to call for quotations to get the best rates and terms of supply such as delivery, credit, quality etc. The tenders could be single tender, restricted tenders, open tenders or global tenders. After getting tenders, a comparative statement is prepared in order to provide decision maker a proper set of figures to decide. The comparison of quotations could be done in the following format.

The ranking of suppliers is done on the basis of this comparison. The lowest quotation is ranked as 'L1' which indicates a preferred supplier. It's not always selected only on price but multiple factors such as quality, previous track record, guarantees offered by them, credit granted, market standing of the supplier etc. The cost and management accountant may participate in the process of finalizing the supplier through this process.

Schedule of Quotations

Requisition Number _____ Date _____ Job / Order Number_____

Department Code _____

Supplier	Minimum Qty offered	Rate per Unit	Delivery Time	Delivery Terms	Credit Terms	Quality Certificates	Ranking

Signed by: Buyer Approved by _____

Once the supplier is selected and rates, quantities and other terms are finalized, a firm order is placed on the supplier. Many firms follow the policy of sending a Letter of Intent (LOI) to supplier as advance intimation and then the actual PO is issued. This is a contractual commitment for both buyer and supplier to supply and accept goods as per the terms of the PO. A specimen of Purchase Order is shown below.

Specimen Purchase Order

To : M/s _____
(name & address of supplier)
PO Number _____ Quotation Reference _____
Date _____

Item code	Description	Quantity	Units	Rate per unit	Amount	Remarks
Add: Freight & Packing Add: Excise duty Add: VAT or CST						
				Total Amount		
Delivery: Goods to be delivered at (address of the place) Delivery date _____ VAT form to be provided ____ Quality certificate required __ Payment terms _____ Signed by: Authorised Signatory						

The main PO is sent to supplier and copies are given to department generating requisition (to intimate the action taken on indent to them), stores department (as advance intimation about likely date of delivery so that storage plan can be worked out) and accounts department (to intimate creation of an obligation to pay as per agreed terms and also timing of the cash outflow). The format of the PO for an imported item will be same except for the unit of currency and some other terms.

If the payment is through letter of credit (L/C), the fact is mentioned in the PO and along with the PO, LC is also opened through bank.

(c) Receiving and Inspection of Material

On or around the scheduled date, the supplier will dispatch the material and intimate the buyer of the fact of delivery. He also sends the delivery documents like VAT invoice, delivery challans, and excise gate pass, test certificates, freight receipt if paid for etc. The purchaser will inform stores department of the delivery.

The stores department will receive the material after the gate entry. It will compare the quantities sent with that of the PO quantity. In case of excess or shortage, the supplier is informed immediately. The excess may be returned back to the supplier. The stores department will prepare Goods Received cum Inspection Note (GRIN) and intimate the Quality Control (QC)department with a set of GRIN copies. The QC department will carry the routine and specific quality checks and either accept or reject the material in full or part. The accepted material is final stores at its place in the bin or yard and the inventory records are updated with this inventory received. The specimen of a GRIN is shown below:

Specimen Goods Received cum Inspection Note (GRIN)						
Received from _____ (name & address of supplier) Received at _____ (place of Receipt)				GRIN Number _____ Date _____ PO Reference _____		
Item Code	Description	Quantity Received	Quantity Accepted	Quantity Rejected	Reason for Rejection	Remarks
Prepared by ____		Received by ____		Inspected by ____		Storekeeper ____

A copy of the GRIN after acceptance of material & invoice of the supplier is sent to accounts department for bill passing. The accounts department will check the rates charged by the supplier with the PO rates and all other terms such as freight, insurance, other certificates, VAT or CST forms and then pass the bill for payment. The payment is released based on the credit period agreed with the supplier.

In case of imported material, Bill of Entry prepared and approved by the department of customs is a very crucial document. The customs duty is charged by the customs based on this.

For cost control, the management accountant test checks the documents to see if quantities are correctly recorded in the stores ledger and whether the rejected goods are actually sent back to the supplier.

(d) Storage and Issue of Material

Once the accepted material is received, it is under the responsibility of the stores-in-charge. It is his duty to ensure that the material movement in and out of stores is done only against proper documents authorised by concerned authorities. He is responsible for proper housekeeping of the storage space to ensure that material is well protected and there is no loss due to defective storing. He also insures the stock. He takes care to avoid loss of material due to pilferage, theft or fire.

