

# CHAPTER -1 RELEVANT COSTING

## Statement of Relevant Cost:-

	<u>Rs.</u>
Cost to be incurred due to acceptance of offer	<u>XXX</u>
Benefit to be lost de to acceptance of offer	<u>XXX</u>
(-) Benefit to be achieved due to acceptance of offer	<u>XXX</u>
<b>Relevant Cost</b>	<u><u>XXX</u></u>

In case of Mixed cost, Variable Cost Per unit :- **Change in Total Cost**

### **Change in output**

\* *Mixed Cost occur when*

a: *-VCPU remain same*

b: *-FC remain same in Totality*

**Variable Cost:-** Normally V.C. per unit remains same. Increase in totality as level of output increases.

**Fixed Cost:-** Which remain fixed upto a particular level of output in Totality. If may increase after that level.

**Mixed Cost:-** A combination of variable cost and fixed cost (behave normally)

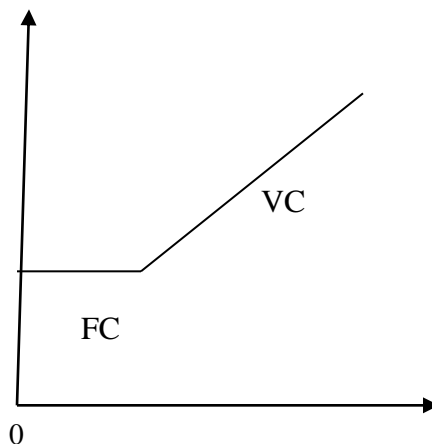
**Differential:-** A Combination of variable cost and fixed cost (behave exceptionally) i.e. VC per unit change or fixed cost increases in Total or change in cost due to change in level of output or change in alternative course of action.

## **Semi variable Cost:- Type -1, Type -2)**

**Type-1 Semi Variable Cost:-** The cost which remain fixed up to a certain level and becomes variable after that level.

**In semi variable Cost, V.C. does not start from Zero Level.**

For Example:- Telephone charges, Electricity bill.



## **Type-2 Semi variable Cost:- (Features)**

- LOT wise----- Variable
- Within the Lot----- Fixed
- Lot size will uniform from beginning
- Cost per lot will remain always same

## **Semi Fixed Cost:-**

- Lot size may not be uniform
- LOT size may same but cost did not maintain Linear relation.
- Every lot will have its own costs.
  
- **Relevant cost-** Every time different.
- **Sunk Cost:-** every time in valuable
- **Irrelevant cost:-** In every alternative cost same but, if Alternative not choose than such cost will be nil.

**Irrelevant cost can never be past cost.**

**It is always a future cost.**

**It is ( Fixed (+) Variable Cost).**

<b>Decision</b>	<b>Relevant</b>	<b>Sunk</b>	<b>Irrelevant</b>
Decision of selection from where to set Coaching	Considered	Ignore	Ignore
Decision of either to accept offer OR Reject the offer of coaching	Considered	Ignore	Consider

# SUMMARY

## Second Shift Working:

If Demand for the regular product increases then management have two choice to meet such excess Demand. Ist either to introduce second shift 2nd OR to introduce overtime working.

Second Shift	Overtime
1:- Timings:- 6 Pm to 2 AM	1:- 6 PM to 10 PM
2:- Always New Worker to be appointed	2:- Existing Worker.
3:- Extra Fixed Cost to be incurred	3:- No extra Fixed Cost to be incurred
4:- Extra labor Cost like Night shift allowance	4:- Over time premium.

- For Decision Making (Either to Introduce Second Shift or Not) we should prepare “Statement of Cost benefit”.
- For Decision (Either to introduce Second Shift or Overtime) We should prepare “Statement of Comparative Cost”.

### Statement of Comparative Cost

Second Shift		Overtime Working	
Night Shift Allowance	<u>XX</u>	Overtime Premium	<u>XX</u>
Extra Fixed Cost	<u>XX</u>	Extra Fixed Cost	<u>NIL</u>
<b>Relevant Cost</b>	<b>—</b>	<b>Relevant Cost</b>	<b>—</b>

- Basic Material, Basic Labour & Variable overhead to be known as irrelevant cost hence ignore in cases.

## Summary of the Topic

# SHUT DOWN AND DIVESTMENT DECISION

Cost is not the only basis for deciding in favour of shut down. Other factors should be taken into account:-

## Interest of the Workers

If the workers are terminated it may become difficult to get highly skilled workers later on reopening of the factory. Also shut down may create problem for the workers, which may far exceed the cost benefits of the shutdown.

Once the firm is closed down competitors may establish their products and thus it may be difficult to introduce the product in the market again.

The plant may become obsolete or depreciation at a larger rate when not in operation. Thus, heavy capital expenditure may have to be incurred on re-opening.

## Shut Down

1. It is temporary Shut down.
2. If Fixed cost is continue (same in both cases) to occur in either continue or temporary closed down. Than it is Sunk Cost.
3. Some fixed cost may be avoidable like Machine Rent . Some fixed cost may be extra like machine rent, which are to be incurred to protect Machinery.
4. Calculate Total loss in comparative form.

	Rs.
<b><u>If Continue</u></b>	
Contribution	xxx
Less: Fixed cost (Avoidable)	xxx
Loss	xxx
<b><u>If Discontinue</u></b>	
Contribution	Nil
Less: Fixed Exp. (extra)	xxx
Loss	xxx

**Shut Down Point:** How much unit should be produced in (continuation) so that

Loss in Continuation = Loss in Discontinuation

Let X be the level of Output for Shut Down

$$\text{Contribution/unit} * x - \text{Avoidable/FC} = \text{Nil} - \text{Extra Fixed Cost}$$

$$X = \frac{\text{Avoidable Fixed cost} - \text{Extra Cost}}{\text{Contribution per unit}}$$

Where total loss in both situations should be equal.

## Decision to Shut Down Facilities

- (i) It is always in the interest of company to continue to operate the facilities as long as products or services sold recover variable cost and make some contribution towards recovery of fixed cost.
- (ii) Shutdown of facilities does not eliminate all costs. Depreciation, interest, property, tax and insurance continue during complete inactivity.
- (iii) If operations are continued, certain expenditure connected with shutdown will be saved.
- (iv) It is in the interest of a company to continue the operations as long as differential costs or any amount above that can be obtained.

### Note:

1. Unavoidable Fixed cost like Factory Rent, permanent labour cost to be known as Sunk Cost.
2. Avoidable Fixed cost like machine rent which are to be incurred due to continuation of business is relevant.
3. Extra fixed cost: to be incurred only at due to restart\ i.e. extra advertisement exp etc called relevant.

## Divestment 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 control over a subsidiary where by the wholly owned subsidiaries may be floated as independently quoted companies.

## Reason For Divestment

1. In case of a firm having an opportunity to get more profitable product or segment but has resource constraint, it may selling off its unprofitable or less profitable division and utilize the recourse so released. Cost Benefit Analysis & Capital Budgeting Method is the useful tool for analyzing this type of situation.
2. In case of purchase of new business, it may be found that some of the part of the acquired business is not up to 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 profit of the whole organization, it is better to cut down of that operation of the product or business segment or subsidiary.
4. If managing of the organization is very constrained, it is good to dispose off the unwanted and undesirable activity of the organization, which involves large management skill. So that it can concentrated on the core activities of the organization.
5. In the situation where the firm suffering from loss, selling off or divestment policy is one suitable option to exit in the current position and to go for turnaround strategy.

## Summary of the Topic RELEVANT COSTING

### 1. Relevant cost of Labour

**Note:** In the following cases the nature of labour should be considered as permanent.

1. If labour can not be retrenched, can not be reduced or cannot be terminated.
2. idle wages.
3. Under utilized,
4. Employee
5. Transferred from one Department to other.

Otherwise, labour shall be treated as casual.

### 3. Relevant Cost of Overheads

**Note:** If the nature of overhead is not mentioned clearly in question then presume overhead as fixed (unavoidable) & called SUNK COST.

- Apportioned/Absorbed overhead always to be considered as Sunk.

### 4. Relevant Cost of Machines

**Note:** If question is silent, machine shall always be treated as idle.

## Relevant Cost of Materials

**CASE NO. 1:** Suppose a company has material "X" purchased for Rs. 100 (4 years ago) and this material "X" is lying in godown as it is Hence called absolute/non-moving. Now, the company is considering to sale such material as scrap for Rs. 20. Before selling the material as a scrap, the company receives an offer which will require such material.

(Requirement = Availability).

Current Purchase price of material X is Rs. 120..What should be the relevant cost of Material X? in respect of offer.

**Solution:**

**STATEMENT OF RELEVANT COST**

	Rs.
Cost to be incurred	Nil
Due to acceptance of offer	
(+) Benefit to be lost due to acceptance of offer (opp. Cost)	20
Minimum Price.	20

**Explanation**

Original Cost of X Rs. 100 to be considered as Sunk Cost (past Cost).

C.P.P. Rs. 120 has no reference because there is no question to purchase the material which already exists in go down (Requirement – Availability)

Relevant Cost means	Rs.
Cost to be incurred due to acceptance of offer	XX
(+) Benefit to be lost due to acceptance	XX
(-) Benefit to be achieved due to acceptance of offer	XX
Relevant Cost	XX

For example:-

We have a scooter	Rs.
Scooter ( <b>Original Cost</b> )	50000 (5 years ago)
(-) Depreciation	<u>50000</u>
	Nil

Now we want to sale it Mr. A is ready to take it, As it where basis for Rs. 5,000

Sales Deptt. Found another customer “B” He required to get repaired for Rs. 2000

“B” does not require stepny

Sale of Stepny 300

(Benefit to be achieved due to acceptance of offer)

What should be relevant cost for Mr. “B”.

**Solution:**

### Statement of Relevant Cost

	Rs.
Cost to be incurred due to acceptance of offer	2000
(+) Benefit to be last due to acceptance of offer	5000
(-) Benefit to be achieved due to acceptance	(300)
Relevant Cost	6700

**Case No. 2:** Suppose a company has a material “X” (Chemical purchased for Rs. 100) 4 years ago. This material is lying in go down hence called absolute but the nature of materials X is toxic. Now, the company will have to remove such material by incurring Rs. 25 as disposal cost. Before remaining such material the company receives an offer which will require such material C.P.P. of material X is Rs. 150.

What should be the relevant cost of material X for the offer?

**Solution:**

### Statement of Relevant Cost

	Rs.
Cost to be incurred	Nil
(+) Benefit to be last	Nil
(-) Benefit to be achieved	25
Relevant Cost	(25)

**Explanation:**

- Purchase Cost to be called Sunk Cost due to past Cost
- Current Purchase price Rs. 150 has no relevance because Req. = Availability

### Case No. 3:- (Substitute use)

Suppose A company purchased a material “X” for Rs. 100 four years ago. Such material is lying in go down as it is now production manager declares that material “X” can be utilized in place of material “Y” in present work. (C.P.P. of “Y” = Rs. 80). Before utilizing X in place of “Y” the company receives an offer which will require material X. C.P.P of “X” is Rs. 120).

What should be the relevant cost of X for the offer?

**Solution:**

### Statement of Relevant Cost

	Rs.
Cost to be incurred due to acceptance	Nil
(+) Benefit to be lost due to acceptance	80
(-) Benefit to be achieved	-

Relevant Cost	80
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### Explanation:

If we had not accepted the offer then cost saving would have been Rs. 80 by utilizing “X” in place of “Y” but due to acceptance of offer such saving will have to be lost. Hence such benefit to be lost should be charged from the offer.

### Case No. 4: Rs. 100 “X”

Sale as Scrap	Selling Price	Rs. 25
	- Commission	5
Absolute		<u>Rs. 20</u>
Or Present Work		
(Y) (Sunmica)		
CPP		-26
(-) Processing		<u>8</u>
		<b><u>18</u></b>
CPP = 120 (X) offer		

**Solution:** If we had not accepted the offer then benefits would have been utilized as under (X):

A. Sale (NRV) = 20

OR

B. Sub. Use (Y) (Net Saving) = 18

Maximum benefit (Rs.20) would have been selected but such benefit will have to be foregone in respect of offer. Hence charge from the offer.

### Case: Regular Use Construction Company (Building)

Bricks	200 Bricks
Purchased 2 weeks ago	@ 5 per
(Within current years)	

Offer – Guest House

Req - 200 bricks

CPP - 5.10

	Rs.
Cost to be incurred due to acceptance of offer	5.1 × 200



If seller sells only in a lot of 300 bricks	
Cost to be incurred (300 × 5.10)	X 5.10
-Transfer to Regular	100 × 5.10
Rel. Cost	200 × 5.10

Suppose a construction Co. has a regular stock of 200 bricks purchased at the rate of Rs. 5 per brick during the last week within the current year. The nature of material is regular. The company receives an offer for the construction of guest house which will require such material (200 bricks) C.P.P. will be Rs. 5.10/brick.

What should be the relevant cost of such material for the offer?

**Solution:** In order to complete the offer, We should not utilize the material which exists in godown due to regular use. Hence we should purchase from the market. Hence C.P.P will be the relevant Cost i.e. Cost to be incurred due to acceptance of offer. (200 X 5.10)

A:- Suppose in above situation supplier agreed to supply in a lot of 300 bricks at the rate Rs. 5.10 then the excess material should be transferred to regular stock instead of sale.

**Solution:** The relevant Cost would be as under:-

Cost to be incurred	300 × 5.10
(-) Transferred Cost	100 × 5.10
	200 × 5.10

## 2. Relevant Cost of Machine

### Case No 1: (absolute)

Machine X	Rs.	
Purchased	50,000	
years ago		
-Depreciation	50,000	
WDV	Nil	
	(Today)	(After 2 month)
Resale Value	2000	800

Offer: Machine can be utilized for (2 months) offer.

What should be the relevant cost of machine for the offer?

**Solution:**

### Statement of Relevant Cost

	Rs.
Benefit to be lost	2000

-benefit to be achieved	800
Difference on resale value	1200

### Case No 2: (Regular Use)

Machine M<sub>1</sub> (Welding Machines)

Regular nature – No Spare Machine

Offer: Guest House (2 months)

Require a machine.

In order to complete the offer, We should purchase a machine from market instead of utilizing from regular stock.

Current Purchase	Today	After 2 month
Price (Replacement Cost)	20000	18000
		(CPP of 2 month old machine i.e. regular welding)
Sale (Resale Value)	19000	5000
Solution		Rs.
Cost to be incurred due to acceptance of offer		20000
-transfer to regular stock		18000
Diff of C.P. Price due to wear/tear.		2000

## Relevant Cost on Labour

- Casual Labour:** Such type of labour can be appointed as and when required and also can be terminated as and when required and payment will be made according to the work.
- Permanent Labour:** Such type of labour cannot be terminated, cannot be retrenched, cannot be reduced due to an agreement with the labour union. Payment will be made irrespective of work.
- Short Supply:** When it is not possible to appoint excess labour for the completion of offer, then this situation is to be known as short supply of labour.

**Busy:** Existing worker of the company is engaged in regular activities and providing some contribution/benefit to the company.

### Case No 1: Casual, not Busy. Not short Supply

**Example:** A Company has 100 labour & they are engaged in regular work. Lab cost @ 500 per labour/day/Now Company receives an offer for the construction of guest house. Which will require 100 labour for next 10 days and such labour can be appointed from market @ 600 per labour day.

What should be the relevant cost of the offer?

**Solution:**

### Statement of Relevant Cost

	Rs.
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Cost to be incurred due to acceptance of offer i.e. Labour Cost	100 × 600 × 10
	6,00,000

### Case No 2: (Permanent & Not Busy & Not in Short Supply) (idle)

**Example:** Suppose A co. has 100 labour @ 500 per job/day. At present the co. has no work for next 10 days. Now the Co. receives an offer which will requires 50 labour for next 10 days. What should be the relevant cost for the offer?

**Solution:**

#### Statement of Relevant Cost

Cost to be incurred due to acceptance of offer	Nil
Relevant Cost	Nil

If we had not accepted the offer. Labour cost 50X10X500 would have been incurred hence called sunk Cost (future obligations).

In the absence of information always assume labour is casual. If permanent they have to mention.]

### Case No 3: (Casual & Busy & Short Supply)

**Example:** A Co. has 100 labour @ 500 per labour/day. At present they are engaged in work & management estimates that the Co. can achieve some contribution from these worker for next 10 days in following manner:

Revenue	1000000
-material Cost	200000
-labour Cost	10 × 100 × 500
Contribution	3,00,000

Now the company receives an offer which will require such labor (100) for next 10 days. Its not possible to appoint excess labour from the market what should be the relevant cost of labour for the offer?

**Solution:**

Regular (next 10 days)	- Rev	1000000
	- Material	200000
Labour	- Labour Cost	<u>500000</u>
(Casual +Busy + Short Supply)	Contribution	<u>300000</u>
offer		

If labour is permanent then it should be included in factory overhead not in prime cost.

Cost to be incurred due to offer (labour Cost)	5,00,000
(+) Contribution to be lost	3,00,000
Relevant Cost of labour	8,00,000

### Case No 4: (Permanent, Busy & Short Supply)

**Example:** A Co. has 100 labour @ 500 per labour/day at present they are busy in regular work for next 10 days & providing:

Revenue	1200000
Material	100000
Labour Cost	500000

Contribution	600000
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Co. receives an offer which will require Such labour for next 10 days. IT is not possible to appoint excess labour from Market Present Labour is permanent.

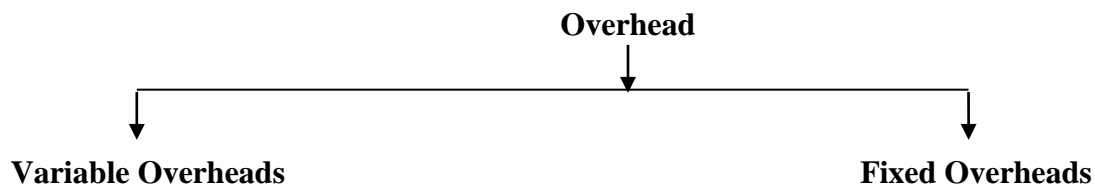
What should be the relevant cost of labour for offer?

