BASIC CONCEPTS

COST

- It is the expenditure incurred for producing the product or rendering the service.(i.e Actual or notional amount of expenditure attributable to a specific product or activity)
- Cost also include notional expenditure.for eg. Depreciation is a notional expenditure but forms part of cost – production overheads.
- It should be expressed from manufacturers point of view (and not from customer's point of view).
- Cost ascertainment is based on uniform principles and techniques

COSTING

- CIMA England defines costing as "techniques and processes of ascertaining cost".
- The process of accounting for cost
- Begins with the recording of income and expenditure
- End with the preparation of periodical statements, reports variances and their analysis.
- Aids ascertainment and control of costs.

COST ACCOUNTING

- **CIMA** defines cost accounting as "the process of accounting for cost from the point at which expenditure is incurred or committed to the establishment of its ultimate relationship with cost centres and cost units.units widest usage ,it embraces the preparation of statistical data,the application of cost control methods and the ascertainment of the profitability of activities carried out or planned."
- Shilling law has defined cost accounting as " the body of concepts,methods and procedures used to measure,analyse or estimate costs,profitability and the performance of individual products.Departments and other segments of company's operations,for either internal or external use or both,and to report on these questions to the interested parties'.

COST ACCOUNTING

CIMA has defined cost accountancy as 'the application of costing and cost accounting principles, methods and techniques to the science,art and practice of cost control and the ascertainment of profitability.It includes the presentation of information derives there from for the purpose of managerial decision making."

- It is the application of costing and cost accounting principles,methods and techniques
- It includes the presentation of information
- It is for the purpose of managerial decision making.

Cost Accountancy = Costing + Application of cost control methods + Ascertainment of profitability

OBJECTIVE OF COST ACCOUNTING

(i) Ascertainment of cost

a. post costing

b. Continuous costing

(ii) Determination of selling price

(iii) Ascertaining the profit of each activity

(iv) Cost control

(v) Cost reduction

(vi) Assisting management in decision making

COST REDUCTION

- It is the achievement of real and permanent reduction in unit cost of goods manufactured or services rendered.
- Without impairing their suitability for the use untended or diminution in the quality of the – product

Three- fold Assumption in cost reduction

(i) There is a saving in unit cost

(ii) Such saving is of permanent nature

(iii) The utility and quality of the goods and services remain unaffected,if not improved.

SCOPE OF COST REDUCTION:

- It is attainable in almost all areas of business activities.
- It covers a wide range like new layout,product design,production method,materials and machines in factories as well as in offices,innovation in marketing etc.
- It also covers activities like,purchasing,handling packaging,shipping,warehousing use of administrative facilities and even utilization of financial resources
- If two or more products are produced and managed together,the result of combined efforts are higher than sum of the results of individual products.Analysis of synergetic effects is helpful in cost reduction.

Focus: The cost Reduction efforts generally focus on the following two key areas:(Nov.2000)

(a) Reduction in expenditure

(b) increased productivity

Generally ,cost reduction is achieved by a combination of these influences,and it may be difficult to identify the extent of contribution which each factor will make to the overall savings.

COST REDUCTION TECHNIQUES:

- Budgetary control and standard costing
- Work study
- Value analysis
- Standardisation
- Simplification and variety reduction
- Economic batch quantity(EBQ)
- Coding and classification
- Improvement design
- Substitute material utilization
- Automation
- Operational research
- Quality control
- Production,planning and control
- Inventory control
- Purchase Sceduling
- Job evaluation and merit voting
- Training and development
- Business forcast
- Market research

DIFFERENCE BETWEEN COST REDUCTION AND COST CONTROL

COST REDUCTION	COST CONTROL
• Real and permanent saving in cost	• Temporary savings
• Saving in cost per unit	• Savings either in total cost or cost per unit
• Quality of the product remains unaffected	• Quality of the product is not guaranteed
• Dynamic approach	• Lack of dynamism
• Value engineering, Market research, Job evaluation and Merit rating are tools for reduction	• Standard costing and Budgetary control are tools for cost control and variance analysis
• It can be achieved by way of continuous process of critical examinaiton	• It is achieved through compliance with standards.
• Corrective function	• Preventive function

STEPS FOR CONTROLLING THE COST

- Preventive function
- Determine the clear – cut objective(i.e ,pre –determine the results)
- Evaluate the actual performance
- Investigate variation in actual performance with planned one
- Initiate corrective action

IMPORTANT DEFINITION

TERMS	DEFINITION/MEANING
DIFFERENTIAL COST	It represent 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. It may be – • Incremental or • Decremental costs It represents an increase or decrease in total cost resulting out of: (a) Producing or distributing a few more or less of the product: (b) A change in the method of production or distribution: (c) An addition or deletion of a product or distribution: (d) Selection of an additional sales channel.
IMPUTED COST	These costs are notional costs which do not involve any cash outlay. These costs are similar to opportunity costs. E.g Interest on the capital,payment for which is not actually made
OPPORTUNITY COST	This cost refers to • the value of sacrifice made or • benefit of opportunity foregone. • In accepting an alternative course of action i.e the next best alternative E.g If a firm is financing its expansion play by withdrawing money from its bank deposits.In such a case the loss of interest on the bank deposit is the opportunity cost for carrying out the expansion plan. • It arises only if alternatives are available • It will not form part of books of accounts • It is purely for the purpose of managerial decision making • Costs which are useful for the purpose of decision making are called relevant cost.Hence it is a relevant cost
OUT OF POCKET COST	• It is that portion of total cost,which involves cash outflow • Out of pocket costs can be avoided or saved if a particular proposal under consideration is not accepted • This is a short run concept • It is used in decisions relating to fixation of selling price in recession, make or buy,etc. • Costs which are directly attributable to production of the product or rendering of service are called direct costs

SHUT DOWN COSTS	• Those costs which continue to be incurred even when a plant is temporarily shut down e.g rent,rates,depreciation,etc. • These costs cannot be eliminated with the closure of the plant. • In other words,all fixed costs which cannot be avoided during the temporary closure of a plant,will be known as shut down costs. • Here we can classify the fixed cost in to two types: a. Avoidable FC and b. Unavoidable FC
SUNK COSTS	• Historical costs incurred in the past are known as sunk costs. • They play no role in decision making in the current period • "It is an irrelevant cost" in decision making • For e.g, In the case of a decision relating to the replacement of a machine,the written down value of the existing machine is a sunk cost and therefore,not considered.
DISCRE - TIONARY	• Such cost are not tied up to a clear cause and effect relationship between inputs and outputs • They usually arise from periodic decisions regarding the maximum outlay to be incurred. • E.g advertising,public relations,executive training etc.
COST OBJECT	• Item for which a separate cost measurement is required is called cost object • E.g product ,service, project, customer, brand category,an activity, department, programme etc.
DIRECT COSTS	• Costs which are directly attributable to production of the product or rendering of service are called direct costs • These are related to the cost object. • These can be traced in an economically feasible way • E.g Raw material cost,wages paid etc. **APPLICATION OF DIRECT COSTING:** • Stock valuation • Minimum quantity to be produced to recover pattern or mould cost separately incurred for that order • Close down decisions – like closing down of adepartment or shop
INDIRECT COSTS	• Costs which are not directly attributable to production of the product or rendering of the serviceare called indirect costs. • These are related to the cost object. • These can not be traced in an economically feasible way to the cost object. • E.g Supervisor salary

PRE-DETERMINED COST	• It is a cost which is computed in advance before production or operation starts. • Computation can be done on the basis of specification of all the factors affecting the cost.
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. • Here a unit may be single article,an order,a stage of production,a process of a department • It relates to change in the output in the particular circumstances under consideration within the capacity of the concerned organisation.
PRE-PRODUCTION COST	• The part of development costs incurred in making trial production run prior to formal production. • This term is sometimes used to cover all activities prior to production including research and development,but in such cases the usage should be made clear in the context.
CONVERSION COST	• The sum of direct wages,direct expenses and overhead cost of converting raw materials to the finished stage,or converting a material from one stage of production to the next. • Conversion cost = Direct wages + Direct expenses + Production Overheads. • In some circumstances this phrase is used to include any excess material cost or loss of material incurred at a particular stage of production.
FIXED COST	• Total cost will remain the same irrespective of level of output,whereas per unit cost will vary. • These are the costs which are incurred for a period. • They do not tend to increase or decrease with the changes in output. • Within certain output and turnover limits they tend to be unaffected by fluctuations in the levels of activity(output or turnover). • But Fixed costs tend to change beyond the relevant range.for E.g Rent.
VARIABLE COSTS	• Total cost will vary depending upon the level of output,whereas per unit cost remains the same i.e,cost which tend to vary with the volume of activity are called variable costs. • Any increase in the activity results in an increase in the variable cost and vice –versa. E.g Direct labour cost

	Fixed cost	**Variable Cost**
Total cost	Remains the SAME	VARY with output
Per unit cost	VARY with output	Remains the SAME

SEMI-VARIABLE COSTS	• These are partly fixed and partly variable in nature. • These costs contain both fixed and variable components and are thus partly affected by fluctuations in the level of activity: • They are fixed up to a particular volume of production and become variable thereafter for the next level of production. • Hence ,they are also called Step costs. • E.g Telephone bills,electricity etc. • Methods of segregating semi-variable costs in to fixed and variable costs (may 2000) • Graphical method • High points and low points method • Analytical method • Comparison by period or level of activity method • Least squares method **Advantages of classification of costs in to fixed and variable** (a) Controlling expenses (b) Preparation of budget estimates (c) Decision making
NORMAL COST	• Cost which is normally incurred at a given level of output is normally attained is known as normal cost.
ABNORMAL COST	• Cost which is not normally incurred at a given level of output under conditions in which that level of output is normally attained is known as abnormal cost. • It is charged to costing Profit and Loss Account.
COMMITTED COST	• A cost which has already been committed by the management is called committed cost • It is not useful for decision making. • It's an irrelevant cost.
REPLACEMENT COST	• It is a cost at which there could be purchase of an asset or material identical to that which is being replaced or revalued. • It is the cost replacement at current market price. • It is relevant for decision making. • It is a relevant cost.
COST PERIOD	• The period to which the cost relates is called cost period. • It is also called control period • Generally,cost period is shorter than the financial period
R**ELEVANT COST**	• Costs which are useful for the decision making purpose are called relevant costs • e.g Opportunity cost,Differential cost ,Incremental cost,Decremental cost,out of pocket cost etc.
IRRELEVANT COST	• Costs which are not useful for decision making purpose are called irrelevant costs. • E.g Sunk cost,committed cost,absorbed fixed overheads etc.

DIFFERENCE BETWEEN IMPLICIT COSTS AND EXPLICIT COSTS

Implicit costs	Explicit costs
✓ These are also known as economic costs ✓ They are refers to costs which do not involve any immediate cash payment. ✓ They are not recorded in the books of account	✓ These costs are also known as out of pocket costs ✓ They are refer to costs involving immediate payment of cash E.g Salaries,wages,postage and telegram,printing and stationery, interest on loan etc.

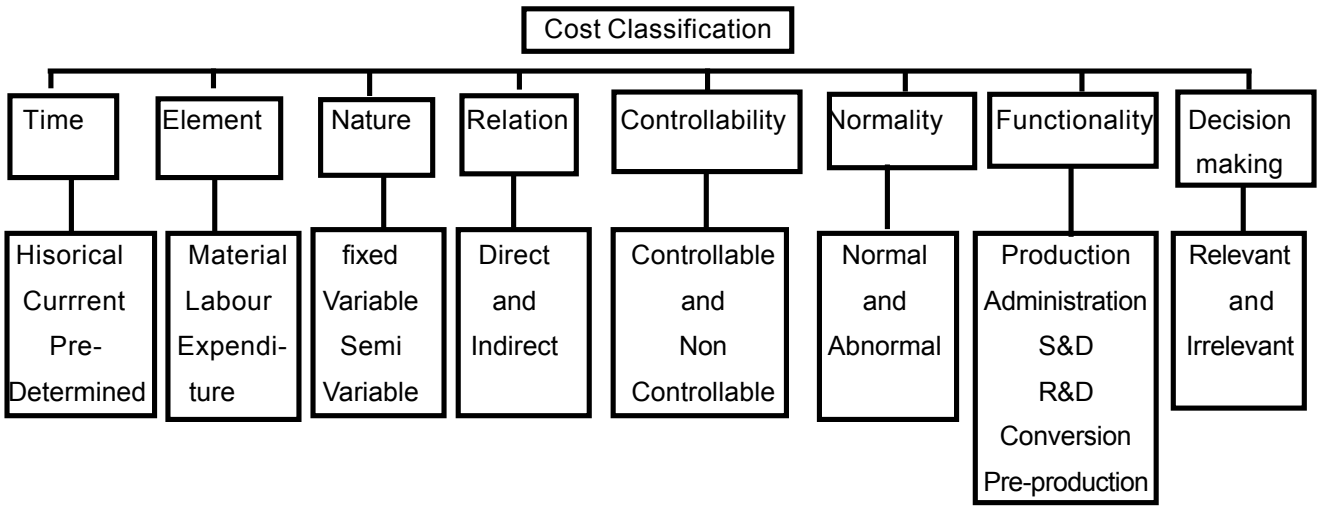
DIFFERENCE BETWEEN CONTROLLABLE COSTS AND UNCONTROLLABLE COSTS

Controllable cost	Uncontrollable cost
✓ Cost which can be influenced by the action of a specified member of an organisation are called controllable cost	✓ Costs which can not be influenced by the action of specified member of an undertaking are known as uncontrollable costs
✓ Controllable costs incurred in a particular responsibility centre can be influenced by the action of the executive heading that responsibility centre.	
✓ Controllable costs are the costs which can be influenced and controlled by managerial action,subject to the following factors: i. Time ii. Location iii. Product / output	

CLASSIFICATION OF COSTS

It means the grouping of costs according to their common characteristics.Basic for cost classification are:

1. Time
2. Element
3. Behavour/Nature/Variability
4. Relatioship
5. Controllability
6. Normality
7. Functionality
8. Decision making



DISTINGUISH BETWEEN MARGINAL COST AND DIFFERENTIAL COST

MARGINAL COST	DIFFERENTIAL COST
• Marginal cost represent the increase or decrease in total cost which occurs with a small change in output,say,a unit of output. • In cost accounting variable costs represent marginal cost	• Differential cost is the change (increase or decrease) in the total cost (variable as well as fixed) due to change in the level of activity,technology or production process or method of production. • In other words,it can be defined as the of one unit of product or service which would be avoided if that unit of product or provided.
• Under marginal costing only variable cost changes due to change in the level of activity	• In the case of differential cost variable as well as fixed cost.i.e both costs change due to change in the level ofactivity.

ALL SUNK COSTS ARE IRRELEVANT COST BUT ALL IRRELEVANT COST ARE NOT SUNK COSTS

Sunk cost is a historical cost .It is incurred in the past.In other words,it is the cost of a resources already acquired.Furure decisions in respect of this resources will not be affected by it. For Eg.book value of machinery.Hence,sunk costs are irrelevant in decision making

Irrelevant costs are not necessarily sunk costs.For eg.When a comparison of two alternative production method using the same material quantity is made,then direct materials cost is not affected by the decision,but this material cost is not sunk cost.

MARGINAL COSTING

MARGINAL COST

- The amount at any volume of output by which aggregate costs are changed it the volume of output is increased by one unit.
- In general it is measured as to total variable cost attributable to one unit.
- Marginal Cost = Variable Cost = Direct Labour + Direct Material + Direct Expenses + Variable Overheads.
- Marginal Cost = Prime Cost + Variable Overheads.
- It is a relevant cost useful for decision making.

MARGINAL COSTING

- Marginal costing is not a distinct method of costing like job costing, process costing etc.
- It uses a special technique for managerial making.
- It is used to provide a basis for interpretation of cost data to measure the profitability.
- Here, cost is classified on the basis of behaviour or nature (*ie Fixed cost, Variable cost and Semi-variable cost*).

THEORY OF MARGINAL COSTING

- In relation to a given volume of output, additional output can normally be obtained at less than proportionate cost.
- This is because of the reason that within certain limits the aggregate of certain items of cost will tend to remain fixed.
- Increase in the volume of output will normally be accompanied by less than proportionate increase in total cost (fixed + variable).
- Similarly, decrease in the volume of output will normally be accompanied by less than proportionate decrease in total cost.
- This is because fixed cost remains constant irrespective of the level of output (upto a certain level), and it is only the variable cost which changes according to the change in the output level.

DECISION MAKING INDICATORS IN MARGINAL COSTING

1. Profit Volume Ratio (PV Ratio)
2. Break-even Point (BEP)
3. Margin of safety (MOS)
4. Indifference Point and
5. Shut down Point

FORMAT OF MARGINAL COST SHEET

Sales Value	**xxx**
Less : Variable Cost	xxx
Contribution	xxx
Less : Fixed Cost	xxx
Profit	**xxx**

ABSORPTION COSTING

- It is Procedure of cost recognition wherein costs are classified on the basis of functions.
- CIMA, London defines, the absorption costing as " the practice of charging all costs, both variable and fixed, to operation, processes or products".
- All cost of production, both fixed and variable are included in inventory valuation.

DIFFERENCE BETWEEN MARGINAL COSTING AND ABSORPTION COSTING

MARGINAL COSTING	ABSORPTION COSTING
1. Only variable costs are included for product costing and inventory valuation.	1. Both fixed and variable costs are onsidered for product costing and inventory valuation.
2. Expenses are classified based on nature (ie Variable and Fixed).	2. Expenses are classified based on Functions.(ie Production, administrative,selling and distribution).
3. All fixed costs are treated as period cost.	3.Only administration, selling and distribution overheads are treated as period cost.
4. Only variable manufacturing costs are treated as product cost.	4. All variable manufacturing costs and fixed production overheads are treated as product cost.
5. Managerial Decisions are based on contribution.	5. Managerial Decisions are based on Net profit.
6. The difference in the magnitude of opening and closing stock dose not affect the unit cost of production.	6. The difference in the magnitude of opening and closing stock affect the unit cost of production due to the impact of the related fixed cost.

<table>
<tr><td>7. In variance reporting, Fixed overhead expenditure variance only can be computed. There is no volume variance since fixed overheads are not absorbed.</td><td>7. In variance reporting, Fixed overhead expenditure and volume variance can be computed. Volume variance can also be sub classified into Capacity, Efficiency and Calendar variances.</td></tr>
<tr><td>8. It aids decision making.</td><td>8. It does not give correct picture for decision making.</td></tr>
<tr><td>9. Fixed costs are regarded as period costs.</td><td>9. Fixed costs are charged to the cost of The profitability of different products is production. Each product bears reasonable judged by their P/V ratio. share of fixed costs and thus the profitability of a product are influenced by an apportionment to fixed assets.</td></tr>
<tr><td>10. Format for the presentation of informaion to management:

<table><tr><th>Particular</th><th></th></tr><tr><td>Sales Value xxx</td><td></td></tr><tr><td>Less: Varible vost</td><td>xxx</td></tr><tr><td>Contribution</td><td>xxx</td></tr><tr><td>Less: Fixed cost</td><td>xxx</td></tr><tr><td>Profit</td><td>xxx</td></tr></table></td><td>10.Format for the presentation of information to management.

<table><tr><th>Particular</th><th></th></tr><tr><td>Sales Value</td><td>xxx</td></tr><tr><td>Less:</td><td></td></tr><tr><td>a. Direct Material</td><td>xxx</td></tr><tr><td>b. Direct Labour</td><td>xxx</td></tr><tr><td>c. Factory OH</td><td>xxx</td></tr><tr><td>Gross Profit</td><td>xxx</td></tr><tr><td>Less:</td><td></td></tr><tr><td>a. Admi. Exp</td><td>xxx</td></tr><tr><td>b. S & D Exp.</td><td>xxx</td></tr><tr><td>Net Profit</td><td>xxx</td></tr></table></td></tr>
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USE OF ABSORPTION COSTING METHOD FOR THE VALUATION OF FINISHED GOODS INVENTORY PROVIDES INCENTIVE FOR OVER PRODUCTION ELUDICATING THE STATEMENT

- Under Absorption Costing method, fixed production overheads are charged to products and are included in production cost. Therefore, the closing stock of finished goods are valued on total cost (including Fixed OH) basis.
- Where stock levels are likely to fluctuate significantly, profits may be distorted if Absorption Costing is applied Under Marginal Costing method, fixed costs are charged off to Profit and Loss Account as period costs and therefore, there will not be any distortion of profits.
- The impact of Absorption Costing method of stock valuation on profits can be summarised as under:

EFFECTS OF DIFFERENCE IN STOCK LEVELS

If Sales Qty = Production Qty	If Sales Qty < Production Qty	If Sales Qty > Production Qty
No. Change in inventory levels. Hence, no difference between profits under Marginal costing and Absorption Costing.	Closing Stocks will be higher. Hence, Profit under Absorption more than Profits under Marginal Costing.	Closing Stock will be lower. Hence, Profits under Absorption Costing, will be less than Profits Under Marginal Costing.

- If the closing stock exceeds the opening Stock for the period, the change of Fixed OH to Profit and Loss Account gets reduced. This will result in inflating the Profit for the period.
- If Absorption Costing Method is used, managers have the incentive to overproduce to show better results. On account of above, managers may deliberately alter the stock levels to influence the profits if Absorption Costing is used.