Broadly the movement of material in and out of stores will be on account of:

- Issue to production departments
- Return back from production department
- Transfer from one location to the other
- Sending material out for further processing to a sub-contractor
- Receiving back the material from sub-contractor

The material is issued to production department based on the document called as Material Requisition cum Issue Note (MRIN). This is prepared by the concerned production planning department and it acts as an authority for the store's manager to issue the material. The specimen of MRIN is shown below:

Specimen Material Requisition cum Issue Note (MRIN)

Required by _____ MRIN Number _____

(name of production location) Date _____

Production / Job Order No _____

Item Code	Description	Quantity Required	Quantity Issued	For Cost Office		
				Rate	Value	Remark

Authorised by_____ Issued by _____ Received by_____ Entered & Valued by_____

The stores department has no access to cost data. Hence the valuation of material issues is generally done by the costing department. Based on the valuation method chosen, the cost accountant will value it and enter in the stores ledger which records the stock.

If for some reason the material is returned back to stores by the production department a document called as Material Return Note (MRN) is prepared which is similar to that of MRIN; except that instead of quantity received and issued the columns will be named as quantity returned will appear.

In case material is transferred from one location to the other, a Material Transfer Note (MTN) is prepared which will record 'transfer from' and 'transfer to' details. The basic format will be quite similar to the above, hence not reproduced.

(e) Stores Records

Normally two set of records are maintained for the movement of goods in and out of stores department. The records are input using the documents like GRIN, MRIN, MRN and MTN which have been discussed. These records reflect an account of 'inflow', 'outflow' and 'balance in hand'. These records are:

(i) Bin Card – This gives a quantitative record of material movement to and from stores. This is maintained by the storekeeper. It is prepared for each material item code and presents a continuous flow of receipts, issue and closing balance of the item concerned. Ideally, these cards are attached to the bins or place where the material is actually stored. But mostly they are centrally kept in the stores department under the custody of storekeeper for ease of handling. Ideally, bin cards are to be instantly updated on an ongoing basis to avoid mismatching of stock records with the physical balance. The specimen bin card is shown below:

Specimen of Bin Card

Item code _____ Normal stock level _____
Description _____ Minimum stock level _____
Location _____
Store Ledger Folio _____ Maximum stock level _____
Bin Number _____ Re-order level _____

Date	Document number	Receipts	Issues	Balance	Remarks
Audit remarks:					

(ii) Stores Ledger – While the bin card gives quantitative record, the stores ledger adds the 'cost' dimension to it. The stores ledger is maintained by the costing department.

Specimen of Stores Ledger

Item code _____ Normal stock level _____
Description _____ Minimum stock level _____
Location _____
Store Ledger Folio _____ Maximum stock level _____
Bin Number _____ Re-order level _____

Date	Document Number	Receipts	Receipt			Issues			Balance			
			Qty	Rate	Value	Qty	Rate	Value	Qty	Rate	Value	Remarks
Audit remarks:												

The stores ledger is the most authentic record of stock value at any given point in time. It is of great help to a cost accountant as he can assess the various aspects of stock movements for particular categories of material items.

As bin cards are kept by stores and stores ledger (also called as stock ledger) is maintained by costing, there has to be a periodic reconciliation of both records to ensure that they match in respect of quantities of receipts, issues and balances. A cost accountant has a major role to play here, as any error in these records may directly affect the consumption figure and thereby the material cost.

Are these records kept for each and every item of material - for both direct and indirect? The answer is 'no'. The decision is based on the overall value of such items. Computer packages have made the task of keeping the stock records very easy and online. The reconciliation is also rendered unnecessary as the system automates it. At one entry point both records get simultaneously updated.

Material Cost

It is essential to keep track of material cost flow alongside the physical flow of material throughout the production activity until it is finally converted into finished product.

Material Cost Flow:

The first instance when material cost is incurred and recorded is when the material is received and accepted (through GRIN). At this stage it is important to carefully value the receipt of goods. Some of the material may be returned back to supplier. Thus, valuation of return of goods is made.

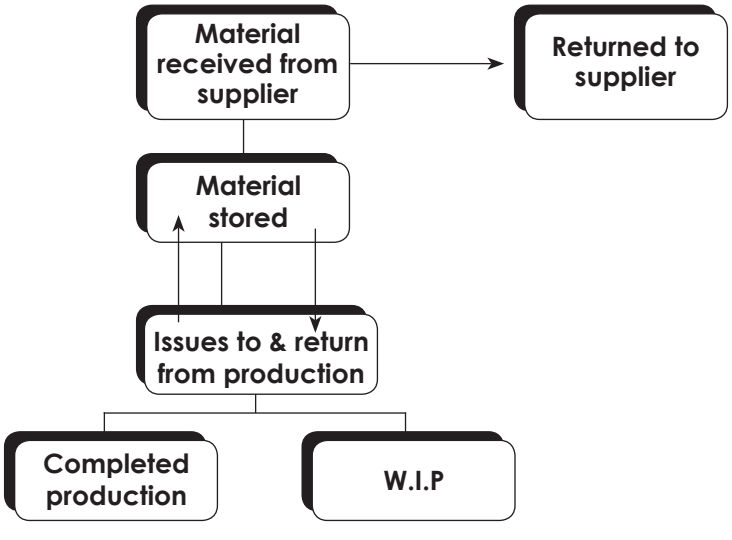
Next stage is issue of material for production. This has an effect of reducing the stock in hand and increase in the production cost (notice the double entry effect here too!). The valuation of issues is the next stage. There may be return of material from production to stores. Hence, valuation of returns to stores is essential.

When material gets converted into finished product the material cost becomes one of the elements of cost of production. During production process some material may be lost. Such losses will have to be valued. The losses may be unavoidable (such as leakage, evaporation, moisture, dusting etc.) or avoidable losses (pilferage, defective storage, careless handling, defective workmanship etc). The valuation of both types of losses is different.

Some production process may not be fully complete and material is under process. This is called 'Work in Process (WIP)'. The material cost of WIP has to be calculated.

Hence it is crucial for a cost accountant to ensure that costs are properly ascertained at each stage in the material flow, interpreted, analysed, reported and controlled; which is the main purpose of cost accounting.

The following chart depicts the material cost flow in a manufacturing concern.



Let us elaborate the mechanism of valuation of material at various stages.

(i) Valuation of Receipts

Material is received as per the terms and conditions given in the purchase order. In addition, there are added on costs such as taxes & duties, freight, packing & forwarding etc. There may be trade discount to be calculated on the basic price and then reduced from the net rate. Cash discounts if any are excluded from valuation of receipts, it being of a pure financial nature.

The foreign Purchase orders are generally given in foreign currency. The foreign suppliers' invoices are also in foreign currency. In such cases, the foreign currency of the basic price is converted into Indian Rupees. The other charges like customs duty, inland transportation etc. are in INR only. The question is what should the currency conversion rate be? Usually it is taken as the bill of entry rate.

In short the cost of material receipts should be equivalent to the landed cost i.e. cost up to the stage of storing in the factory warehouse. When we speak of the base price, the price term has great significance. For example, if the price is FOB price, it means the cost of insurance and freight is to be borne by the buyer. The CIF price is inclusive of insurance and freight up to the port. If the price is ex-works, it means complete expenses of picking up material from the factory gate of supplier will be the responsibility of the buyer. A DDU price means delivery duty unpaid. Here duty is payable by the buyer, whereas a DDP price means delivery duty paid where duty is paid by the seller. The student is advised to make himself aware of different price terms used in the national and international trade agreements.

The cost of receipts should include all items of expenses related to bringing the material to the warehouse.

(ii) Pricing of Material Issues

The material received and stored in the warehouse is intended to be used for issue to production. There will be several receipts and numerous issues of the items of material and this is an ongoing activity. Prices do fluctuate in the market as the material may be bought from different vendors, in different quantities, from different states which may result in different landed cost for the same item. Consider material 'P' is bought from 3 different suppliers as:

From A 1,000 units @ ₹ 24.50 on 1st Jan 2012

From B 700 units @ ₹ 26.00 on 4th Jan 2012 and

From C 1,250 units @ ₹ 23.75 on 7th Jan 2012

Assume 500 units are issued to production on 2nd Jan 2012 and production is complete. The answer here is simple as there is stock of 1,000 units from which 500 are issued and as this is the only lot existing, the issue cost per unit will be ₹ 24.50.

Now assume that 1,500 units were issued on the 9th of Jan 2012. What will be the material cost per unit produced? As there are 3 different rates which of them will be considered?

There could be different answers for this. It could be:

(1) Use the first lot first or
(2) Use the last lot first or
(3) Take an average of rates
(4) Try and relate the lot to production on actual basis and many more.

Whichever of such methods of valuing issue of material is used remember the following impact thereof:

* *Receipts are always valued at actual*
* *Issues are valued using one of valuation method*
* *Stock values reflect the effect of valuation of issue*

Let us see these methods in depth now.

(a) Actual Cost Method: Under this method the production made is exactly identified with the purchase lots and issues are valued at the rate of such identified purchase lot. This is possible in case of Job or contract type of companies or those executing projects. This is because each job or contract

or project uses non-standard items and each item is used for specific job only. The purchase orders are made according to the project number and material is physically stored separately according to project numbers. Although effective, this method is tedious in terms of record keeping. For same item used in different projects a separate stock card according to project number will have to be used. This method is also called as 'specific cost' method.

(b) First-In-First-Out (FIFO) Method: This method assumes that the material received first is consumed first. For issue valuation, the rate of the earliest available lot is considered first and when the lot gets fully consumed, the rate of next available is taken and so on.