**Solution:**

Regular			Rs. lakhs
Labour	Rev,	12	12
	- Labor Cost	5	X(Sunk)
	- Mateial	1	1
	Contribution	6	11
Offer			

Contribution to be last ignoring labour Cost (Sunk) Rs. 11,00,000.

Relevant Cost of overhead



Variable overheads are always to be known as relevant and we can say, variable overhead to be incurred only when labour do the work.

- Variable overheads Consist:—
- Indirect Material
  - Indirect Labour
  - Indirect expenses (power)

Variable overhead should be linked with level of production only when it consist of Indirect Material.

Variable overhead should be linked with productive labour hours (Working hours) when it consists indirect labour & Indirect expense.

**Fixed Overheads:-**

**Avoidable Fixed overhead:** means the cost which is to be incurred due to acceptance of offer hence called relevant.

**For example:** Machine Rent for the offer. Extra Supervisor salary & any other cost which is to be incurred for the offer called avoidable fixed cost hence relevant for the decision.

**Unavoidable Fixed Cost:** The cost which is to be incurred or incurred in past due to regular activity but not due to acceptance of offer called Sunk Cost.

**For example:** Factory Rent, Manager Salary, Electricity rent, Depreciation of existing machine (past Cost)

Change in apportionment does not change cash outflow.

**Example:**

	Rs. Lakh	Deptt	A	B	C
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Future rent	5	Rent	3	2	X
M. Salary	2	Salary	1	1	X
Electricity Rent	1	E. Rent	0.5	0.5	X
Depreciation	2	Depreciation	1	1	X
	10		5.5	4.5	X

	A	B	C
Rent	-	-	-
Salary	-	-	-
Electricity Rent	-	-	-
Depreciation	-	-	-
	4	4	2

Fixed Cost is the cost which does not vary with the change in the volume of activity in the short run. These costs are not affected by temporary fluctuation in activity of an enterprise. These are also known as period costs.

**Examples for fixed cost:** Salaries, rent, audit fees, depreciation etc.

Variable Cost is the cost of elements which tends to directly vary with the volume of activity. Variable cost has two parts- (a) Variable direct cost; and (b) Variable indirect costs. Variable indirect costs are termed as variable overhead.

**Examples of variable cost** are material consumed, direct labour, sales commission, utilities, freight, packing, etc.

Semi Variable Costs contain both fixed variable elements. They are partly affected by fluctuation in the level of activity.

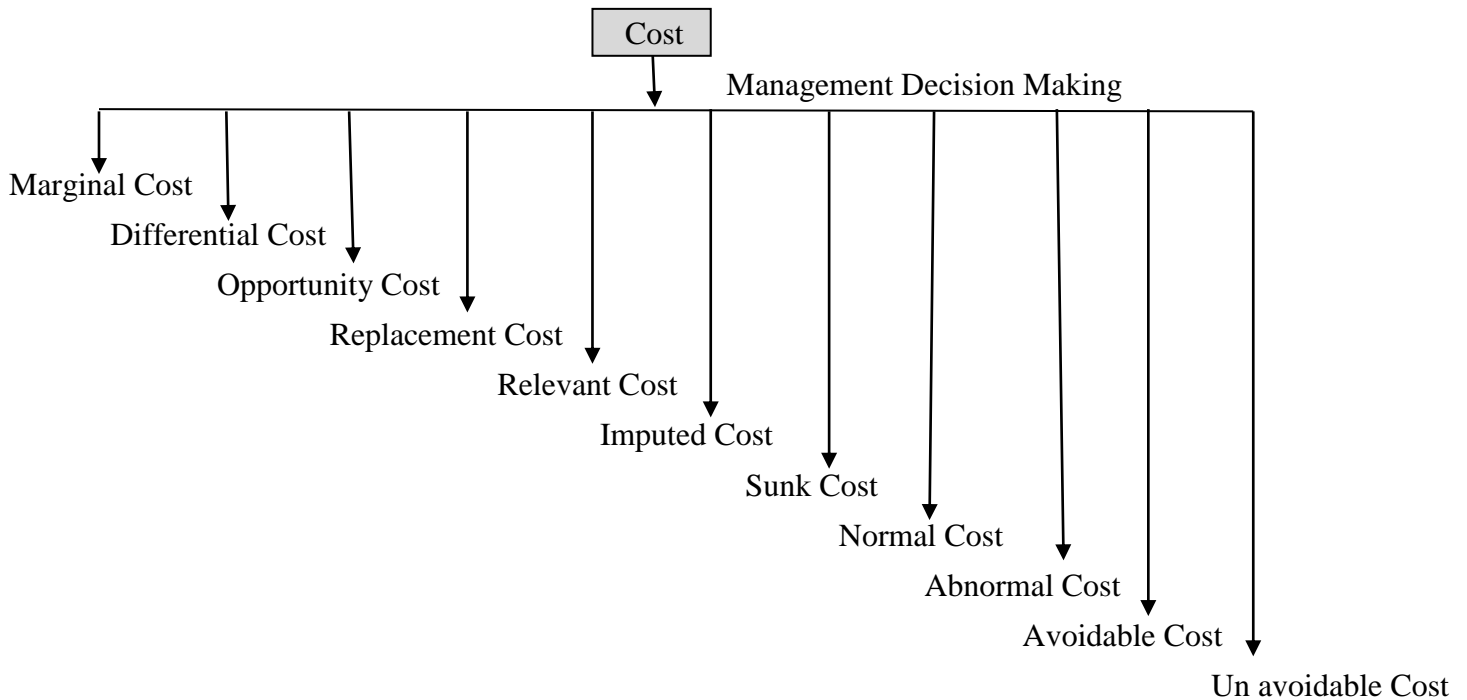
**Examples of semi- variable cost:** Factory supervision, maintenance, power etc.

**Note:**

1. The characteristics of fixed costs are (1) Fixed amount within an output range (2) Fixed cost per unit decreases with increased output
2. The characteristics of variable Cost: (1) The Variable cost varies directly with volume of activities or production (2) Variable cost remains constant per unit within a range of activity.

**For Management Decision Making**

Costs are classified for the purpose of management decision making under different circumstances as under:



Marginal cost is the aggregate of variable costs, i.e. prime cost plus variable overhead. Marginal cost per unit is the change in the amount at any given volume of output by which the aggregate cost change if the volume of output is increased or decreased by one unit.

Marginal cost is used in Marginal Costing system. For determining marginal costs, if any, are segregated into fixed and variable cost. Then, Variable costs plus the variable part of semi-variable costs is the total marginal cost for the volume of production in consideration.

**Example:**

<b>Production</b>		<b>45,000 units</b>
	<b>Fixed Cost</b>	<b>Variable Cost</b>
<b>B Cost</b>	<b>Rs. lakhs</b>	<b>Rs. lakhs</b>
Material cost		4.50
Labour cost		2.45
Fixed Cost	4.80	-
Variable Production & Selling overhead		2.30
Semi- variable Cost (after segregation fixed and variable part)	3.20	2.00
<b>Total Marginal Cost</b>		
Marginal cost per unit		11.25
Marginal cost per unit		Rs.25.00

Differential Cost is the change in cost due to change activity from one level to another.

Differential Cost is found by using the principal which highlights the points of difference in costs by adoption of different alternatives. This technique is used in export pricing, new products and pricing goods

sought to be promoted in new markets, either within the country or outside. Differential cost to be known as relevant Cost.

The algebraic difference between the relevant cost at two levels of activities is the difference cost. When the level of activity is increased, the differential cost is known as incremental cost and When the level of activity is decreased, the decrease in cost is known as decremental cost.

Output Unit in Lakhs	Differential Unit in lakhs	Total Cost (Rs. Lakhs)	Differential Cost(Rs. Lakhs)	Differential cost unit (Rs.)
1.00	—	30.00	—	—
1.20	0.20 (b) – (a)	35.00	5.00	25.00
(c) 0.80	0.20 (a) – (c)	26.00	-4.00	-20.00

(+) Incremental cost

(-) Discremental cost

**Opportunity Cost is the value of the alternatives foregone by adopting a particular strategy or employing resources manner.**

It is the return expected from an investment other than the present one- The opportunity cost is considered for selection of a project or justification of investment, studying viability of an investment option.

**Example:** A machine is currently being used to produce product P. It can also be used to produce product Q which can fetch Rs. 60,000 profit. Then the opportunity cost of using the machine Rs. 600000.

**Replacement Cost is the cost of an asset in the current market for the purpose of replacement.**

Replacement cost is generally used for determining the optimum time of replacement of an equipment or machine in consideration of maintenance cost of the existing one and its productive capacity.

**Relevant Costs are costs relevant for a specific purpose or situation.**

In the context of decision making relating to a specific issue, only those costs which are relevant are considered. A particular cost item may be relevant in a decision making and may be irrelevant in some other decision making situation. For example, present depreciated cost of machine is relevant in case of decision of its sale but it is irrelevant in case of decision of its replacement.

**Imputed Costs are hypothetical or notional cost, not involving cash, not involving cash outlay, computed only for the purpose of decision making.**

In economics, ‘imputed’ indicates an ascribed or estimated value when there is no criteria of absolute monetary value for such purpose. In national income estimation wages of housewives are imputed. Similarly, in farming operations, the wages or salaries of owner are imputed. Imputed costs are Similar to opportunity costs. Interest on Internally generated fund, which is not actually paid is an example of imputed cost.

**Sunk Costs are historical costs which are incurred i.e. ‘sunk’ in the past and are not relevant to the particular decision making problem being considered.**

Sunk costs are those that have been incurred for a project and which will not be recovered if the project is terminated. Which considering the replacement of a plant, the depreciated book value of the old asset is irrelevant as the amount is a sunk cost which is to be written off at the time of replacement.

**Normal Cost is a cost that is normally incurred at a given level of output in the conditions which that level of output is achieved.**

Normal cost includes those items of cost which occur in the normal situation of production process or in the normal environment of the business. The normal idle time is to be included in the ascertainment of normal cost.

**Abnormal Cost is an unusual or a typical cost whose occurrence is usually irregular and unexpected and due to some abnormal situation of the production.**

Abnormal cost arises due to idle time for some heavy break down or abnormal process loss. They are not considered in the cost of production for decision making and charged to profit & loss account.

**Avoidable Costs are those costs which under given conditions of performance efficiency should not have been incurred.**

Avoidable costs are logically associated with some activity or situation and are ascertained by the difference of actual cost with the happening of the situation and the normal cost. When spoilage occurs in manufacture in excess of normal limit, the resulting cost of spoilage is avoidable cost, Cost variances which are controllable cost.

**Unavoidable Costs are inescapable costs which are essentially to be incurred within the limits or norms provided for. It is the cost that must be incurred under a programme of business restriction. It is fixed in nature and inescapable.**

### **Concept of EOQ:-**

At EOQ  $\Rightarrow$  Ordering Cost = Storage Cost

Ordering Cost = No. of orders X Cost per Order

Storage Cost = Carrying & Storage Cost per unit per annum X Average Stock

No. of Orders X Cost per Order = Carrying & Storage cost per unit per annum X  
Averages Stock

A/EOQ X O = C.S. per unit per annum X  $\frac{1}{2}$ (EOQ)

$$\sqrt{\frac{2AO}{CS}} = EOQ$$

$$\text{Average Stock} = \left( \frac{\text{Opening stock (+) Closing Stock}}{2} \right)$$

**OR**

$$\frac{EOQ}{2}$$

## **JOINT PRODUCT/BY PRODUCT**

**Joint Costs are the common cost of facilities or services employed in the output of two or more simultaneously produced or otherwise closely related operations, commodities or services.**

When a production process is such that from a set of same input, two or more distinguishably different products are produced together, products of greater importance are termed as joint products and products of minor importance are termed as by- products and the costs incurred prior to the point of separation of the products are termed as joint Costs. For example, in a petroleum refinery industry, petrol, oil, kerosene oil, kerosene oil, naptha, tar etc. are produced jointly in the refinery process.

**By-Product Cost is the cost assigned to the by-products.**

### **Apportionment of Joint Cost:**

- On the basis of Sales Realisation at split off point.
- On the basis of Physical unit (Output).
- On the basis of NRV (Final Sales value – Further processing cost).

Joint Cost includes material & Labour & variable overhead (For Decision Making Process)

Joint Cost does not include Fixed Cost.



# **DECISION MAKING:- JOINT PRODUCT / BY PRODUCT**

Joint Product:- Two or more products produces simultaneously from common process having almost same utility.

Split off Point:- The point where these products.

Cost of each product:- Total joint cost should be distributed between Joint products.

## **Joint Cost means:-**

A:- Direct Material

B:- Direct Labour

C:- Direct Expense

D:- All variable overheads.

Joint cost does not include any part of Fixed Costs.

## **Reasonable Bases**

1:- Output

2:- Sales Realization & Split off point

3:- Essential Realization value at split off point.

Final Sales value after further process (-) further processing cost .

## **MAIN PRODUCT/BY PRODUCT**

If one product has been less value as compared to Sales Realization of offers:-

Higher Sales Value: known as : Main product

Low Sales Value : Known as:- By Product.

The entire Sales Value of By product should be deducted from the cost of product like Normal Loss.

If incremental cost < Incremental Revenue

Than apply further processing

Share of joint Cost -----Irrelevant for Decision making

Fixed Cost ----- Sunk for Decision Making.

## **FIXED OVER HEADS**

### **Apportioned**

Koi bhi expense base lekar

Deptt mein batana

### **Allocation**

this exp. will be added only in

this deptt where this was expensed.

### **Absorption apportioned**

Allocation ka kharche absorb karega koun,

Units badne ke wajah se cost price kam hogi.

## **PRODUCT ABONDNED/DISCONTINUE/DIVESTMENT POLICY**

### **Product Discontinue**

- Manufacture like to take decision for discontinuation of particular product(s) due to continuous cases from particular products.
- Fixed cost will be Sunk irrespective of closure of particular department.
- If different products in different departments.
- All fixed cost relating to that factory – considered
- Head office expenses---- Sunk

## **DIVESTMENT POLICY:-**

It means Diversification of Investment OR capital employed.

A part of business activity is /in source to outside Agency permanently.

Such policy is Divestment policy.

In this

Fixed amount will be given to outside agency & outside agency bears all expenses & carry all Business Activities.

**DECISION MAKING:-** Labour related Decision:-

Consider these points:-

(i)	Contribution to be loss due to outside	XXX
(ii)	Change in labour rate (due to strike)	XXX
(III)	Benefit achieved during strike	XXX

### **DISCRETIONARY COST AND COMMITTED COST**

**Discretionary cost:-** will be Incurred for next period

Event decided

Amount Uncertain.

**Committed Costs (only future Cases) :-** will have to be incurred

Event certain

Amount certain

I.e. future obligation already decided

It is a part of Sunk Cost.

**SUNK COST:- Both: .**

- Past Cost
- Future cost

## **Relevant Costs**

Relevant costs are those costs, which are appropriate to a specific management decision. These are the expected future costs, which will differ among alternatives i.e., an item is irrelevant if it will remain same regardless of the alternative selected. For example, if the salary of the General Manager (Finance) remains same irrespective of the machine purchased, his salary is irrelevant to the selection of the machines. In other words only the incremental or differential cash flows for choosing any alternative form the relevant cost for that specific decision. The following example will clarify the concept more clearly-

You are very fond of reading a specific news paper and you purchase it every morning from either of the two shops nearby at the cost of Rs. 2.50 per day and therefore this is the price you expect to pay in future also. Since this expected future cost remains same under both the alternatives, it is irrelevant cost for taking decision as to from which shop to purchase.

Now suppose, yesterday you observed a big signboard at one of the shops saying that they would be selling that news paper for Rs. 2.25 per day. Now you need a specific news paper every day and the expected future costs differ between the alternatives i.e ., Rs. 2.50 and Rs. 2.25 respectively. The cost of newspaper therefore becomes the relevant cost for our decision making as it fulfills both the conditions:

- (i) It is the expected future cost, and
- (ii) It differs among alternatives.

It may be noted here that the expected future costs i.e., What you will pay today or tomorrow and so on only are the relevant costs, not what you have been paying in the past.

In our example for relevant costs, the historical cost of newspaper in both the shops was Rs. 2.50 per day. That was irrelevant for our decision to purchase from a specific shop at the rate of Rs. 2.25 in the future. In fact had it been Rs. 2.75 in place of 2.50, even then our decision would have been to purchase at the rate of Rs. 2.25 from a specific shop in the future, In other words, we completely ignored the past costs or the historical costs in taking the decision. That shows the irrelevance of past costs or the historical costs.

- Sales – Variable cost = Contribution.

- Contribution – Avoidable Fixed Cost = Benefit.
- Benefit – unavoidable Fixed Cost = profit.
- If we have only one offer & Revenue amount is given, we should prepare “STATEMENT OF COST BENEFIT”.
- If we have only one offer & Revenue Amount is not given, we should prepare Statement of Relevant Cost.
- If we have more than one proposal, prepare “Statement of Comparative cost benefit”.

## OPPORTUNITY COST:

An opportunity cost has been defined as the value of a benefit sacrificed in favour of an alternative course of action. For example, if the amount of fixed deposit in the bank is proposed to be withdrawn for investing in a project, the opportunity cost would be the loss of interest on the said amount of fixed deposit. The opportunity costs little difficult to measure but the following example will prove the relevance of opportunity cost in decision making.

Suppose M/s Universal Drug Company has manufactured a bulk drug XYZ at the cost of Rs. 5,00,000 It can sell this bulk drug for Rs. 7,00,000 or make a formulation from it worth Rs. 9,00,000 for an additional cost of Rs. 2,50,000. Now if we do not consider the opportunity cost of Rs. 2,00,000 (i.e., Rs. 7,00,000 - 5,00,000) of selling the bulk drug we will say that preparation of formulations is profitable to the company because it gives a profit of Rs. 1,50,000 computed as under:

	Amount (Rs.)
(a) Cost of bulk drug	5,00,000
(b) Additional cost of formulating	2,50,000
(c) Opportunity cost of selling bulk drug	2,00,000
(d) Total cost of formulations	9,50,000
(e) Sales price of formulations	9,00,000
(f) Loss from manufacture of formulations.	(-) 50,000

Thus we see that the opportunity costs play a very crucial role in decision making process. However these costs do not involve actual cash receipts or out lays. Therefore these opportunity costs find no place in the formal accounting systems particularly for external reporting and are computed basically for comparison purpose only i.e., in decision making while choosing an alternative.

## Example of opportunity cost:

- The opportunity cost of using a machine to produce a particular product is the earnings foregone that would have been possible if the machine was used to produce other products.
- The opportunity cost of funds invested in a business is the interest that could have been earned by investing the funds in bank deposit.
- The opportunity cost of one’s time is the salary which he would have earned by his profession.

**Avoidable Costs:** Avoidable costs are cost that can be skipped if the decision on activity in consideration will not been taken up. As per CIMA terminology avoidable costs are the ‘Specific cost of an activity or sector of a business that would be avoided if the activity or sector did not exist’. For example, if a company wants to discontinue a product line to manufacture, then the cost that can be saved due to discontinuation of a product

line to manufacture, then the cost that can be saved due to discontinuation of a product line is called avoidable cost.

**Historical Costs:** Cost that has been already incurred in the past is called historical cost. Amount invested in purchase of a machinery, for example is historical cost and is not relevant for decision making.

**Sunk Cost:** Costs which do not change under given circumstance and do not play any role in decision making process are known as sunk costs. These are the costs which have been incurred by a decision made in past and cannot made in the future . CIMA defined sunk cost as ‘Cost that has been irreversibly incurred or committed and cannot therefore be considered relevant to a decision. Sunk costs may also be termed irrecoverable costs’. All sunk costs are irrelevant for decision making but all irrelevant cost may not be sunk cost.

**RELEVANT COST means:**

Particular	Rs. Amount
Cost to be incurred due to acceptance of offer	XX
+ benefit to be lost acceptance of offer	XX
Benefit to be achieved	XX
	XX

In the absence of instruction always we should pre assume the following Results.

Resources	Nature
Material	Obsolete
Labour	Casual
Machine	Obsolete
Centre (Deptt)	Cost centre
Overhead	Fixed (unavoidable)

All apportioned/Absorbed overhead to be considered as sunk Cost.



**SUMMARY OF RELEVANT COST**

**Relevant Cost**

Material	Labour	Overhead
<b>A:-OUT OF STOCK:-</b> Current Purchase Price	<b>A:- CASUAL:-</b> (i) <b>NOT BUSY:-</b> Labour Cost (ii) <b>BUSY:-</b> LC+ Cont. to be Lost	<b>A:- VARIABLE:-</b> Always Relevant
<b>B:- IN STOCK:-</b> (i) <b>OBSOLETE:-</b> Resale Value (2) <b>TOXIC NATURE:-</b> Benefit to be achieved (3) <b>SUBSTITUTE USE:-</b> Resale value	<b>B:- PERMANENT:-</b> (i) <b>IDLE:-</b> NIL (Sunk Cost) (ii) <b>BUSY:-</b> Contribution to be lost , ignoring Labour Cost	<b>B:- FIXED:-</b> (i) <b>UNAVOIDABLE:-</b> Always Sunk. (ii) <b>AVOIDABLE:-</b> Always relevant

<b>OR</b>		
Cost of Sub Material, Whichever is higher is the Opp. Cost		
<b>C:- Regular Use:-</b> Current Purchase Price		

**Relevant Cost**



<b>MACHINE</b>	<b>CENTRE</b>
<b>A:- OBSOLETE:-</b> Difference of Resale Value	<b>1:- COST CENTRE:-</b> Only variable Cost
<b>B:- REGULAR NATURE:-</b> Difference of Replacement Cost	<b>2:- PROFIT CENTRE:-</b> VC + Contribution to be lost

## CHAPTER-2 MAKE OR BUY DECISION

Decision of Make or Buy refers to Component but not product as decision of product (either of Manufacture or Purchase) is known as Subcontracting.

**Component:-** A part of product but not Integral part.

**Non integral Part:-** Chair (Bicycle). Empty bottle (Soft drinks) , Condenser (Fan, Blades (Fan).

### Statement of Comparative Cost

Manufacture A <sub>1</sub>		Purchase A <sub>2</sub>	
Rs.		Rs.	
Cost to be incurred due to Manufacturing			
Manufacturing	X	Purchase Cost	X
Labour	X		
Direct Expenses	X		
Variable Overhead	X		
Avoidable Fixed Cost	X		
<b>Relevant Cost</b>	<b>X</b>	<b>Purchase Cost</b>	<b>X</b>

Select the Option having least cost. (Ignore unavoidable FC due to Sunk Cost)

### Statement of Cost Benefit

	<b>Rs.</b>
<b>Loss on Purchase</b>	<b>XXX</b>
<b>Benefit from Released Capacity</b>	<b>XXX</b>
<b>Net benefit</b>	<b>XXX</b>

- Statement of Cost benefit should be prepared only when we have other alternative to utilize the released capacity.
- Case1 :- IF Ques..... Details are given requirement.

All are Independent

- Case 2:- If Question.....
  - (a) Facts
  - (b) Facts
  - (c) Facts..... details Requirement.....?

Here a, b, c are dependent as parts of Question.

## Make or Buy Decision with Key Factor

**Key Factor/ Limiting Factor :-** It means factor of Production which are in short supply.

**Factor of Production :-** Material (Kgs) Labor (hours) Machine ( hours)

**Short Supply :-** Requirement of Resources > Supply of Resources

**And**

Its Not possible to purchase from outside Market and present Availability are not sufficient to meet own requirement.

Now, we should utilize the Resources in Optimum manner.

### STATEMENT OF RANKING

Components	A	B	C
If Manufacture- VC (Rs. Per Unit)	XX	XX	XX
IF Purchase – PC (Rs. Per unit)	XX	XX	XX
Savings in Purchase -			
(a) Savings in Manufacturing- Over purchase	XX	XX	XX
(b) Material (kgs) per unit-	XX	XX	XX
(a/b) Savings per material (kgs per unit)	XX	XX	XX
Ranking	XX	XX	XX

### Statement of Optimum component Mix

Production	Units	Kg. Per Unit	Kilograms
A			
B			
C			_____ Available

In Make or Buy Key Factor decision, We should prepare the following 2 statements

(a) Statement of Ranking &

(b) Statement of Optimum Component Mix

### Points to be Remember:-

Material	XX
Labour	XX
Direct Expenses	XX
Prime cost	XX
Factory Overheads	XX
(Payment to Labour per unit) i.e. Permanent Labour variable / Marginal cost	XX

Sales	XX
(-) VC	XX
Contribution	XX
(-) Avoidable Fixed Cost	XX
(-) Semi Variable Cost	XX
(-) Semi Fixed Cost	XX
Benefit	XX Benefit from Released Capacity
(-) un avoidable fixed cost	XX
Profit	XX

Payment to be given to the labour per unit basis.

**Permanent Labour :-** It is Sunk

Casual Labour:- Employment salary as on monthly basis.

**Employee :-** It is Sunk.

**Overall :-** ( Make or Buy):-

**Number of Batches:-**  $\frac{\text{Cost of Total Component}}{\text{Batch Size}}$

If Batches ( No. of Batches) is reduced then, Total Cost is reduced , If cost per Batch Remain Same.

Key Factor( In case of Make or Buy decision in respect of Component):-

- If Total Resources in current year is Not given. But variable cost, purchase cost and Hours required are given and In the next year, the Requirement increases and only one component is required to be purchased then always presume total Resources be either 100 or 1000 or 10,000 ( Key factor availability).

**OR**

May presume quantity of each component be 100 or 1000 or 10,000

When to Find

-Savings per Key factor in Manufacture

- Loss on Purchase per key factor & gave decision.

### Savings per key factor in Manufacture

When question is asking regarding in what quantities the components should be purchased to minimize the cost, So question indirectly is asking about How much quantities is to be manufactured.

#### **Loss on purchase per Key factor:-**

If Question specifically says that if only component is to be purchased then which is to be purchased in what Quantity.

**So, Basic difference is:-**

<b>Savings/Key Factors in Manufacturing.</b>	<b>Loss on key factor Purchase</b>
<b>If question says :- In what quantities, the components should be purchased</b>	<b>If only 1 component is to be purchased, then which is to be purchased.</b>
<b>If questions says how much to be purchases then we will decide how much manufacture, then savings is manufacturing per key factor we have to find.</b>	<b>If we decide to purchase from outside , so we can calculate loss on Purchase so that where loss will be reduce where we have to purchase the item.</b>

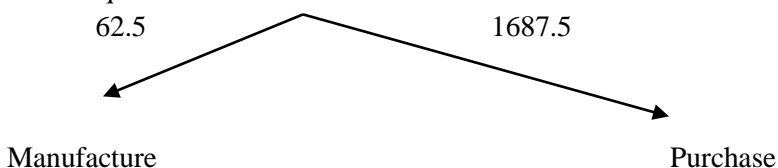
Department of A always means process i.e. output of 1 department becomes Input of other.

#### **Example: Cutting & Stitching.**

Half Purchase is not possible

But Half Manufacture is possible( Like we work in Progress )

Total requirements:- 1750 units



Manufacture is possible but purchase is not full purchase possible that way we have to purchase whole product.

Purchase the whole.

## Costing Decision

Purchase cost should be compared with relevant cost of Manufacturing

### Relevant cost of Manufacturing

	<b>Rs.</b>
Variable Cost	XX
(+) Avoidable Fixed Cost	XX
(+) Benefit to be Lost	XX
Relevant Cost	XX

- **UNAVOIDABLE FIXED COST- SUNK COST – IGNORE (always)**  
**COST INDIFFERENCE POINT**

	<b>Alternative 1</b>	<b>Alternative-2</b>
Variable Cost	↓	↑
Fixed Cost	↑	↓

Indifference point is the level at which savings in variable cost (A1) will cover extra burden of fixed cost .

Total Cost (Alternative -1) = Total Cost (Alternative-2)

Change in Fixed Cost = VC per unit

Change in Variable Cost

$$EOQ = \sqrt{\frac{2AO}{CS}} = \text{Order Size}$$

Where, Ordering cost = storage Cost

A = Annual Demand/ Production

CS = Carrying Cost

Average Stock =  $\frac{1}{2}$  (EOQ) (+) Minimum stock

When Requirement > Available Resources

Purchase the Component if  $PC < VC$

Manufacture the Component if  $VC < PC$

### With Limited Resource

- Produce the component having Maximum savings per limiting factor  
&
- Component t that could not be produced that should be purchased

## Summary of the Topic MAKE OR BUY

**Question: What are the non-costing factors to be considered in make or buy decisions?**

**Answer:**

1. The delivery of the component should be on schedule time.
2. The Quality of the supplied component should be standard.
3. The delivery of the component should be on regular basis at constant price.
  - (i) For the decision of make or buy. We should compare purchase cost with the cost to be incurred due to manufacturing the component. Instead of Total Cost.  
Cost to be incurred due to manufacturing the component includes variable cost & avoidable fixed cost.  
Unavoidable fixed cost like general overhead should not be considered in make or buy decision due to sunk cost.

(For Example)	
Manufacturing cost per unit	Purchase cost = Rs. 75 per unit



Material	20	
Labour	40	
Variable cost	70	
Fixed overhead	10	Quantity = 1000

In the above e.g. cost to be incurred is Rs. 70 only. Whereas purchase cost is Rs. 75, hence we should make & Total cost (manufacture) is 80.

(ii)

	Manufacturing (per unit)		Purchase cost
Material	20	Purchase cost	85
Labour	10		
Variable Over head	40		
Avoidable Fixed overhead	10		
Unavoidable Fixed Overhead	20		
	100	Quantity	1000 per month

Rent = 7000 per month

Cost to be incurred	80	Purchase cost	85
Loss on purchase		(5 × 1000)	5000
Benefit (rent)			7000
			2000

The above situation can be explain in the following manner.

#### A. Statement of Comparative cost (per unit)

Manufacturing		Purchase cost	
Cost to be incurred	Rs. per unit		Rs. per unit
Variable cost	70	Purchase cost	85
Avoidable Fixed cost	10		
Total	80	Total	85

#### B. Statement of Cost Benefit

	Rs.
Loss on purchase	5 × 1000
Benefit from released capacity	7000
Net benefit	2000

**Alternative 2:** Purchased cost should be compared with relevant cost i.e. cost to be incurred + benefit to be lost.

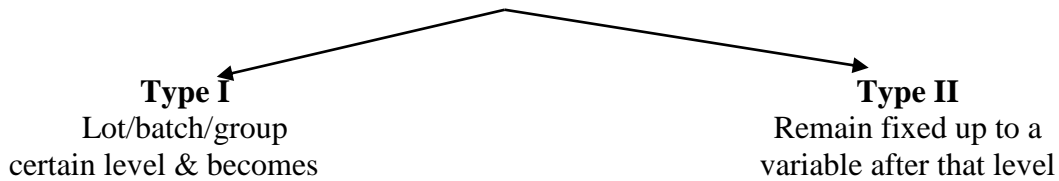
#### Statement of Comparative cost (Relevant cost)

Relevant (manufacturing)		Purchase	
Cost to be incurred:			
Variable cost	70		
Avoidable fixed cost	10	80	Purchase cost 85
Benefit to be lost (7000/1000)		7	
		87	85

It is better to purchase due to net benefit (2 X 1000 = 2000)

- If we have different alternative to utilize, the release capacity then we should select the alternative which has higher net benefit & cover the loss on purchase.

## Semi variable Cost



Type 1:	Bus rent, Packing charges (Example)	Level	Rs.
	Supervision charges	0 - 100	2000
		101 – 200	4000
		201 – 300	6000
		301 – 400	8000

- It is not possible to segregate variable & Fixed element cost for this type.
- Within the lot it is fixed, Lot wise it is variable
- Total Cost will increase as No. of lot increases but cost per lot remain constant.

**Example:** Bus Rent, Packing charges of a box, Inspection charges.

### Type 2:

1 Box = 100 unit : Rs. 1000/- per box

Level	Box	Cost (Rs.)	Cost (lot)
0 - 100	1	1000	1000
101 - 200	2	2000	1000
201 - 300	3	3000	1000
301 - 400	4	4000	1000

1. Batch Wise:-Variable  
Within Batch:-Fixed
2. Cost per lot remain constant (unless specially provided in situation)
3. Total Cost will increase as no. of lot increase.
4. Lot Size will remain uniform as provided for the first lot.

## Make or Buy With Key Factor

If a product consumes more than one component & we have limited resources (Key factor) then we should utilize the resource in optimum manner in following way:-

1. Purchase the component having least Purchase cost as compare to manufacture cost  
(Purchase cost < Manufacture Cost)

- Produce the component at first up to its maximum requirement having maximum saving in manufacture over purchase in terms of limiting factor. (Although the component having least Saving per unit consumption or resource (hours) may be very low means High Quantity for that component would be produced. Which results overall saving to be maximized.

Saving = Saving Per unit  $\downarrow$  X Qty  $\uparrow$

**Key factor :** Limiting Factor

Means the factor of production which are in short supply.

Our purpose is to utilize the limiting factor in optimum manner.

Factors of production means material, Labour (hrs/Rs.) and machine (hrs).

**SHORT SUPPLY:** it is not possible to purchase these resources from outside market and present avoid ability of a particular resource is not sufficient to meet 100% our requirement in respect of component.

**Example:**

**Product X Demand 10000**

	A	B	C
Component	10000	10000	10000
Quantity	1 hour	2 hour	3 hour
Requirement			

of Labour hrs per unit

Requirement of labour hour = 60000 Labour hrs

Available labour hour = 50000 hrs

It is a clear case of short supply.

## Optimum Utilisation

We should purchase a component and produce other component so that total cost in manufacturing & purchase would be minimized.

### STATEMENT OF RANKING

Component	Variable cost	Purchase Cost	Hrs.	Saving in Manufacture	Saving in Labour hour	Ranking
A	10	15	1	5	5	I
B	20	50	10	30	3	II
C	30	25	Purchase			

Make or Buy decision with Key factor approach. If a product consumes more than one component then we should consider the following points.

- We should purchase the component which has least purchase cost as compare to its manufacturing cost irrespective of key factor.
- We should produce the component which has maximum saving in manufacturing over purchase in terms of limiting factor. For this purpose we should prepare the following two statements:
  - STATEMENT OF RANKING (Savings in manufacture over purchase in terms of Key factors)
  - STATEMENT OF OPTIMUM COMPONENT MIX

**Points to be remembered:**

1. If total resources and individual quantity for each component are not given and the requirement is only one component should be purchased then first of all we should presume the quantity of each component either be 1 unit or 100 unit or 1000 unit and then prepare statement of ranking & Statement of component mix with different combinations.
2. During the selective combination if the requirement of resource falls below the availability of resources then such difference of resources shall be utilized to produce the component which is going to be purchased.

## Make OR Buy

### Statement of Comparative Cost

Manufacturing Cost		Purchasing Cost	
	Rs.		Rs.
Cost to be incurred:		Purchase Cost	XXX
Material	XXX		
Labour	XXX		
Variable Overhead	XXX		
Avoidable fixed cost	XXX		
Benefit to be lost	XXX		
Relevant Cost	XXX	Relevant Cost	XXX

### Statement of Cost benefit

#### Benefit from Released Capacity

Revenue from released capacity	XXX
Less: Cost	XXX
Net benefit from released capacity	XXX

**Note:** If we have more than one alternative to utilize the released capacity, select the alternative which has higher benefit.

## MAKE OR BUY

**Alternative 2** (We should prepare two statements)

### Statement of Comparative cost

Manufacturing		Purchasing	
Cost to be incurred	XXX	Cost	XXX

and

### Statement of Cost benefit

Loss o purchase	XXX
Benefit from released capacity	XXX

Net benefit	XXX
-------------	-----

MAKE or BUY + Key Factor. We should prepare the following Statement.

1. Statement of Ranking
2. Statement of optimum component Mix.

### STATEMENT OF RANKING

Component	A	B	C	D
Manufacturing Cost (Rs.)	X	X	X	X
Purchase Cost (Rs.)	X	X	X	X
Saving in manufacturing	X	X	X	X
Labour hour/units	X	X	X	X
Savings per hour	X	X	X	X
Ranking (According to saving P.H./P.U)	I	II	III	IV

### STATEMENT OF COMPONENT MIX

Component	Ranking	Quantity (no. of units)	Labour Hours Per unit	Labour Hours
A	I			
B	II			
C	III			
D	IV			
Total Labour Hours Available				



## Chapter-3 Decision Making (Key factor)

Decision of Key factor should be applied only for product

**Key factor:-** Factor of Production which are in short supply.

**Factors of Production:-**  $\Rightarrow$  Material (Kgs, Litre)

**OR**

Labour (Hours/ Rupees)

**OR**

Machine ( hours)

**OR**

Sales (Quantity/Rupees)

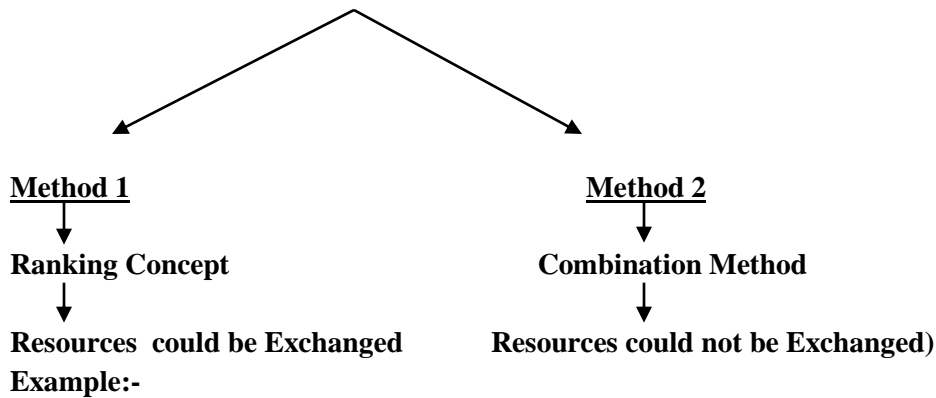
Short Supply:- If factor of production are limited means

**DEMAND > AVAILABILITY**

**And**

- It is not possible to purchase from outside market..
- To utilize the limiting factor in the optimum manner i.e. we should utilize limiting factor in such a manner so that Overall contribution to be maximized.
- Overall contribution = Contribution per unit X Number of units of product to be produced

**Overall contribution Should be maximized**



Material A- Kg.	Material A- Kg
Material B- Kg	Material B – Litre
Material A- Ltr	Material A- Kg (Domestic)
Material B- Ltr	Mateial B –Kg (International)
A-Domestic	A- Skilled
B- Domestic	B – Unskilled
A- International	A –Special Material
B- International	B – Normal Material
Lab:- Skilled	
Lab:- Skilled	

**1:- Ranking Concepts:-**

**Basis of Ranking:- Contribution per unit of Key Factor**

<b>Factors of Production (Key Factor)</b>	<b>Basis of Ranking</b>
- Material (Kg)	Contribution per Kg
- Material (Ltr)	Contribution per Litre
- Labour (hours)	Contribution per Labour hours
- Machine hours	Contribution per Machine hours
- Sales (Quantity)	Contribution per unit
- Selling Price (Rupees)	Contribution per Rupees of selling price

**In Key factor concepts, we should prepare**

- **Statement of Ranking**
- **Statement of Optimum Product Mix**
- **Statement of Profit**

**Statement of Ranking**

<b>Product</b>	<b>A</b>	<b>B</b>	<b>C</b>
Selling Price	X	X	X
Variable Cost	X	X	X
a. Contribution/unit	X	X	X
b. Kgs per unit	X	X	X
a/b Contribution/Kg	X	X	X
Ranking	I	II	III

- In the absence of Instruction in relation to demand, always presume that the demand of that product will be unlimited.
- Key factor decision indicates only that which product should be produced and which should not be produced,
- Key factor decision does not indicate which product should be purchased.

**Key Factor with Avoidable Fixed Cost**

**-Ref. to Question 10:-** If we have Avoidable fixed cost along with key factor then final Decision should be analyzed after considering Avoidable fixed cost.

- Ref to Question 11:- Cost of Land should be treated as Capital Expenditure, Hence, If become assets, But Interest thereon should be a Revenue expenditure Although, Interest is a financial expenditure i.e. not a part of Cost. It should be considered charge against profit.

**A:- Two Key Factor with one Product:-** We should produce the product saving higher amount of overall contribution.

**Overall Contribution = Contribution per unit X No. of Possible units.**

If we have Two Key Factor with Two Products  
 Both Product = Same Ranking : ----- Ranking  
 Both Product = Different Ranking -----Equation

**Two Key Factor with Three Products**

Example-

- (A) Prepare statement of Ranking as per material & as per R.Labour.
- (B) Prepare Statement of Product Mix as per Material & Labour (Independently)
- (C) Identify a Product which exhaust & calculate balance Resource to other 2 products.

4;- Two Key factor with 2 product apply equation Method if Rankings are Opposite.

5;- Prepare Statement of Contribution.

**DIFFERENCES**

<b>Make/Buy</b>	<b>Subcontracting</b>
COMPONENT	PRODUCT
PC < VC : Purchased	PC < VC ; Purchased
(irrespective of Key Factor)	(only when)
Manufacture	Manufacture
Savings in Manufacture over purchase per Key factor	Savings in Manufacture Over Purchase per Key factor
Higher	(excess contribution in Manufacture over purchase).

# Summary of the Topic

## Key Factor

Key Factor means the factor of production which are in short supply. Factor of production means material, Labour machine hours, sales Qty or sales price.

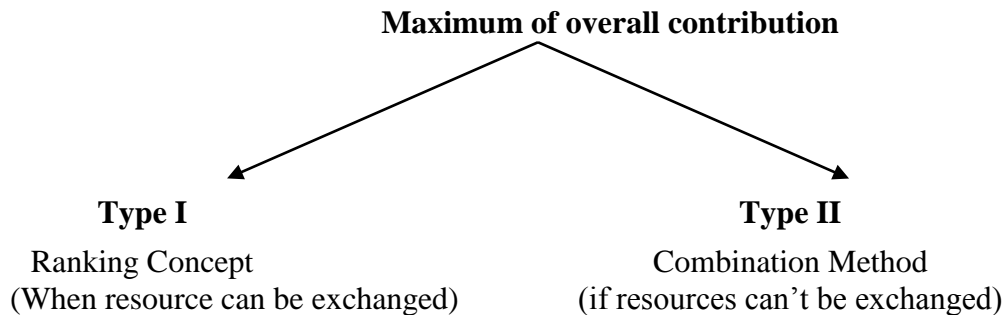
**Short Supply** means the present availability of resource would not be sufficient to meet 100% demand for all products in a particular period and it is not possible to purchase such resources from outside market for the next period.

**Example:**

Product	A	B	C
Hours per unit	1	2	3
Demand	10000	10000	10000
Requirement	10000 (1 + 2 + 3)	= 60000	
Available	50000		

The main purpose of Cost management is to utilize the resource in optimum manner which are in short supply. Optimum manner means maximization of overall contribution overall contribution to be maximized in the following manner.

### OPTIMUM UTILIZATION



**Example: Type I**

Product	A	B
Selling price	100	100
-material (5Kg @ 2/Kg)	10 (10 Kg @ 2)	20
Labour Variable overhead (100 hour @ 2 )	20 (30 hours@ 2)	60
Contribution/unit	70	20
<b>Material : Key factor</b>		
Material (kg/Per unit)	5	10
Contribution/Kg.	14	2
Ranking	I	II



Maximum Demand resource	1000	1000
Resource	12000 Kg	

Resources can't be exchanged due to change in rates OR different skills (Deptt.)

### STATEMENT OF OPTIMUM PRODUCT MIX & PROFIT

	Qty	Kg/unit	Kg.	Contribution
A	1000	5	5000	1000 × 70
B	700	10	7000 (b.f)	700 × 20
			Total contribution	84000
			(-) Fixed Cost	—
			Profit	84000

For type No. 1 we should prepare following two statements:

1. Statement of Ranking (contribution in term of limiting factor)
2. Statement of Optimum product mix & profit

### Adjustments

1. if we have minimum requirement or special requirements for any one product or products then first of all we should utilize our resource for producing such minimum requirement and balance resource should be utilized as per ranking.

### Two key factor with two products

**Example:** If we have two product A, B & Two key factor material & Labour.

	A	B
Material (Kg)	2	4 (1600 Kg)
Labour (hrs)	3	2 (15000 Hrs)
Contribution/unit	100	100

### Demand unlimited

#### Approach I: STATEMENT OF RANKING

	A	B
Contribution/unit	100	100
Kg. per unit	2	4
Contribution/Kg	50	25
Ranking	I	II
Hours Per unit	3	2
Contribution/hour	33.3	50

Ranking	II	I
---------	----	---

### STATEMENT OF OPTIMUM PRODUCT MIX

Material	A	Labour	B
	16000 Kg/2 = 8000 unit	15000 hrs/2	7500 unit
	1500 hrs/3 = 5000 unit	16000 kg/4	4400 unit
Possible unit	5000	Or	4000
Contribution	5000 × 100		4000 × 100

### Approach II: EQUATION METHOD

	A	B	
Material	2 Kg	4 Kg	16000
Labour	3 hours	2 hours	15000

Let X1 be qty for A & X2 be qty For B

$$2x_1 + 4x_2 \leq 16000 \text{ -----1}$$

$$3x_1 + 2x_2 \leq 15000 \text{ -----2}$$

Multiply the 2nd equation by 2

$$2x_1 + 4x_2 = 1600 \text{-----1}$$

$$6x_1 + 4x_2 = 30000 \text{ -----3}$$

$$\text{-----}$$

$$-4x_1 = - 14000$$

$$X_1 = 3500$$

Put the value for X1 into 1st equation

$$2 \times 3500 + 4x_2 = 16000$$

$$4x_2 = 16000 - 7000 \quad x_2 = 2250$$

$$\text{Contribution A} = 3500 \times 100 = 350000$$

$$\text{B} = 2250 \times 100 = 225000 = 575000$$

### Result:

If we have two key factor with two products then we should follow the following rules-

1. We should prepare ranking statement with first key factor as well as 2nd key factor.
2. We should apply equation method if we have opposite ranking. We should follow product mix method (RANKING CONCEPT) if we have same ranking for each product from both key factors.

### POINTS:

- Limiting factor exist only when maximum demand can not be fulfilled.
- If we have an opportunity cost for the resources then we should divert our resources form other activities in producing the product when the product has sufficient contribution to cover the opportunity cost.

If we have two key factor with three product then we should apply the following steps:-

1. We should prepare statement of ranking for each key factor.
2. We should prepare optimum product mix with 1st key factor and with 2nd key factor separately.
3. Identify a product which can be produced at its maximum level & satisfied both the ranking and then calculate balance resources which may be utilized for other two products either by equation method or product mix method & calculate unit if other two product.
4. Prepare statement of overall contribution.
  - In case of avoidable Fixed cost, Final decision should be analyzed on the basis of net benefit. Net benefit = contribution as per ranking –avoidable Fixed cost.
  - If two product have same avoidable Fixed cost then we should not compare net benefits from these products.
  - If we have one product with two Key factor then we should produce the product which has maximum overall contribution i.e. Overall Contribution = Contribution per unit X possible unit.

Possible unit means the unit of Finished Goods which can be processed from all the resources, for example if we have Material 1,00,000 Kg & Labour 50,000 hrs & 1 unit of product “X” require 20 kg & 100 hours.

Quantity to be processed from material =

Quantity to be processed from Labour =

Possible unit = 500 unit.



# CHAPTER 4:- SUBCONTRACTING

## Decision Making (Relevant Costing)

**SUBCONTRACTING means:-** Purchase & Sale of Goods i.e. **OUTSOURCING** (Trading activity)

\*It is a Short Term Decision Making.

Subcontracting decision should not be applied whenever we have 100% resources for All products i.e. (No Key Factor Exists)

\*Subcontracting decision should be applied when we have key factor.

\*Once Subcontracting decision applied then there is no limit subject to Benefit.

Key Factor Decision indicates	Sub contracting decision indicates ONLY
Which product should be produced and which product should not be produced.	
It does not indicate which product should be Purchased	Which product should be purchased.
Manufacture	PC ↓ (purchase)
Manufacture	PC ↑ (Manufacture)
KEY FACTOR	SUB CONTRACT
	Subject to Key Factor
	Subject to Benefit

## Question:- SUBCONTRACTING FORMA FOR DECISION MAKING

Product	A	B	C
Variable Cost	XX	XX	XX
Purchase Cost	XX	XX	XX
Savings in Manufacture (A)	XX	XX	XX
<b>(Excess Contribution per unit in Manufacturing over purchase per unit)</b>			
Decision	mfr	mfr	mfr
<b>Now, if depends on availability of resources for products (Supposedly if Resources are not sufficient for products).</b>			
Hours per Units	X	X	X
Savings per Hour (A/B)	X	X	X
<b>(Excess Contribution per Hour)</b>	<b>I</b>	<b>II</b>	<b>III</b>

### Ranking.

In Subcontracting Decision

### We should prepare the following 3 statement

A: Statement of Ranking

B:- Statement of Optimum product MIX

C:- Statement of Profit

CONCEPT If in Question	Concept:- If in Question
Total resources are given	Total are not given
↓	↓
Then	
Resources (Exchangeable)	Resources ( Not Exchangeable)
E.g. ↓ Hours	E.g. ↓ Hours
Dept 1 1,00,000	Dept 1 1,00,000
Dept II 1,60,000	Dept II 1,60,000

## Summary of the Topic

### SUB CONTRACTING

#### Statement of Ranking

Products	A	B	C	D
Manufacturing Cost (Rs.) + (a)	XX	XX	XX	XX
Purchase Cost (Rs.) (b)	XX	XX	XX	XX
Saving in manufacturing per unit (a – b)	XX	XX	XX	XX
Labour hour/units (Limiting Factor)	XX	XX	XX	XX
Savings per hour	XX	XX	XX	XX
Ranking (Depends on condition)	XX	XX	XX	XX

#### Statement of Product Mix

Product	Quantity	Ranking	Labour Hours	Total Labour Hours
A	X	X	X	X
B	X	X	X	X
C	X	X	X	X
D	IV	X	X	X

#### MAIN POINTS:

1. Purchase and sale of finished goods.
2. Sub- contracting is a short term decision making.
3. Sub –contracting decision should not be applicable for all products simultaneously i.e. A, B, C & D. All are taken together because this decision will convert the manufacturing activity to trading activities.
4. Key factor decision does not indicate that which one should be purchased. It indicate only which one should be produced & how much quantity should be produced.

Sub-Contracting decision only indicate which product should be purchased and which product should be manufactured.

For example:—

#### STATEMENT OF RANKING

	A	B	C
Selling Price (Rs.)	100	200	300

Variable Cost (Rs.)	60	150	200
Contribution In manufacturing & Sale (a)	40	50	100
Labour hour per unit (limiting Factor)	10	20	50
Contribution in manufacturing sale/hour	4	2.5	2
Ranking	1	2.5	3
Purchase cost (Rs. per unit)	50	160	210
Contribution in purchase & Sale (b)	50	40	90
Decision (Comparing a & b)	Purchase	Manufacture	Manufacture
Or			
	<b>A</b>	<b>B</b>	<b>C</b>
Variable Cost (Rs. per unit)	60	150	200
Purchase Cost (Rs. per unit)	50	160	210
Saving in purchase over manufacturing	10	-	-
Saving in manufacturing over purchase/Excess contribution	-	10	10
Decision	Purchase	Manufacture	Manufacture
Labour hours per unit	X	20 hrs	50 hrs
Saving/hour	X	0.50	0.20
Ranking for manufacture	X	I	II

1. if we have sufficient resource only for 100% requirement in B & 40% for product C then balance 60% of product (should be purchased).
2. If we have sufficient resource for 100% requirement in product B & C. and partially for product A then we should purchase 100% requirement of A.
3. If we have sufficient resources for all products, we should not apply sub contracting decision.

In sub-contracting decision. We should prepare the following two statements.

**A. Statement of Ranking (Comparison of Purchase cost with variable cost)**

Or

Comparison of contribution in manufacturing & Sale with contribution in purchase & Sale.

**B. Statement of optimum product mix**

**C. Statement of Profit**

**Points to be remembered:**

- If we have more than 1 section 1 division for a product and every section has more than one part then sub-contracting decision should not be applied within the parts for any section, however sub- cont. decision should be applied for each complete section independently.

**Points to be remembered:**

- Labour hours can + be exchanged in the following circumstances. IF we have labour hours for each division separately and total labour hours for both/all division are given.
- If they same different rate.
- If we have unlimited demand then it indicate only one product to be produced.
- First of all we calculate possible unit, otherwise selling price of trigger can't be decided.
- Order: can never be reduced.
- Demand: can be reduced
- Manufacture at all means when it will start manufacturing work in any way.

**Make/Buy + Key factor**

If all component have Variable Cost < purchase Cost, then we should produce but due to limited resource, it is not possible to produce all component in house, then first of all we should produce that component which has higher saving in manufacturing over purchase in terms of key factor i.e. by prepare statement of Rank.

**Sub Contract**

1. Finished Goods
2. Key Factor exist
3. Short term Decision making

We should prepare the following statements.

1. Statement of ranking (Contribution in manufacturing & Sale with contribution in purchase & sale in terms of key factor or comparison of variable cost with purchase cost in terms of key factor).
2. Statement of optimum product mix
3. Statement of Profit

**Main Points**

**DIFFERENCE**

<b>Make/Buy + key factor</b>	<b>Sub contracting</b>
Component	Product
It can't be sold only consumed	Sale in market
Compare Variable cost with purchase cost in terms of key factor	Compare variable cost with purchase cost in terms of key factor
	Or
	Contribution in manufacturing. & Sale with
	Contribution in purchase & sale in terms of key factor.

- In make or buy decision, key factor decision & sub - contracting decision, if we have any avoid FC then final decision should be analyzed on the basis of net benefit.

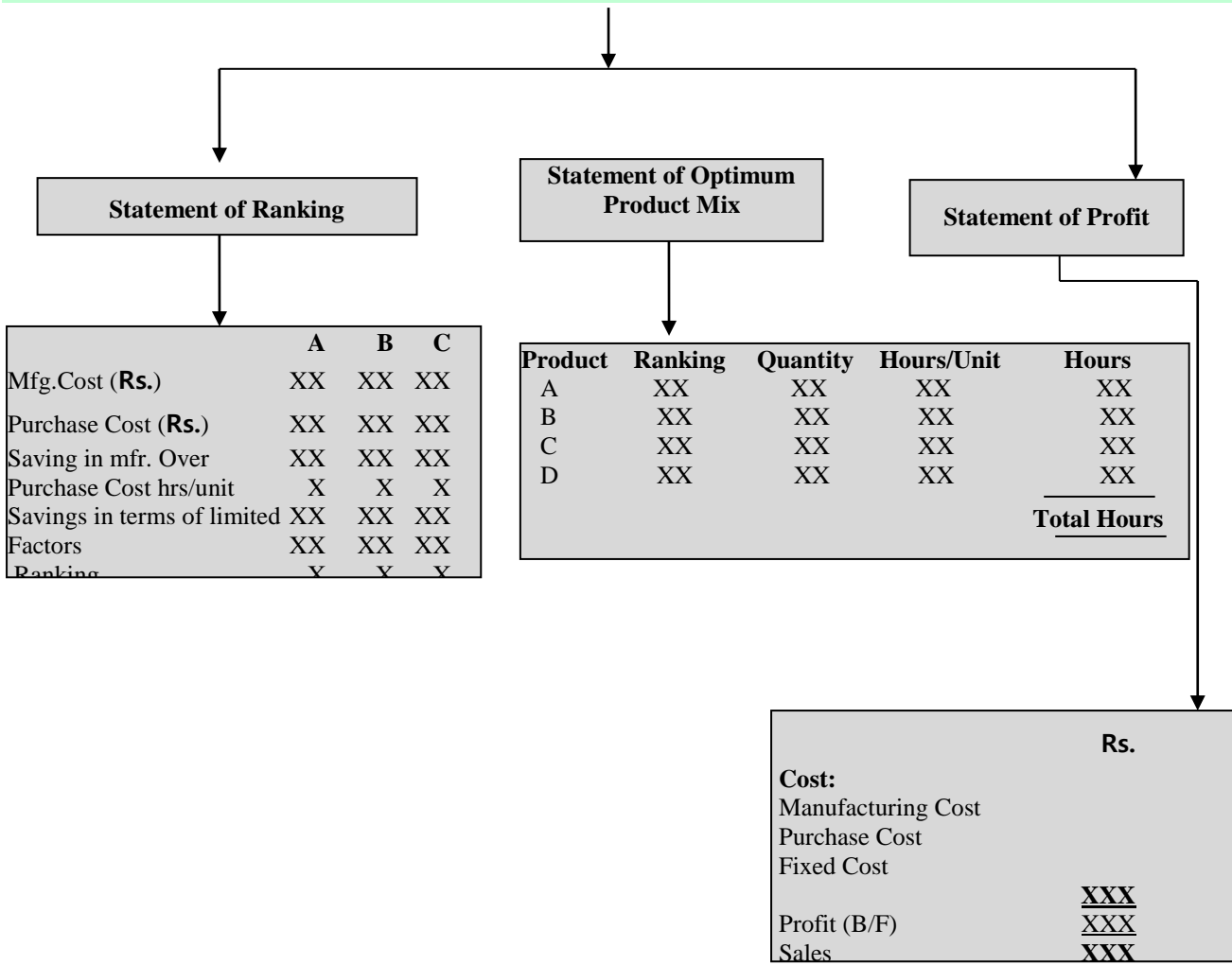
NET BENEFIT = Contribution as per ranking –avoidable Fixed Cost.

- If management would like to know which product should be manufactures within key factor, we should follow only key factor approach (Contribution per limiting factor).
- If management would like to know that which product should be produced & which should be purchased then we should follow Sub contracting approach.





# SUB-CONTRACTING



	A	B	C
Mfg. Cost (Rs.)	XX	XX	XX
Purchase Cost (Rs.)	XX	XX	XX
Saving in mfr. Over	XX	XX	XX
Purchase Cost hrs/unit	X	X	X
Savings in terms of limited Factors	XX	XX	XX
Ranking	X	X	X

Product	Ranking	Quantity	Hours/Unit	Hours
A	XX	XX	XX	XX
B	XX	XX	XX	XX
C	XX	XX	XX	XX
D	XX	XX	XX	XX
				<u>Total Hours</u>

	Rs.
<b>Cost:</b>	
Manufacturing Cost	
Purchase Cost	
Fixed Cost	
	<u>XXX</u>
Profit (B/F)	<u>XXX</u>
Sales	<u>XXX</u>



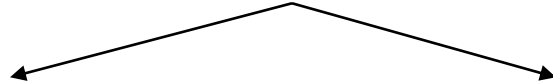
# Chapter 5:- Transfer Price

- **Transfer Price:-** Price charged from Receiving department for supply of Goods & Service.
- Transfer Price: Revenue: for Supply Department
- **T.P. Cost :** for Receiving department
- Transfer Price different from Selling Price
- In case of Sale- Goods- reaches in the hand of customer
- In case of Transfer Price-Goods- remain-within Business
- Transfer Price Notional- No effect on the overall profit of company.
- Transfer Price should be fixed in such a manner-overall profit of Co. remains same.

## Transfer Price

1. Transfer Price is different from sale price because in case of sale of goods, the title would be transferred and goods reaches in the hands of customers but in case of transfer. Title of goods would not be transfer and goods remain within the business.
2. Transfer price is a notional price because higher Transfer price would increase the profit of supply division, correspondingly decrease the profit of receiving division but overall profit of the company remain same. (other factor remain constant).
3. The purpose of transfer price is the evaluation of performance for each department separately.
4. The Conflict in relation with the transfer price is to be resolved either by management or management accountant.

### Transfer Price to be Fixed by



**Management**

(No decision Making)

**Management Accountant**

(Decision on the bases of Relevant costing)

Case 1:-

### Statement of Transfer Price (As in Make or Buy)

Manufacture		Rs.	Purchase	
			Rs.	
Variable Cost	XX		Purchase Cost	XX
	XX			XX(b)
(+) Benefit to be lost due to Transfer	XX			
Minimum Transfer Price	XX (a)			

Range:- Minimum TP: (a) to (b)

Case 2:- Statement of Transfer Price

	Rs.
Cost to be incurred due to transfer	XX
(+) Benefit to be lost due to Transfer	XX
Minimum Transfer Price	XX
(TP based on Relevant Cost)	

## Transfer Price (“ Coverage”) (Types of Questions)

1:- TRANSFER PRICE TO BE FIXED BY MANAGEMENT /MANAGEMENT ACCOUNTANT WITH/WITHOUT KEY FACTOR.

2:- PREPARATION OF STATEMENT OF PROFIT FOR EACH DEPARTMENT WITH GIVEN TRANSFER PRICE/OR METHOD PROVIDED BY MANAGEMENT I.E. NO DECISION MAKING.

3:- TRANSFER PRICE BASED ON BEST STRATEGY BASES

4:- TRANSFER PRICE BASED ON CALCULUS

5:- TRANSFER PRICE BASED ON INTERNATIONAL TAXATION.

**TRANSFER PRICE FIXED BY MANAGEMENT ACCOUNTANT**

A:- If spare capacity :

Then  $TP = VC$

B:- If no spare Capacity

Then  $TP = VC + \text{Contribution Lost}$

**(Contribution loss per hour X Hours per unit)**

**I:- TRANSFER PRICE:** Preparation of “Statement of Profit” with given Transfer Price Method from Management ( No decision Making).

**II:- AVOIDABLE FIXED COST & Unavoidable Fixed cost** both should be considered.

**III:- Best strategy Based:-**

How much part of our capacity is utilized & how much quantity should be utilized for

- (a) External Sale &
- (b) Transfer to another department. So that,

**The Profit of**

- (a) Department &
- (b) Company will be at Maximum level.

**General Rule for BEST Strategy**

- (i) Spare Capacity (TP) = VC (+) Avoidable Fixed Cost
- (ii) Busy (Transfer Price) = Variable Cost (+) Avoidable Fixed Cost (+) Contribution to be lost

Transfer Price = Relevant Cost

In Same circumstances, we can prepare

### **Statement of Ranking**

- (Ranking statement, should be prepared only when Transfer price is given)
- **If question required that Best strategy should be applied for Deptt then we should consider only Deptt. contribution . However if question requirement is for overall company then only we should consider overall contribution of Co. to be maximized.**

(iv):- **Application of Calculus (Derivative)**

Basics :- Profit is to be maximized where we have,  $MR = MC$ .

$MC = VC = \Delta$  in cost due to  $\Delta$  in output by 1 unit

$MR =$  Usage in Revenue due to  $\Delta$  in output by 1 unit .

MC is a derivative of Total Cost function

MC - ?

$TC = \text{No. of units} \times VC \text{ per unit (+) Fixed Cost}$

$TC = X \cdot VC (+) \text{ Fixed Cost}$

$$\frac{d(TC)}{dx} = MC = I \times VC (+) O$$

$$MC = VC$$

MR is a derivative of Total Revenue function

MR - ?

Price Function = a - bx -----where-----Quantity = X,

A= Highest price with "0" Quantity, Reduction in Price per unit = b

Revenue Function = Price function X Quantity

$$R = (a - bx) \times X$$

$$R = ax - bx^2$$

$$MR = a - 2bx$$

Profit will be at Maximum level

When MR = MC

$$X = ?$$

Keeping x in Price Function

P= ?

### TP with MAKE or BUY Decision

If TP given and decision is for either to produce/purchase

Decision Better to Produce ----- PC > VC /Relevant Cost

Better to Purchase ----- PC < VC/Relevant Cost

Fixed Cost in Sunk. (**always ignore**)

If a department has no spare capacity busy then, Relevant cost of producing the component will be as under:-

Cost to be incurred (a) Department	XX
(+) Contribution to be lost	XX
(+) Cost to be Incurred (B) Department	XX
	<b>XX</b>

If (A) Department don't sell in Market:-

Then there will be non recovery of FIXED COST

Multinational Transfer Price / International Taxation

If a company transfer his goods & services to other company under the same Management but the country of Transferor and Transfer are different. Such Transfer Price is known as Multinational Transfer Price.

In Multinational Transfer Price, If Goods transferred from Transferor company to transferee company.

Then, Due to spare capacity, and if Transferor Co. transfer goods at its Variable Cost.

The Govt will recognize, such Transaction as Sale & we should consider ARM's LENGTH PRICE as Sale Price & than Transferor Co. will have to pay CORPORATE TAX on such Transfer (Demand Sale).

### **Two Types of Costs**

<b>Transferor Company</b>	<b>Transferee Company</b>
1:- Corporate Tax= ( ARM's length - Cost price (-) ) X Tax Rate	(i) Import Duty on (ARM's length Price)
2:- SHIPPING Charges i.e. Transportation cost, Duty, Loading charges, Insurance.	2:- Shipping Charges i.e. Transport Cost, Duty, loading Charges

## Summary of the Topic Transfer Price

**Reason for Conflict**

Supply division	TO receive higher amount	For Goods & Services
Receiving Division	To pay low amount	

### Fixation of Transfer price

By Management	By management Accountant
1:- Transfer Price = Market Price (no fluctuation)	We should fix the transfer price so that overall profit of the company would remain constant.
2:- Transfer Price = cost plus return	Transfer price always based on relevant cost.
Or	
Cost + Mark up	
Return means profit as a % of investment.	
Investment = Fixed Assets + working capital	
Mark up means margin as a % of cost.	
Cost means = variable cost + Avoidable Fixed cost + unavoidable cost.	
Variable cost + Contribution = Selling Price	
Variable cost + Fixed cost + profit = Price	
Total cost + contribution $\neq$ Price	
Variable cost + Fixed cost + fixed cost + Profit $\neq$ Price.	

### Statement of Comparative Cost

Variable Cost	10	Purchase Cost	25
---------------	----	---------------	----

### Decision: manufacture & transfer

Now we should fix the transfer price so that B Dept would not like to purchase the component from outside market i.e. Transfer price should be less than purchase cost but Transfer price should be based on relevant cost instead of an arbitrary price.

### Statement of Transfer Price (Relevant Cost)

Cost to be incurred due to transfer	10
+ Benefit to be lost	=
= Minimum Transfer price	<b><u>10</u></b>

Transfer price Rs. 10 to 25 (Range).

### Case No.2:

A		B	
Capacity	10000	Requirement	2000

Demand	8000	Purchase Cost	25
Selling price	25		
Variable Cost	10		
Fixed cost	20000		

Spare capacity can be utilized for rental income Rs. 40000.

**Answer:**

Variable cost	10	Purchase cost	25
Loss on purchase (15 × 2000)			30000
(-) benefit from released capacity			40000
Net benefit			10000

### Decision: Better to Purchase

Now we should fix the transfer price so that Department B would like to purchase the component from the outside market but transfer price should be based on relevant cost.

Cost to be incurred due to transfer	10
Benefit to be lost (40000/2000)	20
Minimum transfer price	30

### Case No 3:- A (profit centre)

Total Capacity	10000	Requirement 2000 unit
Selling Price	25	
Variable cost	10	
Fixed cost	20000	

#### Statement of Transfer Price (Relevant Cost)

Cost to be incurred due to transfer		10
Contribution to be lost due to transfer	(25 – 10)	15
(by non-selling to market) Minimum price		25

1	A (Spare capacity)	Qty 2000
	Variable cost =10 selling price = 12	Purchase cost = 12
	Transfer price = 10 i.e. 10 to 12	10/12 (make or buy)
2	A (spare capacity)	B : Qty 2000
	Variable cost = 10 selling price = 12	Purchase cost = 12
	Rental = 5000	10/12

	Loss on purchase 2000 X 2	4000
	Benefit to be lost	5000
		1000
	Transfer price = $10 + 5000/2000 = 12.50$	
3	A spare capacity	B
	Variable cost = 10	Purchase cost = 9
	Transfer price = Rs.10	10/9 buy
	Variable cost = 10	Purchase cost 9/11/9.8

### Points to be Remembered

1. If statement of profit is required then unavoidable Fixed cost should be considered. (not consider in decision making).

Sales ratio means = selling price X quantity

Wages means = Cost per unit X quantity

**Example:** If Transfer Price is given & Decision is for Make or Buy.-

If supply department has sufficient spare capacity to produce and transfer the required qty. then for make or buy decision, we should compare purchase cost with cost to be incurred (variable cost +avoidable Fixed cost). In other words we can say fixed cost should not be considered due to sunk cost and profit amount also should not be considered due to unrealized.

2. If in the above case if department "A" is a profit centre then contribution to be lost in the hands of department A is a part of relevant cost and purchase cost should be compared with relevant cost. Relevant cost (manufacturing).

## COST RATIO METHOD (Decided by management)

This method is to be applied where the output of department A is not marketable due to specialized product and it is not possible for B department to purchase from outside market.

**NOTE:** “If TP is given & Decision is for Make or Buy, then purchase Cost should be Compared with Relevant Cost”.

Relevant Cost = Variable Cost : Spare Capacity

Relevant Cost = Variable Cost + Contribution to be lost :- Busy

**Step 1:- Calculate total profit in the hands of Company.**

Sales Value	20	XX
A's Cost (total)	3	XX
B's Cost (total)	12	<u>XX</u>
Total Profit	<u>5</u>	<u>XX</u>

**Step 2: Distribute the total profit to each division on the basis of their total cost i.e.**

$$5 \text{ L} / 15 \text{ L} \times 3 \text{ L} = 1 \text{ L}$$

= Total profit/total cost X A's cost (supply department).

**Step 3: Transfer value = A's total cost + A's share of profit.**

- Demand means Demand Exist for furnished product (Good unit) but Demand does not correlate the demand of scrap/Rework unit.





## Dual Rate of Transfer Price

**Question:-** Global Multinational Ltd. (GML) has two Divisions “DX” and “DZ” with full profit responsibility.

The Division “DX” produces component “X” which it sells to outside customers only. The Division “DZ” produces a product called the “Z” which incorporates Component “X” in its design.”DZ” Division is currently purchasing required units of Component “X” per year from an outside supplier at market price.

New CEO for Indian Operations has explored that “DX” Division has enough capacity to meet entire requirement of division “DZ” and accordingly he requires internal transfer between the divisions at marginal cost from the overall company’s perspective.

Manager of Division “DX” claims that transfer at marginal cost are insuitable for performance evaluation since they don’t provide an incentive to the division to transfer goods internally. He stressed that transfer price should be “Cost plus a Mark-up”.

New CEO worries that transfer price suggested by the manager of Division “DX” will not induce managers of both Divisions to make optimum decisions. You are requested to help him out of the problem.

### **Solution:**

To Overcome the optimum decision making and performance evaluation conflicts that can occur with marginal cost based transfer pricing following methods has been proposed:

### **Dual Rate Transfer Pricing System**

“With a Dual Rate Transfer Pricing System the Receiving Divisions is charged with marginal cost of the intermediate product and “Supplying Divisions” is credited with full cost per unit plus a profit margin”.

Accordingly Division “DX” should be allowed to record the transactions at full cost per unit plus a profit margin. On the other hand Division “DZ” may be charged only marginal cost. Any inter divisional profits can be eliminated by accounting adjustment.

### **IMPACT:-**

Division “DX” will earn a profit on inter-division transfers.

Division “DZ” can chose the output level at which the marginal cost of the product “X” is equal to the net marginal revenue of the product ”Z”.

### **Two Part Transfer Pricing system**

“The Two part Transfer Pricing System” involves transfer being made at the marginal cost per unit of output of the “Supplying Division” plus a lump-sum fixed fee charged by the “Supplying Division” to the “Receiving Division” for the use of the capacity allocated to the intermediate product.”

Accordingly Division “DX” can transfer its products to Division “DZ” at marginal cost per unit and a lump-sum fixed fee.

### **IMPACT:**

“Two part Transfer Pricing System will inspire the Division “DZ” to choose the optimal output level.

The pricing system also enable the Division “DX” to obtain a profit on inter division transfer.



# CHAPTER 6- PRICING POLICY

## PRICING DECISION

**PRICING:-** Selling Price to be fixed for Goods purchased & sold

In Domestic Market

In outside country/Export Price(FOB/CIB)

### **Domestic Price:-**

- (i) Introductory stage:- New product to be introduced first the in Market by Company Minimum Price =Relevant Cost = Variable Cost (+) Avoidable Fixed Cost
- (ii) Developing Stage:-  
Minimum Price = Variable Cost (+) Avoidable Fixed Cost (+) Unavoidable Fixed Cost = Break Even
- (iii) Developed Stage:- Min Price =Total Cost (+) Mark-up

### **Basic Term:-**

Rs.1:- Return:- Margin after Tax

2:- Mark-up :- Profit Before Tax

3:- Capital Employed/Investment:- Fixed Assets (+) Working capital.

4:- Value added:- Total Cost (-) Material Cost

**OR**

= Labour + Overhead (Variable (+) Fixed)

5:- Incremental Cost:- Material (+) Labour (+) variable overhead (+) Avoidable Fixed Cost.

6:- MRP ( List Price) (-) Trade discount = Net sale value (-) Cash discount = Net Price.

PBT (-) Tax Amount = PAT      List Price = MRP

PBT (-) Tax amount = PAT

(Sales-Total Cost) –Tax Rate X PBT = PAT

(Sales-TC) (-) Tax (Sales-Total Cost) = PAT

\*(S-TC) (1-TR) = PAT

### **EXPORT PRICE:-**

Free on Board (FOB) =Export Price = Price Upto the port of Seller.

= Ex factory Price (+) Transportation Cost (+) Export Duty (+) Loading Charges

Cost Insurance & Freight (CIF) = Free on Board (FOB) (+) Transit freight Insurance

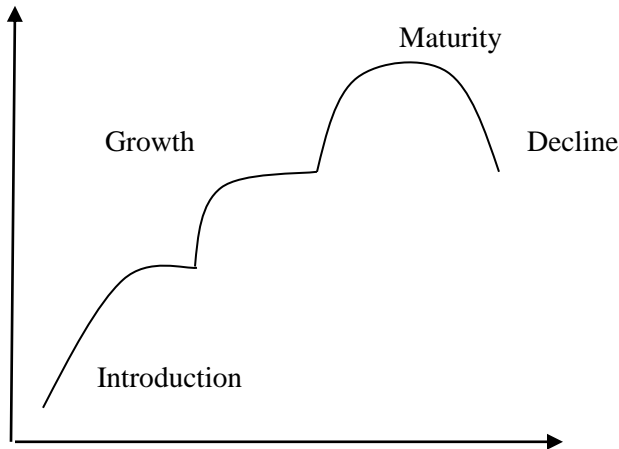
Landed Cost = Cost, Insurance (CIF) & Freight (+) Import Duty (+) Unload Charge

**Total Cost of Imported Goods** = Landed Cost (+) Transportation Cost.

Pricing Policy with Life cycle Costing

There are 4 stages in a Life Cycle costing of every product:-

Particulars	Introduction	Growth	Maturity	Decline
Demand	Very Low	Increasing	High level	Very Low
Competition	No	Enter to field	Face	Outstanding
Advertisement	Very High	Just reduction	Very low	Very High
Profit	No	Closer to Break even Point	Higher margin	No



**Market penetration Pricing ( Price low ) :-** Already Market Expansion  
New Product new Company

**Skimming policy ( Price High , innovation, New product, Market)**

## Summary of the Topic

### Pricing Policy

- **For New Product :-** Minimum price should be equal to its “ RELEVANT COST”.

i.e. Cost to be incurred	XX
(VC + Avoidable Fixed cost)	
+ Benefit to be lost	XX
– Benefit to be achieved	XX
	=====
	=====

- **For Developing product:**  
Pricing Policy = Total Cost = Variable Cost + Avoidable Fixed Cost + Unavoidable Fixed Cost
- **For Developed Product :-**  
Pricing Policy = Cost plus Markup

#### Basic Term:

- **Markup means :-** Margin Before Tax
- **Return/profit :-** Margin after Tax

#### Conversion Cost means

- Total Cost less material Cost i.e. Labour & Overhead (all).
- Incremental Cost means relevant cost i.e. Variable Cost + Avoidable Fixed Cost i.e. It does not include any part of unavoidable Fixed Cost.

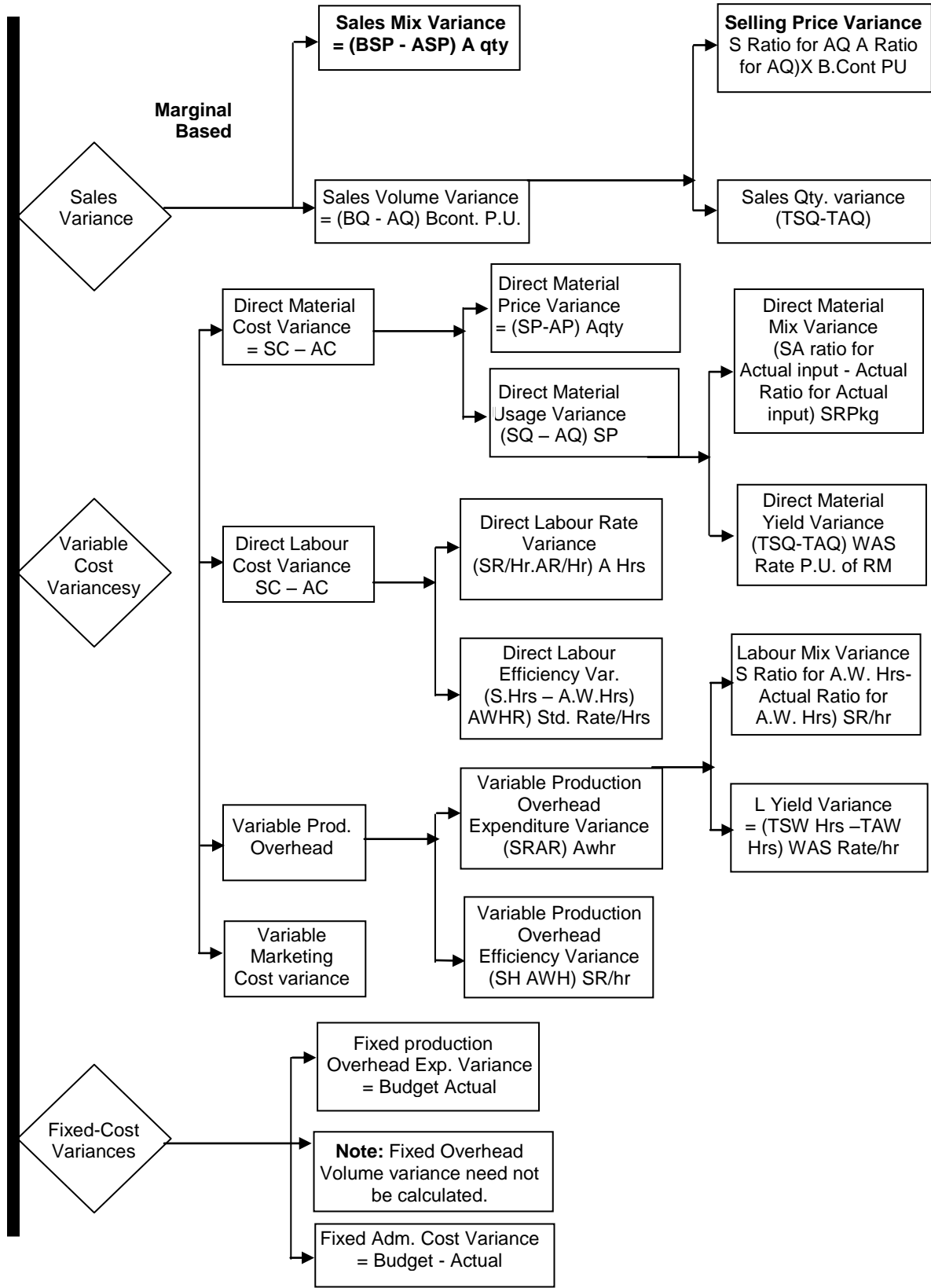
#### Equation: (Sales – Total Cost) (I - Tax Rate) = PAT

- Investment means Fixed Assets + Current Assets – Current Liabilities.
- Investment means Relevant Investment for the product or (attributable) for the product but not of Total Investment of the Company.



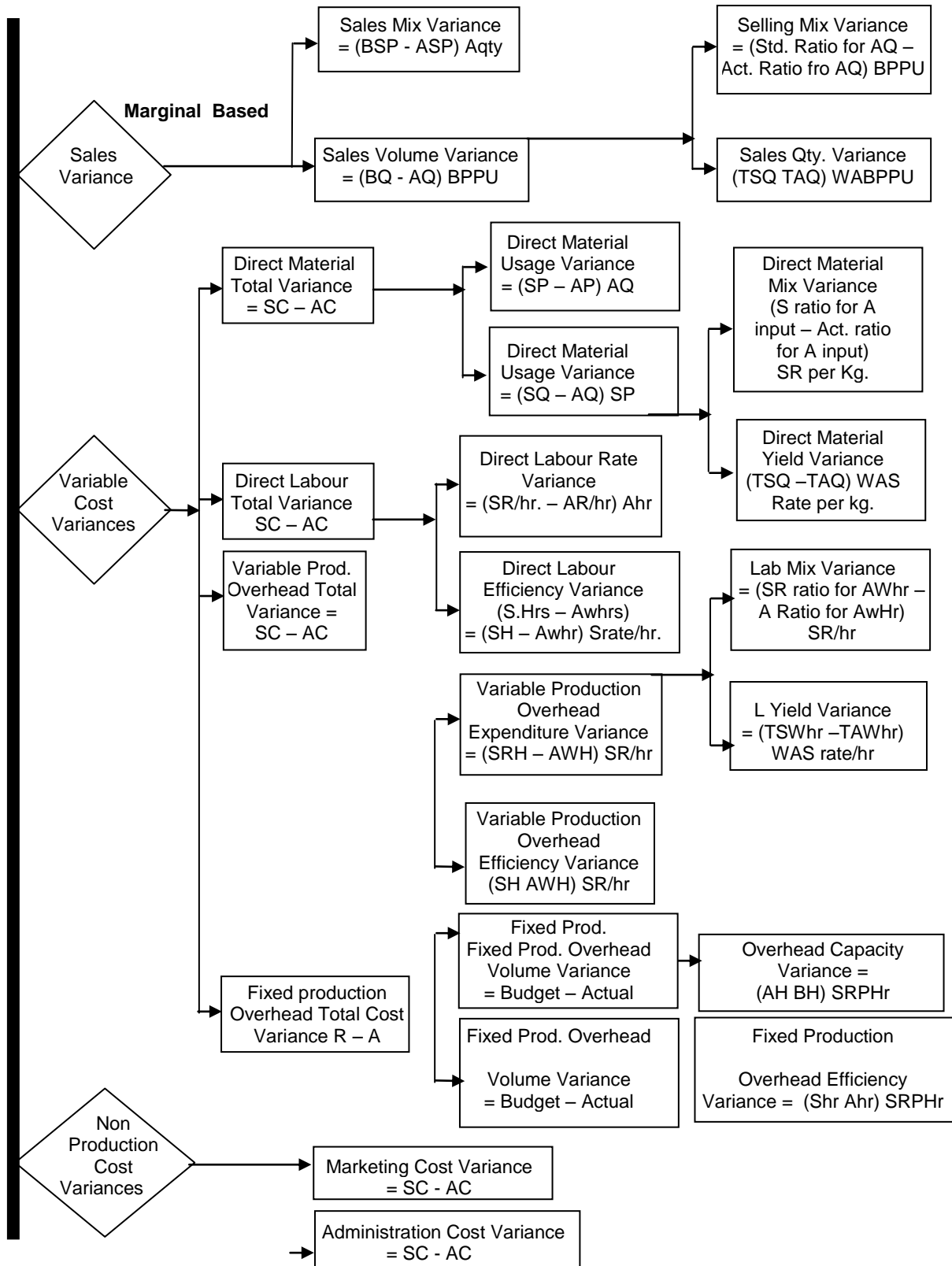
# **CHAPTER 7:- STANDARD COSTING**

**A Chart of Variances (Using Marginal Costing)**



1. WAB Cont. P.U. = Weight Average Budgeted Cont P.U.
2. SRP kg = Standard Rate Per Kg
3. AWH = Actual Working Hours

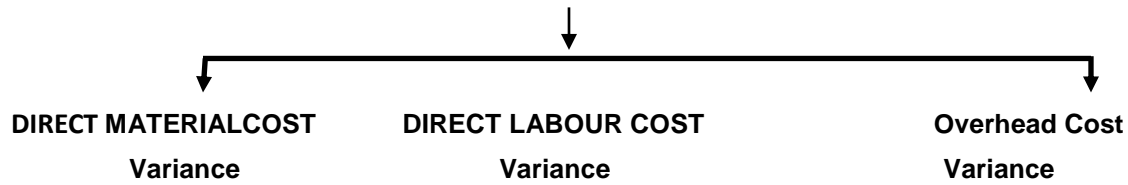
### A Chart of Variances (Using Marginal Costing)



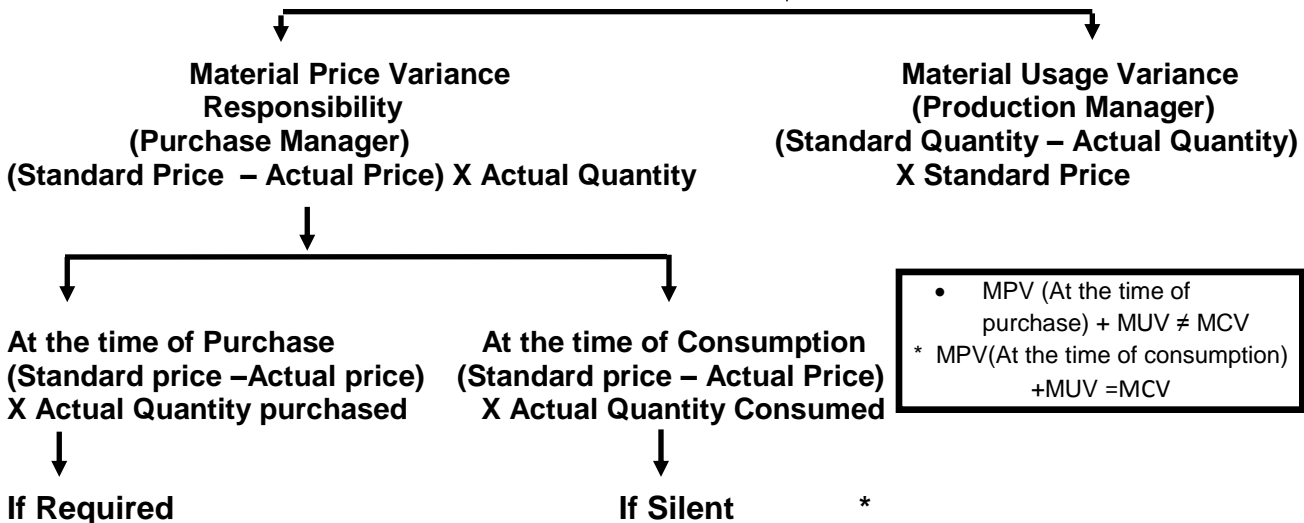
1. BPPU = Budgeted Profit Per Unit.
2. WABPPU = Weighted Average Budgeted Profit Per Unit.
3. TSQ = Total Standard Quantity
4. TAQ = Total Actual Quantity.
5. Total Material Cost Variable = Material Price Variance + Material Usage Variance
6. Material Usage Variance = Material Mix Variance + Material Yield Variance

# Summary of the Topic

## COST VARIANCE



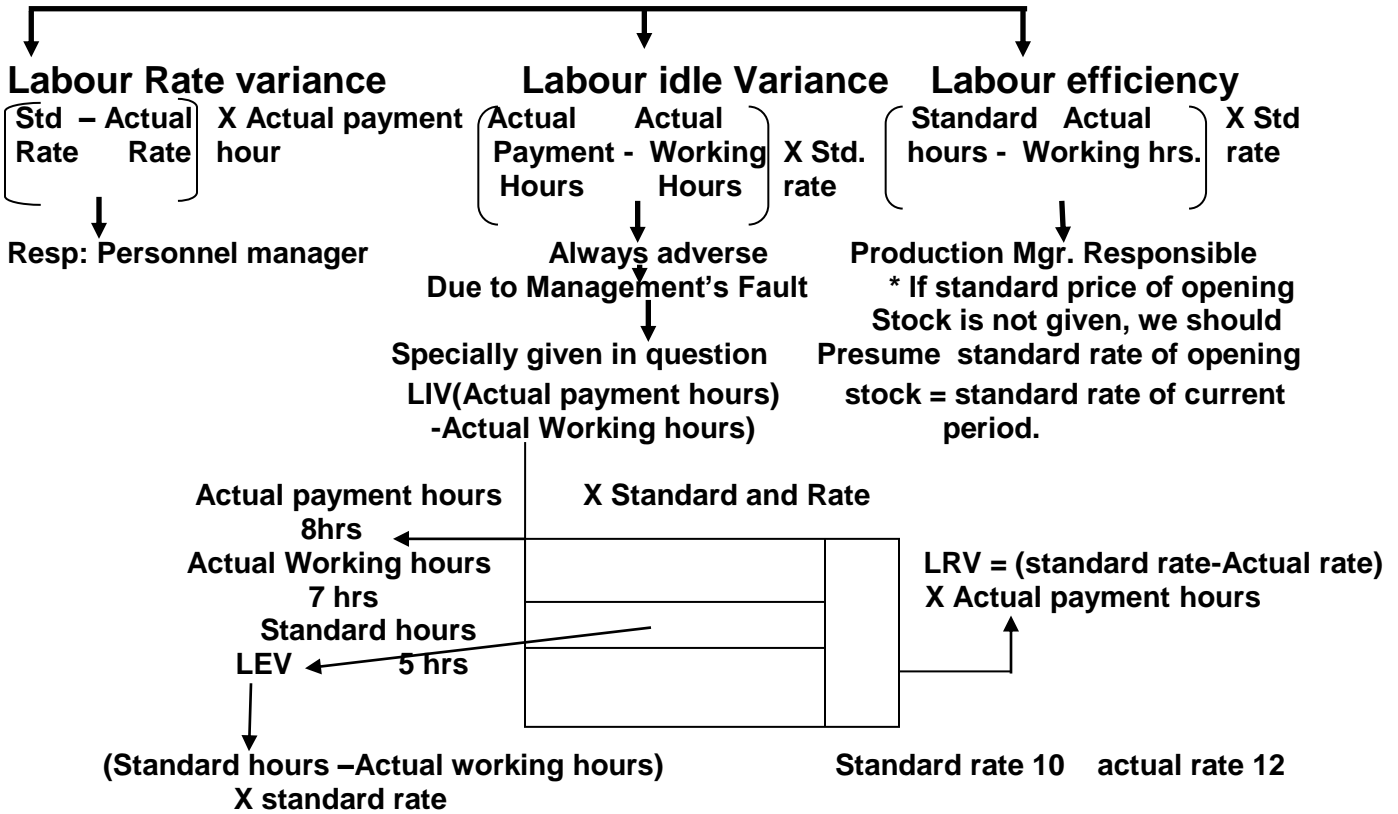
## DIRECT MATERIAL COST VARIANCE



<ul style="list-style-type: none"> <li>• MPV (At the time of purchase) + MUV ≠ MCV</li> <li>* MPV(At the time of consumption) + MUV = MCV</li> </ul>
------------------------------------------------------------------------------------------------------------------------------------------------------

\*  
If actual Rate of opening Stock is not given, always we should presume Actual Rate of op. stock = Current period standard Rate

# DIRECT LABOUR COST



- If the difference of variance is positive, its called "FAVOURABLE".
- If the difference of variance is negative, it is "ADVERSE".



# MATERIAL USAGE VARIANCE

↓

MATERIAL MIX  
Variance

MATERIAL YIELD  
Variance

$$\text{Standard Rate} \left( \frac{\text{Standard ratio for Actual Mix}}{\text{Actual Ratio for Actual Mix}} - 1 \right) \left( \frac{\text{Standard ratio for Total Standard Mix}}{\text{Standard Ratio for Total Actual Mix}} - 1 \right) \times \text{SR}$$

Standard Rate

OR

$$\frac{(\text{Total Standard Quantity} - \text{Total Actual Quantity})}{\text{Total Actual Quantity}} \times \text{Weighted Average Budgeted Rate}$$

*Note:* if budgeted output and actual output are not given, we should presume actual output = Budgeted output = 1.  
 If Budgeted output is given but actual output is not given, actual output = Budgeted output and *vice versa*. (When other factors are also not provided)

$$\text{MUV} = (\text{Standard Quantity} - \text{Actual Quantity}) \times \text{Standard Price}$$

	C	H	D
Actual Quantity 19,000			
Standard Quantity 18,000	B	G	
	A	F	

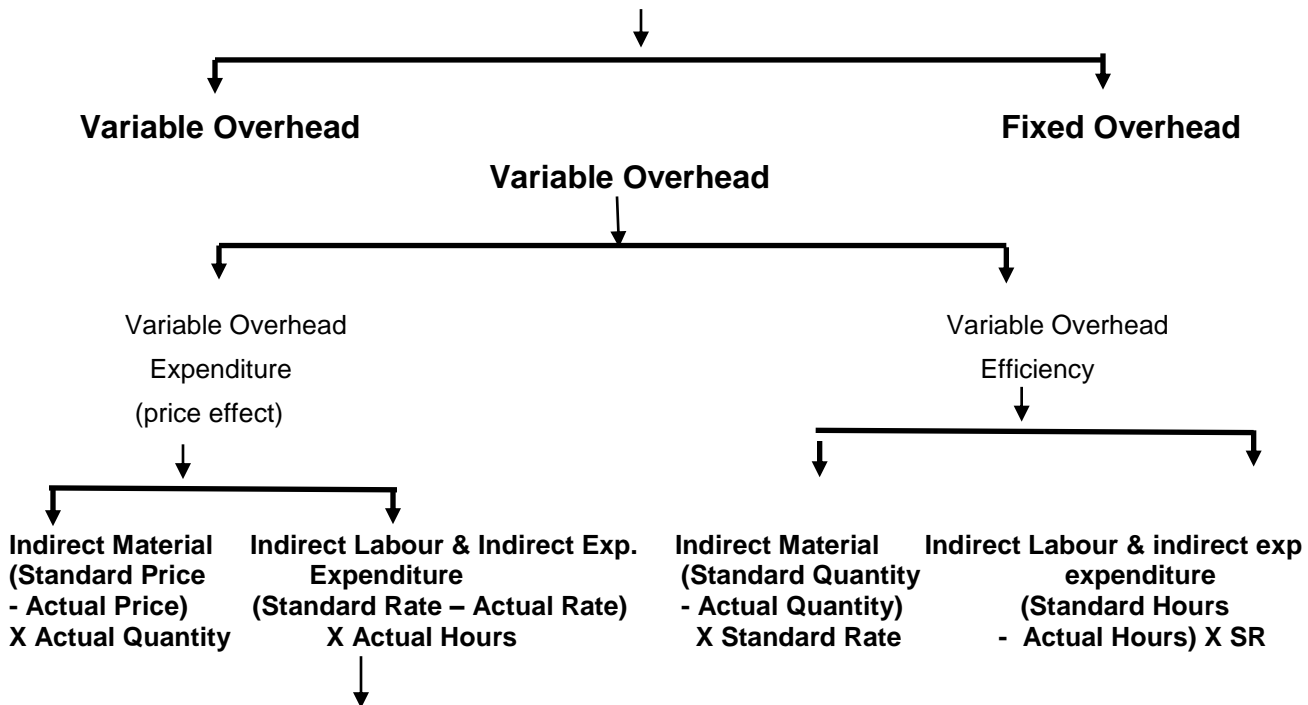
$$\text{B MPV} = (\text{Standard Price} - \text{Actual Price}) \times \text{Actual Quantity}$$

E Standard Rate 10

Actual Price 12

FEDH = MPV, BCHG = MUV

# OVERHEAD COST



- In the absence of instruction Vo means variable expenditure i.e. Power. No variable overhead incurred in unproductive hours

$$\left( \text{Recovery Rate} = \frac{\text{Budgeted Overhead}}{\text{Budgeted Hours}} \right)$$



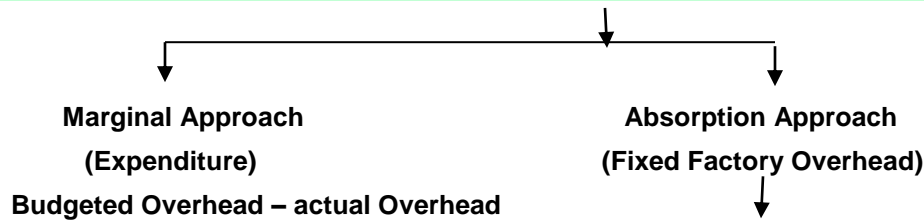
- \* If actual Rate of opening Stock is not given, always we should presume Actual Rate of op. stock = Current period standard Rate
- \* If standard price of opening Stock is not given, we should Specially given in question Presume standard rate of opening stock = standard rate of current period.
- If the difference of variance is positive, its called “FAVOURABLE”.
- If the difference of variance is negative, it is “ADVERSE”.

**Note:** if budgeted output and actual output are not given, we should presume actual output = Budgeted output = 1.  
 If Budgeted output is given but actual output is not given, actual output= Budgeted output and vice versa.  
 (When other factors are also not provided)

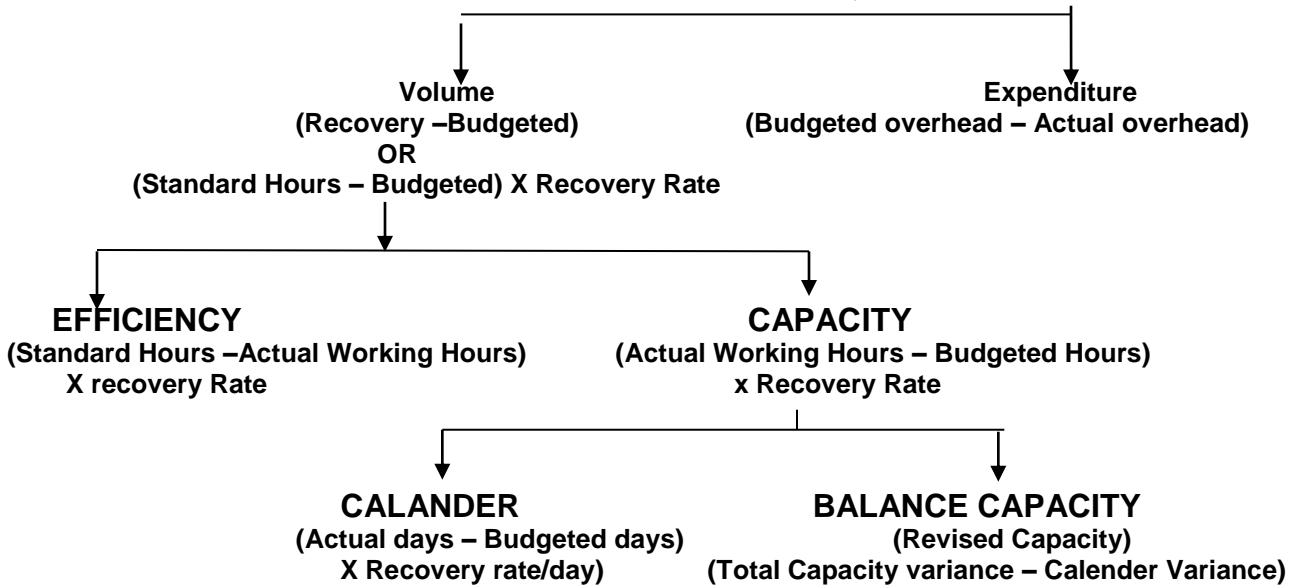
$$\text{MUV} = (\text{Standard Quantity} - \text{Actual Quantity}) \times \text{Standard Price}$$



## FIXED OVERHEAD

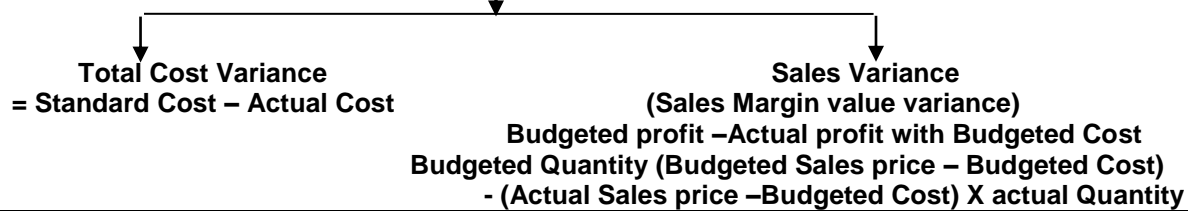


## FIXED OVERHEAD



## PROFIT VARIANCE- BUDGETED PROFIT - ACTUAL PROFIT

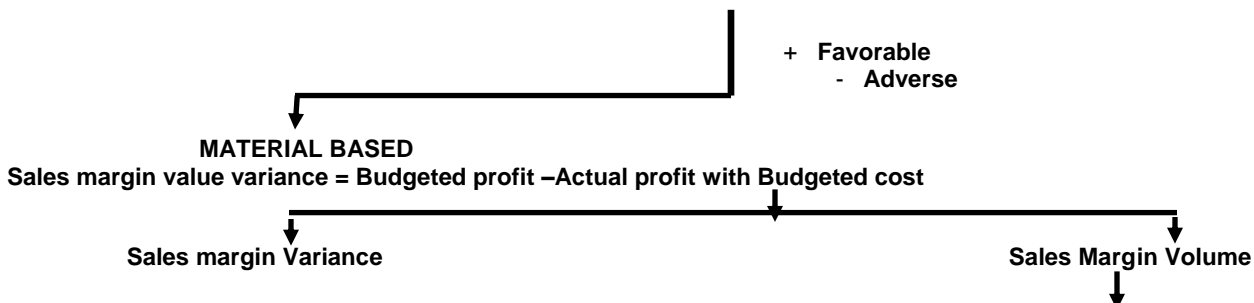
$$\frac{\text{BUDGETED SALES PRICE} - \text{BUDGETED COST}}{\text{x ACTUAL QUANTITY}} \times \text{BUDGETD QUANTITY} - \frac{\text{ACTUAL SALES PRICE} - \text{ACTUAL COST}}{\text{x ACTUAL QUANTITY}}$$



### Notes:

1. For profit variance, we should compare actual profit with budgeted profit (with all actual data).
2. For Sales Margin value variance, we Should compare actual profit (With budgeted cost) with budgeted profit

## SALES VARIANCE



$(\text{Budgeted Sales price} - \text{Actual sales Price}) \times \text{Actual Quantity}$

It means change in margin is due to Change in price only. All other factors Remain constant.

**Marginal Approach**  
 $(\text{Budgeted Quantity} - \text{Actual Quantity}) \times \text{Budgeted Contribution per unit}$   
 Margin means contribution  
 Bud. sales price - Bud. variance Cost

**Absorption Approach**  
 $(\text{Budgeted Actual Quantity}) \times \text{budgeted prof. per unit}$   
 margin means profit  
 Bud. Sales price - Bud. Var. Cost - Budgeted Fixed Cost per unit

OR

Budgeted fixed cost per unit + Budgeted profit per unit  
 It means change in margin is due to change in volume only.  
 All other factors remain constant

Recovery Rate

**Marginal Technique**

Sales margin volume variance (Margin Based)  
 Sales Mix variance | Sales Yield(Qty) Variance

Budgeted Cost X Per unit

standard ratio for total Actual Quantity sold	-	Actual ratio for total actual quantity sole
-----------------------------------------------	---	---------------------------------------------

Standard Ratio For total Budgeted Sales Quantity

Standard Ratio - for total actual Quantity sold

Budgeted X Cost per unit

OR

$(\text{Total Budgeted Quantity} - \text{Total Actual Quantity})$   
 Weighted Average Budgeted Contribution Per unit

Market Size

Market Share Variance

**Absorption Technique**

Sales Margin Volume variance (Margin Based)  
 Sales Mix Variance | Sales Yield(Qty) Variance

Budgeted Price per unit

Standard ratio for total actual Quantity sold	-	Actual Ratio for total actual Quantity sold
-----------------------------------------------	---	---------------------------------------------

Standard Ratio for total Budgeted Quantity Sold

Standard Ratio - for total actual Quantity sold

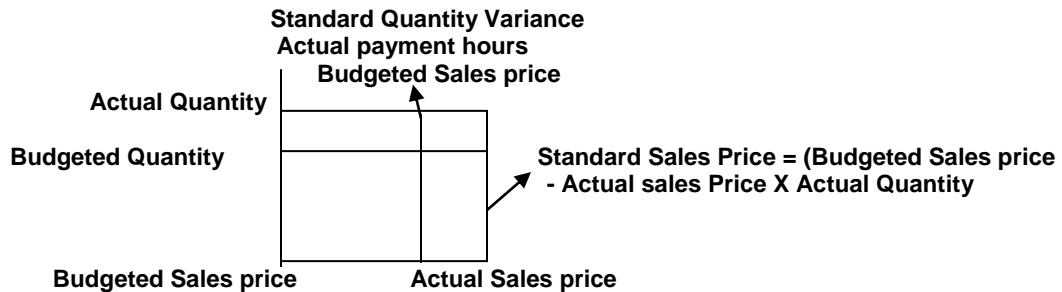
Budgeted X price per unit

OR

$(\text{Total Budgeted Quantity} - \text{Total Actual Quantity})$   
 Weighted Average Budgeted profit per unit

Market Size

Market Share Variance



**Note:** Sales Margin variance it means change in profit due to change in sales only ignoring cost variance

- Sales Variance (Turnover based) is to be analyzed to evaluate the performance of marketing Department but not to analyze in change in profit.
- MPU (at time of Purchase) + MUsage variance  $\neq$  M cost variance.
- Labour Gang variance may be known as Labour mix variance.

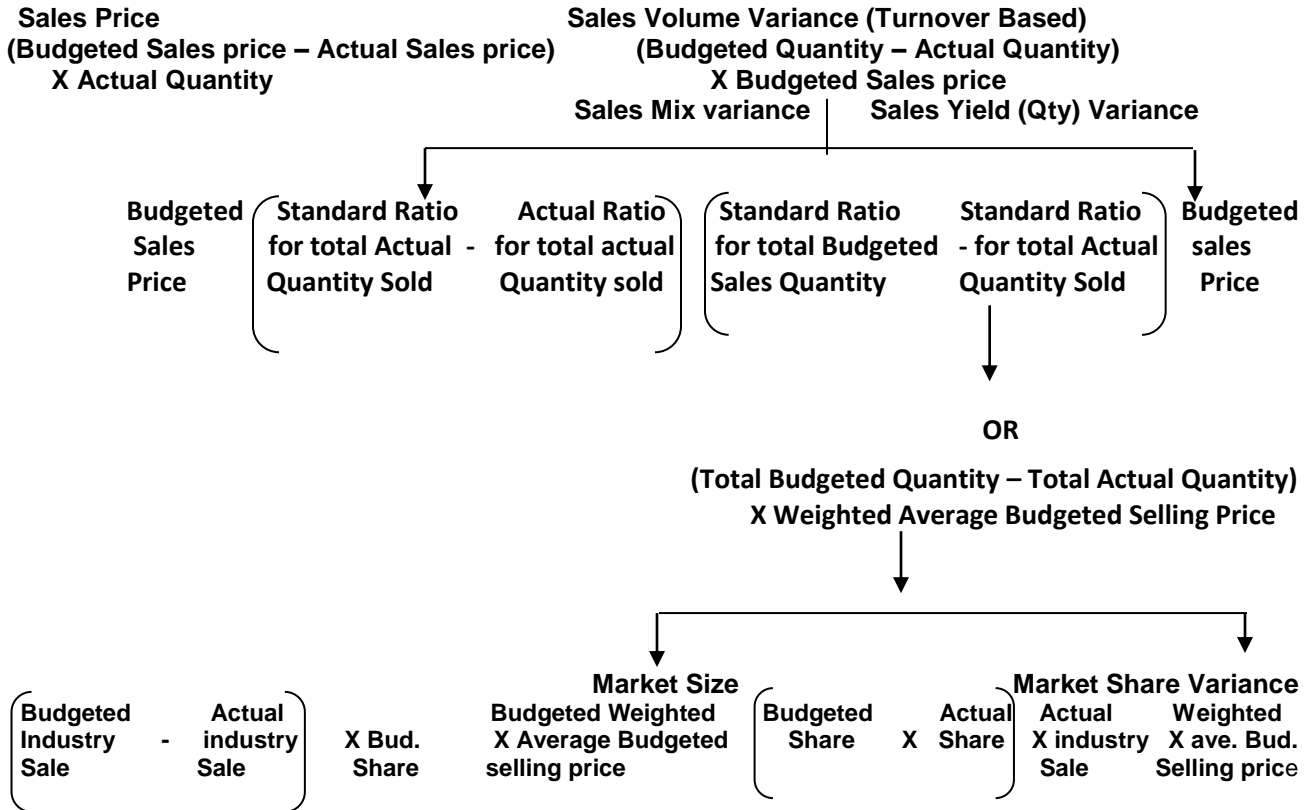


# SALES VARIANCE

+ Favorable  
- Adverse

## TURNOVER BASED

$$\text{Sales value variance} = \text{Budgeted Sales} - \text{Actual Sales}$$



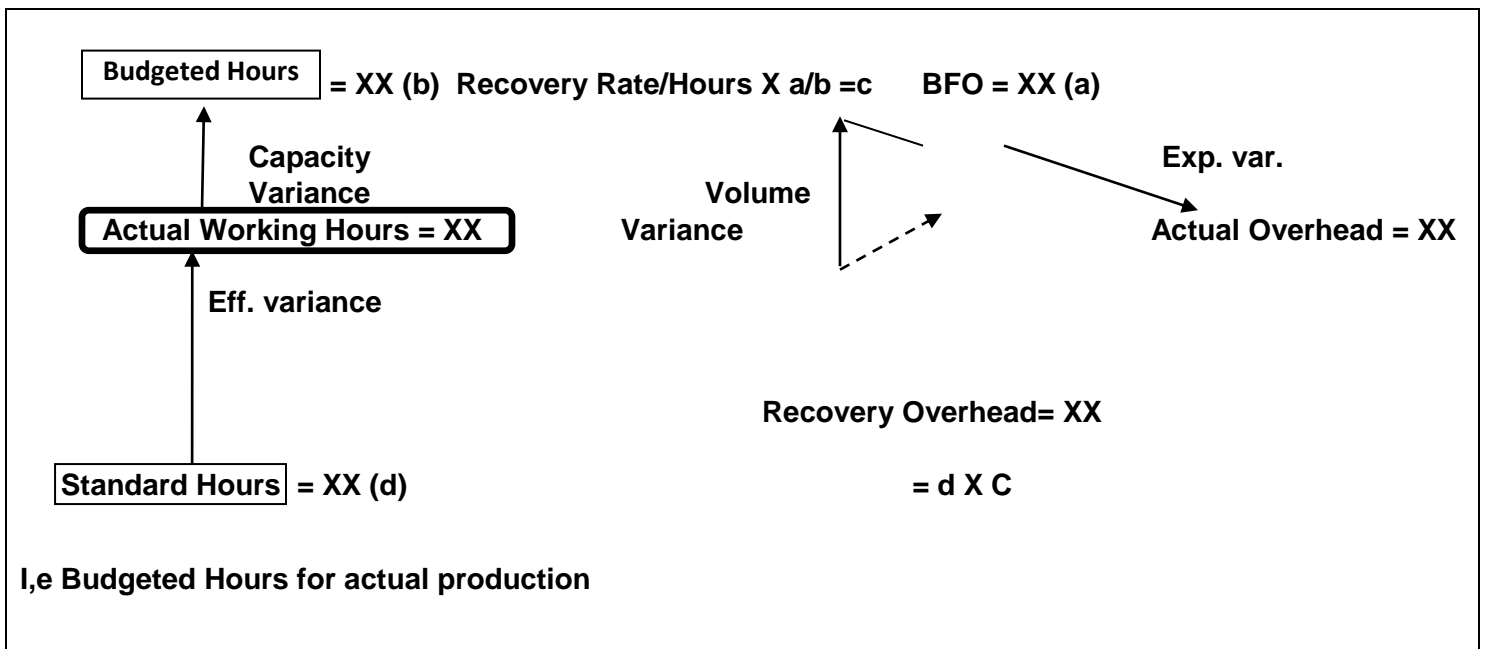
- Sales Variance (Turnover based) is to be analyzed to evaluate the performance of marketing Department but not to analyze in change in profit.
- MPU (at time of Purchase) + MUsage variance ≠ M cost variance.
- Labour Gang variance may be known as Labour mix variance.



## DATA FORMAT MATERIAL & LABOUR VARIANCE

	Budget			Revised Budget			Actual		
	Budgeted Quantity	Rate	Amount	Standard Quantity	Rate	Amount	Actual Quantity	Rate	Amount
Material (kg)	X	X	X	X	X	X	X	X	X
Labour (hrs)	X	X	X	X	X	X	X	X	X
Variable Overhead (hrs)	X	X	X	X	X	X	X	X	X

## DATA FOR FIXED OVERHEAD VARIANCE



## RECONCILIATION STATEMENT

Marginal	Amount	Absorption	Amount
B. Profit	XXX	B. Profit	XXX
Sales Variance		Sales Variance	
Price Variance	XXX	SMPV	XXX
Volume Variance	XXX	SMVV	XXX
(BQ - AQ) B Contribution Per unit		(BQ - AQ) BPPV	
(BQ - AQ) (FOPU + BPPU)			

COST VARIANCE	AMOUNT	COST VARIANCE	AMOUNT
MPV	XXX	MPV	XXX
MUV	XXX XXX	MUV	XXX XXX
LRV	XXX	LRV	XXX
LEV	XXX XXX	LEV	XXX XXX
VO EXP.	XXX	VOEXP	XXX
VO Eff.	XXX XXX	VO Eff	XXX XXX
FO Exp. Variance	XXX	FO Exp. Variance	XXX
	-	FOVV	XXX XXX
Actual Profit	XXX	Actual Profit	XXX

## RATIOS

1. **EFFICIENCY VARIANCE RATIO** =  $\frac{\text{Standard Hours}}{\text{Actual Working Hours}}$
2. **CAPACITY RATION VARIANCE** =  $\frac{\text{Actual Working Hours}}{\text{Budgeted Hours}}$
3. **Volume Variance Ratio (Activity)** =  $\frac{\text{Standard Hours}}{\text{Budgeted Hours}}$

**Note:** if budgeted hours are not given and actual hrs are given, then, Budgeted Hours = Actual Hours.

Overhead volume variance = Recovered – Budget

Overhead Expenditure Variance = Budget – Actual

Overhead efficiency variance = (Standard Hours – Actual Hours) X Recovery Rate per Hour.

Overhead Capacity Variance = (Actual Working Hours – Budgeted Hours) × Recovery Rate per hour

### 1. STORE DEPARTMENT

(Coast of material and Consumed)

A: FIFO (units can be traced)

B: Weighted Average Method (units cant be traced)

### 2. MANUFACTURING DEPARTMENT

A. FIFO- Silent- Statement of Equivalent Production

B. Weighted Average Method-Specified (AS-1 Compliance)

### 3. VARIANCE ANALYSIS : (to control the cost)

#### FIFO

(Standard Cost for actual production – Actual cost for actual production)

For Variance analysis, we should always consider FIFO method.







**(B):-** Details Of Normal Loss (Down Time)

**WN:-**

**Statement of Revised SR**

	<b>Hour</b>		
Paid Hours as per factory gate	XX	X	X
- NL	<u>XX</u>		
Paid Hours as per Production	<b>3000</b>	5	<b><u>15000</u></b>
Predictable Idle Hours	<b><u>150</u></b>		
Productive Hours to be used	2850	5.263	<b><u>15000</u></b>
- Excess idle hours (165-150)	15		

**Excess idle Time variance** = Excess idle Hour × Rev SR

$$= 15 \text{ hours} \times 5.263$$

$$= 78.94 \text{ A}$$

**Leffv** =  $(0.5 \text{ hour} \times 5400 \text{ unit} - n (2850-15)) \times 5.263$

<b>GROWTH</b>	<b>PRICE</b>	<b>PRODUCTIVITY</b>
$\frac{\text{Revenue effect of growth}}{(BQ - AQ) \text{ BSP}} = \text{XX}$	$\frac{\text{Revenue effect of Price}}{(BSP - ASP) \text{ Aqty sold}} = \text{XX}$	
$\frac{\text{Cost effect of Growth}}{(BQ - AQ) \text{ Budgeted V. Cost per unit}} = \text{XX}$	$\frac{\text{Cost Effect of Price}}{\text{Mat. (SR - AR) Aqty of Input used}} = \text{X}$ Labour: $(SR - AR) \text{ ALHS paid} = \text{X}$	Mat: $(SQ - AQ) \text{ X SR}$ Lab; $(SH - AH) \text{ X SR}$
	OVERHEAD : Budgeted -Actual = X	
Total = "A"            XX	Total "B" =            XX	Total "C" =        XX
GROWTH	PRICE	PRODUCTIVITY

A+B+C represents Change in profit in current year & As compare to last year.

---

# CHAPTER- BALANCE SCORE CARD

## BALANCE SCORE CARD

Financial Factor

Non financial factor  
(major component)

### FINANCIAL FACTOR

BSC----- another format of Reconciliation statement

Uniform Costing Principle

### Prepare 2 statement

- Statement of  $\Delta$  in Profit
- Statement showing component of BSC.

### FINANCIAL FEATURES:-

**GROWTH**

**PRICE**

**PRODUCTIVITY**

### GROWTH FACTOR:-

A:- Revenue effect of growth (BQ-AQ) BSP

B:- Cost effect on Growth (BQ-AQ) BVC

### PRICE FACTOR:-

C:- Revenue effect of Price (BSP-ASP) X Actual Qty Sold

D:- Cost effect on Price :- MPV,  
LPV,  
V.O. Exp.,  
S.O. Exp.

### PRODUCTIVITY FACTOR:-

E:- Productivity Factor:- MUV  
LOV  
V.O/H efficiency

### REVISED RECONCILIATION STATEMENT

Change in Profit XX

(a) Growth XX  
Market Size factor

(b) PRODUCT DIFFERENTIATION POLICY

Growth Market store factor	XX
Price	XX
PRODUCTIVITY	XX

	<b>XX</b>
BSC	

**Major Component;- non Financial Features:-**

- 1:- Financial perspective
- 2:- Customer perspective
- 3:- Internal Business perspective
- 4:- Innovation learning & Growth perspective

**1:- Financial Perspective:-**

- a- Sale
- b- Cost of Sales
- c- Return on capital employed
- d- Economic value added
- e- Application of different price/rate for different service during last period.

**2:- Customer perspective:-**

- a:- Customer satisfaction
- b:- No. of customer complaint
- c:- Time taken to process a loan/produce/complete the product
- d:- No. of defective goods produced
- e:- No. of Discount voucher redeemed
- f:- On Time delivery

**3:- Internal VS Perspective**

- A:- Opening new shops/new franchise in different area
- B:- Satisfaction level of employee i.e. expenditure incurred on maintenance of machine resources.
- C:- Evaluation of performance of employee by comparing budgeted sales with Actual Sales.

**4:- Innovation /Learning/Growth perspective**

**Innovation:-**

A:- New invention to introduce our product OR increasing the Existing Sales. Ex. Sanction a loan with Insurance policy .

**Learning:-**

(b) Staff training at the Regular interval computer training

**Growth**

(c ) Any back up facility for students in Education Industry.

(d ) Continues improvement

# CHAPTER :- BUDGETARY CONTROL

**Budget:-** It is a Statement which is prepared in Advance for future course of action. So that All Resources ( Material, Labour , Machine etc would be utilized at optimum Manner).

**Bases of Production:-** Past data, Current Market scenario, strategy situation, government policy .

**Sales Budget** → **Production Budget** → **Material Consumption Budget** → **Material Purchase Budget** → **Man Power Budget**.

## **(A) Resource Budget:-**

(i) **Sales Budget:-** How much Qty to be sold X Quantity at what price X Selling Price

(2) **Production Budget:-** How much Qty of finished goods should be produced to meet sales Target

Quantity to be sold XX

(+) Desired closing stock of finished goods XX

(-) Opening Stock of finished Goods XX

Production Budget XX

(3) **Material Consumption Budget:-**

Raw Material Requirement per unit of finished goods X Production Qty of Finished Goods

(4) **Material Purchase Budget:-** How much Qty of Raw Material to be Purchased

Raw Material to be consumed XXX

(+) Desired closing stock of Raw Material XXX

(-) Opening stock of Raw Material XXX

Raw Material to be Purchased XX

## **(B) Functional Budget:-**

(i) It manufacture would like to know the cost profit & Sale at different level of output because label demand may vary fluctuate with original budget.

(ii) **Fixed Budget:-** If management would like to know detailed cost & Sales price & profit at a particular level of output.

## **Question:- Giving hint of using FIFO or LIFO?**

Supposedly if is given that Opening stock = 100 ( Car (white) ) & Question says that if/Company. Manufacturing Programme will match the sales Qty.

It means = Manufacture (Red Car ) 500  
Sales (Red car) 500

So, here is this Question, we cannot apply the FIFO we have to apply LIFO (So that Latest i.e New Costs can be taken into consideration)

In FIFO	In FIFO
---------	---------

Opening stock to Manufacture sale		Opening statement 100 (white)	
100 (White)	100 (White)	Manufacture	500
Manufacture 500 (Red)	400 (R)	Closing	100 (white)
	500 Total Sale		
& Closing stock of Red car will be left.			

- **Wage Rate means**

Wage rate per hour	OR	Variable
Wage rate per unit	OR	
Wage rate per Day	OR	Fixed
Wage rate per week	OR	
Wage rate per month	OR	
Wage rate per Quarter	OR	

If question says wage rate , then Both Variable & Fixed has to be changed.

\* There is no concept of Assumption . IT is always presumption

If we prepare cost detail for 2 successive period than any increment in second period will be applied on preceding period.

**Question:- Lead Time:-** Time Gap between Placing the Order and Receiving the Order and The day of placing the order should not be considered but the day of receiving the order should be considered.

**Question:-** Is Replenishment is different from lead time

- Day of placing the order
- Day of Receiving the order
- Both are not considered.

### **TYPE OF LOSS**

**A:-** Down Time

**B:-** Idle Time

**C:-** Loss of efficiency

**A:- DOWN TIME:-** Normal Loss:- adjust in Rate

**Ex.**

- Factory gate to Machine area &
- Machine area to Factory Gate
- Lunch Hour

**B:- IDLE HOURS:-** Unproductive: No work to do:-

- Power Failure
- Non Availability of Machine
- Machine Break Down

**C:- LOSS OF EFFICIENCY:-** PRODUCTIVE:- BUT hai to LOSS

- Lack of conversation
- Dedication
- Slow Speed

### **Summary of the Topic: BUDGETORY CONTROL**

1. **Sales Budget** (in Quantity and in Value) = Qty Sold X Selling price

2. **Production Budget** (in Qty) = Budgeted Qty Sales + Closing Stock of FG – Opening Stock of

FG.
<b>3. Raw Materials Consumption/Usage Budget:</b> (a) RM Usage Quantity = Budgeted Prodn of FG x RM Usage p.u. of FG, (b) Cost of RM Consumed = RM Usage Quantity x Price of RM p.u.
<b>4. Raw Materials Purchase Budget:</b> (a) RM Purchase Quantity = RM Usage Quantity + Closing Stock of RM – Opening Stock of RM, (b) Cost of RM Purchased = RM Purchase Quantity x Price of RM p.u.
<b>5. Labour Cost Budget:</b> (a) DLH Requirement = Budgeted Prodn of FG x DLH required pu of FG,(b) Direct Labour Cost = DLH Required x Labour Rate per hour, (c) Manpower required = Total DLH Required ÷ Effective Hours per worker.
<b>6. Over Head Budgets:</b> (a) Fixed Budget lists fixed OH, Variable OH and Semi-Variable OH at one level of activity (i.e. one amount column only), (b) Flexible Budget lists Fixed OH, Variable OH and Semi-Variable OH at various levels of activity (i.e. different amount columns)
<b>7. Budget Summaries/Master Budget – Budgeted Income Statement &amp; Budgeted Balance Sheet.</b>

Ratio	Time Based Formula	Output Based Formula
Actual Capacity Usage Ratio	Actual Hrs ÷ Budgeted Hrs	Std Output ÷ Budgeted Output
Efficiency Ratio	Std HRs ÷ Budgeted Hrs	Actual Output ÷ Std Output
Calendar Ratio	Actual Days ÷ Budgeted days.	Possible Output ÷ Budgeted Output
Volume or Activity Ratio	Std Hrs ÷ Budgeted Hours	Actual Output ÷ Budgeted Output
<b>Note:</b> Volume Ratio = Capacity Ratio x Efficiency Ratio.		

## ZERO BASE BUDGET

<b>Meaning:</b> Expenditure Control Device where each divisional head has to justify the requirement of funds for each head of expenditure and prepare the budget accordingly, without reference to the past budget or achievements
<b>Features:</b> 1. Wholistic, 2. Analytical, 3. Priority Based, 4. Review Based, 5. Rational, and 6. Efficiency.
<b>Benefits:</b> 1. Priority Allocation, 2. Maximum Efficiency, 3. Cost Benefit Analysis, 4. Goal Congruence, 5. Management by Objectives.
<b>Losses:</b> 1. Lack of Co-ordination, 2. Old is Gold Attitude, 3. Time Consuming.

Points to remember (Difference)	
Traditional Budgeting	ZBB
1. