saransh

Last Mile Referencer for

COST AND MANAGEMENT ACCOUNTING

The Institute of Chartered Accountants of India

(Setup by an Act of Parliament)

Board of Studies (Academic)

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Saransh - Last Mile Referencer for Cost and Management Accounting

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PREFACE

Board of Studies (Academic), the student wing of the Institute, does not leave any stone unturned in providing best-in-class services to its students. It imparts quality academic education through its value-added study materials, wherein concepts are explained in lucid language. Illustrations and Test Your Knowledge Questions contained therein facilitate enhanced understanding and application of concepts learnt. Booklet on MCQs & Case Scenarios contain a rich bank of MCQs and Case Scenarios to hone the analytical skills of students, by applying the concepts learnt in problem solving. Revision Test Papers contain updates and Q & A to help students update themselves with the latest developments before each examination and revise the concepts and provisions by solving questions contained therein. Suggested Answers containing the ideal manner of answering questions set at examination also helps students revise for the forthcoming examination. Mock Test Papers help students assess their level of preparedness before each examination. BoS (Academic) also conducts live virtual classes through eminent faculty for its students across the length and breadth of the country.

To reach out to its students, the BoS (Academic) has also been publishing subject-specific capsules in its monthly Students' Journal "The Chartered Accountant Student" since the year 2017 for facilitating effective revision of concepts dealt with in different topics of each subject at the Foundation, Intermediate and Final levels of the chartered accountancy course. Each issue of the journal includes a capsule relating to specific topic(s) in one subject at each of the three levels. In these capsules, the concepts and provisions are presented in attractive colours in the form of tables, diagrams and flow charts for facilitating easy retention and quick revision of topics.

In today's business world, Chartered Accountants are very much part of the decision-making team of any Organisation. They are rigorously involved in decision making process with the help of Cost and Management Accounting tools. The capsule on 'Cost and Management Accounting' covers diagrams, flow charts tables and formulas. In addition, it encompasses case studies and skill assessment-based questions so that students can critically analyse business problems and strengthen their analytical skills through interpreting and evaluating." This capsule, though, facilitates the students in undergoing quick revision, under no circumstances, such revisions can substitute the detailed study of the materials provided by BoS such as Study Material and Practice Manual.

Happy Reading!

Message of Key ICAI Office Bearers

CA. (Dr.) Debashis Mitra
President, ICAI

The Board of Studies (Academic) of ICAI has always been at the forefront of providing quality education to aspiring CA students and handholding them in preparing for their exams. Saransh — Last Mile Referencer is a step in that direction. This pack of 3 booklets on Accounting, Auditing & Cost Management and Strategic Decision Making covers significant concepts of each chapter in precise form. This will not only help students for their reference for examinations but also Members can use it for their practice reference.

CA. Aniket S. Talati
Vice-President, ICAI

It has always been the endeavour of ICAI to provide updated information to its student to keep them abreast about the latest happenings in the accounting and related fields. The Board of Studies (Academic), the academic wing of ICAI, has come up with a series of booklets 'Saransh – Last Mile Referencer' with key points of different subjects. This will help facilitate effective revision of concepts in each subject.

CA. Dayaniwas Sharma
Chairman, Board of Studies (Academic)

Saransh — Last Mile Referencer is a compilation of capsules on different subjects of Foundation, Intermediate and Final levels of the chartered accountancy course. This series of booklets consolidates all significant topics of Accounting including Accounting Standards & Ind AS, Auditing with Auditing Standards and Cost Management and Strategic Decision Making at one place by capturing the key points. The concepts and provisions presented in attractive colours in the form of tables, diagrams and flow charts will facilitate quick revision of topics and easy retention.

CA. Vishal Doshi
Vice-Chairman, Board of Studies (Academic)

Among the many best-in-class services that the Board of Studies (Academic) provides to its students, Saransh — Last Mile Referencer is another initiative in that direction. These booklets on different subjects have been provided in a concise and precise form. It will facilitate understanding of the concepts better to students and grasp the essence of the subject. These capsules will enhance of level of preparedness before the examinations.

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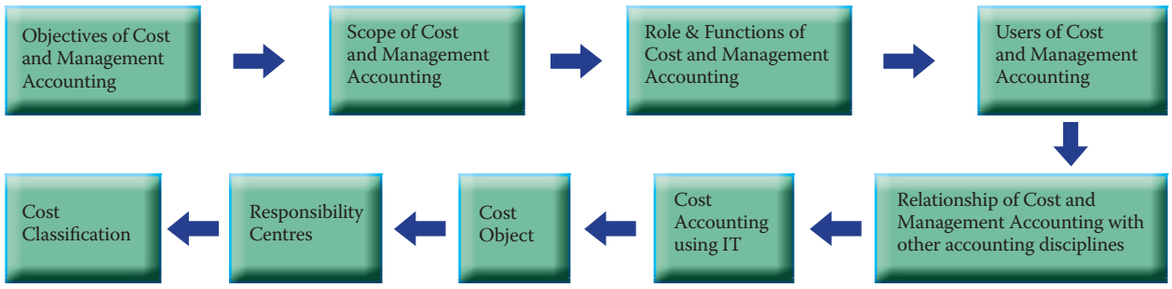
Cost and Management Accounting

In contemporary business environment, existence of an entity depends on the way it tackles the challenges posed by the competitive market conditions. Cost leadership being one of the competitive strategies, gives an added advantage to the entity. Cost being an important aspect for survival and growth in business, requires a mandatory awareness about the cost control and cost reduction. Fourth industrial revolution, also known as Industry 4.0, puts more emphasis on the digitization of information for effective decision-making, which enables an entity in keeping ahead in competition. Cost and Management accounting, a discipline of accounting, capacitates an entity in taking timely decisions by provisions of cost, profitability and other relevant information.

Chartered Accountants, as a global business solution provider, play an important role in business, have an onus by helping an entity to achieve its long-term objectives. In this direction, Cost and Management Accounting helps Chartered Accountants in taking timely and informed business decisions.

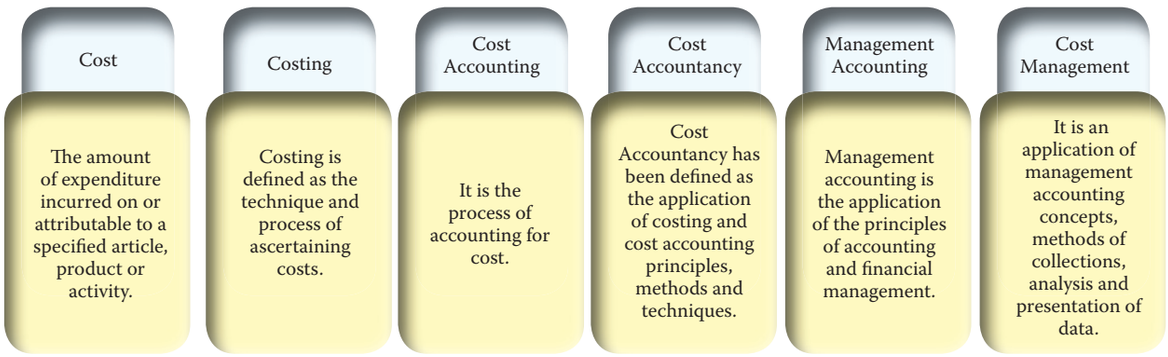
Introduction to Cost and Management Accounting

Chapter Overview



Meaning of Terms used in Cost and Management Accounting

First of all, let us discuss the meaning of various terminologies used in Cost and Management Accounting to have a clear understanding about the subject.



Objectives of Cost Accounting

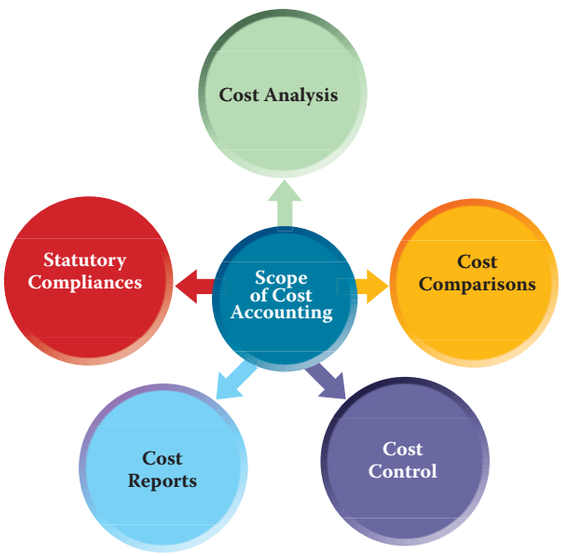
There are many objectives of cost accounting. The main objectives are explained as below. We also need to keep our focus on understanding the difference between Cost Control and Cost Reduction.

Objectives of Cost Accounting

- **Ascertainment of Cost:** The main objective of cost and management accounting is accumulation and ascertainment of cost. Costs are accumulated, assigned and ascertained for each cost object.
- **Determination of Selling Price and Profitability:** The cost and management accounting system helps in determination of selling price and thus profitability of a cost object.
- **Cost Control:** Maintaining discipline in expenditure is one of the main objectives of a good cost and management accounting system. It ensures that expenditures are in consonance with predetermined set standard and any variation from these set standards is noted and reported on continuous basis.
- **Cost Reduction:** It may be defined "as the achievement of real and permanent reduction in the unit cost of goods manufactured or services rendered without impairing their suitability for the use intended or diminution in the quality of the product."
- **Assisting management in decision making:** Cost and Management accounting by providing relevant information, assist management in planning, implementing, measuring, controlling and evaluation of various activities.

Scope of Cost Accounting

We also need to know various scopes of cost accounting. Cost ascertainment and the process of cost accounting are the major scopes. The other scopes are presented.



Role and Functions of Cost and Management Accounting

Role of a Cost and Management Accounting system

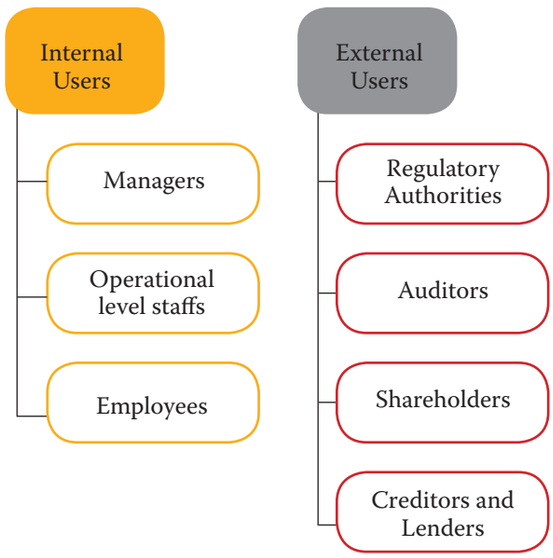
- Provide relevant information to management for decision making
- Assist management for planning, measurement, evaluation and controlling of business activities
- Help in allocation of cost to products and inventories for both external and internal users.

Functions of Cost and Management Accounting System

- Collection and accumulation of cost for each element of cost
- Assigning costs to cost objects to ascertain cost.
- Sets budget and standards for a particular period or activity beforehand and these are compared with the assigned and ascertained cost.
- Provision of relevant information to the management for decision making.
- To gather data like time taken, wastages, process idleness etc., analyse the data, prepare reports and take necessary actions

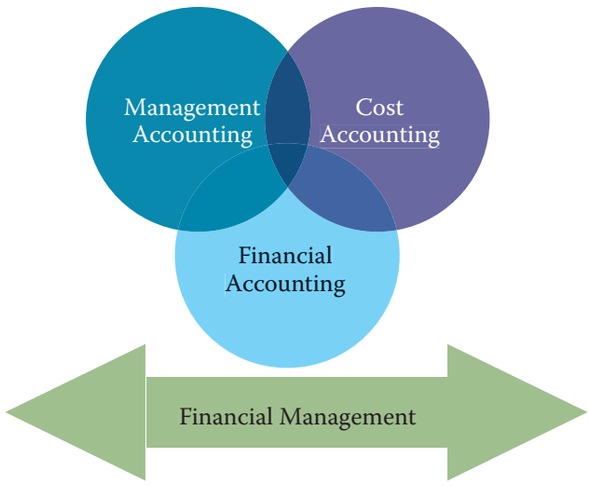
Users of Cost and Management Accounting

Cost and Management Accounting information which are generated or collected are used by various stakeholders. The users of the information can be broadly categorized as below:



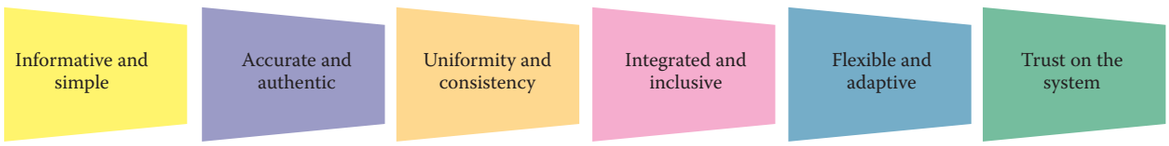
Relationship of Cost Accounting, Management Accounting, Financial Accounting and Financial Management

There is a close relationship between various disciplines like Cost Accounting, Management Accounting, Financial Accounting and Financial Management. Sometimes these disciplines are interrelated and dependent on each other also.



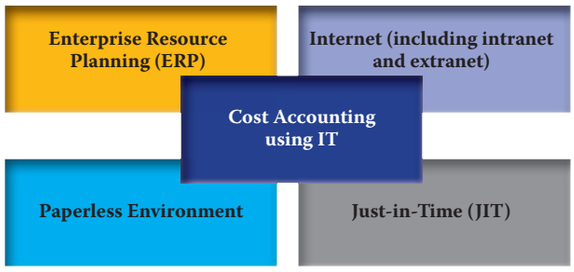
Essentials of a good Cost Accounting System

The essential features which a cost accounting system should possess are depicted as below:



Cost Accounting using Information Technology

With the use of information technology, the cost accounting system gets integrated and automated. The basic features are depicted as below:



Cost Objects

It is very important to understand the meaning of cost object, cost unit and cost driver. Their meaning alongwith examples are illustrated below.

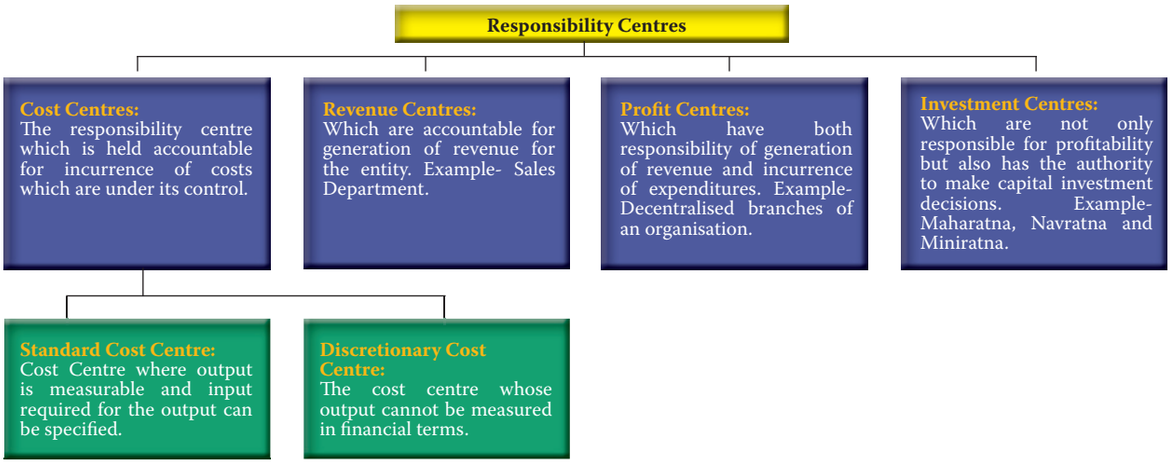
Cost Object: Cost object is anything for which a separate measurement of cost is required. Cost object may be a product (book), a service (airline), a project, a customer, a brand category etc.

Cost Units: It is a unit of product, service or time (or combination of these) in relation to which costs may be ascertained or expressed. Example for power industry is kilo Watt hour (kWh).

Cost Drivers: A Cost driver is a factor or variable which effect level of cost. Example for a purchase department is number of purchase orders.

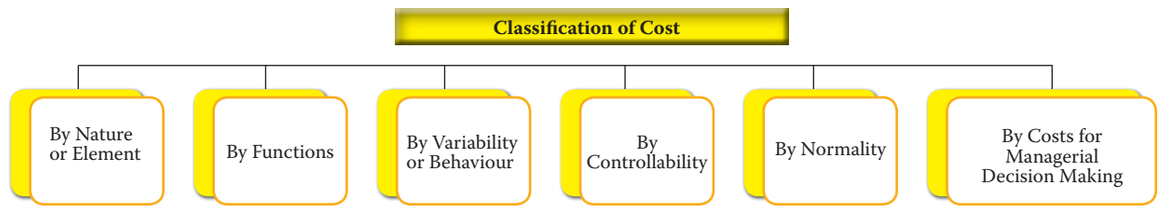
Responsibility Centres

To have a better control over the organisation, management delegates its responsibilities and authorities to various departments or persons, which are known as responsibility centres. There are four types of responsibility centres as discussed below:

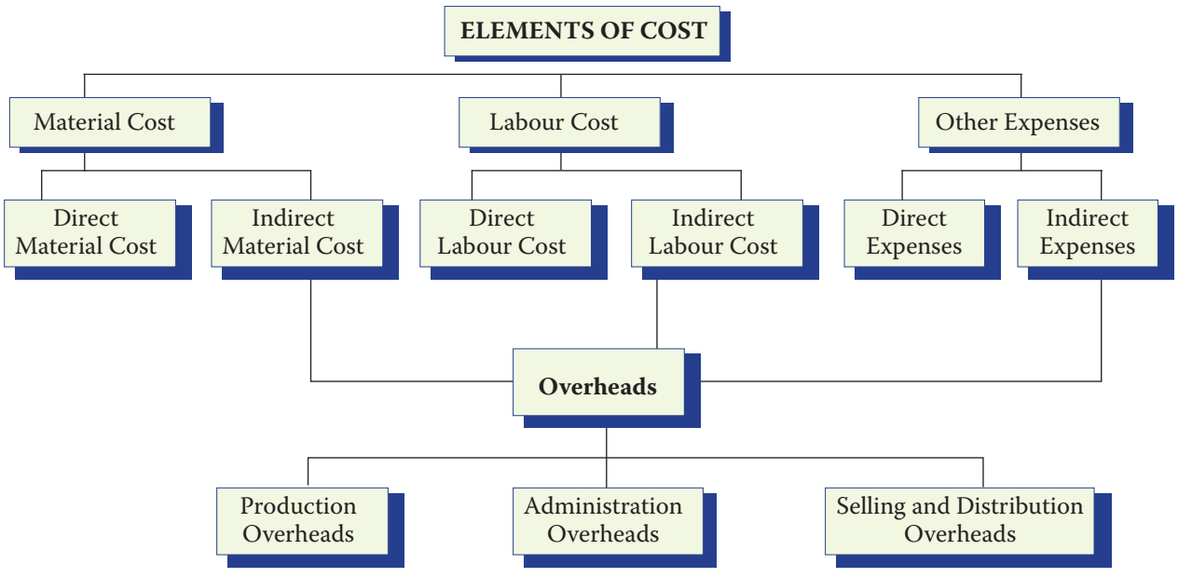


Classification of Cost

Classification of cost basically means grouping of cost according to their common features. The important ways of classification of cost are illustrated as below:



(i) By Nature or Element



(ii) By Functions

- Direct Materials, Direct Employees (Labours), Direct Expenses → **Prime Cost**
- Indirect Material, Indirect Labour, Indirect Expenses + Factory Overheads → **Factory Cost or Works Cost**
- + Administration Overheads → **Cost of Goods Sold**
- + Selling and Distribution Overheads → **Cost of Sales**

(iii) By Variability or Behaviour

(iv) By Controllability

Controllable Costs: Cost that can be controlled

Uncontrollable Costs: Costs which cannot be influenced or controlled

(v) By Normality

Normal Cost - It is the cost which is normally incurred

Abnormal Cost - It is the cost which is not normally incurred

(vi) By Cost for Managerial Decision Making

(a) Pre determined Cost	A cost which is computed in advance before production or operations start
(b) Standard Cost	A pre-determined cost, which is calculated from managements 'expected standard of efficient operation' and the relevant necessary expenditure
(c) Marginal Cost	The amount at any given volume of output by which aggregate costs are changed if the volume of output is increased or decreased by one unit
(d) Estimated Cost	The expected cost of manufacture, or acquisition, often in terms of a unit of product computed on the basis of information available in advance of actual production or purchase
(e) Differential Cost	It represents the change (increase or decrease) in total cost (variable as well as fixed) due to change in activity level, technology, process or method of production, etc.
(f) Imputed Costs	These costs are notional costs which do not involve any cash outlay
(g) Capitalised Costs	These are costs which are initially recorded as assets and subsequently treated as expenses.
(h) Product Costs	These are the costs which are associated with the purchase and sale of goods (in the case of merchandise inventory).
(i) Opportunity Cost	This cost refers to the value of sacrifice made or benefit of opportunity foregone in accepting an alternative course of action
(j) Out-of-pocket Cost	It is that portion of total cost, which involves cash outflow
(k) Shut down Costs	Those costs, which continue to be incurred even when a plant is temporarily shut-down e.g. rent, rates, depreciation, etc
(l) Sunk Costs	Historical costs incurred in the past are known as sunk costs. They play no role in decision making in the current period.
(m) Absolute Cost	These costs refer to the cost of any product, process or unit in its totality.
(n) Discretionary Costs	Such costs are not tied to a clear cause and effect relationship between inputs and outputs.
(o) Period Costs	These are the costs, which are not assigned to the products but are charged as expenses against the revenue of the period in which they are incurred.
(p) Engineered Costs	These are costs that result specifically from a clear cause and effect relationship between inputs and outputs.
(q) Explicit Costs	These costs are also known as out of pocket costs and refer to costs involving immediate payment of cash. Salaries, wages, postage and telegram, printing and stationery, interest on loan etc.
(r) Implicit Costs	These costs do not involve any immediate cash payment.

Material Cost

Chapter Overview

Material Procurement:
- Bill of Materials
- Material Requisition Note
- Purchase Requisition
- Goods Received Note
- Material Returned Note etc.

→ Valuation of Materials Received

Material Storage & Records:
- Bin Cards
- Stores Ledger
- Stock Control Cards etc.

Inventory Control:
- Setting of various stock levels
- Economic Order Quantity (EOQ)
- Techniques of Inventory Control etc.

Valuation of Material Issues:
- Cost Price methods (FIFO, LIFO etc)
- Average Price methods
- Market Price methods
- Notional Price methods

Accounting & Control of:
- Waste, Scrap, Spoilage, Defectives etc.

→ **Consumption of Materials**

Value at Which Materials are Recorded in Stores Ledger

From the following table we can understand the procedure of calculating total value at which materials are to be recorded in stores ledger.

Particulars	Amount	Amount
Purchase Price		XXX
Additions/ Inclusions:		
Insurance charges	XXX	
Commission or brokerage	XXX	
Freight inward	XXX	
Cost of containers	XXX	
Wastage due to normal reasons	XXX	
Duties and Taxes for which no credit or refund is available	XXX	XXX
Deduction/ Exclusions:		
Discount, Rebate and Subsidy	XXX	
Duties and Taxes for which credit or refund is available	XXX	
Penalties and charges	XXX	
Other expenses not borne	XXX	(XXX)
		XXX

How Material is Procured?

Material requirement procedure can be understood with the help of the following diagram. We should focus on various documents in general required and also should keep in mind the departments who initiate these documents.

Bill of Materials- It is the basic document which is prepared by experts specifying the quality and quantity of materials required to make final goods.

→ **Material Requisition Note**- It is prepared by the department which require materials for processing.

↓

Purchase Requisition Note- It is the document which authorise purchase department to purchase the requisitioned materials. Based on this document the purchase department invites proposals or quotations from the vendors.

← **Purchase Order**- After selection of vendor for the materials, the purchase department initiates purchase order for the required quality and quantity.

↓

Goods Received Note (GRN)- This document is evidence of the receipt of goods from the vendor.

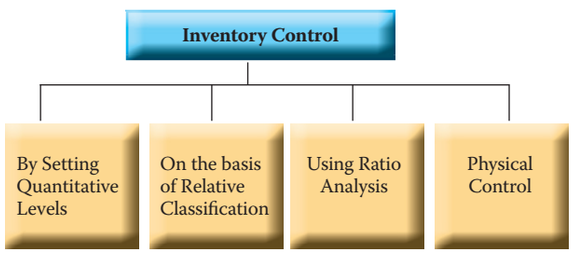
→ **Material Returned Note**- This document is prepared when all or any materials are returned back to vendor.

↓

Invoice- This is the bill charged by vendor for the materials. Invoice also shows the duties and taxes to be paid for the purchase of materials. The invoice is the basis for valuation of material in store ledger and books of account.

How Inventory is Controlled?

Inventory control is the function of ensuring that sufficient inventory is retained to meet all requirements. In inventory control, it is essential to balance between overstock and understock. Various techniques of inventory control are illustrated below:



(a) Inventory Control- By Setting Quantitative Levels

Re-order Stock Level	When to Order
Re-order Quantiy/ EOQ	How Much to Order
Maximum Stock Level	Upto How much to stock
Minimum Stock Level	Atleast How much to keep
Average Stock Level	Stock normally kept
Danger Stock Level	Kept for emergency requirement
Buffer Stock	To meet sudden demand

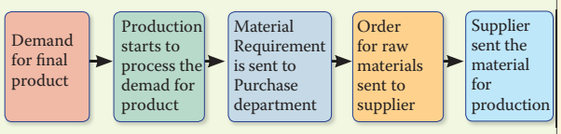
(i) Re-order Stock Level (ROL): Maximum Consumption × Maximum Re-order Period
Or, ROL = Minimum Stock Level + (Average Rate of Consumption × Average Re-order period)

(ii) Re-Order Quantity/ Economic Order Quantity (EOQ):

$$EOQ = \sqrt{\frac{2x \text{ Annual Requirement (A) x Cost per order (O)}}{\text{Carrying Cost per unit per annum (C)}}}$$

Just in Time (JIT) Inventory Management

JIT is a system of inventory management with an approach to have a zero inventories in stores. According to this approach material should only be purchased when it is actually required for production.



(iii) Minimum Stock Level:
Minimum Stock Level = Re-order Stock Level - (Average Consumption Rate × Average Re-order Period)

(iv) Maximum Stock Level:
Maximum Stock Level = Re-order Level + Re-order Quantity - (Minimum Consumption Rate × Minimum Re-order Period)

(v) Average Inventory Level:
Average Stock Level = Minimum Stock Level + 1/2 Re-order Quantity
Or
Average Stock Level =

$$\frac{\text{Maximum Stock Level + Minimum Stock Level}}{2}$$

(b) On the basis of Relative Classification

ABC Analysis	On the basis of value and frequency of inventory
Fast, Slow and Non Moving (FSN)	On the basis of inventory turnover
Vital, Essential and Desirable (VED)	On the basis of importance of inventory
High, Medium and Low (HML)	On the basis of price of an item of inventory

(c) Using Ratio Analysis

(i) Input Output Ratio: Input-output ratio is the ratio of the quantity of input of material to production and the standard material content of the actual output.

(ii) Inventory Turnover Ratio:
Inventory Turnover Ratio =

$$\frac{\text{Cost of materials consumed during the period}}{\text{Cost of average stock held during the period}}$$

(d) Physical Control

(i) Two Bin System: Two Bin System is supplemental to the record of respective quantities on the bin card and the stores ledger card.

(ii) Establishment of system of budgets: Based on this, inventories requirement budget can be prepared. Such a budget will discourage the unnecessary investment in inventories.

(iii) Perpetual inventory records and continuous stock verification :
Perpetual inventory represents a system of records maintained by the stores department in the form of Bin cards and Stores ledger.

(iv) Continuous Stock Verification:
The system of continuous stock-taking consists of physical verification of items of inventory.

Valuation of Material Issue

Cost Price Methods	Average Price Methods	Market Price Methods	Notional Price Methods
• Specific Price Method • First-in First-out (FIFO) method • Last-in-First-out (LIFO) method • Base Stock Method	• Simple Average Price Method • Weighted Average Price Method	• Replacement Price Method • Realisable Price Method	• Standard Price Method • Inflated Price Method • Re-use Price Method

Some of the techniques are discussed as follows:

(i) First-in First-out method (FIFO): The materials received first are to be issued first when material requisition is received. Materials left as closing stock will be at the price of latest purchases.

(ii) Last-in First-out method (LIFO): The materials purchased last are to be issued first when material requisition is received. Closing stock is valued at the oldest stock price.
(Accounting Standard- 2 and Ind AS-2 do not allow LIFO method for inventory valuation, however, for academic knowledge it may be studied).

(iii) Simple Average Method: Material Issue Price=

$$\frac{\text{Total of unit price of each purchase}}{\text{Total Nos of Purchases}}$$

(iv) Weighted Average Price Method: This method gives due weightage to quantities purchased and the purchase price to determine the issue price.

Weighted Average Price =

$$\frac{\text{Total cost of materials in stock}}{\text{Total quantity of materials}}$$

Normal and Abnormal Loss of Materials

Loss of Material

- **Waste:** Portion of basic raw material lost in processing having no recoverable value
- **Scrap:** The incidental material residue coming out of certain manufacturing operations having low recoverable value.
- **Spoilage:** Goods damaged beyond rectification to be sold without further processing.
- **Defectives:** Goods which can be rectified and turned out as good units by the application of additional labour or other services.
- **Obsolescence:** It is the loss in the intrinsic value of an asset due to its supersession.

Treatment of Loss of Material

(i) Treatment of Waste

Normal- Cost of normal waste is absorbed by good production units.

Abnormal- The cost of abnormal loss is transferred to Costing Profit and loss account.

(ii) Treatment of Scrap

Normal- The cost of scrap is borne by good units and income arises on account realisable value is deducted from the cost.

Abnormal- The scrap account should be charged with full cost. The credit is given to the job or process concerned. The profit or loss in the scrap account, on realisation, will be transferred to the Costing Profit and Loss Account.

(iii) Treatment of Spoilage

Normal- Normal spoilage (i.e., which is inherent in the operation) costs are included in costs either charging the loss due to spoilage to the production order or by charging it to production overhead so that it is spread over all products.

Abnormal- The cost of abnormal spoilage (i.e., arising out of causes not inherent in manufacturing process) is charged to the Costing Profit and Loss Account.

(iv) Treatment of Defectives:

Normal- The cost less realisable value on sale of defectives are charged to material cost of good production.

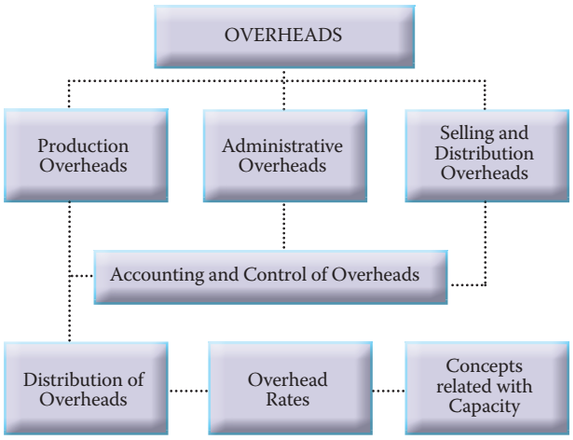
Abnormal- The material cost of abnormal loss is transferred to costing profit and loss account.

(v) Treatment of Obsolescence:

The value of the obsolete material held in stock is a total loss and immediate steps should be taken to dispose it off at the best available price. The loss arising out of obsolete materials on abnormal loss does not form part of the cost of manufacture.

Overheads

Chapter Overview



Classification of Overheads

Overheads are the expenditure which can not be identified with a particular cost unit. Overheads can be classified as under.

By Function	By Nature	By Element	By Control
• Factory or Manufacturing or Production Overhead • Office and Administrative Overheads • Selling and Distribution Overheads	• Fixed Overhead • Variable Overhead • Semi-Variable Overheads	• Indirect materials • Indirect employee cost • Indirect expenses	• Controllable costs • Uncontrollable costs

Functional Classification of Overheads

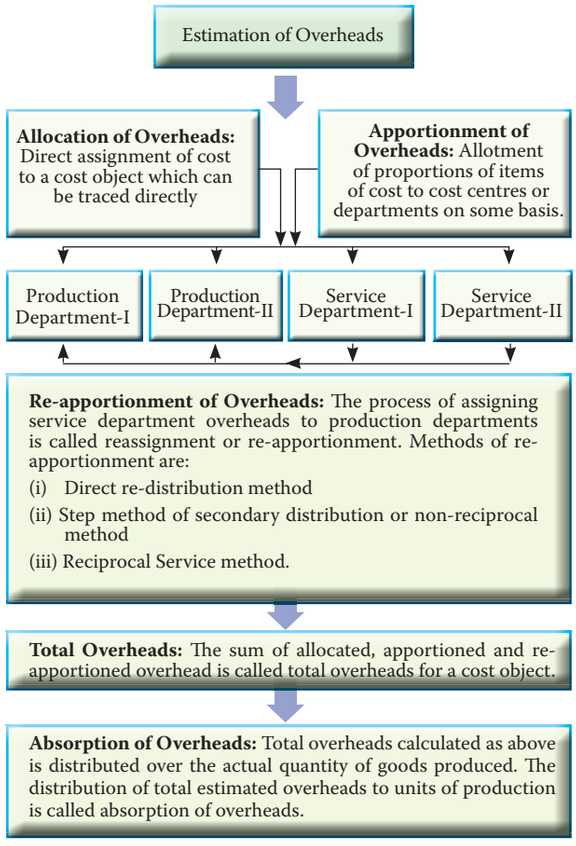
One of the most important ways of classifying overheads is as per their function. As per this classification overheads are classified as under.

Factory or Manufacturing or Production Overhead — Indirect cost incurred for manufacturing or production activity in a factory. Manufacturing overhead includes all expenditures incurred from the procurement of materials to the completion of finished product.

Office and Administrative Overheads — Expenditures incurred on all activities relating to general management and administration of an organisation. It includes formulating the policy, directing the organisation and controlling the operations of an undertaking which is not related directly to production, selling, distribution, research or development activity or function.

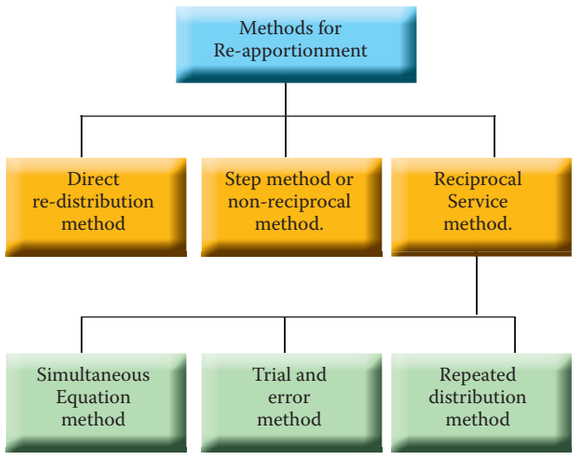
Selling and Distribution Overheads — (i) Selling overhead: expenses related to sale of products and include all indirect expenses in sales management for the organisation.
(ii) Distribution overhead: cost incurred on making product available for sale in the market.

Steps for Distribution of Overheads



Methods for Re-apportionment of Overheads

The re-apportionment of service department expenses over the production departments may be carried out by using any one of the following methods:



Methods of Absorbing Overheads to various Products or Jobs

Several methods are commonly employed either individually or jointly for computing the appropriate overhead rate. The more common of these are:

- Percentage of direct materials
- Percentage of prime cost
- Percentage of direct labour cost
- Labour hour rate
- Machine hour rate
- Rate per unit of Output

Machine hour rate

Machine hour rate implies, cost of running a machine for an hour to produce goods.

The steps involved in determining of Machine hour rate is as follows:

Step1: Calculate total of overheads apportioned to a production department.

↓

Step 2: Apportion further these overheads to machines or group of machines in the department.

↓

Step 3: Allocate machine specific costs (directly identifiable with the machine)

↓

Step 4: Estimate total productive hours for the machine

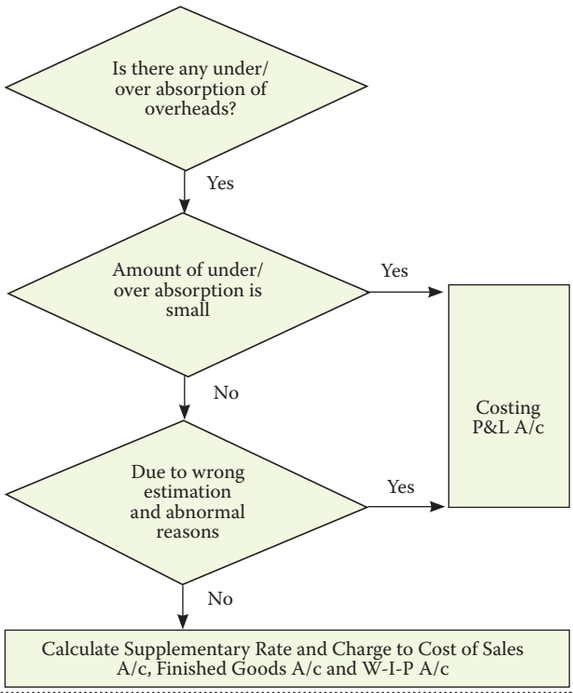
↓

Step 5: Aggregate overheads as apportioned in step-2 and allocated in step-3 and divide it by Estimated total productive hours

↓

The resultant figure is machine hour rate

Treatment of Under-absorption and Over-absorption of overheads in Cost Accounting



Types of Overhead Rates

Normal Rate: This rate is calculated by dividing the actual overheads by actual base. It is also known as actual rate.

Pre-determined Overhead Rate: This rate is determined in advance by estimating the amount of the overhead for the period in which it is to be used.

Blanket Overhead Rate: Blanket overhead rate refers to the computation of one single overhead rate for the whole factory.

Departmental Overhead Rate: It refers to the computation of one single overhead rate for a particular production unit or department.

Concepts related with Capacity

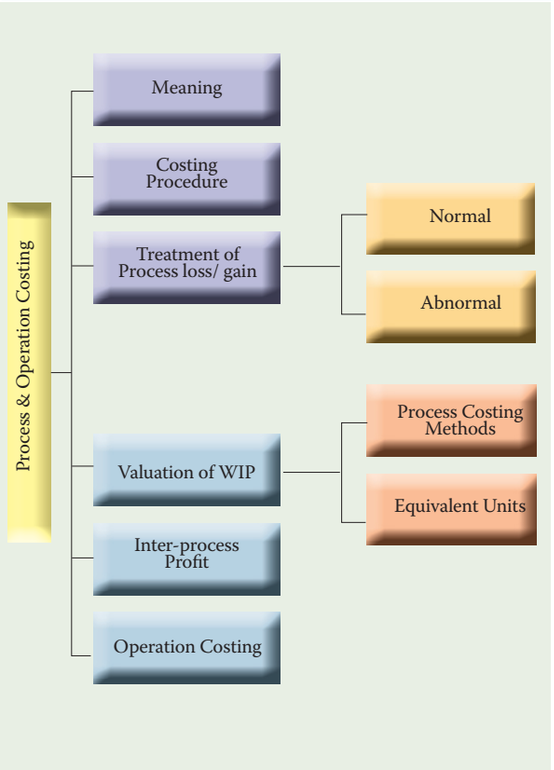
Installed/ Rated capacity	The maximum capacity of producing goods or providing services. It is also known as theoretical capacity.
Practical capacity	It is defined as actually utilised capacity of a plant. It is also known as operating capacity.
Normal capacity	The volume of production or services achieved or achievable on an average over a period under normal circumstances taking into account the reduction in capacity resulting from planned maintenance.
Actual capacity	Capacity actually achieved during a given period.
Idle capacity	It is that part of the capacity of a plant, machine or equipment which cannot be effectively utilised in production.

Treatment of Certain Items in Cost Accounting

Interest and financing charges	It includes any payment in nature of interest for use of non- equity funds and incidental cost that an entity incurs in arranging those funds. Interest and financing charges shall be presented in the cost statement as a separate item of cost of sales.
Packing expenses	Cost of primary packing necessary for protecting the product or for convenient handling, should become a part of cost of production. The cost of packing to facilitate the transportation of the product from the factory to the customer should become a part of the distribution cost.
Fringe benefits	These indirect benefits stand to improve the morale, loyalty and stability of employees towards the organisation. If the amount of fringe benefit is considerably large, it may be recovered as direct charge by means of a supplementary wage or labour rate; otherwise these may be collected as part of production overheads.
Research and Development Expenses	If research is conducted in the methods of production, the research expenses should be charged to the production overhead; while the expenditure becomes a part of the administration overhead if research relates to administration. Similarly, market research expenses are charged to the selling and distribution overhead. Development costs incurred in connection with a particular product should be charged directly to that product. Such expenses are usually treated as "deferred revenue expenses," and recovered as a cost per unit of the product when production is fully established.

Process and Operation Costing

Chapter Overview



Meaning of Process Costing

Process Costing is a method of costing used in industries where the material has to pass through two or more processes for being converted into a final product. It is defined as "a method of Cost Accounting whereby costs are charged to processes or operations and averaged over units produced".

This can be understood with the help of the following diagram:

Costing Procedure in Process Costing

Materials: Each process for which the materials are used, are debited with the cost of materials consumed on the basis of the information received from the Cost Accounting department.

Employee Cost (Labour) - Each process account should be debited with the labour cost or wages paid to labour for carrying out the processing activities. Sometimes the wages paid are apportioned over the different processes after selecting appropriate basis.

Direct expenses - Each process account should be debited with direct expenses like depreciation, repairs, maintenance, insurance etc. associated with it.

Production Overheads- These expenses cannot be allocated to a process. The suitable way out to recover them is to apportion them over different processes by using suitable basis.

Steps in Process Costing

Step-1: Analyse the Physical Flow of Production Units

↓

Step-2: Calculate Equivalent Units for each Cost Elements

↓

Step-3: Determine Total Cost for each Cost Element

↓

Step-4: Compute Cost Per Equivalent Unit for each Cost Element

↓

Step-5: Assign Total Costs to Units Completed and Ending WIP

Treatment of Normal, Abnormal Loss and Abnormal Gain

Normal Process Loss	Abnormal Process Loss	Abnormal Process Gain/ Yield
• The cost of normal process loss in practice is absorbed by good units produced under the process. The amount realised by the sale of normal process loss units should be credited to the process account.	• The cost of an abnormal process loss unit is equal to the cost of a good unit. The total cost of abnormal process loss is credited to the process account from which it arises. • Total cost of abnormal process loss is debited to costing profit and loss account.	• The process account under which abnormal gain arises is debited with the abnormal gain and credited to abnormal gain account which will be closed by transferring to the Costing Profit and Loss account.

Valuation of Work-in-process

The valuation of work-in-process presents a good deal of difficulty because it has units under different stages of completion from those in which work has just begun to those which are only a step short of completion.

(i) Equivalent Units

Equivalent units or equivalent production units, means converting the incomplete production units into their equivalent completed units. Under each process, an estimate is made of the percentage completion of work-in-process with regard to different elements of costs, viz., material, labour and overheads.

The formula for computing equivalent completed units is:

$$\text{Equivalent completed units} = \left(\begin{array}{c}\text{Actual number of units in}\\ \text{the process of manufacture}\end{array}\right) \times \left(\begin{array}{c}\text{Percentage of}\\ \text{Work completed}\end{array}\right)$$

Input Details	Units	Output Particulars	Units	Equivalent Units					
				Material		Labour		Overhead	
				%	Units	%	Units	%	Units
			a	b	c= a×b	d	e=a×d	f	g=a×f
Opening W-I-P	xxx	Opening W-I-P*	xxx	xxx	xxx	xxx	xxx	xxx	xxx
Unit Introduced	xxx	Finished output**	xxx	xxx	xxx	xxx	xxx	xxx	xxx
		Normal loss***	xxx	-	-	-	-	-	-
		Abnormal loss/ Gain****	xxx	xxx	xxx	xxx	xxx	xxx	xxx
Total		Closing W-I-P	xxx	xxx	xxx	xxx	xxx	xxx	xxx
	xxx	Total	xxx		xxx		xxx		xxx

* Equivalent units for Opening W-I-P is calculated only under FIFO method. Under the Average method, it is not shown separately.

**Under the FIFO method, Finished Output = Units completed and transferred to next process less Opening WIP. Under Average method, Finished Output = Units completed and transferred.

***For normal loss, no equivalent unit is calculated.

****Abnormal Gain/ Yield is treated as 100% complete in respect of all cost elements irrespective of percentage of completion.

(ii) Methods for valuation of work-in-process

First-in-first-out (FIFO) method

Under this method the units completed and transferred include completed units of opening work-in-process and subsequently introduced units. Proportionate cost to complete the opening work-in-process and that to process the completely processed units during the period are derived separately.

Weighted Average (Average) Method

Under this method, the cost of opening work-in-process and cost of the current period are aggregated and the aggregate cost is divided by output in terms of completed units.

Inter Process Profit

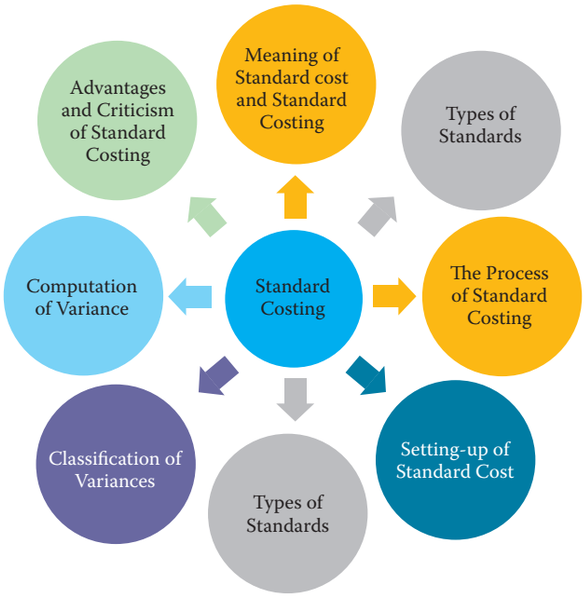
In some process industries the output of one process is transferred to the next process not at cost but at market value or cost plus a percentage of profit. The difference between cost and the transfer price is known as inter-process profits.

Operation Costing

This product costing system is used when an entity produces more than one variant of final product using different materials but with similar conversion activities. Which means conversion activities are similar for all the product variants but materials differ significantly. Operation Costing method is also known as Hybrid product costing system as materials costs are accumulated by job order or batch wise but conversion costs i.e. labour and overheads costs are accumulated by department, and process costing methods are used to assign these costs to products.

Standard Costing

Chapter Overview



What is a Standard or Standard Cost?

Standard cost is defined in the CIMA Official Terminology as "'the planned unit cost of the product, component or service produced in a period. The standard cost may be determined on a number of bases. The main use of standard costs is in performance measurement, control, stock valuation and in the establishment of selling prices."

Types of standards

There are various types of standard which are illustrated below:

Ideal Standards: The level of performance attainable when prices for material and labour are most favourable, when the highest output is achieved with the best equipment and layout and when the maximum efficiency in utilisation of resources results in maximum output with minimum cost.

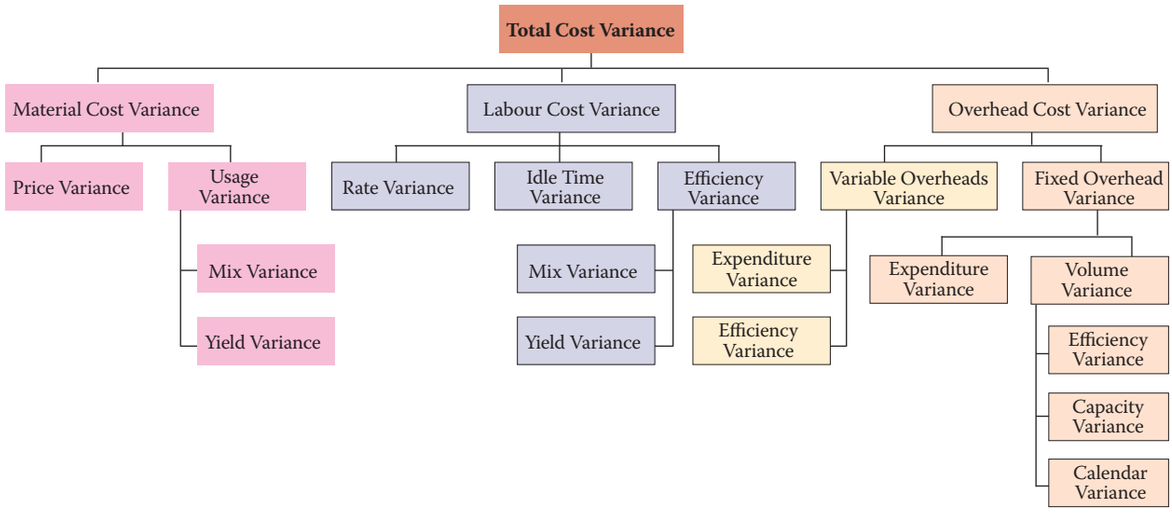
Normal Standards: These are standards that may be achieved under normal operating conditions.

Basic or Bogey Standards: These standards are used only when they are likely to remain constant or unaltered over a long period.

Current Standards: These standards reflect the management's anticipation of what actual costs will be for the current period.

Process followed in Standard Costing

Variances at a Glance



Variance Analysis

(i) Material Cost Variance

Material Cost Variance

[Standard Cost – Actual Cost]

(The difference between the Standard Material Cost *of the actual production volume* and the Actual Cost of Material)

[(SQ × SP) – (AQ × AP)]

Material Price Variance	Material Usage Variance
[Standard Cost of Actual Quantity – Actual Cost] (The difference between the Standard Price and Actual Price for the Actual Quantity Purchased) [(SP – AP) × AQ] *Or* [(SP × AQ) – (AP × AQ)]	[Standard Cost of Standard Quantity for Actual Production – Standard Cost of Actual Quantity] (The difference between the Standard Quantity *specified for actual production* and the Actual Quantity *used*, at Standard Price) [(SQ – AQ) × SP] *Or* [(SQ × SP) – (AQ × SP)]

Material Mix Variance	Material Yield Variance
[Standard Cost of Actual Quantity in Standard Proportion – Standard Cost of Actual Quantity] (The difference between the Actual Quantity *in standard proportion* and Actual Quantity *in actual proportion*, at Standard Price) [(RSQ – AQ) × SP] *Or* [(RSQ × SP) – (AQ × SP)]	[Standard Cost of Standard Quantity for Actual Production – Standard Cost of Actual Quantity in Standard Proportion] (The difference between the Standard Quantity *specified for actual production and Actual Quantity in standard proportion,* at Standard Purchase Price) [(SQ – RSQ) × SP] *Or* [(SQ × SP) – (RSQ × SP)]

(ii) Labour Cost Variances

Labour Cost Variance

[Standard Cost – Actual Cost]

(The difference between the Standard Labour Cost and the Actual Labour Cost *incurred for the production achieved)*

[(SH × SR) – (AH* × AR)]

Labour Rate Variance	Labour Idle Time Variance	Labour Efficiency Variance
[Standard Cost of Actual Time – Actual Cost] (The difference between the Standard Rate per hour and Actual Rate per hour for the Actual Hours paid) [(SR – AR) × AH*] *Or* [(SR × AH*) – (AR × AH*)]	[Standard Rate per Hour x Actual Idle Hours] (The difference between the Actual Hours *paid* and Actual Hours *worked* at Standard Rate) [(AH* – AH#) × SR] *Or* [(AH* × SR) – (AH# × SR)]	[Standard Cost of Standard Time for Actual Production – Standard Cost of Actual Time] (The difference between the Standard Hours *specified for actual production* and Actual Hours *worked* at Standard Rate) [(SH – AH#) × SR] *Or* [(SH × SR) – (AH# × SR)]

Labour Mix Variance Or Gang Variance	Labour Yield Variance Or Sub-Efficiency Variance
[Standard Cost of Actual Time Worked in Standard Proportion – Standard Cost of Actual Time Worked] (The difference between the Actual Hours worked in standard proportion and Actual Hours worked in actual proportion, at Standard Rate) [(RSH – AH#) × SR] *Or* [(RSH × SR) – (AH# × SR)]	[Standard Cost of Standard Time for Actual Production – Standard Cost of Actual Time *Worked* in Standard Proportion] (The difference between the Standard Hours specified for actual production and Actual Hours worked in standard proportion, at Standard Rate) (SH – RSH) × SR *Or* (SH × SR) – (RSH × SR)

(iii) Variable Overhead Variances

Variable Overhead Cost Variance

(Standard Variable Overheads for Production – Actual Variable Overheads)

Variable Overhead Expenditure (Spending) Variance	Variable Overhead Efficiency Variance
(Standard Variable Overheads for Actual Hours#) *Less* (Actual Variable Overheads) [(SR – AR) × AH#] *Or* [(SR × AH#) – (AR × AH#)]	(Standard Variable Overheads for Production) *Less* (Standard Variable Overheads for Actual Hours#) [(SH – AH#) × SR] *Or* [(SH × SR) – (AH# × SR)]

(iv) Fixed Overhead Variances

Fixed Overhead Cost Variance

(Absorbed Fixed Overheads) *Less* (Actual Fixed Overheads)

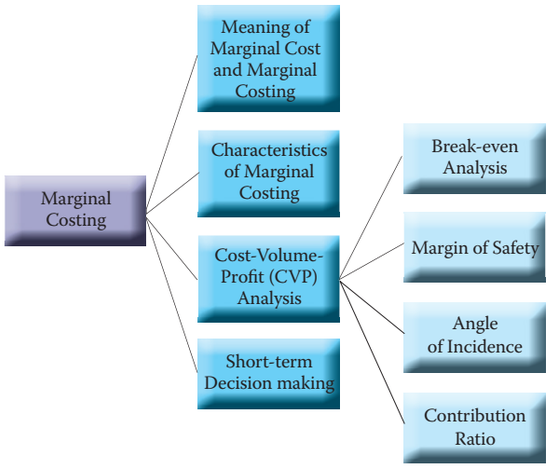
Fixed Overhead Expenditure Variance	Fixed Overhead Volume Variance
(Budgeted Fixed Overheads) *Less* (Actual Fixed Overheads) *Or* (BH × SR) – (AH × AR)	(Absorbed Fixed Overheads) *Less* (Budgeted Fixed Overheads) *Or* (SH × SR) – (BH × SR)

Fixed Overhead Capacity Variance	Fixed Overhead Calendar Variance	Fixed Overhead Efficiency Variance
SR (AH – BH) *Or* (AH × SR) – (BH × SR)	Std. Fixed Overhead rate per day (Actual no. of Working days – Budgeted Working days)	SR (AH – SH) *Or* (AH × SR) – (SH × SR)

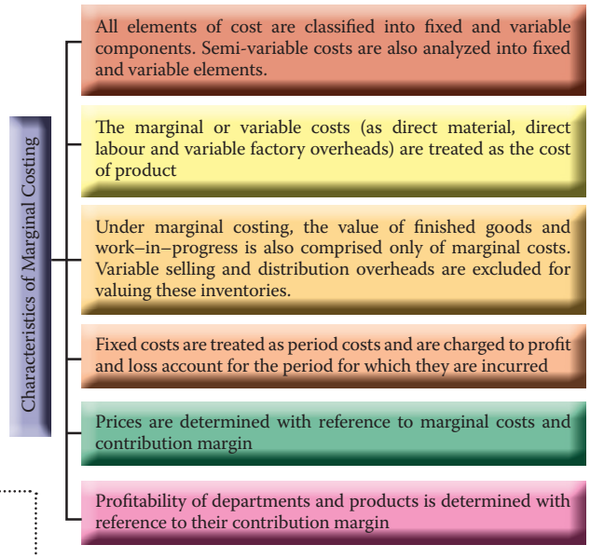
AH* - Actual Hours paid
AH# - Actual Hours worked

Marginal Costing

Chapter Overview

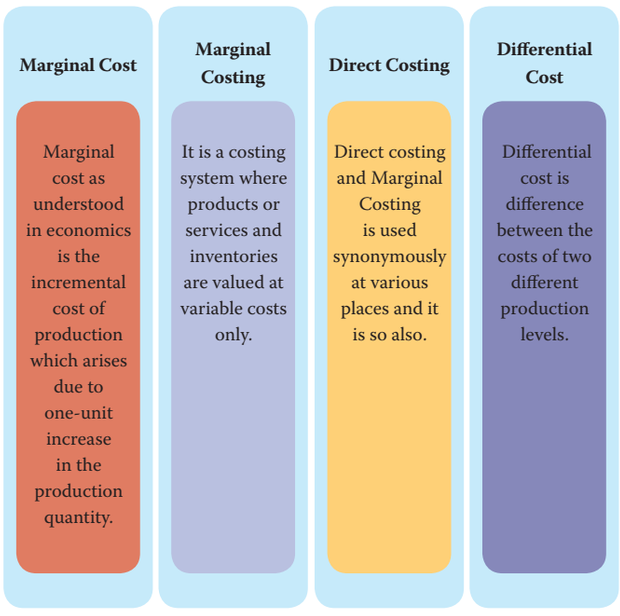


Characteristics of Marginal Costing



Meaning of Terms

In order to understand the concept of marginal costing, let us first define various terminology associated with marginal costing.



Computation of Contribution and Profit under Marginal Costing

For the determination of cost of a product/ service under marginal costing, costs are classified under variable and fixed. All the variable costs are part of product and fixed costs are charged against contribution margin.

Cost and Profit Statement under Marginal Costing

	Amount (Rs)	Amount (Rs)
Revenue		xxx
Product Cost:		
- Direct Materials	xxx	
- Direct employee (labour)	xxx	
- Direct expenses	xxx	
- Variable manufacturing overheads	xxx	
Product (Inventoriable) Costs	**xxx**	**(xxx)**
Product Contribution Margin		xxx
- Variable Administration overheads	xxx	
- Variable Selling & Distribution overheads	xxx	(xxx)
Contribution Margin		**xxx**
Period Cost:		
Fixed Manufacturing expenses	xxx	
Fixed non-manufacturing expenses	xxx	(xxx)
Profit/ (loss)		xxx

Advantages of Marginal Costing

There are many advantages of marginal costing, some of them are discussed below.

Cost-Volume-Profit (CVP) Analysis

It is a managerial tool showing the relationship between various ingredients of profit planning viz., cost, selling price and volume of activity.

Marginal Cost Equation

Marginal Cost Equation = S -V = C = F ± P

Marginal Cost Statement

	(₹)
Sales (S)	xxxx
Less: Variable Cost (V)	xxxx
Contribution (C)	xxxx
Less: Fixed Cost (F)	xxxx
Profit/ Loss (P)	xxxx

Profit Volume Ratio or P/V ratio

This ratio shows the proportion of sales required to cover fixed cost and profit. P/V ratio is calculated as below:

(a) $\text{P/V Ratio} = \frac{\text{Contribution}}{\text{Sales}} \times 100$

(b) When two years' data is given, P/V Ratio

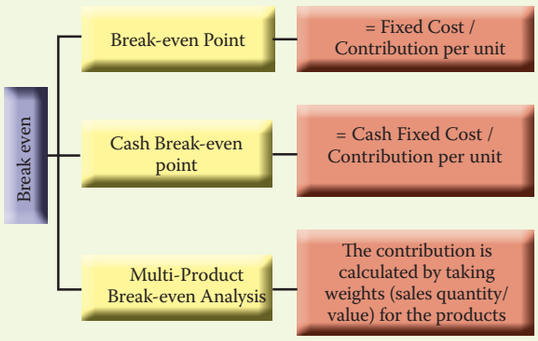
$= \frac{\text{Change in contribution/ Profit}}{\text{Change in sales}} \times 100$

Break-Even Analysis

Break-even analysis is a generally used method to study the CVP analysis. This technique can be explained in two ways.

(i) In narrow sense it is concerned with computing the break-even point.

(ii) In broad sense this technique is used to determine the possible profit/loss at any given level of production or sales.



Angle of Incidence

This angle is formed by the intersection of sales line and total cost line at the break-even point. This angle shows the rate at which profit is earned once the break-even point is reached. The wider the angle the greater is the rate of earning profits. A large angle of incidence with a high margin of safety indicates extremely favourable position

Margin of Safety

This is the difference between the expected level of sales and break even sales (no profit, no loss). The larger is the margin of safety higher is the profit and vice versa.

Variations of Basic Marginal Cost Equation and other formulae

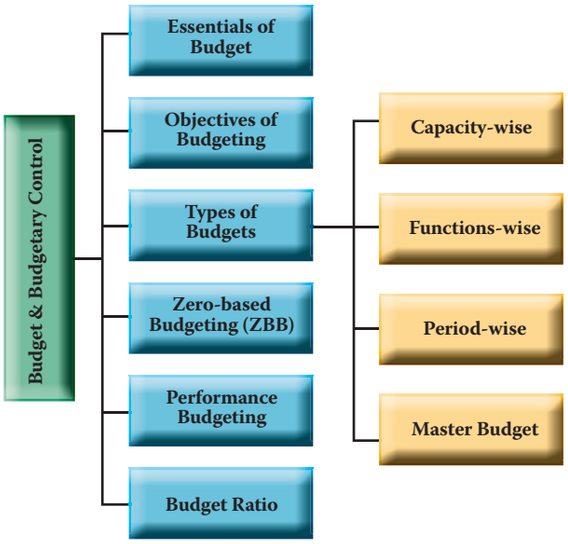
i. Sales – Variable cost = Fixed cost + Profit / Loss
By multiplying and dividing L.H.S. by S
ii. $\frac{S(S-V)}{S} = F + P$
iii. S x P/V Ratio = F + P or Contribution ($P/V\ Ratio = \frac{S-V}{S} \times 100$)
iv. BES x P/V Ratio = F ($\because$ at BEP Profit is zero)
v. $BES = \frac{\text{Fixed cost}}{\text{P/V Ratio}}$
vi. $\text{P/V Ratio} = \frac{\text{Fixed cost}}{\text{BES}}$
vii S × P/V Ratio = Contribution (Refer to iii)

viii.	$\text{P/V Ratio} = \frac{\text{Contribution}}{\text{Sale}} \times 100$
ix.	(BES + MS) × P/V Ratio = Contribution (Total sales = BES + MS)
x.	(BES × P/V Ratio) + (MS × P/V Ratio) = F + P
	By deducting (BES × P/V Ratio) from L.H.S. and F from R.H.S. in (x) above, we get:
xi.	M.S. × P/V Ratio = P
xii.	$\text{P/V Ratio} = \frac{\text{Change in profit}}{\text{Change in sales}} \times 100$
xiii.	$\text{P/V Ratio} = \frac{\text{Change in contribution}}{\text{Change in sales}} \times 100$

xiv.	$\text{Profitability} = \frac{\text{Contribution}}{\text{Key factor}}$
xv.	$\text{Margin of Safety} = \text{Total Sales} - \text{BES}$ or $\frac{\text{Profit}}{\text{P/V Ratio}}$
xvi.	BES = Total Sales – MS
xvii.	$\text{Margin of Safety Ratio} = \frac{\text{Total sales} - \text{BES}}{\text{Total Sales}}$

Budget & Budgetary Control

Chapter Overview



Definition and Terminology

Let us first define various important terminologies used in budget and budgetary control.

Budget	Budgeting	Budgetary control
Quantitative expression of a plan for a defined period of time	Coordinating the combined intelligence of an entire organisation into a plan of action based on past performance	The establishment of budgets relating to the responsibilities of executives of a policy and the continuous comparison of the actual with the budgeted results, either to secure by individual action the objective of the policy or to provide a basis for its revision

Essentials of Budget

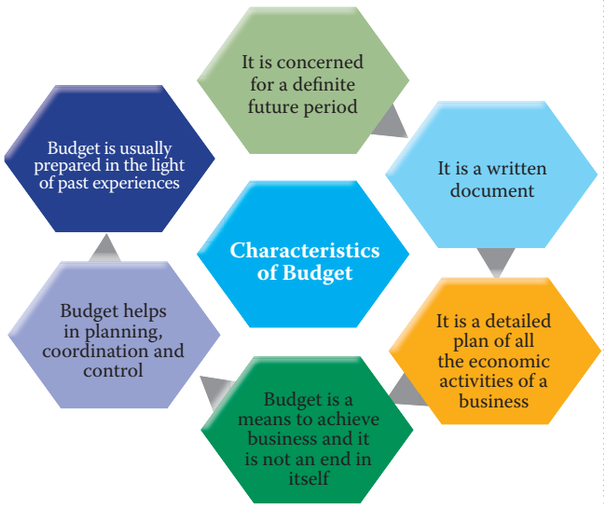
Essential elements of budget are illustrated below:

Essential elements of a budget

Organisational structure must be clearly defined	Setting of clear objectives and reasonable targets	Budgets are prepared for the future periods based on expected course of actions	Budgets are updated for the events that were not kept into the mind while establishing budgets	Budgets should be quantifiable and master budget should be broken down into various functional budgets. Budgets should be monitored periodically	Budgetary performance needs to be linked effectively to the reward system

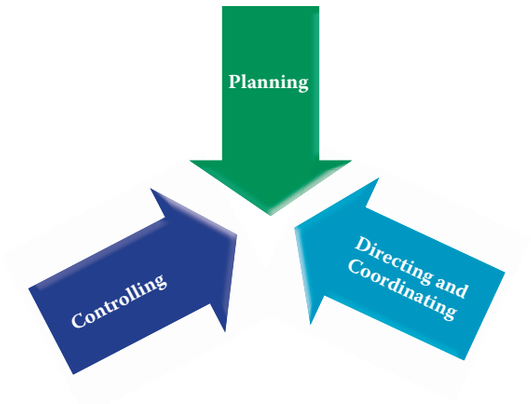
Characteristics of Budget

Main characteristics of budget are as below:



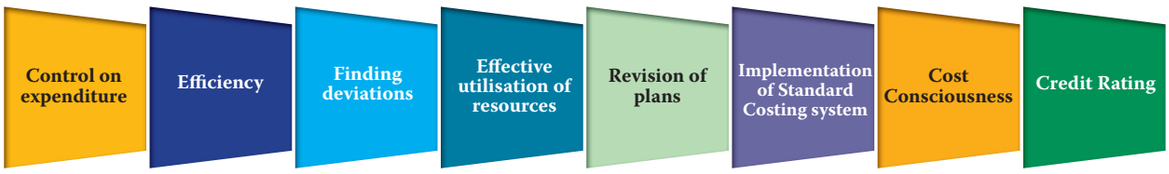
Objectives of Budgeting

The objective of budgeting begins with planning and ends with controlling. Once the planning is done, they can be used for directing and controlling operations so that the stated targets in planning are achieved.

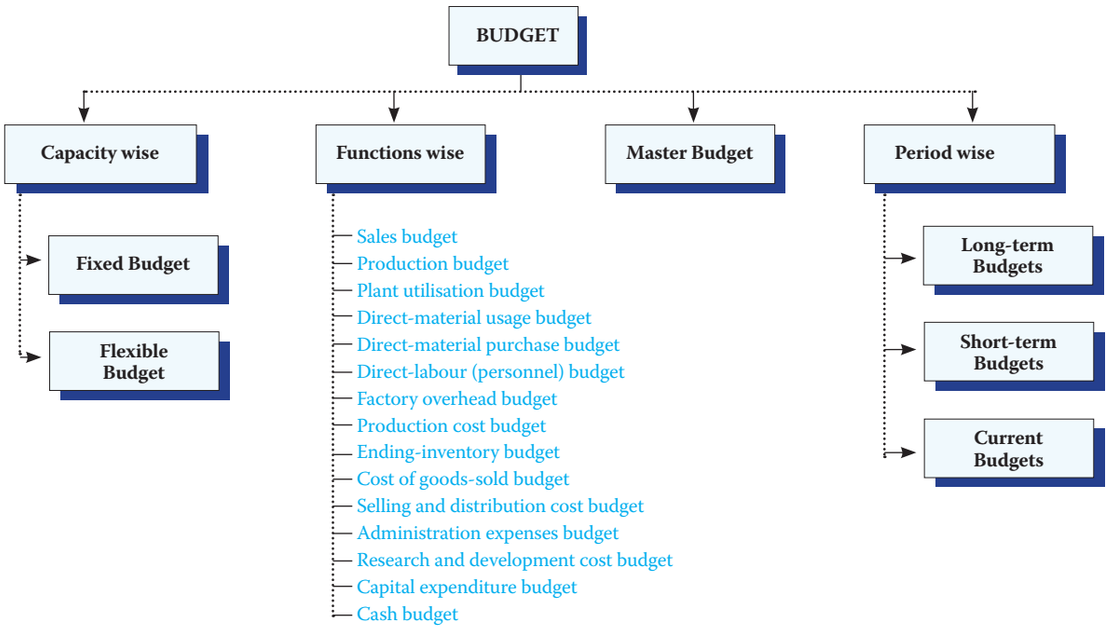


Advantages of Budgetary Control System

There are many advantages of budgetary control system, and some of the them are illustrated below:



Classification of Budget



Definition of different types of Budget

Functional Budgets	Budgets which relate to the individual functions in an organisation are known as Functional Budgets. For example, purchase budget; sales budget; production budget; plant-utilisation budget and cash budget.
Master Budget	It is a consolidated summary of the various functional budgets. It serves as the basis upon which budgeted P & L A/c and forecasted Balance Sheet are built up.
Long-term Budgets	The budgets which are prepared for periods longer than a year are called long-term budgets. Such budgets are helpful in business forecasting and forward planning. Capital expenditure budget and Research and Development budget are examples of long-term budgets.
Short-term Budgets	Budgets which are prepared for periods less than a year are known as short-term budgets. Cash budget is an example of short-term budget. Such types of budgets are prepared in cases where a specific action has to be immediately taken to bring any variation under control, as in cash budgets.
Basic Budgets	A budget which remains unaltered over a long period of time is called basic budget.
Current Budgets	A budget which is established for use over a short period of time and is related to the current conditions is called current budget.
Fixed Budget	According to CIMA official terminology, "a fixed budget, is a budget designed to remain unchanged irrespective of the level of activity actually attained".
Flexible Budget	According to CIMA official terminology, "a flexible budget is defined as a budget which, by recognizing the difference between fixed, semi-variable and variable costs is designed to change in relation to the level of activity attained."

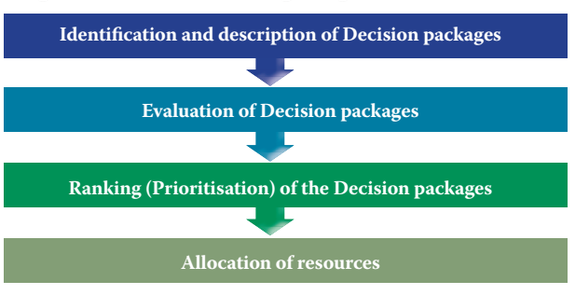
Differences between Fixed Budget and Flexible Budget

Sl. no.	Fixed Budget	Flexible Budget
1.	It does not change with actual volume of activity achieved. Thus it is known as rigid or inflexible budget	It can be re-casted on the basis of activity level to be achieved. Thus it is not rigid.
2.	It operates on one level of activity and under one set of conditions. It assumes that there will be no change in the prevailing conditions, which is unrealistic.	It consists of various budgets for different levels of activity.
3.	Here as all costs like - fixed, variable and semi-variable are related to only one level of activity, so variance analysis does not give useful information.	Here, analysis of variance provides useful information as each cost is analysed according to its behaviour.
4.	If the budgeted and actual activity levels differ significantly, then the aspects like cost ascertainment and price fixation do not give a correct picture.	Flexible budgeting at different levels of activity facilitates the ascertainment of cost, fixation of selling price and tendering of quotations.
5.	Comparison of actual performance with budgeted targets will be meaningless specially when there is a difference between the two activity levels.	It provides a meaningful basis of comparison of the actual performance with the budgeted targets.

Zero- Based Budgeting (ZBB)

It is defined as 'a method of budgeting which requires each cost element to be specifically justified, although the activities to which the budget relates are being undertaken for the first time, without approval, the budget allowance is zero.'

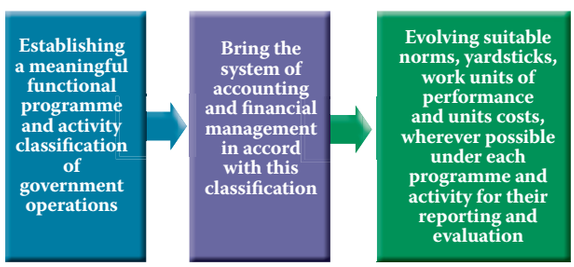
Stages in Zero-based budgeting



Performance Budgeting

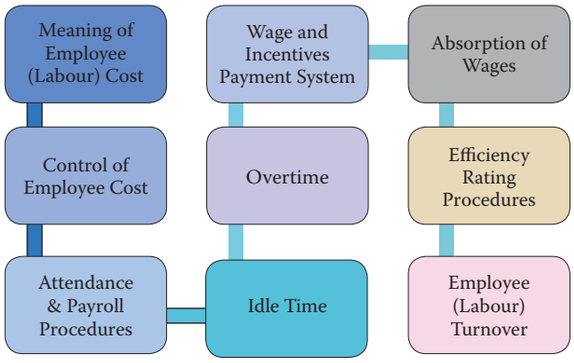
A performance budget is one which presents the purposes and objectives for which funds are required, the costs of the programmes proposed for achieving those objectives, and quantitative data measuring the accomplishments and work performed under each programme.

Steps in Performance Budgeting



EMPLOYEE (LABOUR) COST

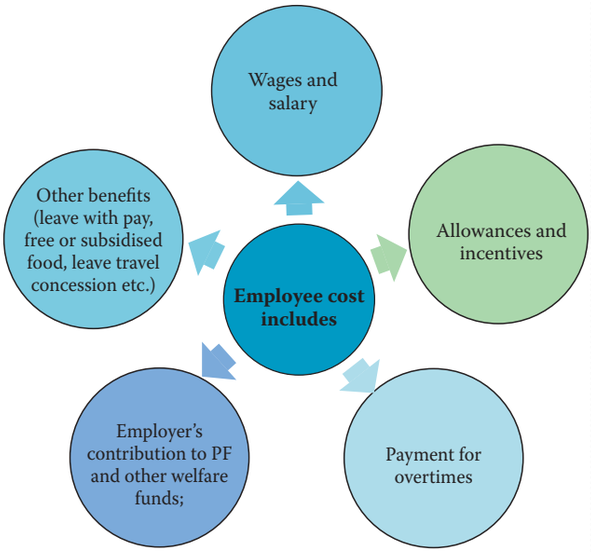
Points of Discussion



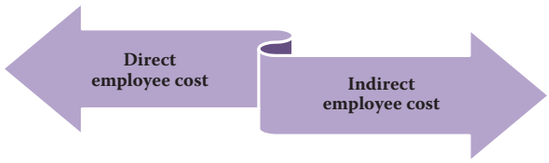
Meaning of Employee (Labour) Cost

EMPLOYEE (LABOUR) COST

- Benefits paid or payable to the employees of an entity, whether permanent, or temporary for the services rendered by them.
- Includes payments made in cash or kind.



Classification of Employee cost:



Direct employee cost	Indirect employee cost
1. **Cost of employees, directly engaged in the production process.**	1. Cost of employees who are **not directly engaged** in the production process.
2. **Easily identifiable and allocable to cost unit.**	2. **Apportioned on** some **appropriate basis**.
3. **Varies with the volume of production and has positive relationship with the volume.**	3. May **not vary with the volume** of production.

Employee Cost Control

EMPLOYEE (LABOUR) COST CONTROL

- **To control over the cost incurred on employees.**
- **To keep the wages per unit of output as low as possible.**
- **To give the employees an appropriate compensation and encourage efficiency.**

Factors for the Control of Employee Cost:

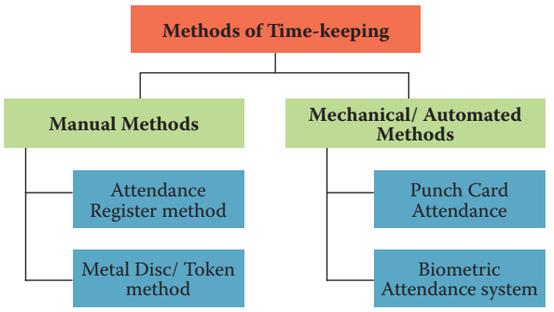
- **Assessment of manpower requirements.**
- **Control over time-keeping and time-booking.**
- **Time and Motion Study.**
- **Control over idle time and overtime.**
- **Control over employee turnover.**
- **Wage and Incentive systems.**
- **Job Evaluation and Merit Rating.**
- **Employee productivity.**

Time-keeping: A record of total time spent by the employees in a factory.

Objectives of Time Keeping:

(i) For the preparation of payrolls.
(ii) For calculating overtime.
(iii) For ascertaining employee cost.
(iv) For controlling employee cost.
(v) For ascertaining idle time.
(vi) For disciplinary purposes.
(vii) For overhead distribution.

Methods of Time-keeping



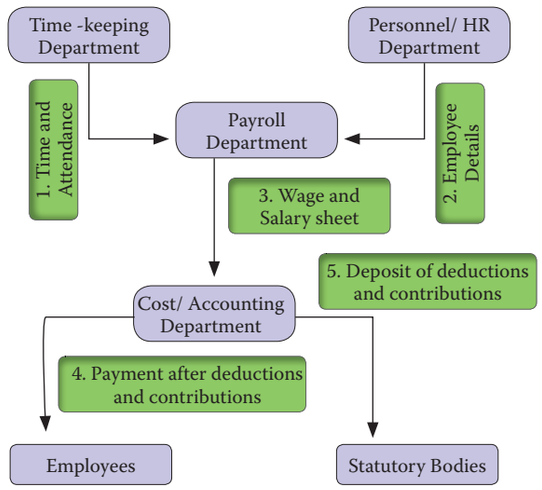
Time-Booking: A method wherein each activity of an employee is recorded.

Objectives of Time Booking:

(i) To compute the cost of the job or activity.
(ii) To measure efficiency.
(iii) To analyse the variance in time with respect to the standard time.

For the collection of all such data, a separate record, generally known as Time (or Job) card, is kept.

Payroll Procedures of Employees



Step-1
- **Attendance and Time details:** *Detailed sheet of number of days or hours worked by each employee as reflected by the time keeping methods are sent to the payroll department.*

Step-2
- **List of employees and other details:** *List of employees on roll and the rate at which they will be paid is sent by the personnel/ HR department.*

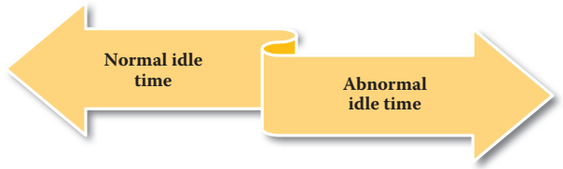
Step-3
- **Computation of wages and other incentives:** *Payroll department prepares pay slip and forward the same to the cost/ accounting department.*

Step-4
- **Payment to the employees:** *After all deductions (like PF, ESI, TDS), wages/ salary is paid to the employees.*

Step-5
- **Deposit of all statutory liabilities:** *All statutory deduction are paid to the respective statutory bodies & funds.*

Idle Time

The time during which no production is carried-out because the worker remains idle but are paid.



Normal Idle Time: Time which cannot be avoided or reduced in the normal course of business.

Causes:
- *Time lost between factory gate and the place of work,*
- *Interval between one job and another,*
- *Setting up time for the machine,*
- *Normal rest time, break for lunch etc.*

Treatment of Normal Idle Time
- Treated as a **part of cost of production**.
- In the case of **direct workers** an allowance for normal idle time is considered while **setting of standard hours** or standard rate.
- In case of **indirect workers**, normal idle time is considered for the **computation of overhead rate.**

Abnormal Idle Time: Apart from normal idle time, there may be factors which give rise to abnormal idle time.

- *Lack of coordination,*
- *Power failure, Breakdown of machines,*
- *Non-availability of raw materials,*
- *Strikes, lockouts, poor supervision, fire, flood etc.*

Causes further analysed into

Controllable abnormal idle time	*Uncontrollable abnormal idle time*
Time which could have been put to productive use had the management been more alert and efficient.	Time lost which management does not have any control e.g., breakdown of machines, flood etc.

Treatment of Abnormal Idle time

- **Not included in production cost.**
- Shown as a **separate item** in the **Costing Profit and Loss** Account.
- For each category i.e. **controllable and uncontrollable** idle time, the **break-up** of cost due to various factors should be **separately shown**.
- **Management** should aim at **eliminating controllable idle time**.

Overtime

Overtime: Work done beyond normal working hours.

Overtime Payment = Wages paid for overtime at normal rate + Premium (extra) payment for overtime work

Overtime premium: Extra amount so paid over the normal rate

CAUSES	↔	TREATMENT
Urgency of work.	↔	Charged to job directly.
To make up shortfall in production due to some unexpected development.	↔	Treated as overhead cost of the particular cost centre which works overtime.
To make up shortfall in production due to some fault of management.	↔	If overtime is worked in a department due to the fault of another department, then premium should be charged to the latter department.
To take advantage of an expanding market or of rising demand.	↔	Overtime worked on account of abnormal conditions such as flood, etc., should be charged to Costing P/L Account.

Systems of Wage Payment and Incentives

System of Wages Payment

Time based	Output based	Combination of time and output based	Premium Bonus method	Group bonus scheme	Incentives for indirect workers

Time based (Time Rate System):

Workers are paid on time basis i.e. hour, day, week, or month.

Wages = Time Worked (Hours/ Days/ Months) × Rate for the time

Output Based (Piece Rate System):

Each operation, job or unit of production is termed a piece.
A rate of payment, is fixed for each piece.
The wages of the worker depend upon his output and rate of each unit of output.

Wages = Number of units produced × Rate per unit

Premium Bonus Method:

The worker is guaranteed his daily wages, if output is below and up to standard.
In case the task is completed in less than the standard time, the saved time is shared between the employees and the employer.

HALSEY PREMIUM PLAN

- **A standard time is fixed for each job or process**
- **Worker gets his time rate even if he exceeds the standard time limit, since his day rate is guaranteed.**
- **If job done in less than the standard time, bonus equal to 50 percent of the wages of time saved is paid.**

Wages = Time taken × Time rate + 50% of time saved × Time rate

ADVANTAGES of HALSEY PREMIUM PLAN

- **Time rate** is **guaranteed**.
- Opportunity for **increasing earnings** by increasing production.
- **System is equitable** in as much as the employer gets a **direct return** for his efforts in improving production methods.

DISADVANTAGES of HALSEY PREMIUM PLAN

- **Incentive** is **not so strong** as with piece rate system.
- **Harder the worker works**, the **lesser** he **gets** per piece.
- Sharing principle may **not be liked by employees**.

ROWAN PREMIUM PLAN

- **Standard time allowance is fixed for performance of a job.**
- **Bonus is paid if time is saved.**
- **Bonus is that proportion of the time wages as time saved bears to the standard time.**

$$\text{Time taken} \times \text{Rate per hour} + \frac{\text{Time Saved}}{\text{Time Allowed}} \times \text{Time taken} \times \text{Rate per hour}$$

ADVANTAGES of ROWAN PREMIUM PLAN

- A worker can **never double his earnings even if there is bad rate setting**.
- Suitable for **encouraging moderately efficient workers**.
- Sharing principle **appeals to the employer** as being equitable.

DISADVANTAGES of ROWAN PREMIUM PLAN

- System is a **bit complicated**.
- Incentive is **weak at a high production level where the time saved is more than 50% of the time allowed**.
- Sharing principle is **not generally welcomed by employees**.

Absorption of Wages

ELEMENTS OF WAGES

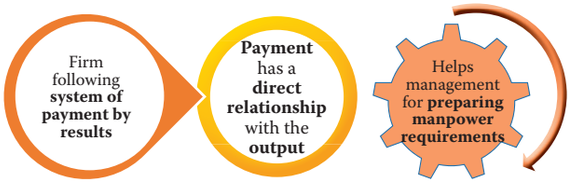
Monetary payment	Non-monetary benefits
• **Basic wages,**	• **Medical facilities;**
• **Dearness allowance,**	• **Educational and training facilities;**
• **Overtime wages,**	• **Recreational and sports facilities;**
• **Production bonus,**	• **Housing and social welfare; and**
• **Employer's contribution to PF, ESI and other funds,**	• **Cost of subsidised canteen and co-operative societies, etc.**
• **Leave pay, etc.**	

Efficiency Rating Procedures

If the time taken by a worker on a job ≤ the standard time, then he is rated efficient.

$$\text{Efficiency in \%} = \frac{\text{Time allowed as per standard}}{\text{Time Taken}} \times 100$$

Need for Efficiency rating:



Factors for increasing Employee productivity:

- **Employing** who possess **right type of skill.**
- Placing the **right** type of **person** to the **right job**.
- **Training** young and old workers by providing right types of opportunities.
- Taking appropriate measures to **avoid** the situation of **excess or shortage of employees.**
- Carrying **out work study for fixation of wages.**

Employee (Labour) Turnover

EMPLOYEE TURNOVER

Rate of change in the composition of employee force during a specified period measured against a suitable index.

Methods to calculate Employee Turnover

Replacement Method
This considers actual replacement of employees irrespective of number of persons leaving the organisation

Separation Method
This considers total number of employees separated

Flux Method
This considers both the number of replacements as well as the number of separations

$$\text{Replacement method} = \frac{\text{Number of employees Replaced during the period}}{\text{Average number of employees during the period on roll}} \times 100$$

$$\text{Separation method} = \frac{\text{Number of employees Seperated during the period}}{\text{Average number of employees during the period on roll}} \times 100$$

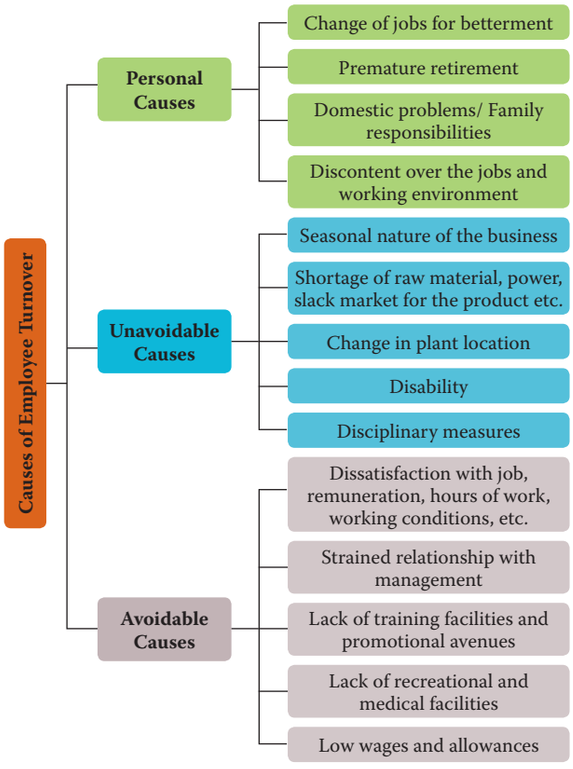
$$\text{Flux method} = \frac{\text{Number of employees Seperated} + \text{Number of employees Replaced during the period}}{\text{Average number Of employees during the period on roll}} \times 100$$

Or

$$\frac{\text{No. of Separations+No.of Accessions (i.e. No.of Replacements+ No.of New Joinings)}}{\text{Average no.of employees during the period on roll}} \times 100$$

Newly recruited employees are also responsible for changes in the composition or work force, some management accountants feel to take new recruitment for calculating employee turnover. The total number of workers joining, including replacements, is called accessions.

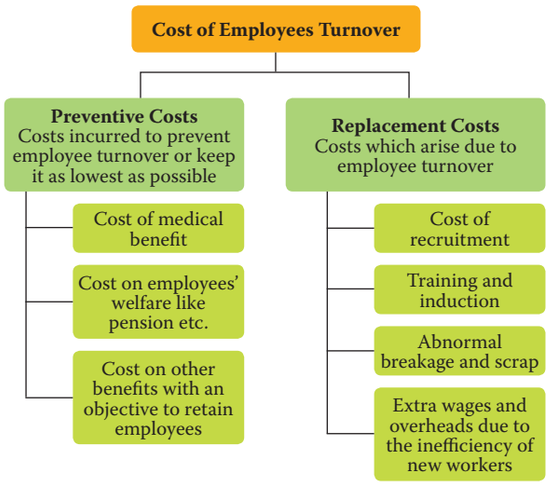
Causes of Employee Turnover:



Effects of Employee Turnover:

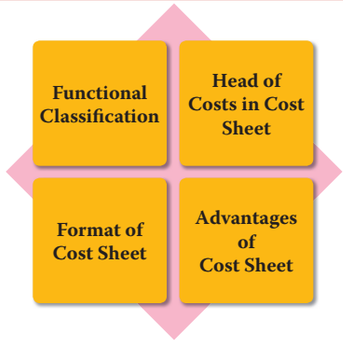
- Even flow of production is disturbed
- Efficiency of new workers is low
- Increased cost of training
- New workers cause increased breakage of tools
- Cost of recruitment

Cost of Employees Turnover:



COST SHEET

Points of Discussion



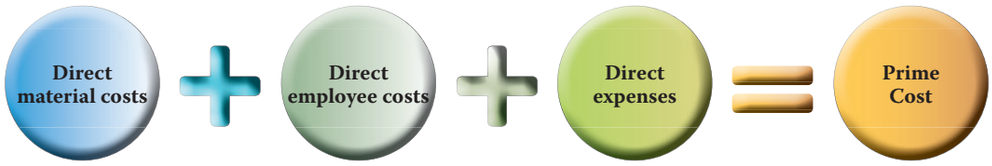
Functional Classification of Elements of Cost

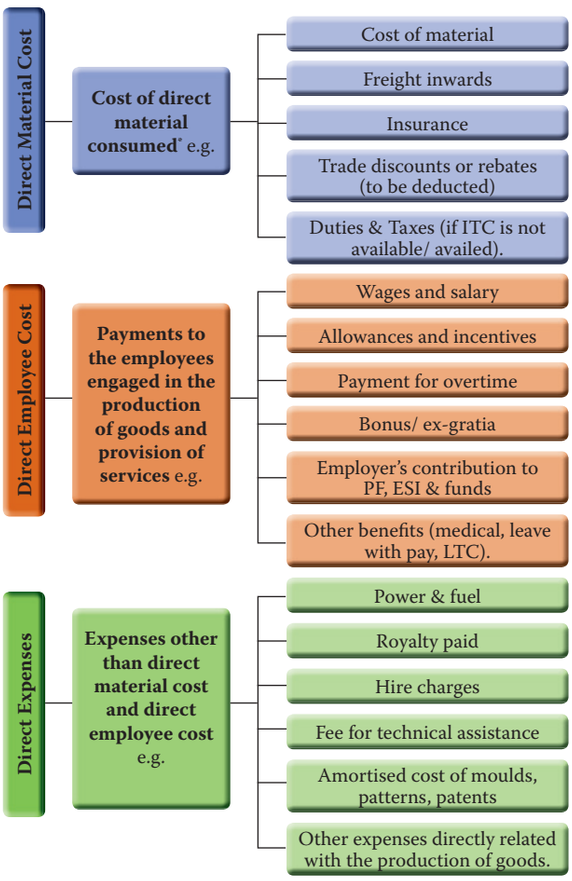
- Direct Material Cost
- Direct Employee (labour) Cost
- Direct Expenses
- Production/ Manufacturing Overheads
- Administration Overheads
- Selling Overheads
- Distribution Overheads
- Research and Development costs etc.

Cost Heads in a Cost Sheet

- Prime Cost
- Cost of Production
- Cost of Goods Sold
- Cost of Sales

Prime Cost:





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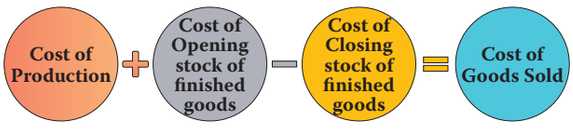
Cost of Production:

Prime Cost	**xxxx**
Add: Factory Overheads#	xxx
Gross Works Costs	**xxxx**
Add: Opening stock of Work-in-process	xxx
Less: Closing stock of Work-in-process	(xxx)
Factory or Works Costs	**xxxx**
Add: Quality Control Cost	xxx
Add: Research & Development cost (Process related)	xxx
Add: Administrative Overheads related with production	xxx
Less: Credit for recoveries (miscellaneous income)	(xxx)
Add: Packing Cost (Primary packing)	xxx
Cost of Production	**xxxx**

 # Factory Overheads (Works / production / manufacturing overheads) includes-

Consumable stores and spares	**Depreciation**	**Lease rent of production assets**
Repair and maintenance of plant and machinery, factory building	**Indirect employees cost related with production activities**	**Drawing and Designing department cost**
Insurance of plant and machinery, factory building, stock of raw material & WIP	**Amortised cost of jigs, fixtures, tooling**	**Service department cost such as Tool Room, Engineering & Maintenance, Pollution Control**

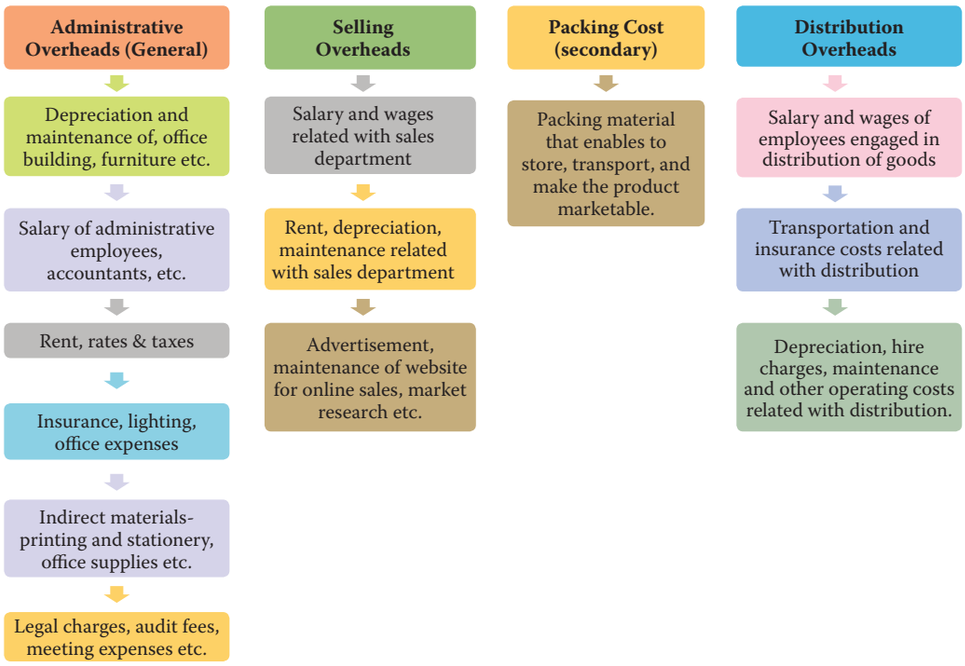
Cost of Goods Sold:



Cost of Sales:

Cost of Goods Sold	**xxxx**
Add: Administrative Overheads (General)	xxx
Add: Selling Overheads	xxx
Add: Packing Cost (secondary)	xxx
Add: Distribution Overheads	xxx
Cost of Sales	**xxxx**

Examples:



Cost Sheet- Specimen Format

	Particulars	Total Cost (₹)	Cost per unit (₹)
1.	Direct materials consumed:		
	Opening Stock of Raw Material	xxx	
	Add: Additions/ Purchases	xxx	
	Less: Closing stock of Raw Material	(xxx)	
		xxx	**xxx**
2.	Direct employee (labour) cost	xxx	
3.	Direct expenses	xxx	
4.	**Prime Cost (1+2+3)**	**xxx**	**xxx**
5.	**Add:** Works/ Factory Overheads	xxx	
6.	Gross Works Cost (4+5)	xxx	
7.	**Add:** Opening Work in Process	xxx	
8.	**Less:** Closing Work in Process	(xxx)	
9.	**Works/ Factory Cost (6+7-8)**	**xxx**	**xxx**
10.	**Add:** Quality Control Cost	xxx	
11.	**Add:** Research and Development Cost	xxx	
12.	**Add:** Administrative Overheads (relating to production activity)	xxx	
13.	**Less:** Credit for Recoveries/Scrap/By-Products/ misc. income	(xxx)	
14.	**Add:** Packing cost (primary)	xxx	
15.	**Cost of Production (9+10+11+12-13+14)**	**xxx**	**xxx**
16.	**Add:** Opening stock of finished goods	xxx	
17.	**Less:** Closing stock of finished goods	(xxx)	
18.	**Cost of Goods Sold (15+16-17)**	**xxx**	**xxx**
19.	**Add:** Administrative Overheads (General)	xxx	
20.	**Add:** Marketing Overheads :		
	Selling Overheads	xxx	
	Distribution Overheads	xxx	
21.	**Cost of Sales (18+19+20)**	**xxx**	**xxx**

Treatment of various items of cost in Cost Sheet:

Abnormal costs	• Any abnormal cost, where it is material and quantifiable, shall not form part of cost of production or acquisition or supply of goods or provision of service.
Subsidy/ Grant/ Incentives	• Reduced from the cost objects to which such amount pertains.
Penalty, fine, damages, and demurrage	• Does not form part of cost.
Interest and other finance costs	• Not included in cost of production. • Shall be presented in the cost statement as a separate item of cost of sales.

Advantages of Cost Sheet

- **Provides the total cost figure as well as cost per unit of production.**
- **Helps in cost comparison.**
- **Facilitates preparation of cost estimates required for submitting tenders.**
- **Provides sufficient help in arriving at the figure of selling price.**
- **Facilitates cost control by disclosing operational efficiency.**

UNIT & BATCH COSTING

Points of Discussion

- Methods of Costing
  - Unit Costing
    - Meaning
    - Process of Cost Accumulation and Calculation
  - Batch Costing
    - Meaning
    - Process of Cost Accumulation and Calculation
    - Determination of Economic Batch Quantity (EBQ)
    - Difference between Job and Batch Costing

UNIT COSTING

Meaning of Unit Costing

UNIT COSTING

- **where the output produced is identical and each unit of output requires identical cost.**
- **also known as single or output costing.**
- **applied in industries like PAPER, CEMENT, STEEL WORKS, MINING, BREWERIES ETC.**

Here, costs are collected and analysed element wise and then total cost per unit is ascertained as follows:

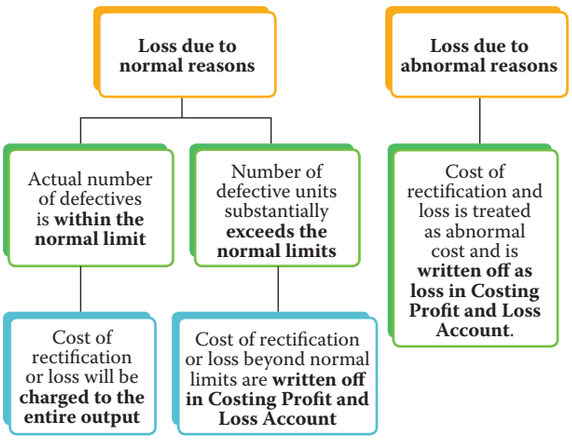
$$\text{Cost per unit} = \frac{\text{Total cost of production}}{\text{No. of units produced}}$$

COST COLLECTION PROCEDURE IN UNIT COSTING

Collection of Materials Cost	Collection of Employees (labour) Cost	Collection of Overheads
It is collected from Material Requisition notes.	**Direct employee cost:** It is collected from job time cards or sheets.	These are collected under suitable standing orders numbers, and selling and distribution overheads against cost accounts numbers.
Accumulated material cost is then posted in cost accounting system.	The time booked/ recorded is valued at appropriate rates and entered in the cost accounting system.	Total expenses so collected are apportioned to service and production departments on some suitable basis.
	Indirect employee costs: These are collected from the payrolls books and posted against standing order or expenses code numbers in the overhead expenses ledger.	The expenses of service departments are finally transferred to production departments.
		The total overhead of production departments is then applied to products on some realistic basis, e.g. machine hour; labour hour etc.

Image source: https://metry.io/en/cost-collection-from-invoices/

TREATMENT OF SPOILED AND DEFECTIVE WORK



BATCH COSTING

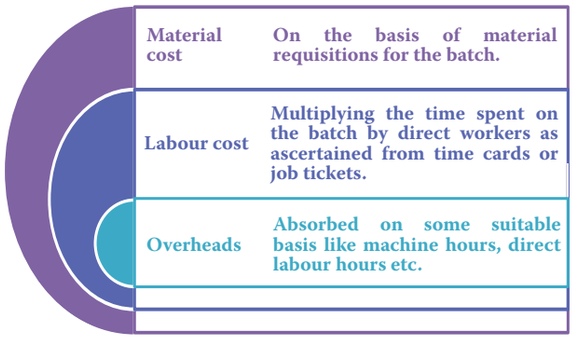
Meaning of Batch Costing

BATCH COSTING

- ❑ is a type of specific order costing where articles are manufactured in predetermined lots, known as batch.
- ❑ the cost object for cost determination is a batch for production.
- ❑ example PEN MANUFACTURING INDUSTRY

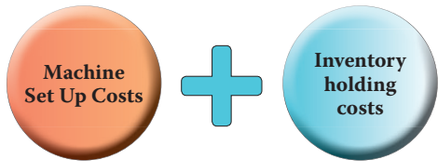
A batch consists of certain number of units which are PROCESSED SIMULTANEOUSLY. Under this method of manufacturing, the inputs are accumulated in the assembly line till it reaches minimum batch size. Soon after a batch size is reached, all inputs in a batch is processed for further operations.

COSTING PROCEDURE IN BATCH COSTING

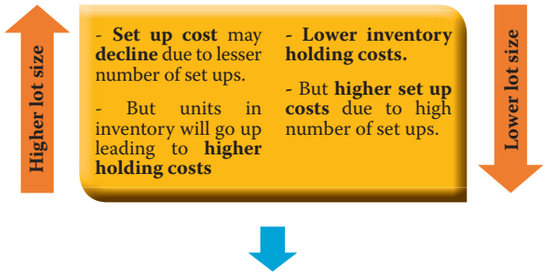


ECONOMIC BATCH QUANTITY (EBQ)

Primarily, the total production cost under batch production comprises of two main costs, namely,

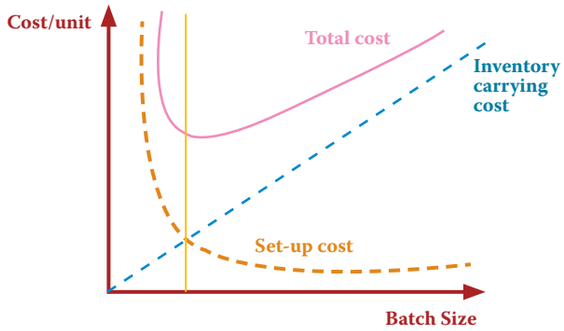


Balancing Machine set up cost and Inventory holding cost



ECONOMIC BATCH QUANTITY (EBQ)

- ❑ It is the size of a batch where total cost of set-up and holding costs are at minimum.



Determination of EBQ

By calculating the total cost for a series of possible batch sizes and checking which batch size gives the minimum cost.

Mathematical formula:

$$EBQ = \sqrt{\frac{2DS}{C}}$$

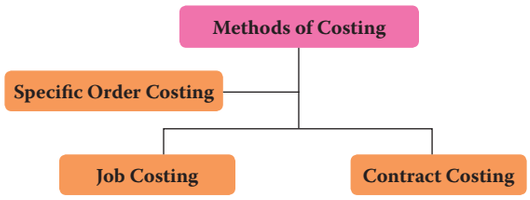
Where, D = Annual demand for the product
S = Setting up cost per batch
C = Carrying cost per unit of production

DIFFERENCE BETWEEN JOB AND BATCH COSTING

Sr. No	Job Costing	Batch Costing
1	Used for **non- standard and non- repetitive products** produced as per customer specifications and against specific orders.	**Homogeneous products** produced in a continuous production flow in lots.
2	**Cost determined for each Job.**	**Cost determined in aggregate** for the entire Batch and then arrived at on per unit basis.
3	Jobs are different from each other and independent of each other. **Each Job is unique.**	Products produced in a batch are homogeneous and **lack of individuality**.

JOB AND CONTRACT COSTING

POINTS OF DISCUSSION



JOB COSTING

MEANING OF JOB COSTING

JOB COSTING

- **It is applicable where the work consists of separate contracts, jobs or batches, each of which is authorised by specific order or contract.**
- **Industry example: PRINTING; FURNITURE; HARDWARE; SHIP-BUILDING; HEAVY MACHINERY; INTERIOR DECORATION.**

PRINCIPLES OF JOB COSTING

- **Analysis and ascertainment of cost of each unit of production**
- **Control and regulate cost**
- **Determine the profitability**

PROCESS OF JOB COSTING

Prepare a **separate cost sheet** for each job

Disclose cost of **materials** issued for the job

Employee costs incurred (on the basis of bill of material and time cards respectively)

When job is completed, **overhead charges** are added for ascertaining total expenditure

SUITABILITY OF JOB COSTING

- **When jobs are executed for different customers according to their specifications.**
- **When no two orders are alike and each order/ job needs special treatment.**
- **Where the work-in-progress differs from period to period on the basis of the number of jobs in hand.**

JOB COST CARD/ SHEET

JOB COST CARD/ SHEET

A cost sheet where,
- **quantity of materials issued,**
- **hours spent by different class of employees,**
- **amount of other expenses and share of overheads**

are recorded.

Format of Job Cost Sheet:

JOB COST SHEET

Description: _____ Job No.: _____
Blue Print No.: _____ Quantity: _____
Material No.: _____ Date of delivery: _____
Reference No.: _____ Date commenced: _____
Date finished: _____

Date	Reference	Details	Material	Labour	Overhead
		Total			

Summary of costs	*Estimated (₹)*	*Actual (₹)*
Direct material cost		
Direct wages		
Production overhead		
PRODUCTION COST		
Administration and Selling & Distribution Overheads		
TOTAL COST		
PROFIT/LOSS		
SELLING PRICE		

For the job _____
Units produced _____
Cost/unit _____
Remarks _____
Prepared by: _____
Checked by: _____

COLLECTION OF COSTS FOR A JOB

Materials cost

- Traced to and identified with specific job or work order
- Posted to individual job cost sheets or cards in the work-in-progress ledger
- If the surplus material is utilised on some other job, instead of being returned to the stores first, a material transfer note is prepared.

Labour cost

- Booked against specific jobs in the job time cards or sheets
- Posted to the appropriate job cost card or sheet in work-in-progress ledger

Image source: https://www.dreamstime.com/job-costing-text-paper-sheet-chart-dice-spectacles-pen-laptop-blue-yellow-push-pin-wooden-table-business-banking-image197323655

Overheads

- Manufacturing overheads are collected under suitable standing order numbers
- Selling and distribution overheads are collected against cost accounts numbers
- Total overhead expenses are apportioned to service and production departments on some suitable basis.
- The expenses of service departments are finally transferred to production departments.
- The total production overhead is then applied to products on some realistic basis.

SPOILED AND DEFECTIVE WORK

Meaning

Spoiled work – It is the quantity of production that has been totally rejected and cannot be rectified.

Defective work – It refers to production that is not as perfect as the saleable product but is capable of being rectified

Treatment

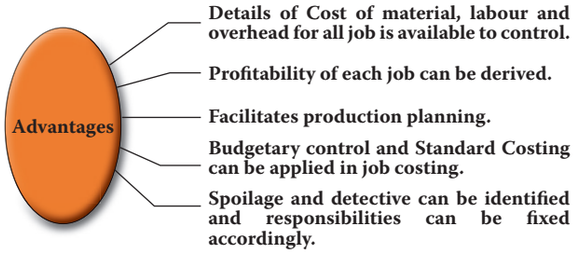
- **Where a percentage of defective work is ALLOWED in a particular batch AS IT CANNOT BE AVOIDED.** → The cost of rectification will be charged to the whole job and spread over the entire output of the batch
- **Where defect is DUE TO BAD WORKMANSHIP.** → The cost of rectification shall be written off as a loss being an abnormal cost
- **Where defect is due to the inspection department WRONGLY ACCEPTING INCOMING MATERIAL OF POOR QUALITY.** → Cost of rectification will be charged to the department and will not be considered as cost of manufacture of the batch

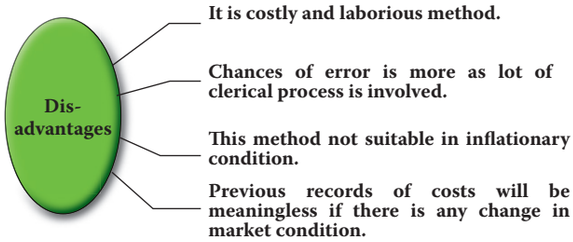
ACCOUNTING OF COSTS FOR A JOB

1.	**For purchase of materials**	
	Stores Ledger Control A/c	**Dr.**
	To Cost Ledger Control A/c	
2.	**For the value of direct materials issued to jobs**	
	Work-in-Process Control A/c	**Dr.**
	To Stores Ledger Control A/c	
3.	**For return of direct materials from jobs**	
	Stores Ledger Control A/c	**Dr.**
	To Work-in-Process Control A/c	
4.	**For return of materials to suppliers**	
	Cost Ledger Control A/c	**Dr.**
	To Stores Ledger Control A/c	
5.	**For indirect materials**	
	Factory Overhead Control A/c	**Dr.**
	To Stores Ledger Control A/c	
6.	**For wages paid**	
	Wages Control A/c	**Dr.**
	To Cost Ledger Control A/c	

7.	**For direct wages incurred on jobs**	
	Work-in-Process Control A/c	**Dr.**
	To Wages Control A/c	
8.	**For indirect wages**	
	Factory Overhead Control A/c	**Dr.**
	To Wages Control A/c	
9.	**For any indirect expense paid**	
	Factory Overhead Control A/c	**Dr.**
	To Cost Ledger Control A/c	
10.	**For charging overhead to jobs**	
	Work-in-Process Control A/c	**Dr.**
	To Factory Overhead Control A/c	
11.	**For the total cost of jobs completed**	
	Cost of Sales A/c	**Dr.**
	To Work-in-Progress Control A/c	
12.	**The balance of Cost of Sales A/c is transferred to Costing Profit and Loss A/c;** For such transfer	
	Costing Profit and Loss A/c	**Dr.**
	To Cost of Sales A/c	
13.	**For the sales value of jobs completed**	
	Cost Ledger Control A/c	**Dr.**
	To Costing Profit and Loss A/c	

ADVANTAGES AND DISADVANTAGES OF JOB COSTING





DIFFERENCE BETWEEN JOB COSTING AND PROCESS COSTING

Job Costing	Process Costing
A Job is carried out by specific orders.	Process of producing the product has a continuous flow and the product produced is homogeneous.
Costs determined for each job.	Costs are compiled on time basis i.e., for each process or department.
Each job is separate and independent.	Products lose their individual identity.
Each job has a number and costs are collected against the same job number.	The unit cost of process is an average cost for the period.
Costs are computed when a job is completed.	Costs are calculated at the end of the cost period.
More managerial attention is required for effective control.	Control here is comparatively easier.

CONTRACT COSTING

MEANING OF CONTRACT COSTING

CONTRACT COSTING

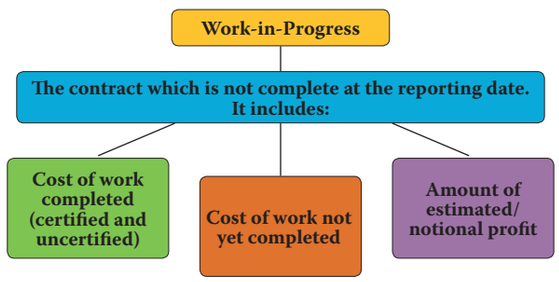
- **It is a form of specific order costing where job undertaken is relatively large and normally takes period longer than a year to complete.**
- **Adopted by the contractors engaged in contracts like CONSTRUCTION OF BUILDING, ROAD, BRIDGE, ERECTION OF TOWER ETC.**

FEATURES OF CONTRACT COSTING

Work in contract is ordinarily carried out at the site of the contract.	**Separate account is usually maintained for each contract.**	**Bulk of the expenses incurred are considered as direct.**
Number of contracts undertaken by a contractor at a time is usually few.	**Indirect expenses mostly consist of office expenses, stores and works.**	**Cost unit in contract costing is the contract itself.**

TERMS USED IN CONTRACT COSTING

(i) Work-in-Progress



(ii) Cost of Work Certified or Value of Work Certified

Expert, based on his assessment, certifies the work completion in terms of percentage of total work.
Cost or value of certified portion is calculated and is known as Cost of work certified or Value of work certified respectively.

(a) Value of Work Certified = Value of Contract × Work certified (%)
(b) Cost of Work Certified = Cost of work to date – (Cost of work uncertified + Material in hand + Plant at site)

(iii) Cost of Work Uncertified

Cost of the work carried out but not certified by the expert.

Always shown at cost price.

The cost of Work Uncertified may be ascertained as follows:

	(₹)	(₹)
Total cost to date		xxx
Less: Cost of work certified	xxx	
Material in hand	xxx	
Plant at site	xxx	xxx
Cost of work uncertified		xxx

(iv) Progress Payment

Progress payment = Value of work certified − Retention money − Payment to date

(v) Retention Money

Retention Money = Value of work certified − Payment actually made

(vi) Cash Received

Cash received = Value of work certified − Retention money

(vii) Notional Profit

Notional profit = Value of work certified − (Cost of work to date − Cost of work not yet certified)

(viii) Estimated Profit

Estimated Profit = Contract price − Estimated total cost

SPECIMEN OF CONTRACT ACCOUNT (with few items)

The cost of Work Uncertified may be ascertained as follows:

	Particulars	(₹)		Particulars	(₹)
To	Materials	xxx	By	Plant at site c/d	xxx
”	Wages	xxx	”	Work-in-progress c/d:	xxx
”	Direct expenses	xxx		- Work certified	xxx
”	Indirect expenses	xxx		- Work uncertified	xxx
”	Plant and Machinery	xxx	”	Costing P&L A/c (b/f) (If Loss)	xxx
”	Cost of Sub-Contract	xxx			
”	Costing P&L A/c (b/f) (If Profit)	xxx			
		XXX			XXX

COST PLUS CONTRACT

Cost- Plus Contract — When the value of the contract is determined by adding an agreed percentage of profit to the total cost.

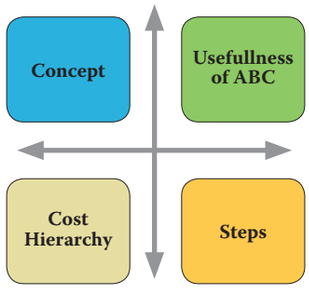
ADVANTAGES AND DISADVANTAGES OF COST PLUS CONTRACT

ADVANTAGES	DISADVANTAGES
• Contractor is assured of a fixed percentage of profit. • Useful when work to be done is not definitely fixed at the time of making the estimate. • Contractee can ensure himself about ‘the cost of the contract’, as he is empowered to examine the books and documents of the contractor.	• Contractor may not have any inducement to avoid wastages and effect economy in production to reduce cost.

ESCALATION CLAUSE

ACTIVITY BASED COSTING

POINTS OF DISCUSSION

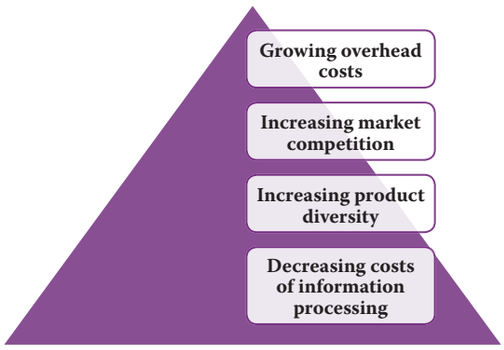


MEANING OF ACTIVITY BASED COSTING

ACTIVITY BASED COSTING (ABC)

- Accounting methodology that assigns costs to activities rather than products or services.
- Costs are assigned based on their use of resources.
- Creates a LINK BETWEEN THE ACTIVITY (resource consumption) and the COST OBJECT.
- Useful to the ORGANIZATION WITH MULTIPLE PRODUCTS.

FACTORS PROMPTING DEVELOPMENT OF ABC



USEFULNESS/SUITABILITY OF ABC

ABC is particularly needed in the following situations:			
High amount of overhead	Wide range of products	Presence of non-volume related activities	Stiff competition

ADVANTAGES AND DISADVANTAGES OF ABC

ADVANTAGES	DISADVANTAGES
• More accurate costing. • Overhead allocation is done on logical basis. • Enables better pricing policies. • Utilizes unit cost rather than just total cost. • Help to identify non-value added activities. • Helpful to the organizations with multiple products. • Highlights problem areas which require attention of the management.	• Expensive. • Not helpful to the small organizations. • May not be applied to organizations with limited products. • Selection of the most suitable cost driver may be difficult or complicated.

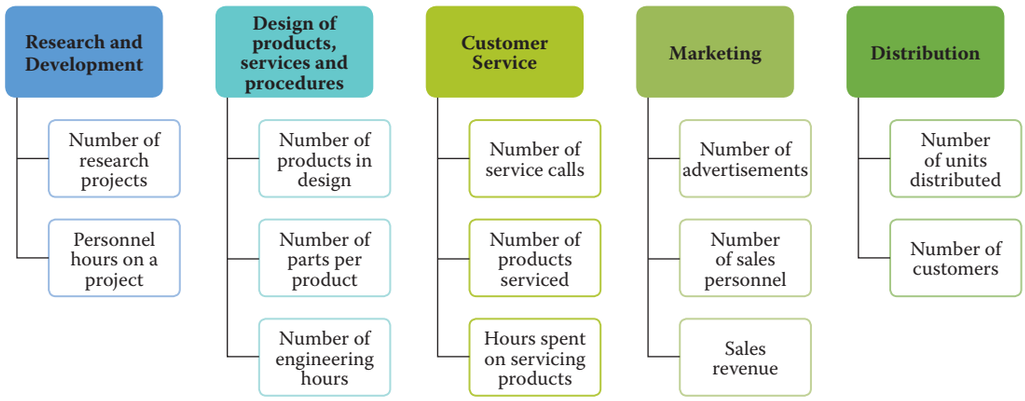
TERMS USED

(i) Activity
- Event that incurs cost.

(ii) Cost Object
- An item for which cost measurement is required

(iii) Cost Driver
- Factor that causes a change in the cost of an activity-
  - **Resource cost driver:** Measure of the quantity of resources.
  - **Activity cost driver:** Measure of the frequency and intensity of demand.

Examples of Cost Driver business function wise:

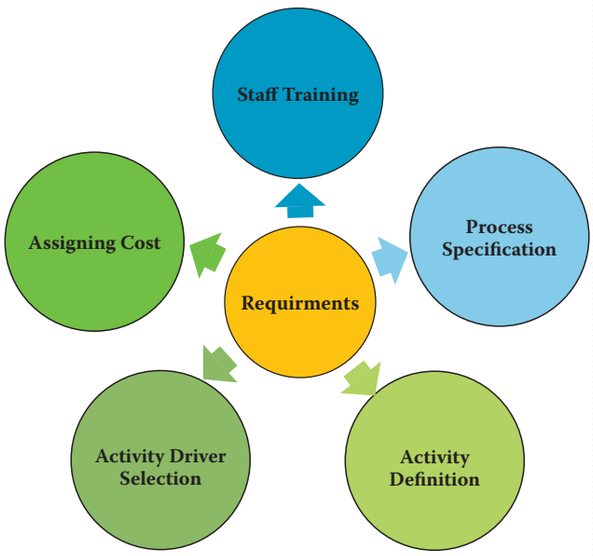


(iv) Cost Pool

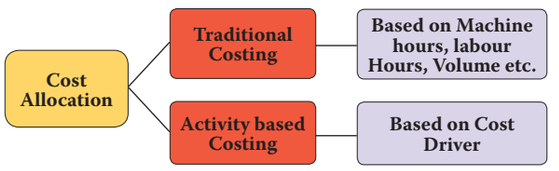
- Group of various individual cost items.
- Example machine set-up.

COST ALLOCATION

REQUIREMENTS IN ABC IMPLEMENTATION



TRADITIONAL ABSORPTION COSTING VS ABC



Activity Based Costing	Traditional Absorption Costing
Related to activities	Related to cost centers
More realistic	Not realistic
Activity–wise cost drivers	Time (hours) - only cost driver
Cost are assigned to cost objects	Costs are assigned to cost units
Aids cost control	Not suitable for cost control.

LEVEL OF ACTIVITIES UNDER ABC METHODOLOGY/COST HIERARCHY

Unit level activities	
Activities which can be identified with the number of units produced.	- Indirect materials/ consumables - Inspection or testing of every item produced

Batch level activities	
Activities which are performed each time a batch of goods is produced.	- Material ordering - Machine set-up costs

Product level activities	
Activities which are performed to support different products in product line.	- Designing the product - Producing parts specifications

Facilities level activities	
Activities which are common and joint to all products manufactured.	- Maintenance of buildings - Plant security

STAGES IN ACTIVITY BASED COSTING (ABC)

Identify different activities within the organisation

Break the organisation down into many very small activities.

Relate the overheads to the activities

This creates 'cost pools' or 'cost buckets'.

Support activities are then spread across the primary activities

Where base is the cost driver measuring, how the support activities are used.

Determine the activity cost drivers

To relate the overheads collected in cost pools to the cost objects.

Calculate activity cost driver rates

Calculate activity cost driver rates for each activity

$$\text{Activity cost driver rate} = \frac{\text{Total cost of activity}}{\text{Activity driver}}$$

EXAMPLES OF COST DRIVERS

	ACTIVITY COST POOL	COST DRIVERS
Overhead Costs	Ordering and Receiving Materials cost	Number of purchase orders
	Setting up machines costs	Number of set-ups
	Machining costs	Machine hours
	Assembling costs	Number of parts
	Inspecting and testing costs	Number of tests
	Painting costs	Number of parts
	Supervising Costs	Direct labour hours
	Delivery cost	Number of deliveries
	Shelf-stocking cost	Shelf-stocking hours
	Customer Support	Number of items sold

HOW TO CALCULATE COST PER PRODUCT USING ABC?

If it is given that,

Activity	Cost (₹)
Ordering	64,000
Delivery	1,40,000
Shelf stocking	80,000

Particulars	Product 1	Product 2
No. of Purchase Orders	30	50
No. of Deliveries	110	90
Shelf Stocking Hours	220	180

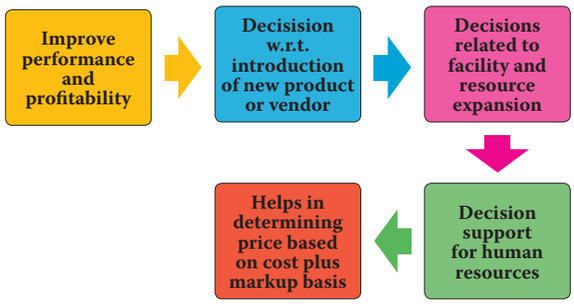
Image source: https://www.dreamstime.com/photos-images/activity-based-costing.html

Then, cost per product as per ABC

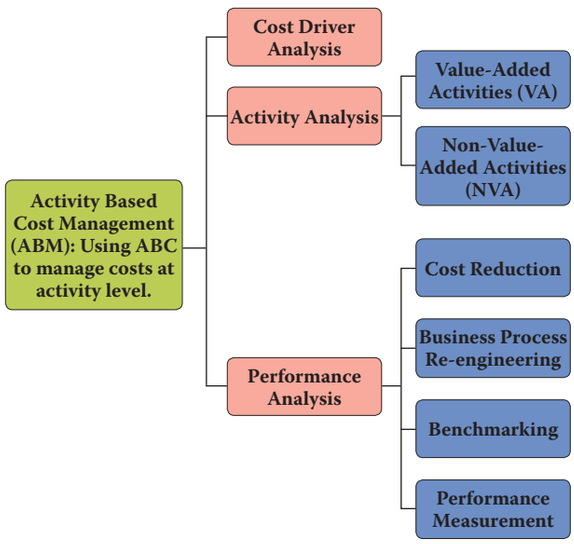
Activity	Total Cost (₹)	Cost Driver	Cost Driver Level	Cost Driver Rate (₹)	Product 1 (₹)	Product 2 (₹)
(a)	(b)	(c)	(d)	(e) = (b)/(d)	(f)	(g)
Ordering	64,000	No. of Purchase Orders	80 (30+50)	800	24,000 (800 x 30)	40,000 (800 x 50)
Delivery	1,40,000	No. of Deliveries	200 (110 + 90)	700	77,000 (700 x 110)	63,000 (700 x 90)
Shelf stocking	80,000	Shelf Stocking Hours	400 (220 +180)	200	44,000 (200 x 220)	36,000 (200 x 180)

PRACTICAL APPLICATIONS OF ACTIVITY BASED COSTING

As a Decision-Making Tool



As Activity Based Management



Facilitate Activity Based Budgeting (ABB)

It analyses the resource input or cost for each activity.
It is the reversing of the ABC process to produce financial plans and budgets.

Key Elements

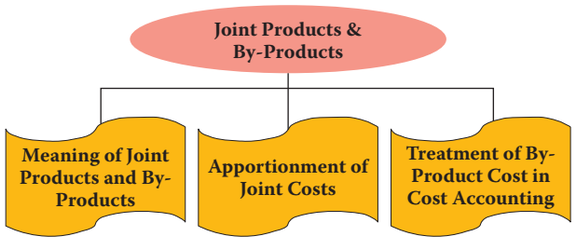
- Type of work to be done
- Quantity of work to be done
- Cost of work to be done

Benefits

- Enhance accuracy of financial forecasts
- Increasing management understanding
- Rapidly and accurately produce financial plans
- Eliminates much of the needless rework

JOINT PRODUCTS AND BY PRODUCTS

POINTS OF DISCUSSION

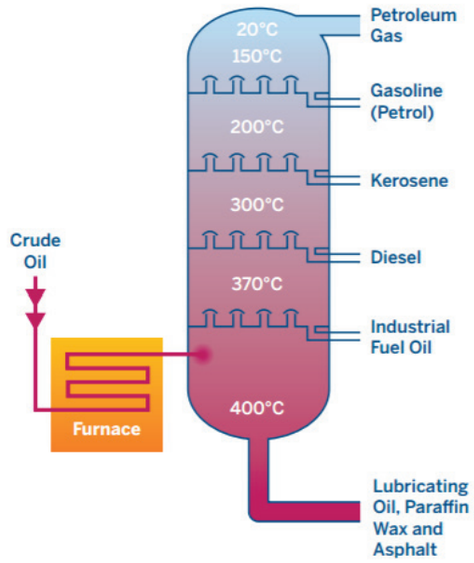


MEANING OF JOINT PRODUCTS AND BY-PRODUCTS

Joint Products* — Two or more products separated in the course of same processing operation.

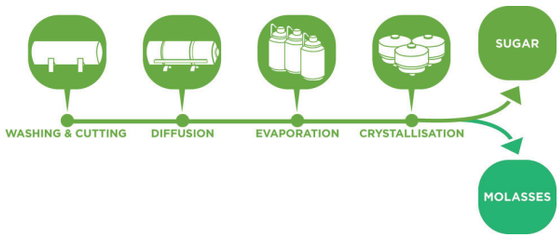
By-Products# — Products recovered from-
- material discarded in main process.
- production of some major products.

*OIL INDUSTRY PRODUCING JOINT PRODUCTS using crude petroleum like gasoline, fuel oil, lubricants, paraffin, asphalt, kerosene etc.



Petroleum Refining Processes[1]

 # MOLASSES IS PRODUCED AS A BY-PRODUCT in the process of sugar manufacturing



Sugar Manufacturing Process[2]

Point at which products are separated from the main product is known as SPLIT-OFF POINT.

DISTINCTION BETWEEN JOINT PRODUCTS AND BY-PRODUCTS

JOINT PRODUCTS	BY-PRODUCTS
• Equal importance. • Produced simultaneously.	• Small economic value. • Incidental to the main product.

[1] *Image source: https://www.cmegroup.com/education/courses/introduction-to-refined-products/a-look-into-the-refining-process.html*
[2] *Image source: http://www.sustainablesugar.eu/molasses*

CO-PRODUCTS

CO-PRODUCTS

Joint products and co-products are used synonymously, but a **distinction is there**.

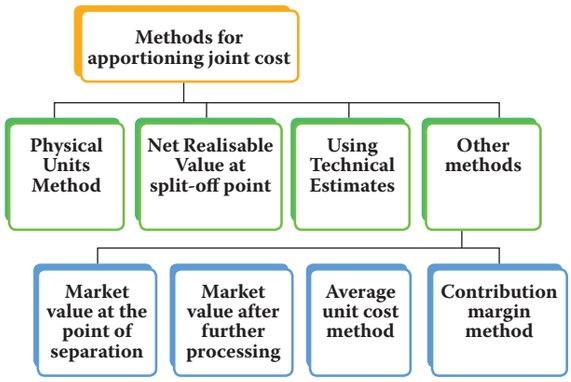
Co-products are the two or more products which are **contemporary but** do **not** emerge necessarily **from the same material in the same process**.

For instance,

wheat and gram produced in two separate farms with separate processing of cultivation are co-products.

Timber boards made from different trees are co-products.

METHODS OF APPORTIONMENT OF JOINT COST TO JOINT PRODUCTS



Physical Units Method:

Joint costs here are apportioned on the basis of some **physical base, such as weight, numbers etc.**

Net Realisable Value at Split-off Point Method:

Joint costs here are apportioned on the basis of **Net Realisable Value at Split-off Point.**

NET REALISABLE VALUE AT SPLIT-OFF POINT

- **sales value of joint products after processing**
- (−) **Estimated profit margins**
- (−) **Selling and distribution expenses**
- (−) **Post split- off costs**

Using Technical Estimates:

This method is used WHEN-

Result obtained by above methods does not match with the resources consumed by joint products, or;

Realisable value of the joint products are not readily available.

Other Methods:

(i) Market value at the point of separation

Useful method where further processing costs are incurred disproportionately.

To determine the apportionment of joint costs over joint products, a multiplying factor is determined as follows:

$$\text{Multiplying factor: } \frac{\text{Joint Cost}}{\text{Total Sales Revenue}} \times 100$$

Alternatively, joint cost may be apportioned in the ratio of sales values of different joint products.

(ii) Market value after further processing

Basis of apportionment of joint cost is the total sales value of finished products.

Use of this METHOD IS UNFAIR WHERE-

Further processing costs after the point of separation are disproportionate, or;

All the joint products are not subjected to further processing.

(iii) Average Unit Cost Method

$$\text{Average unit cost} = \frac{\text{Total process cost (up to the point of separation)}}{\text{Total units of joint product produced}}$$

Physical unit method also follows the same steps of calculation as followed under Average unit cost method, ultimately giving the same outcome.

(iv) Contribution Margin Method

Joint costs segregated into two parts → Variable; Fixed

Variable costs

Apportioned on the basis of units produced (average method or physical quantities)	In case products are further processed after point of separation, then all variable cost incurred be added to the variable costs determined earlier.

↓

Total variable cost is arrived which is deducted from their respective sales values to **ascertain their contribution**.

↓

Fixed costs

Thereafter, fixed costs are **apportioned** over the joint products **on the basis of the contribution ratios**.

METHODS OF APPORTIONMENT OF JOINT COST TO BY-PRODUCTS

Methods for apportioning joint cost → Net Realisable Value method; Standard cost in Technical Estimates; Comparative price; Re-use basis

Net Realisable Value method:

No further processing required	Further processing required
Realisation on the disposal of the by-product deducted from the total cost of production.	Additional expenses so incurred be deducted from the total value realised from the sale of the by-product.
	Only the net realisations be deducted from the total cost of production to arrive at the cost of production of the main product.

Standard cost in Technical Estimates:

This method may be adopted where by-product is not saleable.

↓

It may be valued at standard costs.

↓

Standard cost may be determined by averaging costs recorded in the past and making technical estimates of the number of units of original raw material going into the main product and the number forming the by-product; or by adopting some other consistent basis.

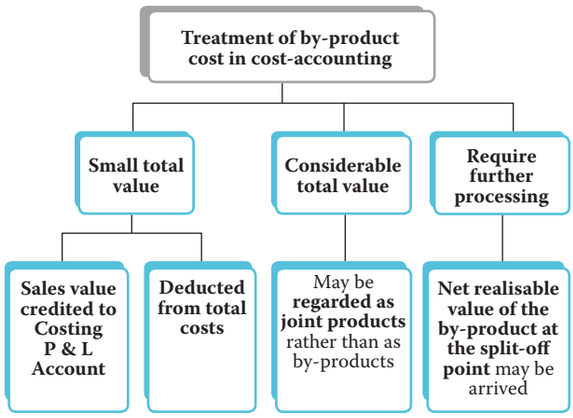
Comparative price:

Value of by-product is ascertained with reference to the price of -	
Similar material, or;	Alternative material

Re-use basis:

Sometimes, by-product may be of such a nature that it can be reprocessed in the same process as part of the input of the process.	
In that case, **value put on by-product should be same as that of the materials introduced into the process.**	However, **if the by-product can be put into an earlier process only**, the **value** should be the **same as for the materials introduced into the process.**

TREATMENT OF BY-PRODUCT COST IN COST-ACCOUNTING



SERVICE COSTING

POINTS OF DISCUSSION

Service Costing

- **Application of Service Costing**
- **Service Costing vs Product Costing**
- **Methods of Ascertaining Service cost unit**
  - **Composite Unit**
  - **Equivalent Unit**
- **Service Cost Statement**
- **Costing of Services:**
  - (i) Transport
  - (ii) Hotels & Lodges
  - (iii) Hospitals
  - (iv) Information Technology Enabled Services
  - (v) Toll Roads
  - (vi) Educational Institutes
  - (vii) Insurance
  - (viii) Financial Institutes
  - (ix) Others

WHEN is service costing APPLIED?

Internal application	External application
When service provided by service cost centre to other responsibility centre	When services are offered to outside customers as a profit centre
Example- Use of canteen services by hospital staff, operation of fleet of trucks for transport of raw material to factory	Example- Hospitality services provided by a hotel, provision of services by financial institutions

SERVICE COSTING VS. PRODUCT COSTING

Unlike products,

- sevices are intangible.
- sevices cannot be stored.
- there are no inventory for the services.
- employee (labour) cost constitutes a major cost element than material cost.
- Indirect costs like administration overheads have significant proportion in total cost.
- service sector heavily depends on support services.

Composite cost units are used,

- for cost measurement.
- to express the volume of outputs.

WHAT is service cost UNIT?

All the costs incurred during a period are-

- collected
- analyzed
- expressed in terms of a cost per unit of service.

LIST of typical cost unit

Service industry	Unit of cost (examples)
Transport Services 	Passenger- km., (In public transportation) Quintal- km., or Ton- km. (In goods carriage)
Electricity Supply service 	Kilowatt- hour (kWh)
Hospital 	Patient per day, room per day or per bed, per operation, etc.
Canteen 	Per item, per meal, etc.
Cinema 	Per ticket

Hotels	Guest Days or Room Days
Bank or Financial Institutions	Per transaction, per services (e.g. per letter of credit, per application, per project, etc.)
Educational Institutes	Per course, per student, per batch, per lecture, etc.
Information Technology Enabled Services	Cost per project, per module, etc.
Insurance	Per policy, per claim, per TPA, etc.

What are the METHODS for ascertaining Service Cost Unit?

Composite Cost Unit

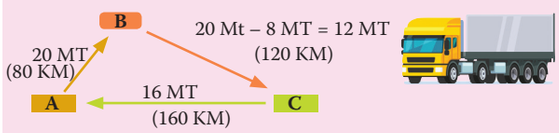
Two measurement units combined together

Example- transportation undertaking measuring operating cost per passenger per kilometre.
Other examples- Ton- km., Quintal- km., Passenger-km., Patient-day etc.

Composite unit may be computed in TWO WAYS

Absolute (Weighted Average) basis	Commercial (Simple Average) basis
Summation of the products of qualitative and quantitative factors	Product of average qualitative and total quantitative factors
ΣWeight Carried (W) × Distance $(D)_1 + (W \times D)_2 + \ldots + (W \times D)_n$	$\Sigma\{\text{Distance } (D)_1 + D_2 + \ldots\ldots\ldots\ldots + D_n\} \times [(\text{Weight}_1 + W_2 + \ldots + W_n)/n]$

Example: A Lorry starts with a load of 20 Metric Ton (MT) of Goods from Station 'A'. It unloads 8 MT in Station 'B' and balance goods in Station 'C'. On return trip, it reaches Station 'A' with a load of 16 MT, loaded at Station 'C'. The distance between A to B, B to C and C to A are 80 Kms, 120 Kms and 160 Kms, respectively.



Weighted Average or Absolute basis – MT – Kilometer would be calculated as follows:

= (20 MT × 80 Kms) + (12 MT × 120 Kms) + (16 MT × 160 Kms)

= 1,600 + 1,440 + 2,560 = 5,600 MT – Kilometer

Simple Average or Commercial basis – MT – Kilometer would be calculated as follows:

= [{(20+12+16) / 3} MT × (80 +120 +160) Kms]

= 16 MT × 360 Kms = 5,760 MT – Kilometer

Equivalent Cost Unit/ Equivalent Service Unit

Each grade of service is assigned a weight and converted into equivalent units

Example- hotel having three types of suites for its customers, viz., Standard, Deluxe and Luxurious and tariff to be decided for one suite being double the rate of other suite.

Example: A hotel may decide tariff to their different type of suites as follows-

Type of suite	Number of rooms	Room Tariff
Standard	100	Amount X
Deluxe	50	2.5 times of the Standard suites
Luxurious	30	Twice of the Deluxe suites

Since, all three types of suites use same amount of overheads but to attach qualitative weight, these rooms are required to be converted into equivalent units.

(i) If Standard suite is taken as base:

Nature of suite	Occupancy (Room-days)	Equivalent single room suites (Room-days)
Standard	36,000 (100 rooms x 360 days)	36,000 (36,000 x 1)
Deluxe	18,000 (50 rooms x 360 days)	45,000 (18,000 x 2.5)
Luxurious	10,800 (30 rooms x 360 days)	54,000 (10,800 x 5)
		1,35,000

Or

(ii) If Luxurious suite is taken as base:

Nature of suite	Occupancy (Room-days)	Equivalent luxurious suites (Room-days)
Standard	36,000 (100 rooms x 360 days)	7,200 (36,000 x 1/5)
Deluxe	18,000 (50 rooms x 360 days)	9,000 (18,000 x ½)
Luxurious	10,800 (30 rooms x 360 days)	10,800 (10,800 x 1)
		27,000

STATEMENT OF COSTS FOR SERVICE SECTORS

Cost sheet on the basis of variability is prepared classifying all the costs into three different heads.

- Fixed costs or Standing charges
- Variable costs or Operating expenses
- Semi-variable costs or Maintenance expenses

COSTING OF TRANSPORT SERVICES

Types of transport services

Goods transport → **Cost unit: Ton– Kilometer**

Passenger transport → **Cost unit: Passenger– Kilometer**

Suggestive heads:

Standing charges or fixed costs (costs that remain constant irrespective of distance travelled)

- Insurance
- License fees
- Salary to Driver, Conductor, Cleaners, etc if paid on monthly basis
- Garage costs, including garage rent
- Depreciation (if related to efflux of time)
- Taxes
- Administration expenses, etc.

Variable costs or Running costs (costs associated with distance travelled)

- Petrol and Diesel
- Lubricant oils,
- Wages to Driver, Conductor, Cleaners, etc. if it is related to operations
- Depreciation (if related to activity)
- Any other variable costs identified.

Semi-variable costs or Maintenance costs

- Repairs and maintenance
- Tyres
- Spares, etc.

COSTING OF HOTELS AND LODGES

Cost unit — **Guest-day or Room-day**

COSTING OF HOSPITALS

A hospital may have different departments such as

- Out - Patient
- In Patient
- Medical services like X-Ray, Scanning, etc.
- General services like Catering, Laundry, Power house, etc.
- Miscellaneous services like Transport, Dispensary, etc.

Unit of Cost

- Out Patient – Per Out-patient
- In Patient – Per Room Day
- Scanning – Per Case
- Laundry – Per 100 items laundered

COSTING OF INFORMATION TECHNOLOGY ENABLED SERVICES

EMPLOYEE COST constitutes SIGNIFICANT portion of total operating costs.

DIRECT EMPLOYEE COST is TRACEABLE to SERVICES RENDERED.

Typical MANPOWER DIRECTLY ENGAGED on a project:

- Software Engineers / Functional Consultants / Business Analysts,
- Project Leaders,
- Project Manager,
- Program Manager, etc.

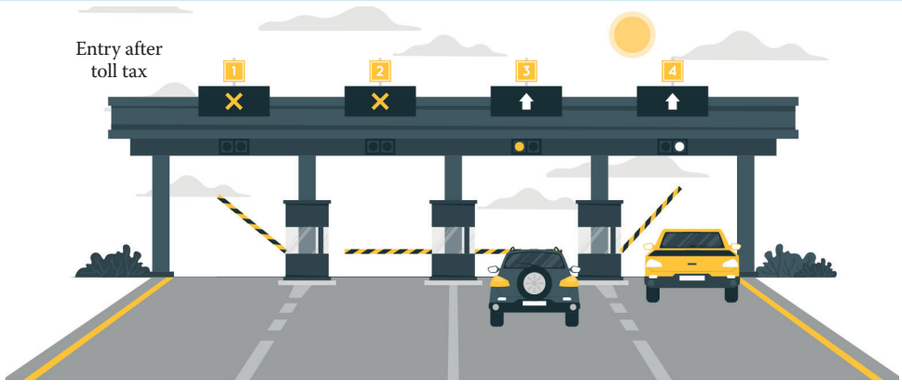
The COSTS are TRACEABLE with a project and hence forming part of DIRECT COSTS of the project.

SUPPORT MANPOWER ENGAGED on a project:

- Quality Assurance Team,
- Testing team,
- Version Control team,
- Staffing Manager, etc.

If time is NOT TRACEABLE with a single project, then it may either be allocated or apportioned to various projects on some SUITABLE BASIS.

COSTING OF TOLL ROADS



Cost Involved

- **Capital Costs (incurred during construction period)**
  - Preliminary and pre-operative expenses,
  - Land Acquisition,
  - Materials, Labour, Overheads incurred in the course of actual construction,
  - Contingency allowance,
  - Interest during construction period.
- **Operating and Maintenance Costs (incurred once the road is operational)**
  - **Annual operating cost**
    - cost of operating tollbooths,
    - administrative expenses,
    - emergency services,
    - communications and security services.
  - **Routine maintenance**
    - Patching of potholes, sealing of cracks, edge repair,
    - Surface renewal,
    - Periodic maintenance.

To compute the toll rate, following formula may be used: $= \frac{\text{Total Cost + Profit}}{\text{Number of Vehicles}}$

COSTING OF EDUCATIONAL INSTITUTIONS

INCOME of the Educational Institutions

One-time fees like Admission fee, Development fee, Annual fee etc

Recurring fees like tuition fee, laboratory, computer and internet fee, library fee, training fee, amenities fee, sports fee, extracurricular activities fee, etc.

Other incomes like transport, hostel, mess and canteen.

EXPENDITURE of the Educational Institutions

Operational Cost like teachers' salary, Building maintenance, Computer maintenance and internet charges.

Research and Development Cost like academic research on various fields of specialisations.

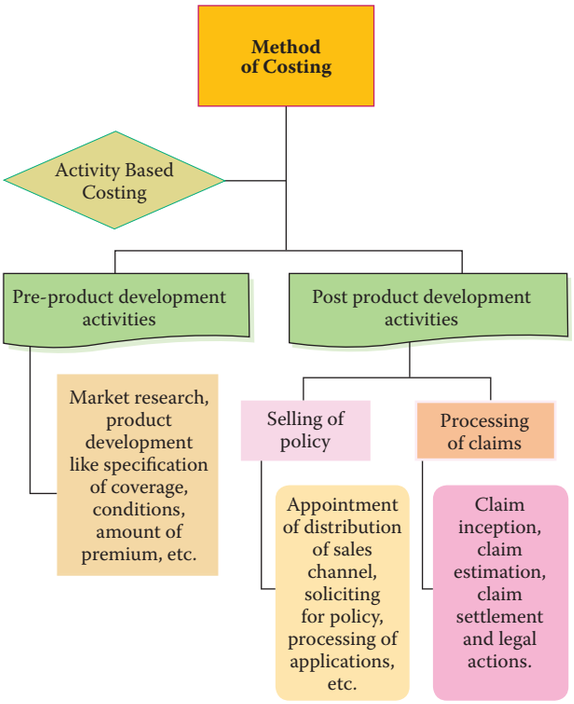
COSTING OF INSURANCE COMPANIES

INCOME of Insurance companies

Premium on policy (periodic or onetime)	Commission on re-insurance	Fund administration fee and return on investment of funds, etc.

EXPENDITURE of Insurance companies

Direct costs like commission paid to agents, claim settlement, cost of valuation, premium for re-insurance, legal and other costs, etc.	**Indirect costs like** actuarial fees, market and product development costs, administration cost, asset management cost, etc.



COSTING OF FINANCIAL INSTITUTIONS

COSTS TO BE IDENTIFIED with appropriate activities that have caused its occurrence.

Then costs must be REASSIGNED FROM ACTIVITIES TO COST OBJECTS based on identified cost drivers.

The concepts on ACTIVITY BASED COSTING under Costing of Insurance Companies is also applicable to financial institutions.

COSTING OF POWER HOUSES

Cost unit → Cost per kilowatt-hour (kWh)

Suggestive heads:

Standing charges or Fixed costs
(costs that remain constant irrespective of power or stream generated)
- Rent, Rates & Taxes
- Insurance
- Depreciation
- Salaries, if paid on time (Monthly basis)
- Administration expenses, etc.

Variable costs or Running costs
(costs associated with power or stream generated)
- Fuel Charges
- Water Charges
- Wages / Labour charges, if paid on the basis of production
- Any other variable costs identified.

Semi-variable costs or Maintenance costs
- Meters
- Furnaces
- Service materials
- Tools, etc.

POINTS OF DISCUSSION

Cost Accounting System

Non-Integral accounting system | Integral accounting system

Reconciliation of Cost and Financial Accounts

Non-integrated Accounting System

SEPARATE LEDGERS are maintained for both cost and financial accounts.

This system is also known as COST LEDGER ACCOUNTING SYSTEM.

This system contain limited ACCOUNTS due to the exclusion of purchases, expenses and also Balance Sheet items like fixed assets, debtors and creditors.

ITEMS OF ACCOUNTS excluded are REPRESENTED BY COST LEDGER CONTROL ACCOUNT.

Integrated Accounting System

COST AND FINANCIAL ACCOUNTS are kept in the SAME SET of books.

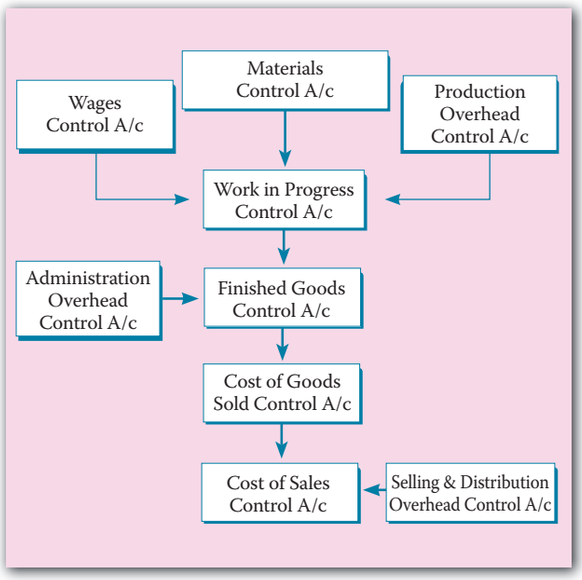
PROVIDES RELEVANT INFORMATION necessary for preparing profit and loss account and the balance sheet.

NON-INTEGRATED ACCOUNTING SYSTEM

MAIN ACCOUNTS usually prepared when a separate Cost Ledger is maintained

- Cost Ledger Control Account
- Stores Ledger Control Account
- Wages Control Account
- Manufacturing/ Production/Works/ Factory Overhead Control Account
- Work-in-Progress Control Account
- Administrative Overhead Control Account
- Finished Goods Control Accounts
- Selling and Distribution Overhead Control Account
- Cost of Sales Account
- Costing Profit & Loss Account
- Overhead Adjustment Account

FLOWCHART



INTEGRATED ACCOUNTING SYSTEM

ADVANTAGES

- No need for reconciliation
- Less efforts
- Less time consuming
- Economical process

In integrated system, all accounts necessary for showing classification of cost will be used but the cost ledger control account of non-integrated accounting is replaced by use of following accounts:

Bank account | Receivables (Debtors) account | Payables (Creditors) account

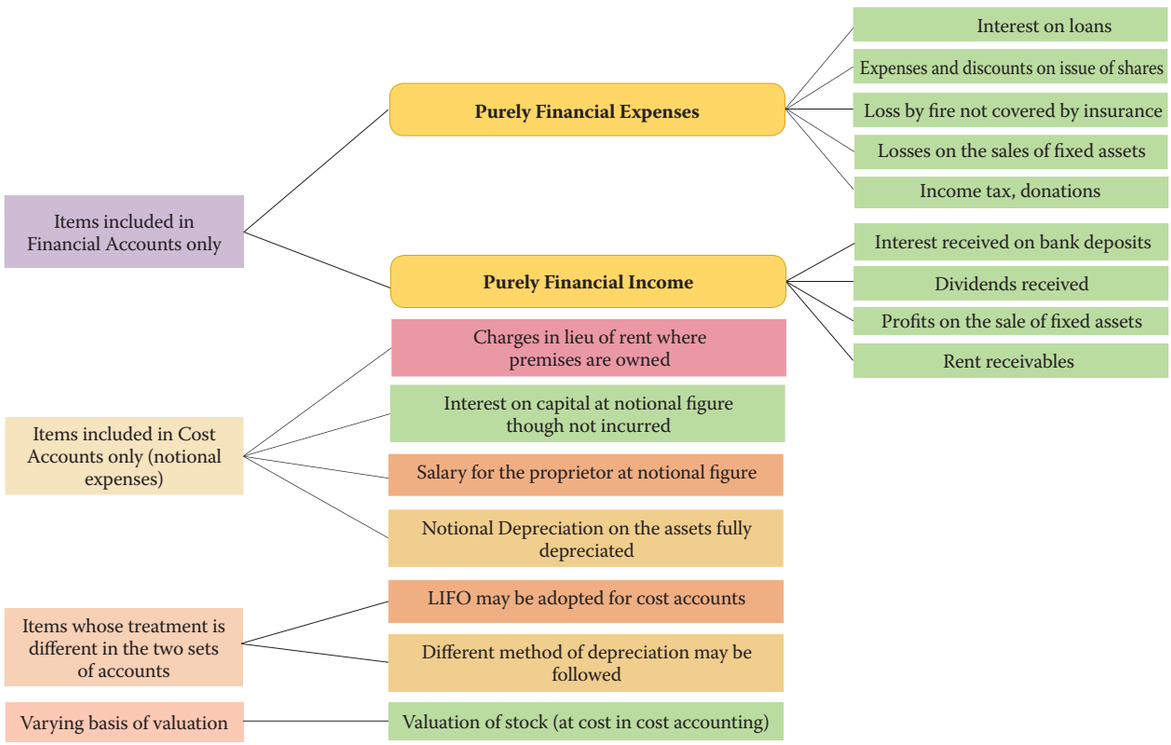
Provision for depreciation account | Fixed assets account | Share capital account

RECONCILIATION OF COST AND FINANCIAL ACCOUNTS

Reconciliation is done when cost and financial accounts are kept separately

Reconciliation of the balances of two sets of accounts is possible by preparing a MEMORANDUM RECONCILIATION ACCOUNT

Causes of differences in Financial and Cost Accounts



Procedure for Reconciliation

1. Ascertainment of profit as per financial accounts
2. Ascertainment of profit as per cost accounts
3. Reconciliation of both the profits

Example:

Profit as per Cost Accounts after following adjustment	**₹3,00,000**
Factory overheads absorbed	₹5,00,000
Selling & Distribution Overhead absorbed	₹2,00,000
Valuation of closing stock of finished goods	₹1,23,000
Administrative Overhead absorbed	₹1,93,000
Profit as per financial accounts after following adjustment	**₹1,10,000**
Factory overheads charged	₹4,50,000
Selling & Distribution Overhead charged	₹1,80,000
Valuation of closing stock of finished goods	₹1,50,000
Administrative Overhead charged	₹2,60,000
Interest on loan	₹2,20,000

Now, reconciliation between Financial and Cost Accounts can be done by preparing RECONCILIATION STATEMENT as follows:

	(Rs.)	(Rs.)
Profit as per Cost Accounts		**3,00,000**
Add: Factory overheads over-absorbed (₹5,00,000 – ₹4,50,000)	50,000	
Selling & Dist. Overhead over-absorbed (₹2,00,000 – ₹1,80,000)	20,000	
Difference in the valuation of closing stock of finished goods (₹1,50,000 – ₹1,23,000)	27,000	97,000
		3,97,000
Less: Admn. overhead under-absorbed (₹2,60,000 – ₹1,93,000)	67,000	
Interest on loan	2,20,000	2,87,000
Profit as per financial accounts		**1,10,000**

saransh

Last Mile Referencer for

COST AND MANAGEMENT ACCOUNTING

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