Benefits:

(i) The method is simple and easy to operate.

(ii) It results in valuation of closing stock at latest prices.

(iii) It can be conveniently applied if transactions are not too many.

Disadvantages: The calculations become complicated if the receipts are too many. Companies having the JIT system will face this problem more. If prices fluctuate widely, the cost of production may seem to vary, thus vitiating results.

Application: The method is applied in the industry where it is necessary to ensure the physical flow as per the principle of FIFO. In pharmaceuticals or chemical factories where the raw material has a shelf life, the principle of FIFO must be followed. Here the valuation will coincide with physical flow also.

(c) Last-In-First-Out (LIFO) Method: This method assumes that the material received last is consumed first. For issue valuation, the rate of the latest available lot is considered first and when the lot gets fully consumed, the rate of the earlier available is taken and so on. This is exactly reverse of the FIFO method.

Benefits: (i) The method is also simple and easy to operate.

(ii) It results in valuation of cost of production at latest prices.

(iii) It can be conveniently applied if transactions are not too many.

Disadvantages: The calculations become complicated if the receipts are too many. Companies having the JIT system will face this problem more. Here also if prices fluctuate widely, the cost of production may seem to vary, thus vitiating results.

Application: The method is applied in the process type of industry where material moves in lots from one process to the other and the individual identity of material is not important, e.g. oil refineries, sugar mills, flour mills etc.

What are the implications of the FIFO and LIFO method?

The choice between the two methods is quite tricky. If the prices of material are showing increasing trend or decreasing trend, what will happen to material cost and stock valuation under both methods? See the following table:

	FIFO method	LIFO method
Increasing prices:		
Material Cost	Lower	Higher
Closing Stock value	Higher	Lower
Decreasing prices:		
Material Cost	Higher	Lower
Closing Stock value	Lower	Higher

(d) Average Method: Both the above methods consider the actual costs for valuation of issues and stocks. However, both the methods are equally cumbersome if number of transactions is very large and prices fluctuate too much; which will happen in a longer term. Consider the following case:

March 1, purchased 1,500 units @ ₹ 10 per unit ₹ 15,000

March 15, purchased 1,600 units @ ₹ 30 per unit ₹ 48,000

On March 20, 1,800 units were issued to production.

The valuation of material cost and closing stock under both the methods will work out as follows:

	FIFO method	LIFO method
Material Cost	1,500 x 10 = 15,000 300 x 30 = 9,000 **24,000**	1,600 x 30 = 48,000 200 x10 = 2,000 **50,000**
Closing Stock value	1,300 x 30 = 39,000	1,300 x10 = 13,000

In average method, the actual rates are not used, but the average rates are used.

There are two methods of averaging – simple average and weighted average. Let us see how both these methods work and what their implications are:

- **Simple Average Method:** Under this method, the rates of various receipts are averaged out. The rates of various receipts are added and this total is divided by total number of receipts. The issue price is thus worked out by a simple formula:

$$\text{Issue Price} = \frac{\text{Unit prices of materials in stock}}{\text{Number of Purchases}}$$

A simple average of prices of lots available for issue is taken as 'issue price'. It is also called as moving simple average method.

Benefits: (i) The method is also simple and easy to operate.

(ii) It results in valuation of cost of production at average prices, thus reducing the fluctuations caused in the methods based on actual costs.

(iii) It can be conveniently applied if purchases are made in identical lots.

Disadvantages: The material and stock values do not reflect actual costs. Here also if prices fluctuate widely, the cost of production may seem to vary, thus vitiating results. It is difficult to verify the closing stock figure lot-wise. The method considers only rates and has no regard for the quantities held.

Application: The method is applied where prices do not vary much and it is difficult to identify each issue of material with the lots.

- **Weighted Average Method:** This method removes the limitation of simple average method in that it also takes into account the quantities which are used as weights in order to find the issue price. This method uses total cost of material available for issue divided by the total quantity available for issue.

The formula applied is:

$$\text{Issue Price} = \frac{\text{Total Cost of Materials in Stock}}{\text{Total quantity of Materials in Stock}}$$

The benefits of weighted average price are more or less similar to that of simple average method, except for the fact that use of quantities as weights refines the average mechanism to make it more equivalent.

• There are other methods of valuation of prices and these are discussed briefly as follows:

(a) **Highest in first out:** In this method the stocks are always shown at minimum value and the issues are priced at the highest rates in the available lots.

(b) **Standard price:** Irrespective of actual prices, this method considers standard price for the issue of materials. The difference between standard and actual is treated as variance.

Selection of method of pricing will depend on the following:

(a) Nature of material – if material has a shelf life then FIFO is suitable

(b) Prices of material – if prices fluctuate widely, weighted average method is useful

(c) Method of costing followed – if standard costing is used, the pricing of issues could be done at standard price

(iii) Treatment of Shortages:

We know bin card and stores ledger show the book balances. They are to be periodically compared with physical balances to ensure accuracy of stock records as well as correctness of physical control. If there are discrepancies arising between physical and book balances, the adjustment has to be done in the stock ledger. The shortage is shown as issue and is valued on the same basis as that of pricing of actual material issued. The excess is treated as a receipt.

Shortages may also arise due to a variety of reasons like:

(a) At times, it may not be possible to measure the exact quantity issued. In such case an estimate may be made.

(b) There could be differences due to theoretical weight and actual measured weight.

(c) If material is in liquid form, it may be subjected to losses due to evaporation, temperature change, moisture etc.

(d) Wastage may be caused within stores due to dusting, leakage etc.

Whatever may be the reason for shortage, it is essential to assess whether the loss is avoidable or unavoidable. If losses are inevitable or unavoidable, it is called as normal loss and the cost is spread over the balance good stock. The avoidable loss (caused due to issue deficiency or accident) is called as abnormal loss and should be costed separately. The abnormal loss should not be charged to production cost and dealt with separately.

(iv) Valuation of Returns to Stores:

When material is returned back from production department to the stores, the question of valuation arises. No doubt the returns are to be shown in the receipt column, but there is no unanimity among experts as to its valuation. Some say it should be taken back at the same price at which it was issued. The other experts say that valuation should be done at current price of the issue.

(v) Valuation of Returns to Vendors:

Material which are not accepted for quality reasons or due to non-conformity to the specifications, it will be returned back to the vendor. If the defect is spotted during initial quality check, the material is not taken in the stock ledger at all and returned as it is. If material is taken into stock, but not yet issued, then the return is valued at the same price at which the receipt is recorded. If an issued material has to be returned back, then firstly it is shown as a return from production to stores and subsequently shown as a returned to vendor. This is valued as per the system of issue pricing currently used.

(vi) Accounting for Stock Entries:

In an integrated accounting system, where cost and financial records are kept simultaneously, the entries for stock transaction are made as follows:

On receipt of material for stocking	Dr Stock of material Cr Suppliers
Receipt of material for specific jobs	Dr Job Work in Process Cr Suppliers
On issue to production	Dr Work In Process Cr Stock of material
Return from production	Dr Stock of material Cr Work In Process

(vii) Perpetual Inventory & Physical Stock Taking

Periodic checks of stock by internal auditors or cost accountants must be carried out to find out whether the procedures and rules are strictly followed. The deviation if any must be properly authorised by competent authority.

The checking of stock is a regular activity in all business organisations. Size of organisation, number of items in stock and the value of stock on an average will be the factors that will determine the system to be followed.

Periodical physical inventory is followed in most of the organisations to exercise control over physical stocks. During the exercise of physical stock taking, all receipts and issue activity is suspended for a day or two. All pending postings into bin cards and stock ledgers are updated. The material items are properly stacked up in their respective locations. An internal team is made to count material items. After counting is over, the physical balances are compared with the book balances. The discrepancies are reconciled and variances are analysed. Many companies follow this activity as a year end exercise. The internal auditors and external auditors also oversee this exercise to ensure that it is properly carried out.

However, this activity cannot be carried out too frequently. Therefore, what many companies follow is the system of perpetual inventory & continuous stocktaking. Under this system, the stock records (viz. bin cards & stores ledger) are updated after every transaction of receipt or issue, the valuation is also almost simultaneously done. *Perpetual inventory means a system of records whereas continuous stocktaking means physical checking of these records continuously with actual stocks.*

The combined process of physical stock checking and perpetual inventory typically involves following steps:

(a) The items are grouped into high value-small volume, medium value-medium volume and low value-large volume.

(b) A programme is laid down in advance for the stock check weekly, fortnightly or monthly.

(c) The observations are recorded in the remark columns of bin card and stores ledger from inventory tags which are serially numbered.

The benefits of perpetual inventory are:

(a) Physical and book balances are tallied and discrepancies are adjusted without waiting for the entire stock taking activity. It is not necessary to close down operations for annual stock taking.

(b) The stock figures can be made readily available for the purpose of monthly P & L.

(c) Discrepancies can be located in time; hence it reduces the risk of pilferage and fraud.

(d) Fixation and monitoring of stock levels becomes easy.

(e) The system enables locating slow and non-moving items.

(f) Stock details are available in time for the purpose of declarations to insurance company and banks.

(viii) Treatment of Stock Discrepancies:

We know that the actual stocks physically counted may defer from book balances for the following reasons:

Unavoidable causes	Avoidable causes
(1) Loss by shrinkage, evaporation	(1) Pilferage
(2) Gain due to moisture absorbed	(2) Breakage
(3) Material purchase by weight & issued in numbers	(3) Errors in posting
(4) Loss due to climatic conditions	(4) Improper storage
	(5) Wrong issues

The gains or losses arising out of unavoidable reasons (termed as normal loss) are adjusted to the cost of production. Normally, such losses are estimated in percentage based on the past experience and historical data and the issues to production are adjusted with such percentage. The gains or losses due to avoidable reasons (called as abnormal loss) are treated as variances and are written off to the P & L A/c.

(ix) Material Control and Inventory Control

The term material here includes all items whether direct or indirect. The control of material refers to the physical flow as well as cost flow. It refers to all managerial functions to ensure that every item of material is made available at the right time, in right quantity, at right price and also with minimum blocking of capital. The control procedures encompass through the functions of material planning, purchasing, stores, material handling within the factory and production planning, transportation logistics and usage control. Hence material control has a very wide connotation justifiably so considering a very high proportion of material cost in the total cost for manufacturing companies.

Inventory control is a part of material control. The term inventory refers to the sum of raw material, packing material, fuels, lubricants, spare parts, maintenance consumables, semi-processed items and finished goods. Inventories are kept to ensure smooth flow of business operations. The scope of inventory control related to maintaining the correct level of inventory at all times. This can be ensured through fixation of stock levels for various items, and fixation of buying quantities and buying schedules.

Many companies in advanced countries operate on the concept of 'zero inventory' based on the concept of JIT as explained later. In India also of late the efforts in this direction have started yielding results.

Objectives of Inventory Control

(a) Maximise quality of customer service by ensuring smooth supply of finished goods

(b) Optimise the cost of maintaining inventory – the cost of maintaining or carrying inventory normally refers to the interest cost on the capital blocked on the cost of inventory

(c) Optimise the cost of procuring – this refers to the cost of ordering

(d) Optimise the cost of material movements

(e) Reduce investment in inventory without affecting efficiency in production and sales. This can be achieved by maintaining proper stock levels to avoid over-stocking or under-stocking.

Techniques of Inventory Control

Broadly the techniques of inventory control can be:

(a) Controlling the buying quantities – concept of Economic Ordering Quantity (EOQ)

(b) Setting up of Stock levels – this facilitates control through early signal system for raising orders

(c) ABC analysis – ensures management by exception and more stringent control on less number of items constituting a very high value.

(d) Inventory ratios – these ratios are broad level indicators of inventory performance

(e) Perpetual inventory system – ensures record keeping controls

Cost associated with maintaining inventory are shown in the following table:

Cost of Holding i.e. possession	Cost of Purchasing i.e. acquisition	Cost of Stock outs
(a) Interest on cost of stock (b) Storage charges i.e. rent, lighting, heating, air-conditioning etc. (c) Stores staffing, equipment maintenance (d) Handling & movement costs (e) Audit, stock-taking (f) Insurance and security (g) Pilferage, deterioration & obsolescence	(a) Clerical & administrative costs associated with purchasing, accounts & receiving departments (b) Transport costs (c) Set up and tooling costs for production run	(a) Loss of contribution (b) Loss of customer goodwill (c) Cost of production stoppage (d) Labour frustrations (e) Extra costs of rush orders

Some of these terms are explained below:

Lead Time: it denotes time expressed in days, weeks, months etc. between ordering (externally or internally) and replenishment i.e. when the goods are available for use. The consideration of lead time is very crucial. Longer the lead time, more efforts will have to be made at the time of planning. Action cannot be taken at eleventh hour for the long lead time items. In short, short lead time items that are readily available need not be stocked, whereas long lead time items must be ordered well in advance.

Demand or Usage: This refers to demand for finished goods by customers or demand for raw materials by production department or even demand for stores and spares by maintenance department. This is usually expressed as number of units required demand or usage per day, week etc. Consideration of demand or usage is very crucial for setting up stock levels.

Physical Stocks: The number of units physically on hand or present at a given time. The quantity on hand cannot be ignored when new ordering is to be done.

Free Stock: This is the quantity of stock freely available for use at any point of time. This will be the quantity on hand (i.e. physical stock) plus quantity on order minus reservation if any. At times the stock quantities may be reserved for a specific production order because of its importance.

Buffer Stock: Also called as safety stock, it means an allowance that covers forecasting errors or usage during lead-time.

(x) Economic Ordering Quantity (EOQ)

This is the purchasing quantity fixed in such a way as to minimize the total cost of inventory. It basically denotes the order size. There are two components of inventory costs – cost of acquisition and cost of possession.

The cost of acquisition is also referred to as Ordering cost which is expressed as amount per purchase order. This cost includes clerical and administrative expenses in relation to purchase requisition, quotations, comparative statements and handling of purchase orders and supplier bills. If the reference is to production stocks, then this will cover production set up time costs.

The cost of possession means the cost of maintaining or carrying inventory. This is normally expressed as a percentage of the material cost. This normally covers interest, handling and upkeep, stores rent.

It is important to understand the relationship between these two categories of costs. The relationship between ordering costs and carrying costs is reverse.

So if the purchase quantity per order increases, the ordering costs will reduce but the carrying costs will increase and vice versa. The tradeoff between these two costs will represent the most economical ordering quantity.

This can be shown by way of a mathematical formula. Consider the following:

Q = Economic order quantity

A = annual demand or usage of the material item in units

O = ordering cost per order

C = cost of carrying stock of one unit for a year

It can be therefore generalized as follows:

$$Q = \sqrt{\frac{2 \times A \times O}{C}}$$

It can be therefore generalized as follows:

$$\sqrt{\frac{2 \times Annual\ requirement \times Ordering\ cost}{Carrying\ cost\ per\ unit}}$$

Limitations of EOQ

EOQ is a very powerful tool which suggests the ordering quantity which will minimize the overall inventory management costs. However, the method suffers from some limitations. These limitations emerge from the assumptions based on which this formula is worked out. These are:

(a) The ordering and carrying costs are known with certainty.

(b) The rate of consumption is uniform throughout the year.

(c) The price per unit is constant throughout the year.

(d) The replenishment of the stocks is done instantaneously i.e. the whole quantity ordered arrives at once.

(xi) Inventory Levels

Depending on the nature of each item, its cost, demand for production, lead time to get the delivery, safety stock to be maintained etc, the stock levels are computed. The stock levels help the organisation to take timely actions as reordering or replenishing. It helps to avoid stock out situations as well. The stock levels need not be fixed for all items.

While determining the annual demand or usage of the item and lead time, we normally have three estimates of thereof viz. minimum, maximum and normal. Making these estimates is a very complex job and needs expertise.

The stock levels can be set up as follows:

Re-order Level: This is the level fixed between the minimum and maximum levels. When the stocks reach this level, the storekeeper should take action for replenishing the stock and immediately place a purchase requisition. While calculating this level, one has to make a provision for maximum usage and maximum lead time. This will take care of any abnormal usage till the material is replenished. It is calculated as:

Reorder Level = Maximum Usage × Maximum Lead Time

Re-ordering Quantity: This is the economic order quantity. This is used in the fixation of stock levels as this is the most economical quantity for which orders should be placed. The formula for EOQ is already discussed.

Maximum Level: This is the level which stocks are not allowed to cross. In case it exceeds, it will cause capital blockage. While fixing the maximum level the following factors are considered:

- Maximum and minimum usage
- Lead time
- Storage facilities available

- Prices of material
- Availability of funds
- EOQ

The maximum level is computed as follows:

Maximum Level = Reorder Level + Reorder Quantity – (Minimum Usage × Minimum Lead Time)

Minimum Level: This is the level below which stocks are not permitted to fall. If a danger level is not separately set up, this level acts as an emergency button. If stock approaches this level, immediate purchase action is initiated and stocks are urgently procured to restore the stock levels back to normal.

The minimum level is below the re-order level and takes into account the normal (or average) usage and lead time. It is calculated as follows:

Minimum Level = Reorder Level - (Normal Usage × Normal Lead Time)

Danger Level: This is fixed below the minimum level. This level brings the situation almost on the brink of stock out. It s calculated as:

Danger Level = Normal Usage × Lead Time for Emergency Purchases

This situation should be avoided as far as possible, as emergency purchases will always cost more.

(xii) Inventory Turnover Ratio

This is a technique available at a very broad level. We know raw material & WIP stocks are held for use in production and finished goods are held for resale. As such there has to be a linkage between the stocks held by an oragnisation and the production and sales activity carried out by the company. This ratio indicates how fast or slow the company converts its stocks into sales. It can be calculated in two way as:

(a) Expressed as sales as number of times the inventory value: the figure indicates whether the stock is fast getting converted into sales or not. Higher the ratio, better it is. It is calculated as:

Value of inventory consumed / Average inventory held

Value of inventory consumed = Opening Stock + Purchases – Closing Stock

Average inventory held = (Opening Stock + Closing Stock) /2

(b) Expressed as number of days sales in stock: Here the stock is expressed as 'so many number of days sales' e.g. current inventory is 60 days sales. Lower the number of days sales are in inventory, better it is. It indicates that inventory is moving fast, which is a good sign. It is calculated as follows:

Number of days in a year / inventory turnover ratio

(xiii) ABC Analysis

ABC method is an analytical method of inventory control which aims at concentrating efforts in those areas where attention is required the most. It is not a control technique in the stricter sense of the term but it provides a sound basis to decide the degree of control required. It is based on the principle of "*vital few trivial many*". The ABC method uses logical bases and recommends stricter & detailed controls for the '*high value – low number items*' and relatively less stringent controls on "*low value – high volume*' items.

Generally the '*high value – low number items*' *are classified as "A" category and "low value – high volume items' are classified as "C" category, while "moderate value – moderate volume items" constitute "B" category.*

Different organisations may use different variables when measuring 'volume' here. These variables could be:

(a) Value of stock held on an average

(b) Value of consumption

(c) Critical nature & requirement of inventory item

(d) Availability based on seasons, restrictive production governed by law

The bifurcation of the stock items could follow the following break up:

Class	Percent of items	Percent of Value
A	10	70
B	20	20
C	70	10

Advantages of ABC Techniques:

(a) This approach enables a selective control so that efforts can be concentrated only where required.

(b) It reduces clerical and administrative costs of managing inventory.

(c) Investment in inventory can be regulated to ensure optimum utilisation of funds.

Application of ABC in deciding stock control systems could be done as follows:

For A Items: Very strict control
Very low level of safety stocks
Controlled by senior management
Rigorous follow up & planning

For B Items: Moderate control
Some level of safety stocks
Less frequent follow up

For C items: A broad level control
High safety stocks
Follow up only in exceptional cases.

(xiv) Modern Techniques of Inventory Control

The newly developed techniques are more of management control systems rather than only inventory related control mechanisms. But their application to field of inventory management is done very effectively. The basic principle of these techniques is reduction in wastage, removal of non-value adding activities and time management. Japan was mainly responsible for intruding many of these path breaking techniques. Many countries have adapted these techniques. Let us see some of these.

(a) Just in Time (JIT)

It is an approach and not a system. The approach is "inventory is a waste". This waste must be reduced to earn a better return on investment. It talks about interlocking of production process not only of an organisation but also of its suppliers and customers; so that an item should not be waiting for an action at all but directly taken to production line where the machines are already set up to process that material. Similarly, when production is finished, the item should not be waiting to be dispatched, it should be immediately loaded for shipment. The crux is the arrangement of entire logistics on an ongoing basis.

Although first adopted in Ford Motor Company in 1920s, the adoption of JIT by Toyota Corporation of Japan was so effective in the 1950s that it started getting known as a Japanese technique.

The philosophy of JIT is to reduce the throughput time (i.e. time between the first stage of production to the point where finished product is complete). There is a drastic reduction in inventory holding costs and improves productivity. The throughput time is a sum total of Added value time and non-added value time. The aim is to eliminate the non-value added time which is basically the time taken in waiting either for movement or inspection or set up.

It basically involves Just-In-Time-Purchasing and Just-In-Time-Production. The JIT purchase channelizes the purchasing in such way as to deliver the material immediately preceding the demand for material.

The JIT production applies to the production at all intermediary stages as well i.e. including parts, semi-finished goods, sub-assemblies etc. The operations are planned & scheduled with the intent of zero waiting time at all stages. The machines are kept running without stoppage.

For successful application of JIT the pre-requisites are:

- Robust computerised systems
- Perfect planning system
- Trained workers and staff
- Excellent logistics
- Transportation facilities

(b) Bar Coding and RFID Tools

The bar code is a computer generated code that stores information about the item. Bar Coding is a series of parallel vertical lines (bars and space), that can be read by bar code scanners. It is used worldwide as part of product packages, as price tags, carton labels, on invoices even in credit card bills and when it is read by scanners, a wealth of data is made available to the users and when used with GS1.UCC (Global India one Numbering Uniform Code Council Inc. USA) numbering system. The bar code become unique and universal and can be recognized anywhere in the world. Bar coding is an international concept today. It facilitates unique product identification through using international symbols/numbering system, promotes brand image and would enable timely and accurate capture of product information. This would result in wide ranging benefits including lowering of inventory costs, lower overall supply chain costs and hence reduced costs for Indian products, increasing efficiency of Indian industry and adherence to stringent quality assurance norms through product traceability.

Radio Frequency Identification (RFID) allows a business to identify individual products and components, and to track them throughout the supply chain from production to point-of-sale. It helps reduce over-stocking or under-stocking.

An RFID tag is a tiny microchip, plus a small aerial, which can contain a range of digital information about the particular item. Tags are encapsulated in plastic, paper or similar material, and fixed to the product or its packaging, to a pallet or container, or even to a van or delivery truck. The tag is interrogated by an RFID reader which transmits and receives radio signals to and from the tag.