Summary

Situation	Closing Stock under Marginal Costing	Closing Stock under Absorption Costing	Effect on Profits
SQ = PQ	NIL	NIL	No Effect
SQ < PQ	Lower	Higher	PMC < PAC
SQ > PQ	Higher	Lower	PMC > PAC

Note

(1) SQ - Sales Quantity
(2) PQ = Production Quantity
(3) PMC - Profits under Marginal Costing
(4) PAC - Profits under Absorption Costing

CONTRIBUTION

- It is the difference between sales value and marginal cost
- It excess of sale revenue over the variable cost

Formula

1. Contribution = Sales Revenue - Variable cost (Direct Labour + Direct expenses Variable overheads)
2. Contribution = Fixed cost + Profit
3. Contribution = Sales XPV Ratio

PROFIT VOLUME RATIO (PV RATIO)

- It is the ratio of contribution to sales
- This ratio is usually expressed in precentage
- The higher the PV Ratio, the better it is
- It indicates the effect on profit for a given change in the sales
- It meansures the profitability of each product, process, operation etc
- It facilitates managerial decision making

Formula

1. PV Ratio = $\frac{\text{Contribution}}{\text{Sales}} \times 100$

2. PV Ratio = $\frac{\text{Changes in Profit}}{\text{Changes in Sales}} \times 100$

3. PV Ratio = 100 - Variable Cost Ratio

Based on the same we can drive the following formulas

Total Sales = Contribution / PV Ratio

Desired Sales (in units) = $\frac{\text{Fixed Cost + Desired Profit}}{\text{Contribution per unit}}$

Desired sales (in Rs.) = $\frac{\text{Fixed Cost + Desired Profit}}{\text{PV Ratio}}$

WAYS TO IMPROVE PV RATIO

A. By reducing variable cost, or

b. By increasing the selling price, or

c. By improving Sales mix

BREAK EVEN POINT (BEP)

- It is the point at which there is neither a profit nor a loss to the firm i.e No profit No loss situation
- It is the volume of operation at which total sales revenue is just equal to total cost

In BEP

1. Profit = Nil
2. Loss = Nil
3. Total income = Total cost (FC + VC)
4. Total income = Fixed Cost + Variable Cost
5. Contribution = Fixed Cost
6. Fixed Cost = Sales x PV Ratio

Formula

$$\text{BEP (in units)} = \frac{\text{Fixed Cost}}{\text{Contributi on per unit}}$$

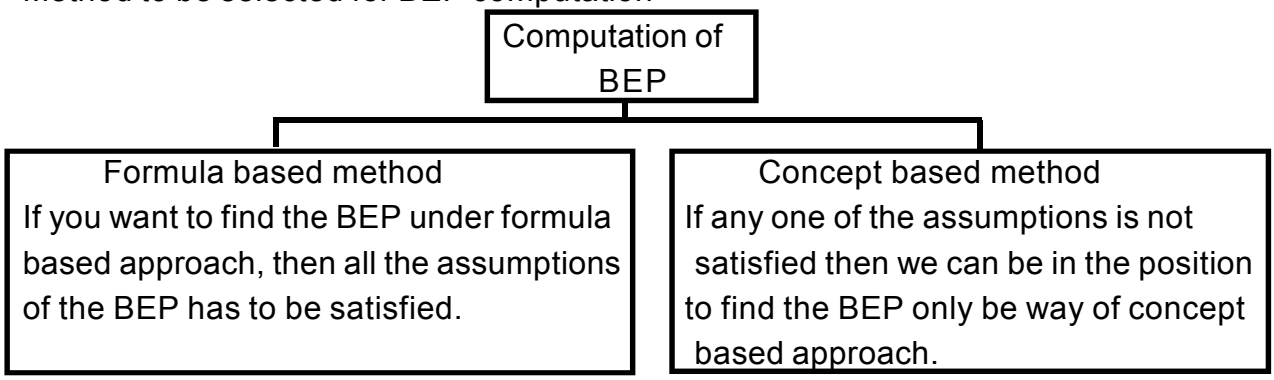
$$\text{BEP (in Value)} = \frac{\text{Fixed Cost}}{\text{PV Ratio}}$$

BEP (in Value / Units) = Total sales - MOS sales

BEP (in %) = 100 - MOS (in %)

Points to be remember:

(1) Method to be selected for BEP computation



(2) Multiple BEP comes into picture, whenever CURVILINEAR CVP exist.

Significane of BEP

LEVEL OF SALES	IMPACT ON BEP
Less than BEP	Guarantee Loss
Equal to BEP	No Profit / No Loss
More than BEP	Guarantee Profit

Break - even analysis is based on a number of assumptions which are as follows:

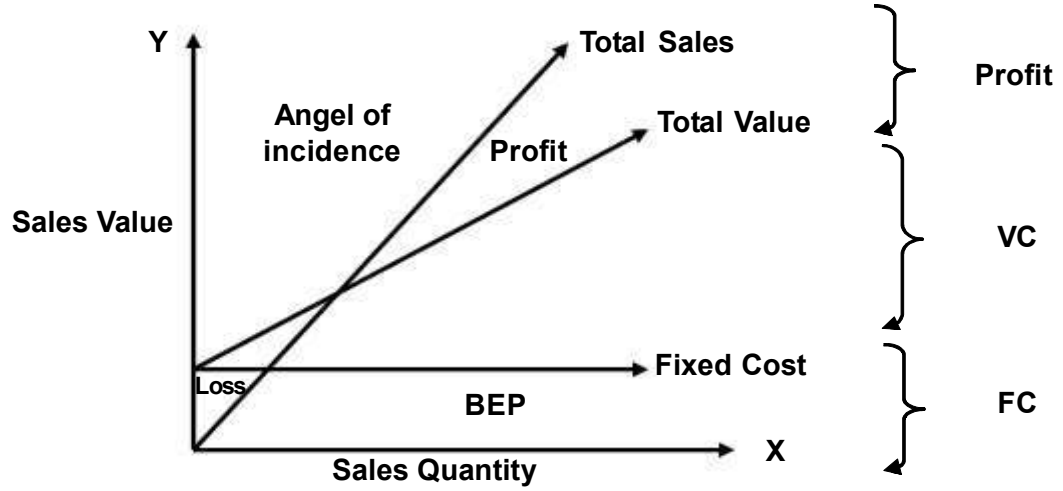
1. Total costs can be easily classified into fixed and variable
2. Variable cost per unit remains constant. However, total variable costs vary in proportion to output.
3. Total fixed costs remain constant irrespective of level of output
4. Selling price per unit remains constant irrespective of quantity sold
5. Costs and revenues are linear over the range of activity under consideration
6. Costs and revenues are influencced only by volume
7. The state of technology, methods of production and efficiency remain unchanged
8. Productivity of the factors of production will remain the same.
9. There will be no significant change in the levels of inventory
10. The company manufacturers a single product
11. In the case of a multi product company, the slaes mix will remain unchanged.

BREAK - EVEN CHART

A break-even chart records costs and revenues on the vartical axis and the level of activity on the horizontal axis. The different types of break-even charts are as follows:

i) Contribution break-even chart
ii) Cash break-even chart
iii) Control break-even chart
iv) Analytical break-even chart
v) Product wise break-even chart
vi) Profit graph

BREAK - EVEN CHART



LIMITATIONS OF A BREAK-EVEN CHART:

(i) While preparing a break-even chart, it is assumed that revenue and costs can be represented with the help of straigh lines (ie. Costs and revenue will have a line a relationship). It may not always be true.

(ii) The preparation of a break-even chart requires the segregation of semi-variable costs into fixed and variable components. There may be situations when semi-variable costs connot be split.

(iii) A break-even chart assumes that selling price and variable cost per unit are constant at a levels of activity. It may not always be true.

(iv) When a firm produces a number of products, the apportionment of fixed expenses over various products may be different and often it may be done arbitrarily.

(v) A Break-even chart assumes that business condition will not change which is not always true.

(vi) A break-even chart does not consider the amount of capital employed in the business, a very important factor for determining profitability of oncern.

MARGIN OF SAFETY

- Margin of safety is the excess of actual sales over the break-even sales ie, it is the difference between the actual sales and the break even sales.
- It may be expressed as a percentage of total sales or in value or in terms of quantity.
- In MOS, firm will earn guaranteed profit.
- Larger the MOS, the higher the chance of making profit.

In MOS,

i. Fixed cost = Nil

ii. Contribution = Profit

iii. Profit = Sales x PV Ratio

Formula

1. MOS (in units) = $\frac{\text{Profit}}{\text{Contribution per unit}}$

2. MOS (in Value) = $\frac{\text{Profit}}{\text{PV Ratio}}$

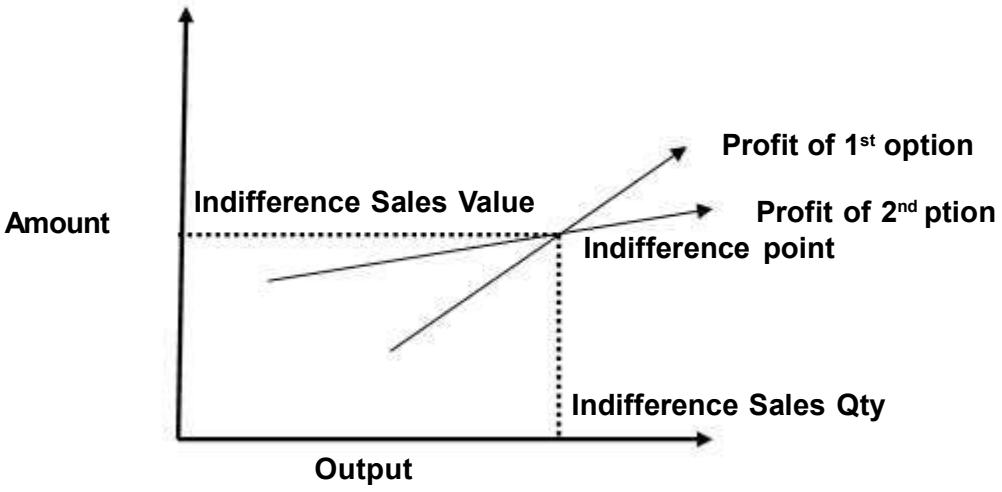
3. MOS (in Value/Units) = Total Sales - BEP Sales

4. MOS (in %) = 100 - BEP (in%)

INDIFFERENCE POINT

It is the level of sales at which total cost of two options are equal. In this level, there is indifferene as to which option is choses, since both options will result in the same amount of profit.

GRAPHICAL PRESENTATION OF INDIFFERENCE POINT :



Formula :

$$\text{Indifference point (in ₹)} = \frac{\text{Changes in fixed cost}}{\text{Changes in variable cost ratio}}$$

$$= \frac{\text{Changes in fixed Cost}}{\text{Changes in PV Ratio}}$$

$$\text{Indifference point (in Quantity)} = \frac{\text{Changes in fixed Cost}}{\text{Changes in variable cost per unit}}$$

$$= \frac{\text{Changes in fixed cost}}{\text{Changes in contribution per unit}}$$

SIGNIFICANCE OF INDIFFERENCE POINT:

Level of Sales	Selection Criteria
Below Indiference Point	Option with lower Fixed Cost
Equal to Indifference Point	Both options are equally profitable
Above Indifference point	Option with lower variable cost per unit

Points to be remembered:

1. If there is a conflict in selecing the option based on fixed and variable cost, use the tool called indifference point.
2. Whenever the general question arises with respect to selecting the option, the hidden requirement therein question is BEP. Find out BEP level also, becaue below BEP level none of the option is best due to guarantee loss.
3. Even though low fixed cost is the criteria for selection where the sales level is below the indifference point, however the sales level should not be less than lower BEP (BEP between option 1 and option 2)
4. Though low fixed cost is the criteria for selecting an option (in case of sale level below indifference point), if the sales level is even below BEP, there will be a guaranteed loss and hence none of the options are best. For this purpose, the relevant BEP is the lowest level of BEP.
5. If the information is not sufficient to find BEP, then a note should be give that below BEP none of the opton is best due to guaranteed loss.

SHUT DOWN POINT

- It indicates the level of sales, below which it is not justifiable to pursue producion
- Here fixed cost has to be classified into
  a. Avoidable fixed cost and
  b. Unavoidable fixed cost
- It focuses to recover the avoidable fixed costs.
- It is better to close down the business it contribution earned is not sufficient to recover avoidable fixed cost.

Formula :

$$\text{Shut down point (in ₹)} = \frac{\text{Avoidable Fixed Cost}}{\text{PV Ratio}}$$

$$\text{Shut down point (in Qty)} = \frac{\text{Avoidable fixed Cost}}{\text{Conribution per unit}}$$

SIGNIFICANCE OF SHUT DOWN POINT :

Level of sales	Decision	Reason
Below Shut down point	Close down operations	Avoidable fixed costs itself are not fully recovered.
Equal to shut down point	Continue operation	Avoidable fixed costs just recovered.
Above shut down point	Continue operation	Avoidable fixed costs are recovered.Further contribution leads to recovery of balance fixed cost.

NON COST FACTORS FOR DECIDING IN FAVOUR OF SHUTDOWN

Cost is not only criterion for deciding in the favour of shut down. Non-cost factors worthy of consideration in this regard are as follows:

- **Interest of workers** - If the workers are discharged, it may become difficult to get skilled workers later, on reopening of the factory. Also shut-down may create problems.
- **Competition** - In the face of competition it may be difficult to re-establish the market for the product.
- **Depreciation** - Plant may become obsolete or depreciate at a faster rate or get rusted. Thus, heavy capital expenditure may have to be incurred on re-opening.

COST VOLUME PROFIT ANALYSIS

- Cost - Volume-Profit (CVP) analysis is the analysis of three variables
  - Cost,
  - Volume and
  - Profit
- It is a manageirla tool showing the relationship between various ingredients of profit planning viz., cost, selling price and volume of activity.
- Such an analysis explores the relationship between costs, revenue, activity levels and the resulting profit.
- It aims at measuring variations in cost and volume.
- CVP analysis is based on the following assumptions:

Please refer assumptions under BEP listed above for this topic as the assumptions are same in both cases.

CVP BASED SENSITIVITY ANALYSISI CAN HELP MANAGERS COPE WITH UNCERTAINITY

Sensitivity analysis focuses on how a result will be changed if the original estimates or the underlying assumptions change.

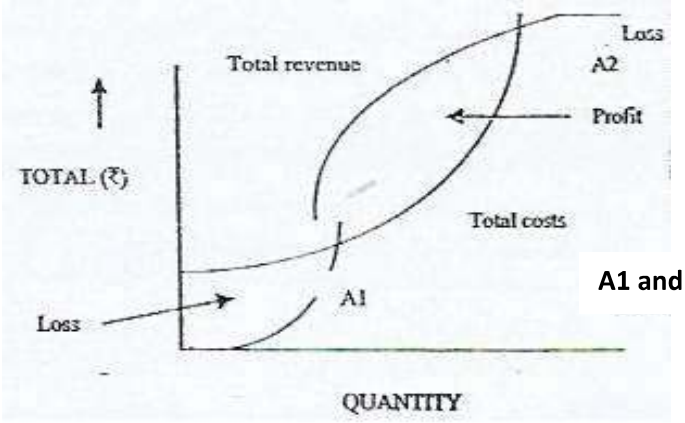
CVP based sensitivity analysis can help managers to provide answers to the following questions to cope with uncertainty.

- What will be the profit if the sales mix changes from that originally predicted?
- What will be the profit if the fixed costs increase by 10% and variable costs decline by 5%.

The use of spreadsheet packages has enabled managers to develop CVP computerised model. which can answer the above questions. Managers can now consider alternative plans by keying the information into the computer, which can quickly show changes show changes both graphically and numerically. Thus, managers can study various combinations of changes in selling prices,fixed costs, variable costs and product mix, and can react quickly without waiting for formal report from the accountant. In this manner, the use of CVP based sensitivity analysis can help managaer to cope up with uncertainty.

CURVILINEAR ANALYSIS

In CVP analysis, the usual assumption is that the total sales line and variable cost line will have linear relationship that is these lines will be straigh lines.



A1 and A2 are break even

In actual practice, it is unlikely to have a linear relationship because:

1. After the saturation point of existing, demand, the sales value may show a downward trend.
2. The average unit variable cost delines initially, reflecting the fact that as the output increases, the firm will be able to obtain bulk discounts on the purchase of raw materials and can also benefit from division of labour. When the plant is operated at further higher levels of output, the variable cost per unit may increase after reaching a particular level of output due to bottlenecks and breakdowns.
3. In these cases, the contribution will not increase in linear proportion ie based on the phenomenon of diminishing marginal productivity; the total cost line will not be straight as assumed, but will be of curvilinear shape.
4. This situation will rise to two break-even points. The optimum profit is earned at the point where the distance between sales and total cost is the greatest.

ANGLE OF INCIDENCE

- The angle formed at the point of intersection of total cost and the sales line is called lije angle of incidence.
- This is the angle at which the total sals line cuts the total cost line.
- The vertex of angle of incidence is the BEP
- The angle represents the rate at which profits are being earned after reaching BEP
- If the angle is large, the firm is said to make profits at a high rate and vice versa.

RELATIONSHIP BETWEEN ANGLE OF INCIDENCE BEP AND MOS

1. If the break-even point is low and angle of incidence is large, the margin of safety is large and the business enjoys financial stability. A low break-even point indicates that the business could be run profitably even if there is a fall in sales, unless the sales are very low.
2. If the break-even point is low and angle of incidence is small, the conditions are the same as in pont 1 above, except that the rate of profit earning capacity is not as high as in point 1 above.
3. If the Break-even point is high and angle of incidence is small, the margin of safety is low. The business is very vulnerable, even a small reduction in activity may result in a loss.
4. If the break-even point is high and angle of incidence is large, it shows that the margin of safety is low; the business is likely to incur losses through a small reduction in activity. However after the break-even point, the business makes the profit at a high rate.

BEP	MOS	Angel of	Interpretations and Conclusions
Low	High	If Larger	Business enjoys financial stability is business could be run profitably even if there is a fall in sales, unless the sales are very low.
Low	High	If Small	Same as above except that the rate of profit earning capacity is not as high as above
High	Low	If Large	Business is likely to incur losses through a small reduction in activity. However, after BEP it makes higher rates of profit.
High	Low	If Small	Business is very vulnerable, even a small reduction in activity may result in a loss.

Note :

(1) There is an inverse relationship between Break-Even Point and Margin of Safety (ie. if BEF is high, MOS is low and vice-versa).

(2) Degree of Angle of Incidence serves as an additional tool along witgh BEP and MOS, to analyses the financial position of the business.

KEY FACTOR

- The CIMA defines a key factor "factor which ata a particular time, or over a period, will limit the activities of an undertaking".
- It represents a resource whose availability is less than its requierment
- It is the most important factor for taking decisions about the profitability of a product.
- It is also called Limiting Factor or Critical Factor or Budget Factor.

Examples of Key Factors

- Shortage of raw material
- Shortage of labour
- Demand
- Availability of Plant capacity
- Availability of Cash
- Time

Steps for solving Key factor problems

1. Identificaion of Key factor
2. Compute contribution per key factor
3. Rank the products based on the contribution per key factor
4. Allocate the key resources based on the rank
5. Prepare the profitability statement

CIRCUMSTANCES IN WHICH IT MAY BE JUSTFIABLE TO SELL AT A PRICE BELOW MARGINAL COST

a. Where materials are of perishable nature
b. Where stocks have been accumulated in large quantities and their market prices have fallen.
c. To popularise a new product
d. Where such reduction enables a firm to boost the sale of other products having large profit margin.
e. To capture foreign market
f. To obviate shut-down cost
g. To capture prospective market

LIMITATIONS OF USING THE MARGINAL COSTIN TECHNIQUE

1. It is difficult to classify exactly the expenses into fixed and variable category. Most of the expenses are neither totally variable nor wholly fixed.
2. Contribution itself is not a guide unless it is linked with the key factor.
3. Sales staff may mistake marginal cost for total cost and sell at a price; which will result in loss or low profits. Hence, sales staff should be cautioned while giving marginal cost.
4. Overheads of fixed nature connot altogether be excluded, particularly in large contracts, while valuing the WIP. In order to show the correct position, fixed overheads have to be included in WIP.
5. Some of the assumptions regarding the behaviour of various costs are not necessrily true in a realistic situation.

NON COST FACTORS IN MAKE/BUY DECISIONS

- Possible use of released production capacity and facility as a result a buying instead of making.
- Sources of supply should be reliable, and they are capable of meeting un-interruptedly the requirement of the concern.
- Assurance about the quality of goods supplied by outside supplier.
- Reasonable certainty from supplier's side about meeting the target delivery dates.
- The decision of buying the product / component from outside suppliers should be discouraged, if the technical know how used is highly secretive.
- The decision of buying from outside sources should not result in the laying off the workers and create industrial relation problems. In fact, on buying from outside, the resources freed should be better utilised elsewhere in the concern.
- The decision of manufacturing product / component should not adversely affect the concern's relationship with the suppliers.
- Ensure that more than one supplier of the product / component is available to reduce the risk of outside buying.
- In case, the necessary technical expertise is not available internally then it is better to buy the requirements from outside.

ENUMERATE THE FACTORS IN DECISIONS RELATING TO EXPANSION OF CAPACITY

(i) Additional fixed overheads involved should be considered.
(ii) Possible decrease in selling price due to increased production capacity.
(iii) Whether the demand is sufficient to absorb the increased production.

ROLE OF COSTS IN PRODUCT MIX DECISIONS

All types of cost involved in cost accounting system are useful in decision making. The cost which plays a major role in product mix-decision is the relevant cost. Costs to be relevant should meet the following criteria:

(i) The costs should be expected as future costs.
(ii) The costs differ among the alternatives course of action.

While making decision about product mix using, the facilities and other available resources, the end results should always aim at profit maximization. Variable costs are relevant costs in product mix decisions and consequently contribution plays a major role in maximization of profit. In addition to the relevancy of costs, the other factors and costs that should be taken into account at the time of deciding the products mix are:

(i) The available production capacity
(ii) The limiting factor
(iii) Contribution per unit of the limiting factor
(iv) Market demand for the products
(v) Opportunity costs

MAJOR AREAS OF DECISION MAKING IN WHICH DIFFERENTIAL IS USED

(i) Make or Buy decisions.

(ii) Whether to process a product further or not.

(iii) Dropping or adding a product line

(iv) Making the best use of the investment made

(v) Aceptance of an additional order from a special customer at lower then existing price

(vi) Opening of new sales territory and branch

(vii) Submitting tenders

(viii) Lease or buy decisions

(ix) Equipment replacement decision

(x) Capital expenditure decison

(xi) Sales mix decision

(xii) Production planning

BUDGETARY CONTROL

BUDGET

CIMA,of England and Wales has defined the terms budget as " A finnancial / quantitative statement prepared and approved prior to a defined period of time of the policy to be pursued during that period for the purpose of attaining a given objective. It may include, expenditure and employment of capital".

BUDGETARY CONTROL

CIMA London defines budgetary control as the establishment of the budgets relating to the responsibilities of the budgets relating to the requirement of the policy and the continiuous comparison of actual with the budgeted results, either to secure by individual action the objective of that policy or to provide a base for its revision"

THE SALIENT FEATURES OG BUDGETARY CONTROL FEATURES

- Determining the objectives to be achieved over the budget period
- Determining the variety of activities that should be undertaken for the achievement of the objectives.
- Drawing up a plan or a scheme of operation in respect of each class of activity.
- Laying out a system of comparison of actual performance by each person, section or department with the relevant budget.
- Determinationof causes for the discrepanies, if any.
- Ensuring the corrective action will be taken.

OBJECTIVES OF BUDGETARY CONTROL

1. **PLANNING :** Planning is deciding in advance the future course of action, in budgeting, also the same task is performed. It will force management at all levels to plan the activities and policies for future period.
2. **DEFINING RESPONSIBILITIES :** The main purpose of budgeting is defining the responsibilities of each functional executive, so that there may be no conflict among the exectives.
3. **COORDINATION :** Budgetary control helps in coordinating various activities of the firm like planning policies, directing scheduling, processing etc. so that the common objective of firm may be achieved successfully.
4. **PERFORMANCE EVALUATION :** Budget can provide the basis for comparison between actual performance with budgeted. It is helpful in controlling he deviation from actuals and take necessry corrective action.
5. **COST CONTROL :** Budget is a powerful tool for controlling the expenditures.

ADVANTAGES OF BUDGETARY CONTROL

(i) It establishes the objective of the organisation and enables the management to conduct business in the most efficient manner.
(ii) Budget is helpful in allocating scarce resources in most optimal way.
(iii) Budget identifies the areas of inefficiencies within the organisation.
(iv) Budget is the most important tool of controlling because it provides a yardstick, against which the performance of organisation can be evaluated.
(v) It is a basis for management by exception as it compares actual and budgeted results.
(vi) It ensures effective utilisation of men, machine, material and money.

LIMITATIONS OF BUDGETARY CONTROL SYSTEM

(i) Budgets may or may not be true, as they are based on estimates.
(ii) Budgets are considered as a rigid document
(iii) Budgets coannot be executed automatically.
(iv) Staff co-operation is usually not avilable during budgetary control exercise.
(v) Its implementation is quite expensive

BUDGET MANUAL

A budget manual is a collection of documents that contains key information for those involved in the planning process. It is a schedule, document or bookled which shows in written form, the budget organisatoin and procedures. A copy of the manual is given to each departmental head for guidance.

BUDGET MANUAL INDICATES THE FOLLOWING MATTERS :

1. Brief explanation of the principles of Budgetary Control System, its objectives and benefits.
2. Procedure to be adopted in operating the system - in the form of instruction and seps.
3. A form of organisation chart to show who is responsible for the preparation of each functional budget and the way in which the budget are interrelated.
4. Definition of duties and responsibilities of Operational Executives, Budget Committee and Budget Controller.
5. A timetable for the preparation of each budget.
6. Nature, type and specimen forms of various reports, persons responsible for preparation of the reports and the program of distribution of these reports to the various officers.
7. Account Code and Chart of Accounts used by the Company.
8. Copies of all forms to be completed by those responsible for preparing budgets, with explanations concerning their completion.
9. Budget Calendar showing the dates of completion of each of the budget and submission of Reports.
10. Budget Periods and Control Periods.
11. Information concerning key assumptions to be made by managers in their budgets, for example the rate of inflation, key exchange rates, etc.
12. Follow-up procedures.

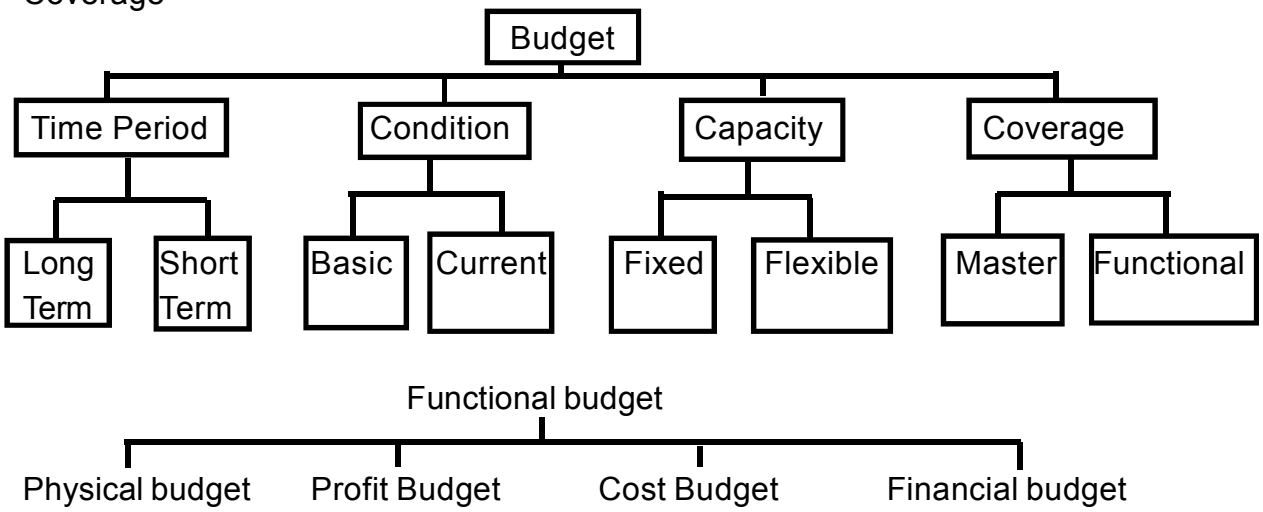
BUDGET RATIOS

RATIO	FORMULA
Efficiency Ratio	(Standard hours --Actual hours) x 100
Activity Ratio	(Standard hours -- Budgeted hours)x 100
Calendar Ratio	(Available working days -- Budgeted working days) x 100
Standard Capacity Usage Ratio	(Bugdeted hours -- Maximum possible hours in the budgeted period)x 100
Actual Capacity Usage Ratio working hours in a period)X 100	(Atucal hours worked -- Maximum possible
Actual Usage of Budgeted Capacity Ratio	(Actual working hours -- Budgeted hours) x 100

TYPES OF BUDGET

Budgets may be classified on the following basis :

1. Time period
2. Condition
3. Capacity
4. Coverage



DIFFERENCE BUDGET AND FLEXIBLE BUDGET

FIXED BUDGET	FLEXIBLE BUDGET
i. According to CIMA, England, a fixed budget, is a budget designed to remain unchanged irrespective of the level of activity actually attained."	i. It is defined as "a budget which, by recognising the diference between fixed, semi-variable and variable costs is designed to change in relation to the level of activity attained."
ii. It is also known as Rigid Budget or inflexible budget.	ii. It can be recasted on the basis of activity level to be achieved. Thus it is not rigid.

iii. It operates at one level of activity, under one set of conditions.	iii. It consists of various budgets for different levels of activity.
iv. Variance analysis does not give useful information.	iv. Variance analysis provides useful information.
v. If the budgeted and actual activity levels differ significantly, then the aspects like cost ascertainment and price fixation do not give a correct picture.	v. It facilitates the ascertainment of cost, fixation of selling price and submission of quotations.
vi. Comparison of actual performance with budgeted targets will be meaningless specially when there is a difference between two activity levels.	vi. It provides a meaningful basis of compa rison of the actual performance with the budgeted target.

DIFFERENCE BETWEEN FUNCTIONAL AND MASTER BUDGET

FUNCTION BUDGET	MASTER BUDGET
1. Budgets which relate to the individual functions in an organisation are known as Functional Budgets.	1. It is a consolidated summary of the various functional budgets.
2. For example, purchase budget sales budget, production budget plant utilisation budget and cash budget.	2. It serves as the basis upon which budgeted P & L A/c and forecasted Balance sheet are built up.
3. The budgets which are prepared for periods longer than a year are called long-term budgets.	3. Budgets which are prepared for periods less than a year are known as short term budgets.
4. Such budgets are helpful in business forecasting and forward planning.	4. Such types of budgets are prepared in cases where a specific action has to be immediately taken to bring any variation under control.
5. E.g. Capital expenditure budget and Research and Development budget.	5. Cash budget is an example of short term budget.

DIFFERENCE BETWEEN BASIC BUDGET AND CURRENT BUDGET

BASIC BUDGET	CURRENT BUDGET
1. A budget which remains ualtered over a long period of time is called basic budget.	1. A budget which is established for use over a short period of time and is related to the current conditions is called current budget.

DIFFERENCE BETWEEN STANDARD COSTING AND BUDGETARY CONTROL

STANDARD COSTING	BUDGETARY CONTROL
1. Standard costing is the preparation of standard cost and applying them to measure the variations from actual cost and analysing the causes of variation with a view to maintain maximum efficiency in production.	1. Budgets are financial statements prepared and approved prior to defined period of time to attain a given objective.
2. Standard costing is based on technical assessment	2. It is based on past performance adjusted with future trend.
3. Standards are set only for production expenses.	3. Budgets are prepared for all items of imcome and expenditure.
4. Standard costs are projection of cost accounts and deals with individual products and ascertaining and controlling their costs.	4. Budgets are projection of financial accounts and it deals with the overall efficiency of the business.
5. Standard costing represents what the cost should be under the specific condition of production.	5. Budgets are anticipated costs used for forecasting of material, labour, overhead cost etc.
6. Standard costing sets the target which should be maintained in actual performance.	6. Budget setup maximum limit of expense above which the actual expenditure should bot normally exceed.
7. Range of standard costing is narrow as it is mainly confined to the control of products on costs.	7. Range of budgeting is wider than that of standard costing. It covers sales, capital and financial expenses as well.

DIFFERENCE BETWEEN CAPACITY AND EXPLANATION

CAPACITY	EXPLANATION
Maximum Capacity	Maximum on. of days in a period x no. of workers or Maximum no. of hours x no. of workers. The maximum no. of units that can be produced by a manufacturing facility in a certain.
Practical Capacity	Maximum capacity (minus) Sundays, holidays, normal maintenance & idle time.
Normal Capacity	Average of past 3 years normal performance excluding abnormal data.

ZERO BASED BUDGETS

" A planning and budgeting process which requires each manager to justify his entire budget request in detail from scratch and shifts the burden of proof to each manager to justify why he should spend any money at all. The approach requireds that all activities to be analysed in decision packages". which are evaluated by systematic analysis and ranked in order of importance."

In zero based budgeting all the activities of firm are evaluated from the base. Each functional budget starts with the assumption that the functions do not exist and budgets are developed on the basis of likely activities for future periods. In this system, various activities of their organisation are identified and then evaluated in terms of benefit obtained from them.

PRELIMINARIES :

1. There must have budgeting system in the organisation.
2. The functions of the department should be divided into various activities.
3. Each activity of an organisation is to be considered as a decision package.
4. Activities are evaluated from the scratch.
5. The objectives and performance standard of each activity should be clearly identified.
6. Decision packages are evaluated and ranked by cost benefit analysis.
7. All the activities must be evaluated in terms of benefit achieved by them.
8. Resources are allocated according to the availability and ranking of the packages.

ADVANTAGES :

1. ZBB process identifies inefficient operation and every time considers alternative ways of performing the same task.
2. It is used in identification of wastage and obsolete items of expenditure.
3. It is very useful for the staff and support areas of an organisation such as R & D, quality control, Pollution control etc.
4. The scare recources will be allocated more efficiently according to the priority of program.
5. It provides an opportunity to the management to allocate resources for various activities only after having a thorough cost benefit analysis.
6. Departmental budgets are colsely linked with corporate objectives.
   achievement of its objectives and are being performed in the best way.
7. It ensures that the various functions undertaken by the organisation are critical for the achievement of its objectives and are being performed in the best way.
8. The technique can also be used for the introduction of the system of management by objective (MBO)

LIMITATIONS :

1. It requires skilled and trained managerial staff.
2. It is time consuming as well as costly
3. It faces various operational problems during the implementation of such techique
4. Rrquires full support of top management.

DIFFERENCE BETWEEN ZERO BASED BUDGET AND TRADITIONLA BUDGET

POINTS OF DIFFERENCE	TRADITIONAL	ZERO BASED BUDGET
Frequency	Annual	Every 3-5 years
Starting point	Last year's budget	Zero
Basis percentage of changes	Last year plus packages	Careful analysis of decision
Budgeted amount	Usually single amount	Depends upon analysis of benefits from incremental spending.
Priority of activities	Musts and wants not differentiated	Distinguished musts and wants and rank priorities
Alternatives	Often ignored	Considered
People involved	Boss and subordinate	Cross-fundctional team
Awareness	Knowledge of own necessary	Comprehensive understanding of function how the whole business works.

TRANSFER PRICING

MEANING

TRANSFER PRICE :

- Transfer price is the price which are division of an organisation charges for a product supplied or service rendered to another division of the same organisation.
- The price charged for transfer of gooods of one division to another division is the cost to receiving division and income of supplying division. It means that the transfer price fixed will affect the profitability of both the divisions.
- The performance of each division can be measured in terms of both income earned and cost which are incurred.
- Transfer price creates revenues for the Transferring Division and purchases costs for the Receiving Deivision affecting each divisions operating income.
- The product transferred between divisions of an organisaton is called intermediate product. It can either be processed further for final sale by the Recipient Division or if transferred from production to making, resld as such, to an external customer.

OBJECTIVES OF TRANSFER PRICING SYSTEM

(i) Emphasis on Overall Company Profitability
(ii) Maximum Utilisation of unused or spare plant capacity
(iii) Optimise allocation of financial resources

The goals of transfer pricing are that is should:

1. provide information that motivates divisional managers to take good economic decisions which will improve the divisional profits and ultimately the profits of the compay as a whole.
2. Provide information which will be useful for evaluating the divisional performance.
3. Seek to achieve goal congruence.
4. Ensure that divisional autonomy is not undermined.

METHOD OF TRANSFER PRICING

1. Cost Based Transfer Pricing
   - Variable Manufacturing Cost
   - Actual Manufacturing Cost
   - Full Cost
   - Standard Cost
   - Cost plus mark up
2. Market Price based Transfer Pricing
3. Bargained or Negotiated Transfer Pricing

METHODS	MEANING
Variable Manuracturing Cost	- In this method goods or services are transferred at these variable manufacturing cost of production. - There is no negative contribution to transferring division. - Suitable it transferring division ha sufficient spare capacity. - Costs and prices fuctuate from time to time. Hence transfer price also vary.
Actual Manufacturing Cost	- In this method, goods or services are transferred their actual cost of production. - Easy to compute and simple to understand - It is useful for those units where the responsibility of profit performance is centralised. - Difficult to measure the performance of each profit centre. - Suitable if transferring division has suficient same capacity. - Costs and prices fluctuate from time to time. Hence, transfer price also vary. - Guaranteed contribution to transferring division. - Not suitable for performance evaluation.
Full Cost	- Full cost means cost of production, plus expenses like selling and distribution, administration, research and development cost, etc. - Easy to compute and simple to understand - Costs and prices fluctuate from time to time. Hece transfer prices also vary. - Does not consider opportunity costs. - Not suitable for performace evaluation - Suitable if transferring division has sufficient spare capacity.
Standard Cost	- Under this method, all transfers of goods and services are made at their standard cost. - The transferring division usually absorbs variances and hence, segment wise performance evaluation is not possible. - Does not consider opportunity costs. - Inventories are carried at standard costs in transferring and receiving divisions.
Cost plus mark up	- Under this method, the supplying unit transfers goods and services at full cost plus some mark-up. - Markup added to Cost may be expressed either. (1) as a percentage of full cost or (2) as a percentage of capital employed

Market Price based Transfer Pricing	- Under this method, the transfer price of goods/services transferred to other units/divisions is based on market price. - Opportunity costs of transferring divisions ae fully recovered. Hence, there is sufficient incentive for internal transfer, for transferring divisions operating at full capacity. - It provides reliable measures of divisional income because these prices are established independently rather than by individuals who have an interest in the results. **Limitaions :-** - Difficulty in obtaining market prices. - Sometimes, the intermediate product may not be saleable. - There may be difficulties in determining the elements of selling and distribution costs such as commission, discount,advertisements and sales promotion etc. so that necessary adjustment may be made in the market price to provide benefit of these expenses, to the Recipient Division. - Market prices lead to unjust enrichment of the transferring division, particularly if the former has sufficient spare capacity and the intermediate is not freely saleable externally.
Bargained or Negotiated Transfer Pricing	- Under this method, each decentralised unit is considered as an independent unit and such units decide the transfer price by negotiations or bargaining. - The determination of transfer price is based on active participation, involvement, co-ordination and agreement of the mangers of the transferring and recipient divisions. - Divisional Managers have full freedom to purchase their requirement from outside, if the prices quoted by the transferring division are not acceptable to them. - The agreed transfer price may depend on the negotiating skills and bargaining power of the managers involved. - Negotiations may lead to conflict between divisions and may require top-management interference.

CRITERIA FOR SETTING TRANSFER PRICE

1. Transfer price should help in achieving the organisatioan's goals and objectives as a who thereby promoting goal congruence.
2. Transfer prices should aid in accomplishing the company's strategies.
3. Top managements initiative and active co-ordinaiton is essential
4. The selection of a transfer pricing system should necessarily facilitate the top management an enterprise to evaluate the performance of the individual sub-units.
5. Tramsfer prices should promote the autonomy of the sub units in decision making.
6. The transfer pricing system should provide information that motivates divisional manager to make good economic decisions.
7. An effective Transfer Pricing System should be based on negotiations and agreement between divisional managers.

MINIMUM TRANSFER PRICE :

Minimum Transfer Price = Incremental Costs up to the point of Transfer + Opportunity Costs

Opportunity Cost = Contribution forgone by the transferring division

Opportunity cost arises only if :

(a) Transferring Division produces and sells marketable products; and

(b) Transferring Division operates at full capacity

MAXIMUM TRANSFER PRICE :

(a) Market Price or

(b) Maker Price + Cost associated with purchase

The transfer price may be subject to the range of minimum to maximum prices.

CASE STUDY

What will be the marketable transfer pricing procedure regarding the goods transferred under the following conditions? (Each condition is independent of the other)

(i) When divisions are not captive of internal divisons and are free to do business both internally and externally and when there are reasonably competitive external markets for the transferred products.

(ii) If the external, market for the transferred good is not reasonably competitive.

Answer :

Marketable Transfer Pricing Procedure

(i) When divisions are not captive of internal divisions and are free to do business both internally and externally and when there are reasonably competitive external markets for the transferres products, then the most suitable transfer price would be the market price, as it generally leads to optimal decisions.

(ii) In case, the external market for the trensferred goods is not reasonably compeitive, following two situations may arise in this case.

(a) If there is idle capacity : Under this situation, opportunity cost will be zero hence minimum transfer price should be equal to the additional outlay costs incurred upto the point of transfer (someime approximated by variable costs)

(b) If there is no idle capacity : Under this situation, opportunity cost should be added to outlay costs for determining minimum transfer price.

CONFLICT BETWEEN A DIVISION AND THE COMPANY

Conflict between a division and the company becomes more significant in the case of those concerns where profitability is used as criteria for evaluating the performance of each divison. In case of failure of a division to achieve the objective of goal congruence, the management of the company may dictate their transfer price. Such interference of the management of the company is usually the main basis of conflict between a division and the company as a whole.

PROPOSALS FOR SOLVING TRANSFER PRICING CONETICTS

To solve the transfer pricing conflicts, the following methods can be suggested :

1. Dual rate transfer pricing system
2. Two part transfer pricing system.

DUAL RATE TRANSFER PRICING	TWO PART TRANSFER PRICING
It uses two separate transfer prices to price each inter-divisional transaction (Company Profit = Sum of divisional profits Less: Inter divisional mark up a. Full Cost plus Mark-up b. Variable plus opportunity costs	Under this method, transfer Price = Marginal Cost + Lump sum Fixed Fee - This method is most suited when there is no market for the intermediate product, and the transferring division has no capacity constraints. - The Recipient Division is also interested in the internal procurement since the transfer price will be less than this market price. - Lump-sum fixed fee comstitutes a commitment of the divisions to utilise a portion of the capacity of the transferring divisions, for an agreed compensation.

DISADVANTAGES OF TREATING DIVISIONS AS PROFIT CENTRES

- Divisions may compete with each other and may take decisions to increase profits at the expense of other divisions.
- Affect co-operation between the division.
- It leads to lack of harmony in achieving organisational goals of the company.
- The cost of activities, which are common to all divisions, may be greater for decentralised structure than centralised structure.
- It may thus result in duplication of staff activities.
- Top management looses control by delegating decision making to divisional managers.
- There are risks of mistakes committed by the divisional managers, which the top management, may avoid.
- Series of control reports prepared for several departments may not be effective from the point of view of top management.
- It may under utilise corporate competence.
- It becomes difficult to identify and defines precisely suitable profit centres.
- It confuses divison results with manager's performance.

MULTINATIONAL TRANSFER PRICING

MNC may have operations in various countries which have different tax rates for maximisation of income through the use of Transfer Pricing.

- Transfer Prices may be set low for an affiliate that is trying to establish a competitive advantage over a local Company either to break into a market or to establish a higher share of the Company's business.
- Transfer Prices in divisions in countries which are subject to import duties for goods or services purchase may be set low so as to avoid host country taxes.
- Transfer Pricing may be set relatively higher for divisions in relative high tax rate countries, which purchases inputs from divisions located in countries with relatively lower tax rates and more tax benefits.The MNC's overall profit is maximised if it shows the maximum income in the country with the least tax rate.
- Transfer Prices to a division in the country which is encontering relatively high inflation may be set relatively high so as to avoid some of the adverse effects of local currency devaluation that are related to the high inflation.

POTENTIAL FOR MAXIMISATION OF INCOME BY A MULTINATIONAL THROUGH THE USE OF TRANSFER PRICING MECHANISM :

(i) Transfer price may be set relatively high for affiliates in relatively high tax countries that purchase inputs from affiliates located in relatively low tax countries.

(ii) Transfer price to affiliates in the countries which are subject to import duties for goods or services purchased may be set low so as to avoid host country taxes.

(iii) Transfer prices to an affiliate in a country that is encountering relatively high inflation may be set relatively high to avoid some of the adverse effects of local currency devaluation that are related to the high inflation.

(iv) Transfer prices may be set high for goods and services purchased by an affiliate operating in a country that has imposed restriction on the repatriation of income to foreign companies.

(v) Transfer prices may be set low for an afiliate that is trying to establish a competitive advantage over a local company either to break into a market or to estabish a higher share of the company's business.

TARGET COSTING

TARGET COSTING

- It is defined as " a structured approach to determine the cost at which a proposed product with specified functionality and quality must be produced, to generate a desired level of profitability at its anticipated selling price".
- It is not a product costing system, but rther a management technique aimed at reducing product's life-cycle costs.

ADVANTAGES OF TARGET COSTING

(i) It helps an organisation to survive in an increasingly competitive environment.

(ii) It reinforces top-to-bottom commitment to process and product innovation, and is aimed at indentifying issues to be resolved.

(iii) It enables to achieve cost reduction target.

(iv) It uses management control systems to support and reinforce manufacturing strategies and to identify market opportunities that can be converted into real savings to achieve the best value rather than simply the lowest cost.

FEATURES OF TARGET COSTING SYSTEM

- Setting of Target selling prices based on customer expectation and sales forecast.
- Establish Target profit based on long-term profit objective and projected volume.
- Determine target cost per unit.

  Target Cost = Target Selling Price Less Target Profit Margin
- Determine the current cost of productions.
- Set cost reduction target in order to reduce the Current Cost to the Target cost.
- Establish the cost reduction target using Value Enginerring (VE) and Value Analysis(VA)
- Focus on further possibilities of cost reduction, ie continuous improvement program.

PROBLEMS WITH TARGET COSTING

a. The developement process for target costing is a time consuming one.

b. To meet the target cost, the designing team may require a number of design interations to reach a low cost product.

c. If there is no evidence of repid progress towards a specific target cost within a relatively short period of time, it is better to either ditch a project or a least shelve it for a short time and then try again, on the assumption that new cost reduction methods or less expensive materials will be available in the near future that will make the target cost an achievable one.

d. A large amount to mandatory cost cutting can result in finger-pointing in various parts of the company, especially if employees in one area feel they are being called upon to provide a disproporitionately large part of the savings.

e. Strong inter-personal and negotiation skills are required on the part of the project manager to avoid this problem, if any with respect to fixation of target price.

f. Representtives from number of departments of the design team can sometimes make it more difficult to reach a consensus on the proper design because there are too many opinions regarding design issues.

The above problems can be set right by a good team leader, who must have the exceptional knowledge of the design process, good interpersonal skills, and a commitment to stick to timelines and costs budgets for a design project.

IMPACT OF TARGET COSTING ON PROFITABILITY

Target costing can have a startling positive impact on profitability, depending on the commitment of the management. Target costing improves profitability in two ways.

1. Target Costing places detailed continuing emphasis on product costs throughout the life cycle of every product and it gives assured profit through constant review.
2. Target Costing improves profitability through correct price determination and consequent cost control.

Thus, target costing results not only in better cost control but also in better price control and hence target costing can have positive impact on profitability.

IMPACT OF TARGET COSTING IN CONTROLLING COSTS AND PRICING OF PRODUCTS

- Target costing considers the price that ought to be charged by a company to achieve a given market share.
- It should take life cycle costs into consideration.
- If there is a gap between the target cost and expected cost, ways and means of reducing or eliminating it can be explored.
- The target cost may be used for controlling costs by comparison.

IMPLEMENTING TARGET COSTING SYSTEM

A target costing initiative requires the participation of several departments. The following steps are required to implement a Target Costing System.

1. CREATE A PROJECT CHARTER :

Project Charter is a decument, approved by the top management that describes its goals and what it is authorised to do. This Charter is based on the corporate mission statement and related goals. Written approval of Project Charter by the top management provides the target costing effort with a strong basis of support and direction in all subsequent efforts.

2. OBTAIN A MANAGEMENT SPONSOR :

The next step is to obtain the strongest possible support from a management sponsor. Management Sponsor is an individual belonging to the top management. His role will be to support the initiative in all respects, to obtain funding, to co-ordinate with oher members of top management, to eliminate problems in a timely manner. This person is central to the success of target costing.

3. OBTAIN A BUDGET :

The funding should be based on a formal allocation of money through the corporate budget. The funds should be given unreservedly to the target costing effort.

4. ASSIGN STRONG TREAM MANAGER :

A strong team manager is required to bring the group together as a smooth functioning team focused on key objectives. The Target Costing team involves the active participation of many members with diverse backgrounds. Team manger should be skilled in dealing with management, the use of project tools, and working with a diverse group of people. This manager should be a full-time employee, so that his or her complete attention can be directed towards the welfare of the project.

5. ENROLL FULL-TIME PARTICIPANTS :

A target costing team member puts in the greatest effort into the program and focuses only on target costing. Thus, it is essential that as many members of the team as possible be devoted to it full-time rather than trying to fulfill other commitment elsewhere in the company at the same time. They should have a single focus on ensuring the success of the target-costing program.

6. USE PROJECT MANAGEMENT TOOLS :

Target costing can be a hightly complex effort especially for high-cost products with many features and components. The team should use all available project management tools, such as Microsoft Project (for tracking the completion of specific tasks), a company database containng various types of costing information, and a vatiety of product design tools.

DIFFERENCE BETWEEN TARGET COST AND TRADITIONAL COSTING

TARGET COST	TRADITIONAL COSTING
Production Specification	Production Specification
↓	↓
Target Price and Volume	Product Design
↓	↓
Target Profit	Estimated Cost
↓	↓
Target Cost	Target Cost
↓	↓
Production Design	Target Price

CONTROL POINTS WHICH SHOULD BE TAKEN CARE OF IN ALL TARGET COSTING PROJECTS

(i) **Identification of Principal Control Point :** Experience shows that there always comes a point, where the cost of maintaining the design team exceeds the savings gardened from additional iterations. It is also necessary that most products should be launched within a reasonably short time or they will miss the appropriate market, where they will beat the delivery of competition products to the market. This emphasis that the principal control points over the course of target costing programme should be properly taken care of.

(ii) **Point of Go/No Go decision :** If target costing is not reached, management retains power to abandon the design project. There comes a point, when actual performance is very close to expected performance in matter of cost incurrence.

(iii) **Milestone can be in terms of Timer of Points :** A Milestone can be in termes of time, say one month. It can also be on the points in design process, at which specific activities are completed.

LIFE CYCLE COSTING

MEANING : (May 02, Nov 03, 04, 06)

- CIMA defines life cycle costing as the paractice of obtaining over their life time, the best use of physical asset at the lowest cost of entity.
- Life cycle costing involves tracing cost and revenues of a product over several calendar periods.

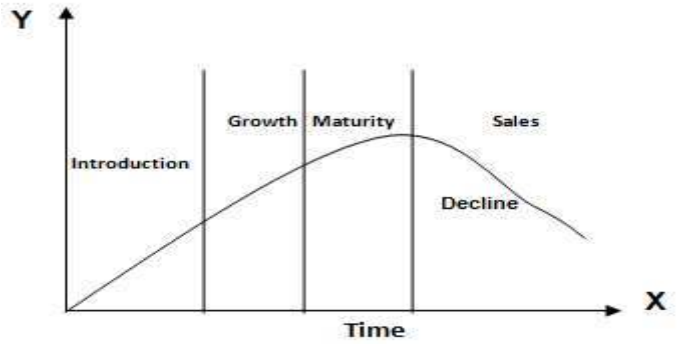
PRODUCT LIFE CYCLE

- Each product has a life cycle varying from a few months of several years.
- Product life cycle is a pattern of expenditure, sale level, revenue and profit over the period Life cycles starts from new idea generation and ends with deletion of product range ie Product life cycle starts from the time of initial of R & D on a product to customer servicing. For example life cycle for the products like Income Tax Book is one year where as Costing book is several years.

PHASES IN PRODUCT LIFE CYCLE

The life cycle of a product consists of four phases :

a. Introduction
b. Growth
c. Maturity and
d. Decline / Saturation



PHASES	EXPLANATION
INTRODU-CTION	It is an introductory phase.During this phase a product is launched into the market. Its customers are innovators.Competition is almost negligible and profits are non-existent.
GROWTH	In this phase, sales and profits rise, at a rapid pace. Competitors enter the market often in large numbers. As a result of competition, profits starts declining near the end of the growth phase.

MATURITY	During the phase of maturity,sales continue to increase but at a decreasing rate. When sales level off, profits of both producers and middlemen decline. The main reason is intense price competition, some firms extend their product lines with new models.
DECLINE	At last a point comes, when it starts appearing that market has bought enough of the product. Decline in sales volume characterises this last phase of the product like cycle. The need or demand for product disappears. Availability of better and less costly substitutes in the market accounts for the arrival of this phase.

A COMPARATIVE ANALYSIS OF FOUR PHASES :

Particular Phase	Introduction I	Growth II	Maturity III	Decline IV
Sales Volumes	Very low levels at	Rise in sales at decreasing increasing	Raise in sales rates	Sales level off and then start decreasing rates.
Selling Price	Very High due to high initial costs	Maintain the same high level prices	Reduction in Prices due to competition to recover the unrecovered cost and to gain profit	Further reducion in price for survival of product in the market
Profits	Nil due to heavy initial costs	Increase at a rapid pace	Normal rate of profits due to reduction in selling price	Declining profits due to entry of new products etc.
Competition	Nil or very low	Entry of a large number of competitors	Fierce Competition	Starts disappearing
Number of firms	Small, growing fast	Large	Stakeout, number stabilizes	Small, exit
Market size	Small	Large	Large	Declining
Market	Fast	Fast	Slow	Negative
Product Varieties	Few and Growing	Increases, then declines to few dominant	Increasing specializing & segmentation designs	Declining

Distribution	One-stop Shopping	Various outlets	Superstores, direct sales.	Minimum Cost
Investment	High	High	Low	Negative
Customer needs	Sophistication, Features, Fit	Performance	Price/ Performance	Low price
Customer Knowledge	Low	Medium	High	High
Product complexity	High simplified	Product	Standardization	Low

CHARACTERISTICS OF PRODUCT LIFE CYCLE

1. The products have finite lives and pass through the cycles of developement, introduction, growth, maturity decline and deletion at varying speeds.
2. Product cost, revenue and profit patterns tend to follow predetermined set of movement through the product life cycle.
3. Growth phase is characterised by earning of profit; at mautiry phase profit stabilises and declines at the point of deletion.
4. Profit per unit varies at each phase of its cycle ie profits are directly proportional to demand.
5. Each phase of the product life cycle offers distinct challenges and avenues that give rise to different strategic actions.
6. Products require different functional emphasis in each phase such as the R & D emphasis in the development phase and the cost control emphasis in the decline phase.
7. Exploiting new uses or new users or getting the present users to increase their comsumption, may extend the life of the product.

VARIOUS STAGES OF PRODUCT LIFE CYCLE

Life cycle of a manufactured product will consist of the following stages :-

(i) Market research stage
(ii) Specification stage
(iii) Designing stage
(iv) Prototype manufacturing stage
(v) Development stage
(vi) Tooling stage
(vii) Manufacturing stage
(viii) Selling stage
(ix) Distrobution stage
(x) Product support stage and
(xi) Decommissioning or Replacement stage.

STAGES	EXPLANATION
(i) Market research	This stage helps to determine customer's quality and quantity requirement of the product and his propensity to pay.
(ii) Specification	1. With the help of market research report, we need to convert the requirements in to detailed specification. 2. This will guide the designer and manufacturing engineer to determine precisely what is reqired. 3. The design specification shall prescribe : - Desired life span - Maximum permissible maintenance costs - Maximum permissible manufacturing cost - Output requirement - Delivery date - Quality and performance requirement of the product.
(iii) Design	With a precise specification, the designers can produce the drawings and process schedules which define the geometry of the product and some of the manufacturing processes.
(iv) Prototype manufacture	From the drawing it will be possible to manufacture test samples called prototypes. These prototypes will be used to develop the product and eventually to demonstrate that it meets the requirements of the specification.
(v) Development	1. When a product has been made for the first time, it is necessary to prove that it meets the requirements of the specification. 2. When a product is first made it rarely meets the requirements of the specification and changes have to be made until requirements are met. 3. This period of testing and changing is called development 4. Development phase tends to be very expensive and often generates a large negative cash flow before any products have been sold.
(vi) Tooling	1. When a product is shown to meet the specification,requirements and calculations suggest that it will be profitable, the decision will be made to make it to sell. 2. This dcision will not be taken lightly because, in many cases, the decision to make a product for sale is commitment to tool up for production. 3. Tooling up for production can mean building a production line costing several lakhs of rupees, building expensive jips, buying special purpose machine tool which implies a huge initial investment.
(vii) Manufacture	The manufacture of a product involves the purchase of raw materials, purchase of bought-out components, use of labour to make and assemble the product, and use of supervisory labour to supervise manufacturing process.

(viii)Selling	When the product becomes suitable for sale then money needs to be spent on advetiseents and campaingning to procure order.
(ix) Distribution	In the processof selling the product, it must be distributed to the sales outlets and to the customers.
(x) Product	1. When the product has been bought, the customer will support expect it to be supported in form of after-sales service. 2. The manufacturer or supplier will have to make sure that spares and expert servicing are available for the life of the product. 3. The manufacturer or the supplier may even have to offer free servicing and parts replacement during the early life of the product.
(xi) Replacement	When a product life comes to an end, the plant used to build the product must be re-used, sold, scrapped, or decommissioned in a way that is acceptable to society.

FEATURES OF PRODUCT LIFE CYCLE COSTING

(a) It involves tracing of costs and revenues of each product over several calendar periods throughout the entire life cycle of the product.

(b) Product life cycle costing involves tracing all cost incurred over various phases of the product life cycle to facilitate comparison of revenue with the costs to determine the feasibility of the product.

BENEFITS OF PRODUCT LIFE CYCLE COSTING

(a) The main objective of life cycle costing is tracing the costs incurred over various phases and comparing the same with the revenue generated with facilitates earlier actions decisions to generate revenue or to lower costs than otherwise might be considered.

(b) Better decisions should follow from a more acurate and realistic assessment of revenues and costs, at least within a particular life cycle stage.

(c) Product life cycle can promote long-term benefits in contrast to short-term profitability.

(d) It provides an overall framework for considering total incremental costs over the enire life span of a product, which in turn facilitates analysis of parts of the whole product where cost effectiveness might be improved.

UNIFORM COSTING

UNIFROM COSTING

The principles and methods of compilation, analysis, apportionment and absorption of overheads differ from one concern to the other in the same industry but if a common or uniform pattern is adopted by all, it help mautally in cost control and cost reduction. Therefore it is necessary that a uniform method of costing should be adopted by the member unit of an industry. The different concerns in an industry should adopt a common method of costing and apply uniformly the same principles and techniques for better cost comparison and common good.

OBJECTIVES OF UNIFORM COSTING

OBJECTIVE	EXPLANATION
1. Comparison	To facilitate the comparison of cost and performance of different units in the same industry; it provides objective basis.
2. Eliminates healthy Competition.	To eliminate unhealthy competition among the different units on of an industry.
3. Improve Efficiency	To improve production capacity level and labour efficicency by comparing the production cost of different units with each other.
4. Provides Relevant	To provide relevant cost information data to the Government for fixing and regulating prices of the Data products.
5. Ensures Standardisation	To bring standardisation and uniformity in the operation of participating units.
6. Reduces Cost	To reduce production, selling and distribution costs, and to exercise control on fixed costs.

PRE - REOUISITE FOR THE INSTALLATION OF UNIFORM COSTING SYSTEM

PREREQUISITE	EXPLANATION
1. WILLINGNESS	The firms in the industry should be willing to share information.
2. TRUST	A spirit of cooperation and mutual trust should prevail among the participating firms.
3. EXCHANGE OF IDEAS	Mutual exchange of ideas, methods used, special achievements made, research and know how etc should be frequent.
4. SCOPE FOR IMPROVEMENT	Bigger firms should take the lead towards sharing their experience and know-how with the smaller firms to enable the latter to improve their performance.
5. UNIFORMITY	Uniformity with regard to following points is must before the introduction of uniform costing. 1) Size of th units 2) Production methods 3) Accounting methods, principles and procedures used 4) Wage system.

ADVANTAGES OF UNIFORM COSTING

- Identification of strength and weakness of each and every firm in the industry
- Optimum achievement of efficiency by utilising the experience of other concerns.
- Sharing of experiences and expenses of services of cost consultants and expert.
- Recearch and development benefits of bigger firms may be m ade available to smaller firms.
- It helps in the reduction of labour turnover as a uniform wage system is the per-condition of a uniform costing system
- It helps to avoid unhealthy competition.

LIMITATIONS OF UNIFORM COSTING

- Uniformity in standards and methods of costing by all the firms in the same industry is difficult.
- Firms may not have the trust / wish to share such information with their competitors in the same industry.
- There is an illusion that the uniform costing is meant for big size firms and small firms cannot afford to install this system.
- It creates monopolistic trend in the business.
- It may create artificial shortage in supply.
- It may lead to artificial increases in prices.

INTER- FIRM COMPARISON

INTER- FIRM COMPARISON

	EXPLANATION
1. Centre of inter-Firm Comparison	A centre body is required to collect and analyse data received from member units, for doing a comparative study. (a) Collection of data and information from its memebers; (b) Dissemination of data and information from its members; (c) Undertaking R & D for benefit of its members; (d) Organising,training programmes and (e) Publishing magazines.
2. Membership	Firms of different sizes should become members of the Centre entrusted with the task of carrying out inter firm comparison.
3. Collection of information	The following information to be collected by the Centre for inter-firm comparison : - Information regarding costs and cost structures - Raw material consumption - Stock of raw materials - Wastages of materials - Labour utilisation - Machine utilisation - Machine efficiency - Capital employed - Return on capital - Liquidity of the organisation - Reserve - Appropriation of profit - Creditors - Debtors - Methods of production and technical aspects
4. Method of Collection and presentation of	i) The Centre collects information at fixed intervals in a prescribed form from its members. ii) Sometimes a question are os sent to each information member, the replies of the Centre constitute the information / data. iii) The information supplied by firms is generally in the form of ratios and not in absolute figures. iv) The information collected as above is stored and presented to its members in the form of a report.

ADVANTAGES OF INTER - FIRM COMPARISON

- It gives an overall view of the industry as a whole to its members:
  a. the present position of the industry,
  b. progress made during the past and
  c. the future of the industry
- It helps to know strengths or weaknesses of the concern.
- It ensures an unbiased specialised reporting on particular problems of the concern.
- It develops cost consciousness amount members of the industry.
- It helps Government in effecting price regulation
- It helps to improve the quality of products manufactured
- It helps to reduce the cost of production
- It is advantageous to the industry as well as to the society.

LIMITATIONS OF INTER FIRM COMPARISON

- Top management feels that secrecy will be lost.
- Middle management is usually not convinced with the utility of such a comparison.
- In the absence of a suitable cost accounting system, the figures supplied may not be reliable for the purpose of comparison.
- Suitable basis for comparison may not be available.

VALUE ENGINEERING & VALUE ANALYSIS

MEANING

VALUE ENGINEERING	VALUE ANALYSIS
It involves searching for opportunities to modify to bhe design of each component or part of a product to reduce cost, but without reducing the functionality or quality of the proudct.	It entails studying the activities that are involved in producing the product to detect non-value adding activities that may be eliminated or minimised to save costs but without reducing the functionality or quality of the product.

SCOPE

Value Engineering and Value Analysis help identify cost into

(a) Value-Added Cost and

(b) Non Value -Added Cost.

The objective is to retain/reduce value-added cost, while totally avoiding or eliminating non value added costs.

VALUE ADDED COST	NON VALUE ADDED COST
It is a cost that, if eliminated, would reduce the vlaue or unility customers obtain from using tghe product/service.	It is a cost which if eliminated would not reduce the value or utility, which the customers obtain form using the product or service. It is a cost that the customers in unwilling to pay to the company.

VALUE CHAIN ANALYSIS

The six business functions contained in the chain are:

(i) Research and development

(ii) Design

(iii) Production

(iv) Marketing

(v) Distribution and

(vi) Customer service.

The objective of value chain is to serve as means of increasing the customer satisfaction and managing costs effectively. Coordination of the individual part of the value chain activities creates conditions to inprove customer satisfaction in terms of cost efficiency, quality and delivery. A firm which preforms value chain acativities with more efficiency and at a lower cost than its competitors will be able to gain competitive advantage. The following methodology should be adopted.

(i) The firm should identify the industry value chain and the assign costs, revenue and assets to value added activities.

(ii) Deagnose the cost drivers regulating each value activity.

(iii) Develop sustainable cost advantage either by controlling cost drivers better than competitors or by reconfiguring the chain value.

By analyzing cost, revenues and assets in each activity systemetically a company can achieve low cost. Thus value chain helps managers in deciding how to apply the organization's vakyavke physical and human resources to each linked process so as achieve cost effectiveness.

CLASSIFICATION OF BUSINESS ACTIVITIES FOR VALUE CHAIN ANALYSIS

Proter classified business activities under two heads.

1. PRIMARY ACTIVITIES
2. SUPPORT ACTIVITIES

PRIMARY ACTIVITIES	SUPPORT ACTIVITIES
These are directly involved in transforming iputs into outputs and delivery and after sales support to output. In other words they include: - material handling and warehousing - transforming inputs into final product - order processing and distribution - Communication,pricing and channel management and - installation, reapair and parts replacement	These are the activities which support primary activities. They are handled by the organisation's staff functions and include the following: 1. Procurement purchasing of raw materials, supplies and other consumable items as well as assets. 2. Technololgy Department - Know how, procedures and technological inputs needed in every value chain activity. 3. Human resource management selection, promotion and placement, appraisal, rewards,management development; and labour / employee relations. 4. Firm infrastructure- general management, planning, finance,accounting, legal, government affairs and quality management.

STEPS ARE INVOLVED IN VALUE CHAIN ANALYSIS APPROACH FOR ASSESSING COMPETETIVE ADVANTAGES

Most corporations define their mission are one of creating products and services. In contrast, the other companies are acutely aware of the strategic importance of individual activities within their value chain. They are concentrating on those activities that allow them to capture miximum value for their customers and themselves.

These firms use the value chain analysis approach to better understand as to which segments, distribution channels, price points, product differentiation, selling propositions and value vhain configuration will yield them the greatest competitive advantage.

The way value chain approach helps these organisations to assess competitive advantage includes the use of following steps of analysis.

(i) Internal cost analysis to determine the sources of profitability and the relative cost positions of internal value creating processes.

(ii) Internal differentiation analysis to understand the sources of diferentition with internal value creating process and

(iii) Vertical linkage analysis - to understand the relationships and associated costs among external suppliers and customers in order to maximise the value delivered to customers and to minimise the cost.

The value chain approach used for assessing competitive advantages in an integral part of the strategic planning process. Like strategic planning value chain analysis is a continuous process of gathering, evaluating and communicating information for business decision making.

COMPETETIVE ADVANTAGE AND CUSTOMER VALUE

In order to survive and prosper in an industry, firms must meet two criterial viz.,

- they must supply what customers want to buy
- they must survive competition.

A firm's overall competitive advantage derives from the difference between the value it offers to customers and its cost of creating the customer value.

Competitive advantage with regard to products and services takes two possible froms.

- An offering or differentiation advantage.If customers perceive a product or service as superior they become more willing to pay a premium price relative to the price they will have to pay for competing offerings.
- Relative low-cost advantage, under which customers gain when a company's total costs undercut those of its average competitor.

DIFFERNTIATION ADVANTAGE	LOW COST ADVANTAGE
- It occurs when customers perceive that a business unit's product offering (defined to include all attributes relevant to the buying decison) is of higher quality, involves less risks and/or outperforms competing product offerings.	A firm enjoys a relative cost advantage if its total costs are lower than the market average. This relative cost advantage enables a business to do one of the two things; price its product or services lower than its competitors in order to gain market share and still maintain current profitability; or match with the price of competing, products or services and increase its profitability.

- For example, differentiation may include a firm's ability to deliver goods and services in a timely manner, to produce better quality,to offer the customer a wider range of goods and services, and other factors that provide unique customer value.	- Many sources of cost advantage exist; access to low-cost raw materials; innovative process technology; low-cost access to distribution channels or customers;and superior operating management.
- Once a company has successfully differentiated its offering, management may exploit the advantage in one of two ways viz., either; increase price until it just offsets the improvement in customer benefits, thus maintaining current market share, or price below the "full premium" level in order to build market share.	- A company might also gain a relative cost advantage by exploiting economies of scale in some markets.

LIMITATIONS OF VALUE CHAIN ANALYSIS

(i) **Non - availability of data :** Internal data on cost revenues and assets used for value chain analtsis are derived from financial information of a single period.
For long term strategic decision making, changes in cost structures, market prices and capital investments etc. may not be readily available.

ii) **Identification of stages :** Identifying stages in an industry's value chain is limited by the ability to locate at least one firm that participates in a specific stages. Breaking a value stage into two or more stages when an outside firm does not complete in these is strictly judgement.

iii) **Ascertainment of cost, revenues and assets :** Finding the cost revenues and assets for each value chain activity poses gives rise to serious difficulties. There is no scientific approach and much depend trail and error and experimentation methods.

iv) **Identification of cost drive :** Isolating cost drivers for each value creating activity identifying value chain linkages across activities and computing supplier and customer profit margins present serious challenges.

v) **Resistance from employees :** Value chain analysis is not easily un
derstandable to all employees and hences may face resistance from employees as well as managers.

vi) **Science vs. Art :** Value chain analysis is not exact science. It is more "art" than preparting precise accounting reports. Certain judgement and factors of analysis are purely subjective and differ from person to person.

FRAMEWORK OF THE VALUE CHAIN ANALYSIS

Value chain is the linked set of value-creating activities all the way from basis raw material sources for component suppliers through to the ultimate end-use product or service delivered to the customer. Proter's described the value chain as the internal process or activities a company performs to design, produce, market, deliver and support its product.

He further stated that a firm's value chain and the way it performs individual activities are a reflection of its history, its strategy, its approach of implementing its strategy, and the underlying economics of the activities themselves. the business activities are classified into primary activites and support activities.

Primary activities are those activities which are involved in transforming the inputs in to outputs, delivery and after sales service to output. support activities are intended to support the primary activities like for example procurement, human resources management, etc.

Three useful strategic frameworks for value chain analysis are :

(i) Industry structures analysis

(ii) Core competencies and

(iii) Segmentation analysis.

Traditional Management Accounting Vs Value chain Analysis

Traditional Management Accounting	Value chain Analysis
- If focuses on internal information	- Focuses on extrnal information.
- Application of sigle cost driver at the overall firm level is taken.	- Application of multiple cost drivers ie structural and executional are taken for each value activity.
- It assume that cost reduction must be found in the value added process	- Exploits linkages throughout the value chain ie. within firm with suppliers and customers.
- Insights for strategic decisions somewhat limited in traditional management accounting.	- Identity cost driver at the individual activity level and develop cost / differentiation advantages either by controlling those drivers better than competitors by reconfiguring the value chain.

Structural cost drivers Vs Executional cost drivers

Structural cost drivers	Executional cost drivers
- Structural cost drivers consist of organisational factors that determine the economic structure driving the cost of a firm's products.	- Executional cost drivers capture a firm's operational decisions on how best to employ its resources to achieve its goals and objectives.

- These cost drivers reflect a firm's long-term decisions, which position the firm in its industry and market place. Structural cost drivers may change. - For example, large pharmaceutical companies enjoy economies of scale that lower their unit costs. - for expensive R & D	- These cost drivers are determined by management policy,style and culture. How well a firm executes its use of human and physical resources will determine its level of success or failure. - For example, worker empowerent and flattened organisation are helping many firms in theircontinuous improvement effort.

ISSUES IN VALUE ENGINEERING

1. Eliminaion of unnecessary functions from the production process:

- This involves a detailed review of the entire manufacturing process to see if there are any steps that add no value to the product, e.g.interim quality review before further processing and final quality check.
- By eliminating unnecessary or duplicate functions, the firm can reduce their associated direct or overhead costs from the total product cost.
- The possible reprecussions of eliminaion of any intermediate production should be carefully analysed. The engineering team must be careful to develop work around steps that eliminate the need for the original functions.

2. Elimination of unnecessary product qualities:

- The product quality should be studied with reference to the nature of its use longevity of product's useful life.
- If some unnecessary quality e.g. excessive degree of sturdiness in consumable item for opposed to a durable item can be eliminated, it should be done in order to save significant material and other product costs.

3. Design Minimisation :

- This involves the creation of a design that uses fewer parts or has fewer features.
- This approach is based on the assumption that a miimal design is easier to manufacture and assemble. Also, with fewer parts to purchase, less procurement overheads are associated with the product.
- However, sometimes it would be less expensive to settle for a few extra standard parts that are more easily and cheaply obtained, rather than customised pre-fabricated parts which complicate the assembly process.

4. Better Product Design to suit manufacturing process:

- This is also known as Design for Manufacture and Assembly (DFMA) and involves the creation of a product design that can be reated in only a specific manner.
- For example, a toner cartridge for a laser printer is designed so that it can be successfully inserted into the printer only when the sides of the cartridge are correct aligned with the printer opening; all other attempts to insert the cartridge will fail.
- When used for te assembly of an entire product, this approach ensures that a product its not incorrectly manufactured or assdembled, which would call for a costly disassembly or product recalls from customers who have reveived defective goods.

5. Substitution of Parts :

- This is also called as Component Parts Analysis. This approach encourages the search for less expensive components or materials that can replace more expensive parts currently used in a product design.
- Sunstitution of new parts is encourged since new mateirals are being developed every year.
- However, parts substitution must be accompanied by a review of related changes elsewhere in the design and the consequet impart on total costs.
- This also involves allied analysis on tracking the intentions of suppliers to continue production of parts in the future. If parts are not available, they must be eliminated from the product design.

6. Combination of steps :

- Sometimes, a careful review of all processes associated with a product reveals that some steps can be eliminated, other steps can be consolidated, or that several can be accomplished by one person, rather than having people in widely distinct parts of the production proccess perform them.
- This is also known as Process Centering.
- By combinning steps, transfer and queue time can be eliminated from the production process, which in turn reduces the chances of damage during transfers.

7. Search for better way of doing things :

- This seeks to answer a basic question - Is there a better way?
- It strikes at the core of the cost reduction issue. It is a more general attempt to start from scratch and build a new product or process that is not based in any way on pre-existing ideas.
- Improvements resulting from this technique tend to have the largest favourable impact on cost reductions, but can clso be the most difficult for the organisation to adopt, especially if it has used other designs or systems for production.

KAIZEN COSTING

It refers to the ongoing continuous improvement program, which focuses on the reduction of waste in the production process, thereby further lowering costs below the initial targets specified during the design phase.

It is a Japanese term for a number of cost reduction steps that can be used of new product design to the factory floor.

NEED FOR KAIZEN COSTING :

The initial Value Engineering review may not be complete and perfect in al cost aspects. There may be further chances of waste reduction cost and time reduction and product improvement. Such continuous cost reduction technique is called as Kaizen Costing.

The review of product costs under the target costing methodology is not reserved just for the period up to the completion of design work on a new product. On the contrary, there are always opportunities to control costs after the design phase is completed, though these opportunities are fewer than during the design phase.

KAIZEN COSTING PROCESS :

Activities is Kaizen Costing include elimination of waste in production, assembly and distribution processes, as well as the elimination of work steps in any of these areas. Thus Kaizen Costing is really designed to repeat many of the value engineering steps for as long as a product is produced, constantly refining the process and thereby stripping out extra costs at each stage.

SAVING FORM KAIZEN COSTING :

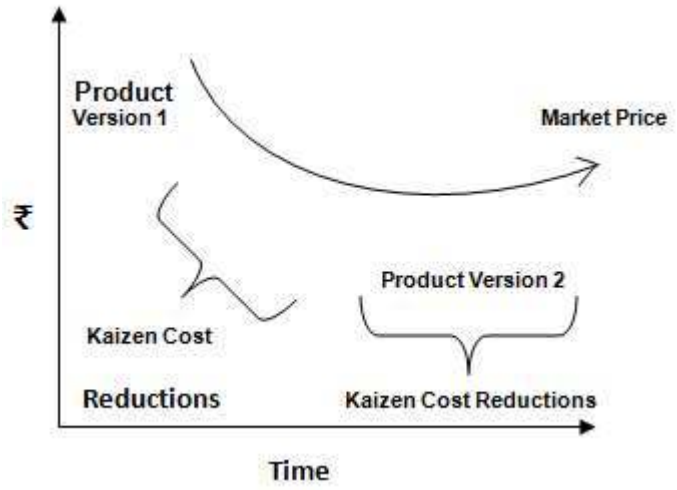
The cost reductions resulting from Kaizen costing are much smaller than those achieved with value englneering. But these are still signeficant since competitive pressures are likely to force down the price of a product over time, and any possible cost savings allow a company to still attain its targeted profit margins while continuing to reduce cost.

MULTIPLE VERSIONS OF PRODUCT - CONTINUOUS KAIZEN COSTING :

Multiple improved versions of products can be introduced to meet the challenge of gradually reducing costs and prices. The market price of products coninues to drop over time, which forces a company to use both target and Kaizen costing to reduce costs and retain its profit margin.

However, prices eventually drop to the point where margins are reduced, which forces the company to develop a new product with lower initial costs and for which kaizen costing can foreces its costs down through successive generations of products.

DIAGRAM



The exact timing of switching over in a new product is easy to determine well in advance since the return from Kaizen costing follow a trend line of gradually shrinking saving. Since prices also follow a predictable downward track, plotting these two trend lines into the future reveals when a new product version must be ready for production.

COSTING OF SERVICE SECTOR

It is a method ascertaining costs of providing or operating a service.

This method of costing is applied by those undertakings which provide services or intangible products rather than production of commodities.

The activities of service sector may be used for both:

(i) Provision of services to outside customers

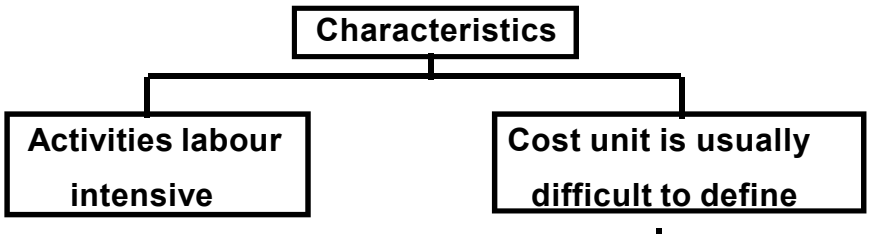
(ii) Provision of services internally (ie. captive consumption)

Operating costing systems is suitable for:

- Transport companies
- Hospitals
- Theatres
- School etc.

Cost Unit of service sector (May 2009)

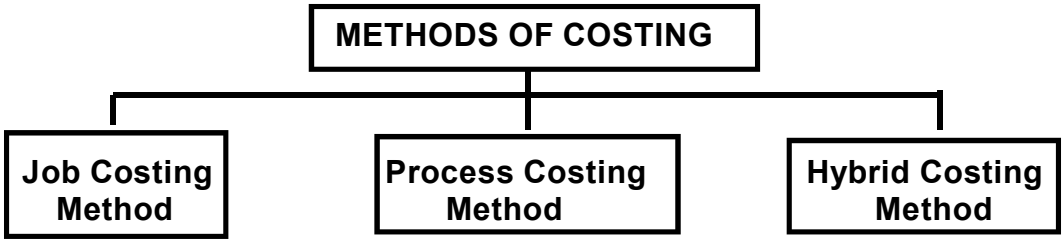
NATURED INDUSTRY	COST UNIT
To External customers	
Bus operator	Passenger Km
Goods Transport service	Tonne Km.
Hospital	Patient per day or Bed per day
Hotel	Room per day
Coaching classes	Number of students
Canteen	Per item
Cinema	Per ticket
Accounting firm	Charged out client hours
Internal Services	
Staff canteen	Meals provided / No. of staff
Computer department	Computer time provided to user department
Machine maintenance	maintenance hours provided to user department.



1. The activities of services sector are generally labour intensive. The labour cost constitutes significant portion of the total operating costs of a service sector entity.
2. The direct maerial cost is either small or non-existent.
3. The selection of cost unit for service sector is relatively difficult to ascertain as compared to the selection of cost unit for manufacturing sector.

Difference between Manufacturing Sector and Service Sector

Manufacturing Sector	Service Sector
• Operation refers to a stage in manufacturing activity where output is converted form one form into another. Cost of each operation is called operation cost.	• Operating cost refers to the total cost of providing a unitlity of service or intangible product.
• Output of each operation is tangible.	• There is no tgangible output. Only services are provided.
• In manufacturing, the cost of material may be of significant protion.	• In service sector, the cost of material is insignificant.
• Costs are classified into direct mateial, direct labour, direct expenses and production overheads.	•- Cost are classified into fixed or standing charges, variable or running charges and semivariable or maintenance charges.
• Operation costing system is suitable for manufacturing industries, such as: - Soap - Paint - Chemical	• Operating costing system is suitable for service industries, such as: - Transport companies - Hospitals - Theatres - School etc.



JOB COSTING METHOD	PROCESS COSTING METHOD	HYBRID COSTING METHOD
In this method, the cost of a particular service is obtained by assigning costs to a distinct identifiable service. This is used in services like Accounting Firms, Advertising campaigns,etc.	In this method, the cost of a service is obtained by assigning costs to a lot and then computing unit cost on an average basis e.g. Retail banking, Postal delivery, Credit card, etc.	This method combines elements of both Job. Costing and Process Costing methods.

RELEVANT COSTING

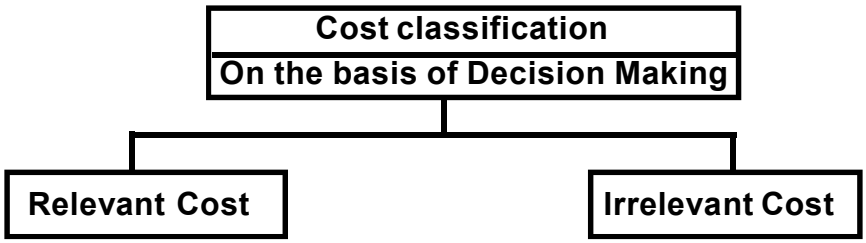
- Cost which is useful for the decison making purpose is called relevant cost.
- E.G. Opportunity cost, Differential cost, Incremental cost, Decermental cost, out of Pocket cost etc.
- Relevant Costs are those expected future costs that are essential but differ for alternation courses of action.
- Relevant Costs is a future cost that would arise as direct consequence of the decision under review.
- Historical or sunk costs are irrelevant as they do not play any role in the decision making process.
- Even among future costs those variable costs,which will not differ under various alternative are irrelevant.
- If, fixed expenses remains un-changed under different alternatives such expenses after irrelevant to the decision at hand.
- Book value of old equipment is irrelevant because it is a past cost. the dispocal value of equipment is relevant because it adds to the cash inflow arising from the decision. Cost of neq equipment is relevant because cash outflow arises by the decision to buy the new equipment.

SITUATION	RELEVANT COST
Material	
If already available in stock: a. regulary used material b. rarely used c. rarely used material having alternative use	 a. Current Replacement cost b. NRV c. Highest of opportunity loss shall be relevant
To be purhased	Purchase price
Labour	
If labour force already available: a. excessive labour force/spare time b. yielding contirbution in a different department	a. Nil b. Variable cost + opportunity cost of contribution foregone
Shortage of labour	Variable cost + oportunity cost of contribution foregone
Additional labours appointed	Out of pocket cost
Overheads	
Variable OH	VOH to be incurred
Fixed OH	Incremental cost
Depreciation	Fall in asset disposal value due to delay in disposal
Intra company Transfer price	Incremental cost + opportunity cost, if any.

FOLLOWING TOW CONTITION NEED TO BE SATISFIED FOR A COST TO BE CALLED A RELEVANT COST:

1. Occur in the Future - Every decision deals with selecting a course of action based on its expected future results.
2. Difference among the alternative courses of action - Costs and revenues that do not differ will not matter and will have no bearing on the decision being made.

COST CLASSIFICATION



	RELEVANT COST
COST	**EXPLANATION**
Marginal Cost	- Marginal Cost is the Total Variable Cost is Prime Cost + Variable Overheads. - It is assumed that Variable Cost varies directly with production, whereas Fixed Cost remains the same irrespective of volume of production. - Marginal Cost is a relevant cost of decision makeing as this will be incurred in futured or additional units of production.
Differential Cost	- It is the change in costs due to change in the level of activity / method of production. - When the change results in increase in cost, it is calledIncremental Cost. - However, if costs are reduced due to decrease of output,the difference is called Decremental Costs. - Differential Costs include certain Fixed Costs, which vary for different alternatives. - It refers to the value of sacrifice made or benefit of opportunity foregone by selecting one particular alternative in preference to other alternatives. - for example, a firm operates at full capacity. If a new order is to be undertaken, contribution foregone on the existing sales constitutes Opportunity Cost. - Oportunity Cost is a relevant cost where alternatives are available. - However, Oportunity Cost does not find any place in formal accounts and is computed only for comparison purposes.

Discretionary Costs	- These are "escapable" or "avoidable" costs. - These costs may have to be incurred for choosing a certain option, but can be avoided if that option is not choses.
Replacement Cost	- It is the cost at which there could be purchase of an asset or material,which is identical to that which is being replaced or revalued. - It is the cost of replacement of current market price and is relevant for decision making.
Imputed Costs	- These are notional costs appearing in the cost accounts only. - e.g. notional rent charges, interest on capital for which no interest has actually been paid. - These are relevant costs for decision making - Where alternative capital investment projects are being evaluated, it is necessary to consider the imputed interest on capital before a decision is arrived at, as to which is the most profitable project.
Out of Pocket	- These are costs that ential current or near future cash outlays for the decision at hand.Such costs are relevant of decision making as these will occur in near future.

	IRRELEVANT COST
COST	**EXPLANATION**
Historical Cost or Sunk Cost	- It is a cost which has already been incurred or sunk in the past. - It is not relevat for decision making and is caused by complete abandonment as against temporary shutdown. - Thus, if a firm has obsolete stock of material amounting to `10,000 which can be sold as scrap of `2,000 or can be utilised in a special job, the value of opening stock of `10,000 is a sunk cost and is not relevant for decision making.
Committed Cost	- A cost which has been committed by the Management is not relevant of decision making. - Committed Cost represent expenditure in respect of which the decision to incur has already been taken, though the acatualy payment of expenditure may not have made. - This should be contrasted with Discretionary Costs, which are avoidable costs.
Absorbed Fixed Cost	- Fixed Costs which do not change due to increase or decrease in activity is irrelevant for decision making. - Although Fixed Costs are absorbed in cost of production at a normal rate, but they are irrelevant for managerial decision making. - However, if Fixed Costs are specific, they become,relevant for decision making.

ALL SUNK COSTS ARE IRRELIVANT COSTS BUT ALL IRRELEVANT COSTS ARE NOT SUNK COST

SUNK COSTS	IRRELEVANT COSTS
Sink Cost is a historical cost incurred in the past ie it is the cost of a resource already acquired. Future decisions in respect of such resources will not be affected by it e.g. book value of machinery. Therefore, sunk costs are irrelevant in decision making. under both the production methods.	Irrelevant Costs are not necessarily Sunk costs e.g., when a comparison of two alternative production methods using the same material quantity is made, then direct material cost is not affected by the decision, but the material cost is not a sunk cost, since it will be incurred for production,

COMMON PITFALLS IN RELEVANT COST ANALYSIS

1. ALL VARIABLE COSTS ARE RELEVANT :

Variable Costs already incurred in the past are historical irrelevant costs. Even among future variable costs, those which will not differ under different alternatives are irrelevant, For example, a Company wishes to replace its manual operations with mechnisation. If the same material is used, the material cost, even if variable, will be irrelevant.

2. ALL FIXED COSTS ARE IRRELEVANT :

Fixed Costs are irrelevant when they are general in nature and do not differ by reference to the alternatives under evaluation.

ACTIVITY BASED COSTING

MEANING

- Activity Based Costing is an accounting methodology that assigns costs to activities rather than products or services.
- Activity Based Costing is an accounting methodology that assigns costs to activities rather than products or services.
- This enables resources and overhead costs to be more accurately assigned to products and services that consume them.
- ABC assigns cost to activities based on their use of resources and then assign cost to the cost objects.
- It can track the flow of acativities in organisation by creating a link between the activity and the cost object.
- According to CIMA, it is defined as "Cost attrabution to cost units on the basis of benefits received from indirect activities ie ordering, setting-up, assuring quality etc."

DEFINITION

<table>
<tr><th>ITEM</th><th>MEANING</th></tr>
<tr><td>Cost Object</td><td>- An item for which cost measurement is required is called cost object.
- e.g. Product, Customer, Job Assignment, etc.</td></tr>
<tr><td>Cost Driver</td><td>- A factor that causes a change in the cost of an activity of an activity is called cost driver.
- It can be classified into two types;
1. Resource Cost Driver
2. Activity Cost Driver
e.g.
<table>
<tr><th>Business Function</th><th>Cost Driver</th></tr>
<tr><td>Research and Development</td><td>(i) Number of research products or
(ii) personnel hours on a project or
(iii) Technical complexities of projects.</td></tr>
<tr><td>Customer Service</td><td>(i) Number of service call or
(ii) Number of products serviced or
(iii) Hours spent on servicing products</td></tr>
<tr><td>Designing</td><td>(i) Number of product designed
(iii) Number of enginnering hours</td></tr>
<tr><td>Distribution</td><td>(i) Number of items distributed
(ii) Number of customers
(iii) Weight of items distributed</td></tr>
<tr><td>Marketing</td><td>(i) Number of advertisement run
(ii) Number of sales personnel
(iii) Sales revenue
(iv) Number of products and volume of sales (in quantitative terms)</td></tr>
</table></td></tr>
</table>

Resources	- It is a measure of the quantity of resources an activity.
Cost Driver	- It is used to assign the cost of a resource to an activity orcost pool.
Activity	- It is a measure of the frequency and intensity of demand, placed on activities b y cost objects.
Cost Driver	- It is used to assign activity costs to cost objects.

FACTORS PROMPING THE DEVELOPMENT OF ABC SYSTEM

1. Growing overhead costs because of increasingly utomated production
2. Increasing market competition which necessitated more accurate products costs.
3. Increasing product deversity to secure economies of scope and increased market share.
4. Decreasing costs of information processing becaue of contunual improvements and increasing applicaition of information technology.

NEED FOR ABC (Nov.2005)

- Production Overheads are high in relation to direct costs.
- There is a great diversity in the product range.
- Products use different amount of overhead resources.
- Consumption of overhead resources is not primarily driven by volume or hours.

STEPS INVOLVED IN ACTIVITY BASED COSTING

1. Identification of various activities in the organisation
   - E.g. purchasing, Produntion process set up, Material Handling, Quality control, Maintenance etc.
2. Classification of activities into Primary activities and Supporting activities
3. Compute Cost Pool of each activity (cost pool = Total cost)
4. Transfer the supporting activities cost to Primary activities on suitable basis
5. Determine Activity Cost Driver for each activity.
6. Compute Activity Cost Driver Rate
   - Activity Cost Drivffder Rate = $\frac{\text{Cost Pool}}{\text{Cost Driver}}$
7. Assign costs to the cost object based on the cost driver rate (i.e. Resources consumed x Activity Cost Driver Rate)

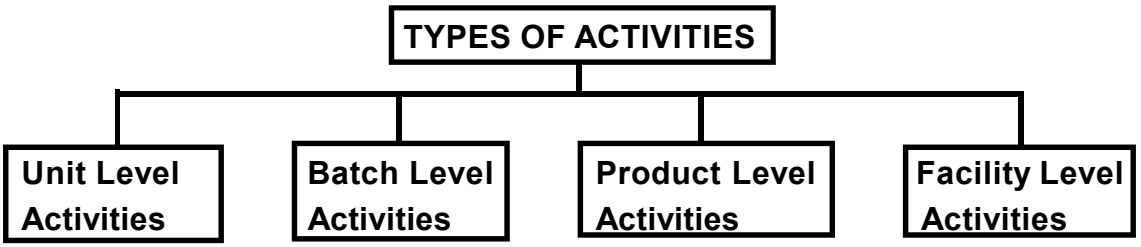
DISTINGUISH BETWEEN TRADITIONAL ABSORPTION COSTING & ABC

Traditional absorption costing	Activity Based Costing
In this system, overheads are related to cost center	In this asystem, overheads are related to activities
Costs are assigned to Cost Units,ie to products, or jobs.	Costs are assigned to Cost Objects, ie customer, services,products etc
Only two levels of activities are identified in this system: (a) Unit Level Activities (Variable) and (b) Facility Level Activities (Fixed)	All four levels of activities are identified, viz . (a) Unit Level Activities (b) Batch Level Activities (c) Product Level Activities and (d) Facility Level Activities.
Time is assumed as the only factor governing cost in all cost centres.	Activity wise Cost Drivers are identified Time is one of Cost Driver.
Usage of Recovery rate may be either 1. Multiple rates (for each department) or 2. Single rate (for the entire factory)	Specific activity wise recovery rates are used. There is no "single" ir "overall" ABC Rate.
Cost Centres cannot be eliminated and hence, not suitable for cost control.	Essential activities can be simplified and unnecessary activities can be eliminated. Hence ABC aids cost control.
Cost of Products is calculated as = Hours x OH Recovery Rate	Resources consumed x Activity Cost Driver Rate.

TYPES OF ACTIVITIES OR HIERARCHY IN ABC

ACTIVITIES:

Activities comprise of units of work or tasks, e.g. purchase of materials activity consisting a series of tasks like quotations, identification of suppliers, placement of purchase order, etc.



1. **UNIT LEVEL ACTIVITIES** : These are activities for which the consumption of resources can be identified with the number of units producted. The costs of some activities are strongly correlated to the unmber of units producted. If the cost are incurred depending upon the number of units produced, then that cost will come under this activity. E.g., Inspection or testing of every iem produced.

2. **BATCH LEVEL ACTIVITIES :**The costs of some activities are driven by the number of batches of units producted. These activities are related to selling up of a batch or a production run. The cost of such activities vary with the number of batches made, but is fixed for all units in that particular batch. E.g., Material ordering, machine set up costs.
3. **PRODUCT LEVEL ACTIVITIES:** The costs of some activities are driven by the creation of a new product line and its maintenance. These are activities performed to support different products in the product line. E.g., Product designing, advertising.
4. **FACILITY LEVEL ACTIVITIES:** Some costs cannot be related to a particular product line, instead they are related to maintaining the buildings and facilities. These are activities necessary for sustaining the manufacturing process and cannot be directly attributed to individual products. E.g. Maintenance of buildings, plant security.

AREAS WHERE ABC CAN BE USED AS A DECISION MAKING TOOL

1. **TQM:** ABC is a complement to TQM and it provided quantitative data that can track the financial impact of improvements implemented as part of the TQM initiative.
2. **PRODUCT PROFIT ABILITY DECISIONS** : Using traditional absorption system, Overheads may get distributed equally across all product lines. ABC traces the costs back to the activity and the consumption of resources by each product. This helps in analysing the costs and profits of existing and new products in a more realistic manner.
3. **FACILITY AND RESOURCE EXPANSION:** For decisions like relocation or opening of a new distribution center, reducion in freight of other logistics costs can offset the expense of the new facility, staff or equipment. ABC system can identify the specific cost elements being targeted, providing a much clearer picture according to which management can decide and act.
4. **HR DECISION:** ABC can augment decision support for human resources. Where activity and therefore cost, can be associated to an individual, new levels of financial performance can be determined. Adding or deleting resources slots can be determined based on costs of activities as well. The added provided through ABC can present a number of options, including outsourcing, productivity improvements through automation and determination of employee/revenue rations.

AREAS IN WHICH ACTIVITY BASED INFORMATION IS USED FOR DECISION MAKING

1. Pricing
2. Market Segmentation and Distribution Channels
3. Make-or-Buy decisions and outsourcing
4. Transfer Pricing
5. Plant close down decisions
6. Evaluation of offshore production
7. Capital Investment decisions
8. Product line profitability,etc.

ACTIVITY BASED BUDGETING (ABB)

ABB is a process of planning and controlling the expected activities for the organisation to derive a cost effective budget that meets forecast workload and agreed strategic goals. An ABB is a quantitative expression of the expected activities of the firm, reflecting to meet agreed strategic goals and planned changes to improve performance.

Thus, the key elements of ABB are:

- Type of work / activity to be performed;
- Quantity of work / activity to be performed; and
- Cost of work / activity to be performed.

ABB focuses on the activity / business processes. Resources required are determined based on the expected activities and workload. The objective is to bring in efficiency into the system. So, in the process of preparation, many key questions need to be addressed and not properly answered.

ABB is a technique for enhancing the accuracy of financial forecasts and increasing management understanding. When automated, ABB can rapidly and accurately produce financial plans and mdels, based on varying levels of volume assumptions. Also, ABB eliminates much of the needless rework created by traditional budgeting techniques. ABB analyses the products or services to be produced, what activities are required to produce those products and services, and finally what resources need to be budgeted to perform those activities.

ACTIVITY BASED MANAGEMENT

The term Activity based management (ABM) is used to describe the cost management applicaiton of ABC. The use of ABC as a costing tool to manage cost at activity level is known as Activity Based Cost Management (ABM).

ABM is a discipline that focuses on the efficient and effective management of activities as the route to continuously improving the value received by customers. ABM utilises cost imformation gathered through ABC.

ABM classifies each activity within a process as value-added or non-value added activity. Consortium for advance Management International (CAM) defines ABM as :adds a dynamic, continuous improvement dimension to the more static ABC model."

Stages in ABM:

-----Same as 'steps involved in ABC' listed above----

Benefits of ABM:

- Provision of excellent basis and focus for cost reduction
- Aids implementation of Activity Based budget.
- Helps to understand the underlying causes of business processing cost.
- Provision of excellent basis for effectiveness of management decision making.
- Identificaion of key process waste elements permit management prioritisation and leverage of key resources.

DISTINGUISH BETWEEN ABC AND ABM

Activity Based Costing	Activity Based Management
ABC refers to the technique of determining the cost of activities and the cost of output producted by those activities	It refers to the management philosophy that focuses on the planning, execution and measurement of activities as the key to competitive advantage.
The aim of ABC it to generate improved cost date for use in managing ac company's activities.	ABM is a much broader concept and aims to use information given by ABC,for effective business process and profitability.
ABC is the operational segment of ABM.	It is a conceptual aspect ie management attitude.

DISTINGUISH BETWEEN VALUE ADDED AND NON VALUE ADDED ACTIVITIES

Value added Activities (VA) These are activities necessary for the performance of the process.	Non Value Added Activities(NAV) These are additional and extraneous activities, not fully necessary for the performance of the process.
These represent work that is valued by the external or internal customer.	These represent work that is not valued by the external or internal customer.
They improve the quality or function of a product. Hence, the customers usually willing to pay for the service.	NVA activities do not inprove the quality are or function of a product or service, but they can adversely affect cost and prices.
VA activities result in "costs reduction" and not in losses.	NAV activities create waste, result in delay of some sort, add cost to the products or services for which the customer is not willing to pay.
E.g. Making product more versatile for certain other uses of defectives, etc	E.g. Expediting due to work delay, cost of re-work hours.

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STATE WHETHER EACH OF THE FOLLOWING INDEPENDENT ACTIVITIES IS VALUE ADDED OR NON-VALUE ADDED

S. No.	Item	Nature of Activities
1	Polishing furniture used by a Systems Engineer in a software firm	Non-value added
2.	Maintenance by a software company of receivables management software for a banking company	Value-added
3	Painting of pencils manufactured by a computer repair centre	Value-added
4	Customer's computer key board cleaning by a computer repair centre	Value-added
5	Providing brake adjustments in cars for repairs by a care service station.	Value-added

PRICING DECISIONS

THEORY OF PRICE

The basic approach in micro-economic theory (theory of the individual firm and its relation other firms) defines the term optimum price as that price which yields the maximum profits (excess of total revenues over total costs)

Assumptions of the pricing theory:

1. The firm's main objective is to maximise its profits;
2. The firm takes into consideration the position of demand and cost functions and
3. The firm produces only one product.

If a firm sells unlimited number of units, the total revenue line will be a straigh line arrived at by

TR = mx

TR = Total of units sold

m = Quantity of units sold

x = Price per unit.

However, additional units can be sold by reducing the price. this means that although the total sales revenue will increase as more and more units are sold, the increase in total revenue will decline gradually as the sales increase.

PRICING UNDER DIFFERENT MARKET STRUCTURES

Market Structures

Pure competition	Monopoly
a. Under pure competition, a firm has no pricing policy of its own. b. It has to accept the prevalent market price. c. there is no control over market price which will equate the quantities available with the quantities which the buyers are willing to buy. d. The firm can continue to produce so long as its marginal cost is less than or equal to its selling price.	It is a business situation which is characterise by- a. Only one seller of a particular product b. Nil competition c. Power to influence Price.

PRICING POLICY

Survival of a business depends upon the firm's ability to increase its sales and device the maximum profit the existing and new capital investment. Price decision depends upon.

a. Cost of production

b. Demand

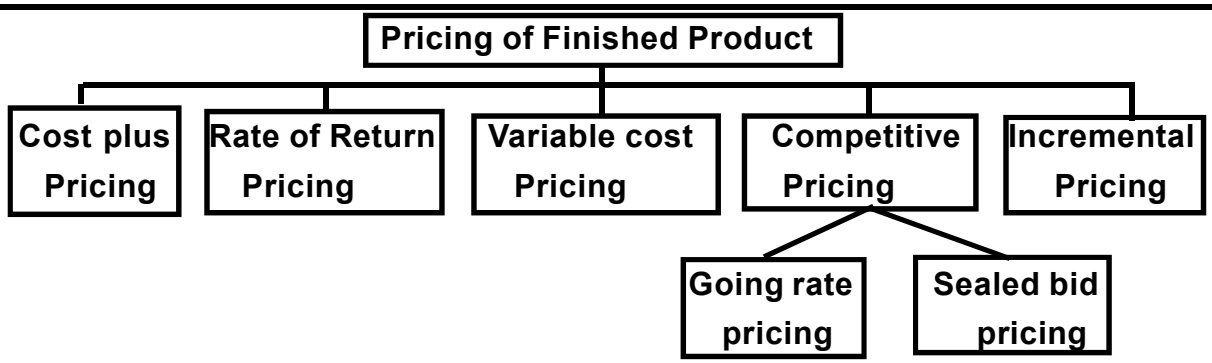
c. Competition

The pricing policy and the relative price structure should:

- Provide an incentive to producer for adopting improved technology and maximising production;
- Encourage optimum utilisation of resources;
- Work towards better balance between demand and supply;
- Promote exports; and
- Avoid adverse effects on the rest of the economy.

MONOPOLISTIC COMPITITION VS OLIGOPOLY

MONOPOLISTIC COMPITITION	OLIGOPOLY
Features: a. Product differentiation b. Existence of many seller and buyers c. Availability of close substitutes	If in a market there are a few large seller occupying a major share of the market, the situation is called oligopoly.
- Substitute firms who sell similar products enter the market, and because of differentiation of products by sellers monopolistic competition arises.	- If the oligopolistic seller finds that his competitors change their price with his decision to increase or decrease their price, his revenue curve will have the same shape as that of the market as a whole.
- Since there is a limit to the growth of competitors the excess profits earned by monopolistic situation attracts new competition.	- If one seller increases his price while the others do not, the consumers will start buying from the competitors, and the sales of the seller who increased his price will start falling off. Thus, each firm will study the potential reaction reaction before increasing or decreasing the selling price.



<table>
<tr><th></th><th>Pricing</th><th>Explanation</th></tr>
<tr><td>1.</td><td>Cost plus pricing</td><td>Selling prices of product are determined based on its estimated cost Plus a fixed profit margin.
i.e., Selling price = Cost + Fixed Profit Margin
Cost = Full Cost at current output and wages levels, since these are regarded as most relevant in price determination.

<table><tr><th>Advantages</th><th>Disadvantages</th></tr><tr><td>a. Fair method
b. Full recovery of all costs
c. Assured Profit
d. Easy to operate
e. Reduced risk and uncertainties
f. Considers market factors
g. Suitable in long run</td><td>a. It ignores demand
b. Fails to reflect competition adequately.
c. Ignores opportunity cost
d. Common costs are allocated arbitrarily</td></tr></table></td></tr>
<tr><td>2.</td><td>Rate of Return Pricing</td><td>In Rate of return pricing, instead of arbitrarily adding a percentage on cost for profit, the firm determines an average make up on cost necessary to produce a desired rate of return on its investment.
The issues to be considered in this method are:
(a) basis on which the Capital Employed is computed.
(b) Components to be covered in the return on Capital
(c) Earness of the rate of return
The rate of return to be earned by the industry must depend of the risk involved.</td></tr>
</table>

3. Variable cost Pricing	Pricing based on total costs in subject to two Limitations: 1. Allocation of inter departmental overheads is based on an arbitrary basis; and 2. Allocation overheads will require estimation of normal output which often cannot be done precisely. In order to avoid these complications, variable costs whcih are condidered as relevant costs are used for pricing, by adding a mark up to include fixed costs allocation also.
4. Competitive pricing	• When a company sets its price mainly on the consideration of what it competitiors are charging its pricing policy under such a situation is called competitive pricing. • It is also called competition oriented pricing. • In this system of pricing, the concern may keep its prices lower or higher than its competitors by a certain percentage. • Depending upon the competitor's price, concern may maintain its price irrespective of changesin its cost or changes in demand. • Concern will change its price when its competitors change their price, even if tis own costs or demand havde not altered.

Type of Competitive pricing

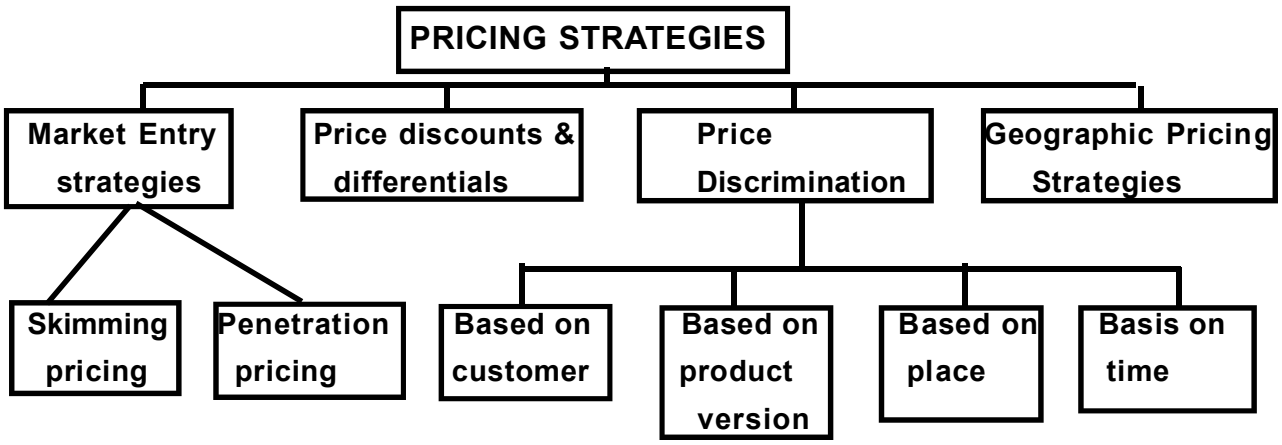
Going rate pricing | **Sealed bid pricing**

Going rate pricing	Sealed bid pricing
• It is a competitive pricing method under which a firm tries to keep its price at the average level charged by the industry	• The Bid constitutes the Firm's offer Price • Competitive. Pricing is prevalent when firms compete for jobs on the basis of bids, while quoting
• It is useful where it is difficult to measure costs	for specificassignments or job e.g. government Contracts,Specialised Wofk Contracts etc.
• It helps to yield fair return and least disruptive for industry's harmony.	• The quotation generally based on the Incremental Costs plus reasonable Make Up.

	• Pricing is based on expectations of how competitors will price rather than on rigid relation, based on the concer's own costs or demand. • If a low price is quoted in order to win the contrct, the firm may lose its profits and worsen its situation. On the other hand, if it raised its prices, chances of gaining the contract may be reduced. • Probability Abalysis may be used to analyse the impact of various bid prices. • The firm's objective in bidding is to get the contracat. This may mean that it hopes to fix its price lower than that of the other bidding Firms.
5. Incremental pricing	• This pricing is used because it involves comparison of the impact of decisions of revenue and cost. • If a pricing decision results in a greater increase in revenue than in costs, it is favourable. • This pricing technique gives consideration to:- - Relevant cost analysis. - Opprotunity cost analysis - Product-Line ralationship analysis - Time factor analysis - CVP analysis - Risk analysis

PRICING STRATEGIES

It is defined as a broad plan of action by which an orgaisation intends ot reach its goal. E.g. Offering quantity discounts.



<table>
<tr><th>Pricing Strategies</th><th>Explanation</th></tr>
<tr><td>Market Entry strategies</td><td>While preparing to enter the market with a new product, management must decide whether to adopt a skimming or penetration pricing strategy.
<table>
<tr><th>SKIMMING PRICING STRATIGY</th><th>PENENTRATION PRICING SERATEGY</th></tr>
<tr><td>• It is a policy of charging high prices during the early period of a product's existence and in the later years the prices are gradually reduced.</td><td>• Penetration Pricing is a policy of using a low price as the Principal instrument for penetrating mass markets early.
• This method is used for pricing a new product and to popularise it initially.
• Profit may not be earned in the initial stages. However, prices may be increased as and when the product is established and its demand picks up.
• this pricing policy is also known as "Stay -Out-Pricing".</td></tr>
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<tr><td></td><td>
<table>
<tr><th colspan="2">REASONS FOR FOLLOWING SUCH POLICY</th></tr>
<tr><td>• Inelastic demand
• Gradual reduction in price in the later year will tend to increase the sales.
• Assured profit, because in the initial periods when the demand for the product is not known the price coversthe initial cost of production.
• Cost revenue matching.</td><td>• Elastic demand.
• lower prices mean large volumes and so more profits.
• Mass Production.
• The prices fixed at a low-level act as an entry barrier to the prospective competitors.</td></tr>
</table>
</td></tr>
<tr><td>Price discounts and dirrerentials.</td><td>• It means price deductions that systermatically make the net price vary according to buyer's position in the chain of distribution.
• These discounts are given to various distributors in the trade channel e.g., wholesalers, dealers and ratailers.
• As these discounts create differentail prices for different customers on the basis of marketing functions performed by them, so they are also called as funtional distounts
• Three calegories of distributor discounts are:
- Different net prices for different distributor levels
- A uniform list price modified by a structure of discount, each rate so determined is applied to a different level of distributor.
- A single discount combined with differential supplementary discount to different levels of distributors.</td></tr>
<tr><td>Price Discrimination</td><td>Price discrimination means charging different prices and it takes various forms, on the basis of customer, product, place ot time.
Conditions to be satisfied for price discrimination:
(a) The maker must be capable of being segmented for price discrimination;
(b) The customers should not be able to resell the product of the segment paying higher price; and
(c) The change of competitors underselling in the segment of higher prices should not be possible.</td></tr>
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<table>
<tr><td></td><td>
<table>
<tr><th>Price discrimination based on</th><th>Explanation</th></tr>
<tr><td>Customer</td><td>In this case, the same product is charged at different prices to different customers. It is however, potentially disruptive to customer relations.</td></tr>
<tr><td>Product</td><td>In this case, a slightly different product is charged at version a different price regardless of its cost price relationship.</td></tr>
<tr><td>Place</td><td>An example of this method is th seats in cinema theatre where the front seats are charged at lower rates than the back seats.</td></tr>
<tr><td>Time</td><td>An example of this method is the practice of giving off-season concession in sale of fans or refrigerators just after the summer season.</td></tr>
</table>
</td></tr>
<tr><td>Geographic Pricing Strategies</td><td>
• In this pricing a seller must consider the costs of shipping goods to the buyer.
• These costs grow in importance as freight becomes a larger part of total variable costs.
• Pricing policies may be established whereby the buyer pays all the freight expenses, the seller bears the entire cost or the seller and buyer share this expenses.
• The strategy chosen can influence the geographic limits of a firm's market, location of production facilities, sources of its raw materials and its competitive strength in various geographic markets.
</td></tr>
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1. PRICE DISCRIMINATION : In this practice, some customers are charged at a higher price, than other customers e.g. in the case of Airline tickets, for Business Class and Economy Class.

2. PEAK LOAD PRICING : This pricing system is based on capacity constraints, where a higher price for the same service or product is demanded which it approaches physical capacity limits e.g. Telephones, Telecommunications, Hotel or Car Rental etc.

GENERAL GUIDELINES TO BE USED IN ADOPTING A PRICING POLICY IN A MANUFACTURING ORGANISATION

(i) The pricing policy should encourage optimum utilisation of resources.

(ii) The pricing policy should work towards a better balance between demand and supply.

(iii) The pricing policy should promote exports.

(iv) The pricing policy should serve as an incentive to the manufacturers to maximise Production by adopting improved technology.

(v) The pricing policy should avoid adverse effects on the rest of the economy.

PREDATORY PRICING VS SHADOW PRICE

PREDATORY PRICING	SHADOW PRICE
• Predatory Pricing occurs when a firm with significant market power sets prices at a sufficiently low level witha purpose of demaging or forcing a competitor to withdraw from the market.	• Increased in value, which would be created by having available one additional unit of limiting resources at its original cost.
• It may involve dumpting i.e. selling a product in a foreign market below cost, or below domestic market price (Subject to, for example, adjustments for taxation differences, transportation costs, specification differences)	• This represents the opportunity cost of not having the use of the one extra unit.

PARETO ANALYSIS

DEFINITIONS

- It is a rule that recommends focus on the most important aspects of decision making, in order to simplify the process of decision making.
- It is based on the 80:20 phenomenon, first observed by Vilfredo Pareto, an Italian economist.
- He notied that 80% of the wealth of Milan was owned by 20% of its citizens. This pattern of 80:20 or approximations like 70:30 can be observed in many different business situations.
- Management can use this 80:20 relationship in a number of business situations to direct it attention to key control mechanism or planning aspects.
- It helps to clearly establish top priorities and to identify both profitable and unprofitable targets.

USEFUL PARETO ANALYSIS

- Prioritise problems, goals and objectives.
- Identify root causes of the problem.
- Select and define key quality improvement programs.
- Select key customer relations programs.
- Select key employee relations improvemnt programs
- Select and define key performance improvement programs
- Maximise research and product development time.
- Verify operating, financial and human resources.

APPLICATION OF PARETO ANALYSIS

Application	Explanation
1. product Pricing	• In the case of a firm dealing with multi products, it may not be possible to analyse CVP relationships for all products. Pareto Analysis might indicate that approximately 80% of the Total Sales Revenue is earned from about 20% of the Firm's products. • This helps top management to delegate the pricing decision for approximately 80% of its products to managerial levels and concentrate on pricing decisions for the important 20% products.
2. Customer Profitability Analysis	• Instead of analysing products, customers can be analysed for their relative profitability to the organistion. • Using pareto analysis, it is often found that approximately 20% of customers generate 80% of the profit. • Such analysis is useful for evaluation of the portfolio of customer profile, and decision making such as whether to continue serving a customer group, what is the extent of promotion expenses to be incurred etc.

3. ABC Analysis - Stock Control	• In Raw Material stock control, about 80% of the materials value,is due to high priced materials, which constitute only 20% of the quantity. • Hence, these materials are classified into A,B and C categories based on their importance. • Control is directed primarily over 'A' category items by setting EOQ, stock Levels, Surprise Stock Verification procedures etc. • The outcome of such analysis is that by concentrating on small proportion of stock items that jointly accounts for 80% of the total value, a firm will be able to control most of the monetary investment in stocks.
4. Activity Based Costing	• Activity Based Costing involves the indentification of cost drivers for various items of Overhead expenses. • Generally, 20% of the Firm's cost drivers are responsible for 80% of the total cost. • By analysing, monitoring and controlling those cost drivers that attribute to high costs, a better control and understanding of overheads will be obtained.
5. Quality Control	• Pareto analysis can be extended to discover the "vital few" causes responsible for most of the reported problems, this can be done from an analysis of defect report or customer complaints. • Generally, 80% of reported quality problems are traceable to 20% of the underlying causes. • By concentrating one's efforts on rectifying the vital 20%,one can have the greatest immediate impact on product quality. • Pareto Analysis indicates how frequently each type of failure occurs. • The purpose of the analysis is to direct management attention to the area where the best returns can be achieved by solving most of quality problems, perhaps just with a single action.

PARETO ANALYSIS IS HELPFUL IN PRICING PRODUCTS IN CASE OF FIRM DEALING WITH MULTI PRODUCTS

In case of the firm dealing with multi products, it would not be possible for it to analyse price volume relationship for all of them. Pareto Analysis is used for analysing the firm's estimated sales revenue from various products and it might indicate that approximately 80% of its total sales revenue is earned from about 20% of its products.

Such analysis helps the top management to delegate the pricing decision for approximately 80% of its product to the lower of management, thus freeing them to concentrate on the pricing decisions for products approximately 20% of which is essential for the company's survival. thus, a firm can adopt more sophisticated pricing methods for small proportion of products that jointly account for 80% of total sales revenue.For the remaining 80% products, which account for 20% of the total sales value the firm may use cost based pricing method.

TOTAL QUALITY MANAGEMENT (TQM)

DEFINITIONS

TQM : It is often viewed as a technique, the usefulness of which is confined to manufacturing processes.TQM also assumes potentially greater importance as a tool for improved efficiency in service areas.

By focusing on the management accounting function, we will devise a process through which quality improvement methods might to be used ti highlight problem areas and facilitate their solution.

It seeks to increase customer satisfaction by finding the factors that limit current performance.
The emphasis of TQM is to be design and build quality in the product, rather than allow defectives and then inspect and rectify them.

The three core concepts of TQM are :

- Quality Control
- Quality Assurance and
- Quality Management

Quality : It is a measure of goodness to understand how a product nmeets it specifications. It has nine important dementions:

- Performance
- Features
- Conformance
- Reliability
- Service
- Responses
- Aesthetics
- Reputation

Quality Cost : It is cost of performing the activities to check failure in meeting the quality specification.These activities are of four types :

Types of Quality Cost		Examples
(i)	Prevention Costs	Quality Engineering, Quality training, Quality audit,Quality Circles, Design Review etc.
(ii)	Appraisal Costs	Inspection, packaging, inspection, Continuing supplier verification, Field testing, Product acceptance etc.
(iii)	Internal failure costs	Re-inspection, Re-testing, Repair, Scrap, rework etc.
(iv)	External failure costs	Warranties, Discount due to defects, product liability, Revenue loss etc.

Quality Control (QC): It is concerned with the past and deals with data obtained from previous production which allows action to be taken to stop the production of defective units.

Quality Assurance (QA): It deals with the present, and concerns with putting in place the systems to prevent defects from occurring.

Quality Management (QM): It is concerned with the future, and manage people in a aprocess of continuous improvement to the products and services offered by the organisation.

BENEFITS ACCRUING FROM THE IMPLEMENTATION OF A TQM

(i) There will be increased awareness of quality culture in the organisation
(ii) It will lead to commitment towards continuous improvement .
(iii) It wil focus on customer satisfaction
(iv) A greater emphasis on team work will be achieved.

LIST A FEW PRINCIPLES OF TQM

- Clear exposition of the benefits of a project.
- Total Employed involvement (TEI)
- Process measurement
- Investment of all customers and contributors
- Eliminationof irrelevant data
- Understanding the needs of the whole proccess
- Use of graphical and pictorial techniques to achieve understanding
- Estabilishment of performance specifications and targets
- Use of errors to prompt continuous improvement.
- Use of statistic to tell people how well they are doing.

STAGES IN THE IMPLEMENTATION OF TQM

1. Indentification of customer
2. Identification of expectation of customer
3. Identification of customer's decision making requirements
4. Identification of perceived problems in decision making
5. Comparison with other organisations and Benchmarking
6. Customer Feedback
7. Identification of improvement opportunities
8. Quality improvement process.

	ACTIVITY	ELEMENTS	DIFFICULTIES	REMEDIES
1.	Problem identification	Areas of customer dissatisfaction	Effects of a problem are apparent but difficult to identify the same.	Participative approaches like brainstorming, multivoting, panel discussion etc.,
2.	Ranking	Priority problems by importance	Difference in perception of individuals in ranking	Introduce Participative approach.
3.	Analysis	Identification of possible causes	Adoption of adhoc approaches & quick fix solution	Lateral thinking & brainstorming.
4.	Innovation	Use creative thinking to generate potential solutions	Lack of creativity expertise	Systematic evaluation of all aspects of strategy
5.	Solution	Implementation of preferred solution & take appropriate action	Resistance from middle managers	Training of personnel & managers
6.	Evaluation	Monitor the effectiveness of actions	Lack of measurable data for comparison of expectations with actual	Effective control system to track actual feedback system.

DEMING 14 POINTS :

W.Edwards Deming is often referred to as the “father of quality control” . He has pointed out that only of quality problems are actually due to worker error, error, remaining 85% are caused by processes and systems, including poor management.

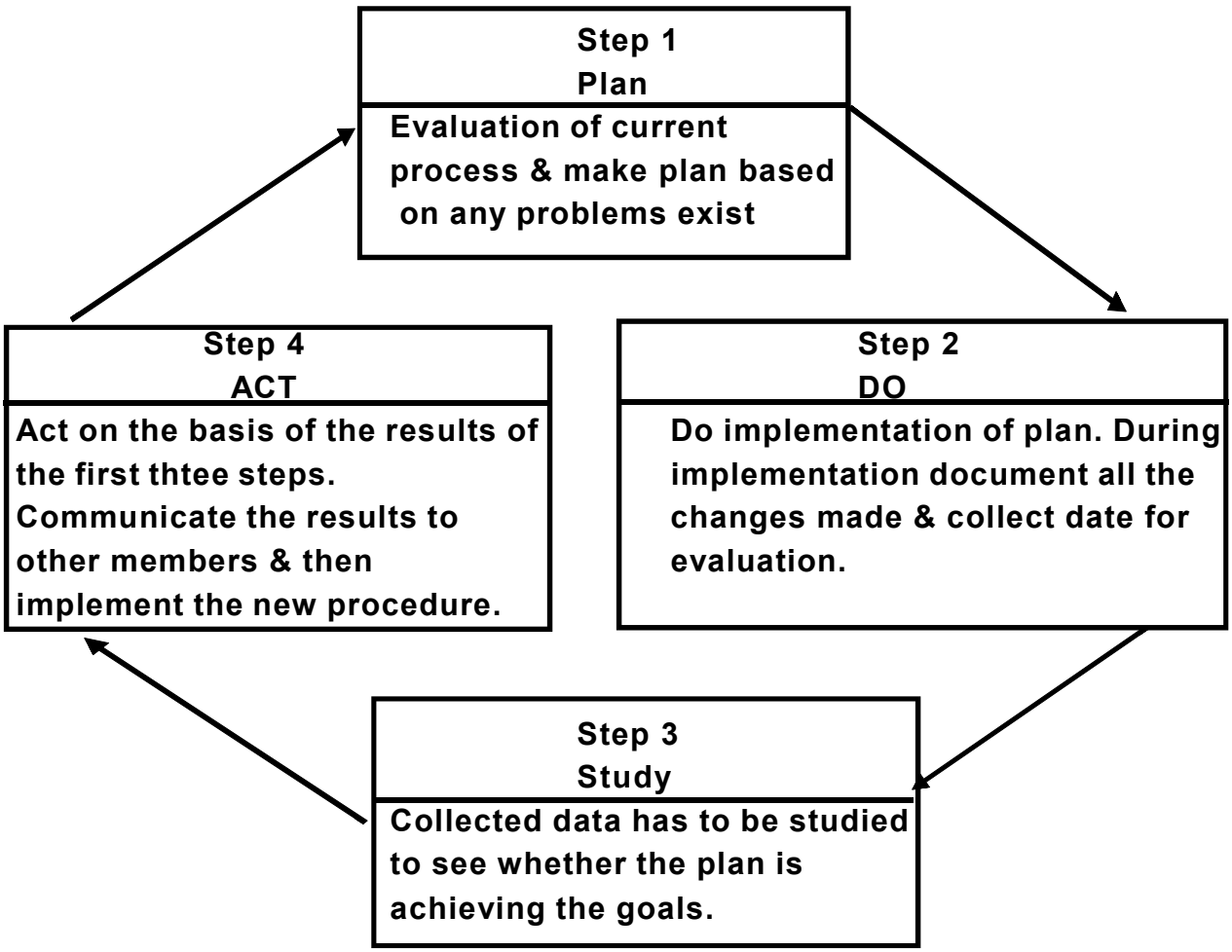
Deming said that it is upto management to correct system problems and create an environment that promotes quality and enables workers to achieve their full potential. Deming outlined has philosophy on quality in his famous "14 points".

1. "Create Constancy"of a purpose towards improvement
2. "Adopt the new philosophy "ie management should actually adopt his philosophy, rather than merely expecting the workforce to do so.
3. Cease dependence on inspection” ie if variation is reduced, there is no need to inspect manufactured items for defects.

4. "Move towards a single supplier for any one item".
5. Improve constantly & forever
6. Institute Training on the job
7. Institute leadership
8. Drive out fear
9. Break down barriers between Departments
10. Eliminate Slogans
11. Eliminate Management by objectives
12. Remove barriers to pride of workmanship
13. Institute Education & Self inprovement
14. Transformation is everyone's job

PDSA CYCLE

PDSA stands for Plan-Do-Study-Act cycle.
It describes the activities to be performed by the company for continuous improvement.
Its also called 'Shewhart' Cycle or 'Deming Wheel'
It is called it as a cycle because continuous improvement is a never ending process.



SIX SIGMA

- It is the statistical measure used to ensure quantity of products and services.
- By way of continuously changing the planned targets, we can achieve continuous improvement.
- One such target can be six-sigma accuracy.
- Six-sigma accuracy mean's the process is 99.999998% accurate
- That is the process will produce only 0.002% defects per million.
- In quality practice, six-sigma means 3.4 parts per million.
- Company engaged in six-sigma can expect to see-
  - Saving in Material
  - Saving in labour
  - Improved customer satisfaction
  - Reduction in cycle time
  - Increased productivity
  - Reductioin in total defect
  - Improved process flow

SIX C's OF TQM

The "essential requirements" for successful implementation are described as the six C's of TQM These are:-

1. **Commitment:** If a TQM culture is to be developed total commitment must come from the top management. It is not sufficient to delegate quality issues to a single person. Quality expectations must be made clear by the top management, together with the support and raining required for its achievement.
2. **Culture:** Training lies at the centre of effecting a changae in culture and attitudes. Negative perception must be changed to encourage individual contributions and to make quality a normal part of everyone's job.
3. **Continuous improvement:** TQM should be recognised as a continuous process. It is not a one- time programme. There will always be a room for improvemnt, however small it may be.
4. **Co-operation:** TQM visualises Total Employee Involvement Employee involvement and co-operation should be sought in the development of improvement strategies and associated performance measures.
5. **Customer Focus:** The needs of external customers in receipt of the final product and also the internal customers like colleagues who receive and supply goods, services or imformation, should be the prime focus.
6. **Control :** Documentation, Procedures and awareness of current best practice are essential if TQM implementations are to function appropriately. Unless control procedures are in place, neither the improvements can be monitored and measured, not the deficiencies can be corrected.

FUNDAMENTAL PRICNIPLES ASSOCIATED WITH FOUR OF OUR IMPROVEMENTS

The problem listed for the PRAISE process, may lead to disruption of TQM process. It is possible that the organisation is led to Total Quality Paralysis, instead of improvement. To avoid such disruption and paralysis the following principles (called the four P's) of TQM should be followed:

1. **People:** To avoid misdirection, TQM teams should consist of team spirited individuals who have a flair for accepting and meeting challenges. Individuals whoare not ideally suited to the participatory process of TQM, should not be involved at all, e.g. lack of anthusiasm, non attandance at TQM meetings, failure to complete delegated work, remaining a "Mute Spectator" at TQM meetings, etc.
2. **Process:** It is essential to have a practical approach for solving problems and to regard the formal process as a system designed to prevent participants from selecting improper dicisions. As such, it will provide a means to facilitate the generation of alternatives while ensuring that important discussion stages are not omitted.
3. **Problem:** Problems needs to be approached in a systematic manner, with teams tackling solvable problems with a direct economic impact, allowing for immediate feedback together with a recognition of the contribution made by individual participants.
4. **Preparation:** Additonal training on creative thinking and statistical processes is needed in order to give participants a greater appreciation of the diversity of the process. This training must quickly, be extended beyond the immediate accounting circle to include emplees at supervisory levels, and also who are involved at the data input stage.

CONTINUOUS PROCESS IMPROVEMENT

- In a process industry, production of a product moves from one process to the next till it is completed. Each Production Department performs some part of the total operation on the product and transfers its completed production to the next process Department, where it becomes the imput for further processing. The completed production of the last Department is transferred to the finished Goods stock.
- The philosophy of Continuous Process Improvement believes in encouraging every member of the firm to continuously strive to efficiently serve their customers, who may either be external or internal.
- The objective of Continuous Process Improvement is to sustain the improvement momentum within the firm over time and to align improvement activities in support of strategic objectivities.
- The challenge is in promoting activities that continuously modify processes, procedures, task, content and proccess interfaces to achieve complete customer satisfaction as well as to reduce costs and to increase product quality.

JUST IN TIME

MEANING :

A just-in-time (JIT) approach is a collection of ideas that stramline a company's production process activities to such an extent that wastage of all kinds viz, of time, material, and labour is systematically deriven out of the process.

OBECTIVES OF JIT PRODUCTION METHOD

a. Waste Reduction
b. Time Reduction
c. Elimination of NVA items/activities
d. Zero Inventory
e. Zero Defects
f. Zero Break downs
g. Economical Batch Sizes
h. product Quality
i. Timely delivery to Customer

ROLE OF JIT TO ELIMINATE WASTAGES OF RESOURCES

1. **Reduction in Inventory Levels:** Unnecessary piling up to Raw Materials, WIP and Finished Goods is avoided. The focus is on production and purchase as per the firm's requirements.
2. **Reduction in Wastage of Time:** Wastage of time in various ways like Inspection Time, Machinery Setup Time, Storage Time, Queue Time, Defectives Rework, Time etc are reduced.
3. **Reduction in Scrap Rates:** There will be sharp reductions in the rate of defective or scrapped units. The workers themselves identify defects and take prompt action to avoid their recurrence.
4. **Reduction in OH Costs:** By reducing non value added activities and the associated time and cost drivers, OH can be greatly reduced e.g. material handling costs, rework costs, facility costs ect. Since all costs accociated with the warehouse are assigned to the overhead cost pool, the amount of overheads is reduced when the costs of staff, equipment, fixed assets, facilities, and rend associated with the warehouse are sharply cut back. In short, overhead costs decline as some costs are eliminated, while other costs shift between products as more costs are charged directly to products and the remaining overhead costs are charged out using different allocation methods.

ROLE OF JIT IN TIMEE REDUCTION

In a JIT system, by reducing wastage of time, the firm effectively eliminates non value adding activities, which in turn reduce tghe costs associated with them. Time reducton can be achieved in the following manner:

1. **Storage Time :** Clearing out excessive stock of inventory and having suppliers who deliver parts as and when needed, eliminates Storage time.
2. **Inspection Time:** All Inspection time is eliminated from the system as Operators conduct their ownh quality checks. Supplier assistance and quality checks at Supplier's factory eliminate the need for separate inspection.
3. **Handling Time:** All material movements, which involves shifting inventory and WIP throughout the various parts of the plant, can be eliminated by clustering machines together in logical groupings called Working Cells.
4. **Queue Time:** Queue Time is eliminated by not allowing inventory to build up in front of machines. Kanban Cards serve this purpose.

BACK FLUSHING IN JIT SYSTEM

Traditional accounting systems record the flow of inventory through elaborate accounting procedures. Such systems are required in those manufacturing environment where inventory values are large. However, since JIT systems operate in modern manufacturing environment characterised by low inventory values, usually associated with low cost variances, the requiremnets of such elaborate accounting procedures does not exist.

Back flushing requires no data entry of any kind until a finished product is conpleted. at that time the total amount finished is entered into the computer system which is multiplied by all components as per the Bill of materials for each item produced. This yields a lengthy list of components that should have been used in the production production process and this is subtracted from the opening stock at arrive at the closing stock so as to arrive at the closing inventory.

THE PROBLEMS WITH BACK FLUSING:

(1) The total production quantity entered into the system must be absolutely correct, if not, then wrong components and quantities willbe subtracted from the stock.

(2) All abnormal scrap must be diligently tracked and recorded. Otherwise, materials will fall outside the black flushing system and will not be charged to inventory.

(3) Lot tracing is impossible under the back flusing system. This is required when a manufacturer needs to keep records of which production lots were used to create a product in case all the items in a lot need to be recalled.

(4) The inventory balance may be too high at all times because the back flushing transactions that relieves inventory usually does so only once a day, during which time other inventory is sent to the production process. This makes it difficult maintain an accurate set of inventory records in the warehouse.

JIT APPROACH IN A PRODUCTION PROCESS

- Products, spare parts/materials are received directly at production floor.Inspection iscompleted before delivery of materials.
- Setup time is minimized while also reducing long production runs, thereby eliminating defectives, scrap and product obsolescence.
- Work-in-progress is reduced by use of Kanban card or working cells or both.

- Workers are trained on a variety of machines, allowed to stop machines when they identify a problem, fix it or call the repair iteam and adequately compensated.
- Supporting system such as administration,accounting and cost reporting are suitably modified to shift from the conventional mode to improved JIT techniques.

JUST IN TIME PRODUCTION	JUST IN TIME PURCHASING
Production system which is driven by demand for finished products, wherby each component ona production line is produced only when needed for the next stage.	Purchasing system in which material purchases are contracted so that the receipt and usage of material, to the maximum extent possible, coincide.

HOW TO REDUCE EXCESS WORK IN PROCESS INVENTORY AND DEFECTIVE PARTS IN JIT SYSTEM

Kanban Card : The first way involved a 'Karban Card' which is a notification card, that a doenstram machine sends to each machine, that feeds it parts, authorizing the production of just enough components to fulfill the production requirements being authorizing in turn by the next machine further downstream. This is also known as a "pull system", since kanbans are initiated at the end of the production process, pulling work authorizations through the production system. With this approach, there is no way for work-in process inventory to build up in the production system, since it can be created only with a kanban authorization.

Working cells: The second way to reduce exerise work-in process investory and defective parts, is to group machines into working cells. A working cell is a small cluster of machines which can be run by a single machine operator. This individual machine operator takes each output part from machine to machine within the cell; and thus there is no way for work-in-process to build up between machines. Also, this operator can immediately identify defectivce output which otherwise is difficult for each machine of the cell. this configuration has the additional benefit of lower maintenance costs since the smaller machines used in a machine cell are gnereally much simpler than the larger, automated machinery they replace. Also, because the new machine are so small, it is much easier to reconfigure the production facility where it is necessary to produce different products, avoiding the larger expenses of carefuly repositioning and aligning equipment.

Both kanbans and machine cells should be used together they are not mutually exclsive. By doing so a company can achieve extemely low product defect rates as well as vanishingly small investment on work-in-process inventory.

EXPLAIN HOW THE IMPLEMENATION OF JIT APPROACH TO MANUFACTURING CAN BE A MAJOR SOURCE OF COMPETETIVE ADVANTAGE

JIT provides competitive advantage in the following ways:

(1) Stocks of raw materials and finished goods are eliminated stock holding cost are avoided.
(2) JIT aims at elimation of non-valued added activities
(3) It affords flexibility to customer requirements, where the company can manufacture customized products and the competitive advantages is thereby improved.
(4) It focuses the direction of performance based production of quiality product.
(5) It minimize waiting times and transportation costs.

BENCH MARKING

MEANING

Bench making is the process of identifying and learning from the best practices anywhere in the world. It is powerful tool for continuous improvemnt. To conribute to efficient, effective and ethical benchmarking, individuals agree for themselves and their organization to abide by the following principles for ther benchmarking with other organization.

Suggested benchmarking code of conduct:

i) Principle to Legality
ii) Principle of Exchange
iii) Principle to Confidentially
iv) Principle of Use
v) Principle of First Party Contract
vi) Principle of Third Party Contract
vii) principle of Preparation

STATGES INVOLVED IN THE PROCESS OF BENCH MARKING

The process of benchmarking requires a company to idenfity the areas i.e. processes, activity etc. which are central to its business and then selects the top-performing companies in those areas.

The benchmarking process is comprised of following stages. The stages are:

(i) Planning:

(a) Determination of benchmarking goal statement: This requires identification of area to be benchmarked. In practice, one should start with the identification of those areas which have to be really good to be really successful.

(b) Identification of best performance: Once the benchmarked goal statement are defined, the step is seeking the best of the breed oif the best of the best

(c) Establishnment of the benchmarking or process improvement term: Ideally this should include the persons who are most knowledgeable about the intgernal operations and will be directly affected by changes due to benchmarking.

(d) Defining the relevant benchmarking measurement: Relevant measures will not include the measures used by the organization boday but they will be refined measures that comprehend the true performance differences.

(ii) Collection of Data and In Information:

The date gathering for benchmarking could be done through national/international clearing houses, mail surveys, suppliers, company visits, telephone, interviews etc. In recent years national and international clearing houses have been set up.

(iii) Analysing the Findings:

(a) Review the findings of step (2) requires following:

(b) Identify gaps in performance between our organization and better performers.

(c) Seek explanations for the gaps in performance. The performance gaps can be positive, negative or zero.

(d) Ensure that comparisons are mainingful and credible.

(e) Communicate the findings to those who are affected,

(f) Identify realistic opportunities for improvements.

(iv) Recommendations:

(a) Deciding the feasibility of making the improvemnets in the light of the conditions that apply within own organization.

(b) Agreement of tghe improvement that are likely to be feasible

(c) Producing a report on the benchmarking in which the recommendations are included.

(d) Obtaining the support of key stakeholder groups for making the changes needed.

(e) Developing action plan(s) for implementation.

(v) Monitoring and Reviewing:

This involves

(a) Evaluating the benchmarking process undertaken and the results of the improvements against objectives and success criteria plus overall efficiency and effectiveness.

(b) Documenting the lessons learnt andd make them available to others.

(c) Periodically re-considering the benchmarking.

TYPES OF BENCHMARKING

(1) Competitive Benchmarking: It involves the comparison of competitors products, processes and business results with own.

(2) Strategic Benchmarking: It is similar to the process benchmarking in nature but differs in its scope and depth.

(3) Global Benchmarking: It is a benchmarking through which distinction in international culture, business proceses and trade practice across companies are bridged and their remificaion for business process improvement are understood and utilized.

(4) Process Benchmarking: It involves the comparison of an organization critical business processes and operations against best pratice organisation that performs similar functions or work processes.

(5) Internal Benchmarking: It involves seeking partners form within the same organization for example, from business units located in different areas.

(6) External Benchmarking: It involves seeking help of outside organisation that are known to be the best in class. External benchmarking provides opportunities of learning from those who are at the leading edge, although it must be remembered that not every best practice solution can be transferred to others.

THROUGHPUT ACCOUNTING

MEANING

- Throughput Accounting (TA) is a method of prformance measurement which relates production and other costs to throughput.
- Throughput accounting product costs relate to usage of key resources by varous products.
- It assumes that a manager has a given set of resouces available. These comprise the existing buildings, capital equipment and labour force. Using these resources, purchased materials and components must be processed to generated sales revenue.
- To achieve this, maximum amount of throughput is required with the financial definition.
- Labour and vairable overheads are considered as fixed items as it is found in maximum organisation now a day technique known, as "labour is not a unit variable cost". Therefore only variable cost in production is material.

Throughput contribution = Sales Material

THROUGHPUT IS INFLUENCED BY:

a. Selling price
b. Direct purchase price
c. Usage of direct materials
d. Volume of throughtput

CONSTRAINTS ON THROUGHTPUT MIGHT INCLUDE:

- Existence of an uncompetitive selling price
- Need to deliver on time to particular customers
- Lack of product quality and reliability
- Lack of reliable material suppliers
- Existence of stortage of procuction recources

THEROY OF CONSTRAINTS

- The theoy of constraint focuses its attention on contraints organisation which hinder speedy production.
- The main concept is to maximise the rate of manufacturing organisation.
- This requires to examine the bottlenecks and constraints.
- A bottleneck is an activity within the organisation where the than its capacity to supply.
- A constraint is a situational factor which makes the achiev more difficult than it would otherwise be.
- constraints may take several forms such as lack of skilled .... or the need to achieve a high level of quality product output.
- Therefore,"a bottleneck is always a constraint but a constraint need not be a bottleneck".
- The idea behing TOC is that raw materials are the only variable costs. Labour and variable overheads are considered as fixed cost.
- The TOC describes methods to maximise operating income under bottleneck situation.

OBJECTIVE OF TOC:

The objective of TOC is to increase throughput contribution while decreasing investments and operating costs.

Key measures of therory of constraints:

Throughput Contribution = Sales-Direct material cost of the goods sold
Investment= Sum of material cost is direct meterial, WIP, finished goods inventories.
R &D costs and costs of equipment and buildings.
Operating costs = All costs of operations (other than direct material) Incurred to earn throughput contribution. Operating costs include salaries and wages, rent, utilities and depreciation.

TOP considers a short run time and assumes that operating costs are fixed costs.

PROCEDURE OF TOC:

Step-1 Find the total requirement of resource for each department separeately.

Step-2 Throughput accounting Ratio

Step-3 The highest among the TA ratio will be considered as the bottleneck facator.

BALANCED SCORECARD

BALANCE SCORECARD

It is defined as an approach to the provision of information to management to assist strategic policy formulation and achievement. It emphasises the need to provide the user with a set of information, which addresses all relevant areas of performance in an objective and unbiased fashion. The information provided may include both financial and non financial elemnents, and cover afreas such as profitability, customer satisfaction, internal efficiency and innovation.

- It is a set of financial and non-financial measures relating to a Company's critical success factors.
- It is an approach which provides in formation to Management to assist in strategic policy formulation and achievement.
- The main objective of Balance Score Card is to provide a conprehensive framework for translating a Firm's strategic obective into a coherent set of performance measures.

It focuses on:

1. Customer satisfaction
2. Internal business process e.g. operating cycle time
3. Kaizen approach
4. Finanacial prespectives

CUSTOMER PERSPECTIVE

GOALS	PERFORMANCE MEASURES
a. Price b. Delivery c. Quality d. Support	a. Competitive price b. Number of on time delivery,lead time from receipt of order to delivery to customer c. Own quality relative to industry standards, number of defects or defect level
INTERNAL BUSNESS PERSPECTIVE	
GOALS	**PERFORMANCE MEASURES**
a. New Product introduction b. Sales penetration c. Efficiency of manufacturing	a. Rate of new b. Sales plan, Increase in number of customer in a unit of time c. Manufacturing cycle time

INNOVATION AND LEARNING PERSPECTIVE

GOALS	PERFORMANCE MEASURES
a. Technology leadership leadership b. Cost leadership c. Market leadership d. R&D	a. Performance of product, use of technology b. Manufacture Overheads per quarter c. Market share in all major markets d. Number of new products, Patents

FINANCIAL PERSPECTIVE

GOALS	PERFORMANCE MEASURES
a. Sales	a. Revenue and profit growth
b. Cost of Sales	b. Extent to which it remains fixed or decreased each year.
c. Profitability	c. Return on capital employed
d. Prosperity	d. Cash flows

ADVANTAGES OF BALANCED SCORE CARD

- It brings strategy and vision as the center of management focus.
- It helps conpanies to assess overall performance and improve operational processes.
- It enables management to develop better plans for improvements.
- It provides management with a comprehensive picture of business operations.
- It brings together in a single Management Report, various aspects like customer oriented, shortening response time, improving quality, etc of a competitive agenda.
- It helps senior managers to consider all the important performance measure together, and allows them to see whether an improvement in one area has been achieved at the expenses of another.
- It emphasises the need to provide the user with a set of information, which addresses all relevant areas of performance in an objective and unbiased manner.
- It facilitates communication and understanding of business goals and atrategies at all levels of the firm. Thus, it enables Management by Objective (MBO).

DIRECT PROCUCT PROFIT ABILITY & CUSTOMER PROFITABILITY ANALYSIS

DIRECT PRODUCT PROBABILITY

As traditional absorption costing, which normally use labour hours as a basis for absorption, is rarely suitable ofr service and retail organization.

Direct Product Profitability (DPP) is decision making tool that helps retail traders to determine profitability from an individual product.

CIMA describe DPP used primarily within the retail sector, DPP involves the attraibution of both the purchase price and other indirect costs such as distribution, warehousing, retailing to each product line. thus a net profit, as opposed to a gross profit, can be identified for each product. The cost attribution process utilises a variety of measures such as warehousing space, transport time to reflect the resource consumption of individual products".

Categorisation of indirect cost of DPP:

a. Overhead cost
b. Volume related cost
c. Product batch cost
d. Inventory fanancing cost.

Format of DPP:

Particular	Amount
Sales	xxx
Less: Cost of Goods sold	xxx
Gross Margin	xxx
+ Adjustments	xxx
Adjusted Gross margin	xxx
Less: Direct product Costs (Warehouse, Transportation,Store etc.)	xxx
DPP	xxx

Benefits of DPP:

(i) Better Cost Analysis: Cost per product is analysed to know the profitability of a particular product.

(ii) Better pricing decision: It helps in price determination as desired margin can be added with the acatual cost.

(iii) Better Management of store and warehouse Space: Space Cost and Benefit from a product can be analysed and it helps in management of store and warehouse in a profitable way.

(iv) The nationalisation of product Ranges.

CUSTOMER PROFITABILTY ANALYSIS

In many organization it is just as important to cost customers as it is to cost products. Different customers or groups of customers differ in their profitability. This is a relatively new technique that ABC makes possible because it creates cost pools for activities. Customer use some activities but not all, and different groups of customers have different acativity profiles.

Service orgnisations, such as a bank or hotel in particular need to cost customers. A bank's activities for a customer will include the following types of activities;

Withdrawal of cash
Unauthorised overdraft
Request for statement
Stopping a cheque
Returning a cheque becaue of insufficient funds

Dirrerent customers or categories of customers will each use different amounts of these activities and so customer profitability profiles can be built up, and customers can be charged according to the costs tro serve them. A hotel may have activity that are provided for specific types of customers, such as well laid-out gardens, a swimming pool and a bar. Older guests may appreciate and use the garden, families use swimming pool and a bar. Older guests may appreciate and use the garden, families use swimming pool and business guest use the bar. If the activities are charged to the relevant guests a correct cost per bed occupied can be calculated for thie type of category. This will show the relative profitability and lead to strategies foar encouraging the more profitable guests.

Even a manufacturing organising can benefit from costing its customers. Not all customers cost the same to serve even if they require the same products. Some customers may be located a long way from the factory and transport may cost more. Other customers may be disruptive and place and place rush orders that interrupt production scheduling and require immediate, special transport. Some customers need after sales service and help with technical mataters, etc.

DEVELOPMENTS IN THE BUSINESS ENVIRONMENT

MRP is a computerised Production

1) pre-requisite information
2) System input
3) System processing
4) System output

AIMS OF MATERIAL REQUIREMENT PLANNING:

- To determine quantity and timing of Fin ished Goods production as per the Master Production Schedule.
- Ascertaining the required units of production of sub-assemblies
- Determining the requirement for materials based on an up-to-date bill of material file (BOM)
- Computing inventories WIP, batch sizes and manufacturing and packaging lead times.
- Controlling inventory by ordering bought-in comonents and raw materials in relation to the orders received or forecased, rather than the more usual practive of ordering from stock-level indicators.

DATA REEQUIREMENTS TO OPERATE MATERIAL REQUIREMENT PLANNING SYSTEM

DATA	EXPLANATION
a. Master Production schedule	The schedule specifies the quantity of each finished unit of products to be producted and the time at which each unit will be required.
b. Bill of material file	The bill of material file specifies the sub assemblies, components and materials required for each of the finished goods.
c. Inventory file	This file maintains details of items in hand for each sub-assembly, components and materials required for each of the finished goods.
d. Routing file	The file specifies the sequence of operations required to manufacture sub-assemblies, components and finished goods.
e. Master parts file	This file contains information on the production time of sub-assemblies; components produced internally and lead times for externally acquired.

PER-REQUISITES FOR SUCCESSFUL OPERATION OPF MRP:

(1) Strict adherence to the schedule: the successful operation of MRP system requires a strict adherence to the latest production and purchasing schedules. Workers must be educated to understand the importance of schedule adherence and controls should be in place to ensure this adherence.

(2) Accurate data base: Data accuracy is vital to the system. If a plan is based on inaccurate date it may be impossible to adhere to the schedule. For example, if the bill of maerials file is not updated to reflect any changes in product compsition, it will be impossible to adhere to the schedule.

MRP II

When the scop of MRP-1 is development further which includes.

1. planning of raw material
2. Planning of component & sub-assemblies,
3. Compute the other resources e.g. machine or labour capacity
4. to create a full integrated plan fofr management

then it is known as manufacturing resources planning (MRP-II)

MRP-II adds MRP schedule into a capacity planning system and then builds the information into a production schedule.It is also seen as a link between strategic planing and manufacturing control.MRP-II provides a common data base for the different fucntion units such as manufacturing, purchasing and finance within a firm.

THE CHARACTERISTICS FEATURES OF A DATA BASE CREATED FOR OPERATIONAL CONTROL AND DESICION MAKING

(I) There should be a file structure that facilities the association of one internal record with other internal records.

(II) There should be cross functional integration of files.

(III) Independence of program/ data file for erase of updating and maintenance of data base .

(IV) There must be compon standards throughout with respect to date definitions, record formulas and other data descriptions.

(V) A data dictoinary should be available

REQUIREMENTS EXPLOSION

The MRP system decides the demand for materials, components and sub assemblies at each stage of production.

Once the schedule production starts, the output of each department is pushed through the MRP system to the next department. From the data input, the MRP system knows:

(i) What is expected to produce it (through the MPS file) ?

(ii) How it should produce it (through the BOM file) ?

(iii) What it has to produce it (through the inventory records file)?

This programme starts with the finished goods demand (from the MRP's) and converts the demand requirements backward in time to schedule the desired production of the finished goods from raw matetials asnd component parts with time phased adjustments for lead time requirements. this process is calles Requirement Explosion.

SYNCHRONOUS MANUFACTURING

It is an all encompassing manufacturing management philosophy which includes a set of principles, producers and technique where every action is evaluated in terms of common goals of the organization:

The seven principles are:

(1) Focus on synchronizing the production flow than on idel capacities.
(2) Value of time at a bottleneck resources is equal to the throughput rate of products processed by the bottleneck
(3) Value of time at a non bolllleneck resource is negligible.
(4) Level of utilization of a non bottleneck resource is controlled by other constraints within the system.
(5) Resource must be utilized, not simply activated.
(6) Transfer batch should not be equal to the process batch.
(7) A process batch should be variable both along its route and overtime.

BUSINESS PROCESS RE ENGINEERING

- Business process re-ingineering involves examining business processes and making substantial changes in the day to day operation of the organisation
- It involves the redesign of work by changing the activities
- A business process consists of a collection of activities that are linked together in a coordinated and sequential manner to achieve goal and objective.
- The aims of business process re-engineering is to improve the key business process in an organisaton by fousing on:
  - Simplification,
  - Cost reduction
  - Improved quality and
  - enhanced customer satisfaction

COMPUTER AIDED MANUFACTURING (CAM)

The manufacturing process is carried out by a rang of machinery that, together with its concomitant software, comes under the collective heading of computer aided manufacturing (CAM) Maximum elements of CAM are computer numerical control (CNC) and robotics.

CNC machines are programmable machine tools. These are capable of performing a number of machining tasks, e.g. cutting grinding, moulding, bending etc. A progfram stores all the existing manufacturing activities and set-up instruction for a particular machine or bank of machines, providing facility of changin gits configuration in a matter of seconds via the keyboard changes to existing configurations and new configurations and new configurations are easily accommodated. CNC therefore offers great flexibility, and reduces set up times.

Human operators will tire and are error prone. CNC machines are able to repeat the same operation continuously in identical manner with high accuracy level.

For Example the car producer found that the time taken to completely retool car body panel jigs in their intelligent body assembly system (IBAS) fell from 12, months to less than 3 months by reprogramming the process machinery by computer and using computerised jig robots.

DIVESTMENT STRATEGY / DISINVESTMENT STRATEGY

Divestment involves a strategy of selling off or shedding business operations to divert the resources, so released, for other purposes. Selling off a business segment or product division is one of the frequent forms of divestment strategy. It may also include selling off or giving up the conrol over a subsidiary where by the wholly owned subsidiaries may be floataed as indepen dently quoted companies

REASON FOR DIVERSTMENT STRATEGY

1. In case of a firm having an opportunity to get more profitanble product or segment but have resource constrain, it may be selling off it's unprofitable or less profitable divison and utilised the recourse so released. Cost benefitr Analysis & Capital Budgeting Method are the useful tool for analysing this type of situation.
2. In case of purchase of new business, it may be found that some of the part of the acquied business is not upto the mark. In such type of situation disposal of the unwanted part of the business is more desirable than hold it.
3. In case where any business segment or product or subsidiary is pull down the prodit of the whole organisation, it is better to cut down of that operation of the product or business segment or subsidiary.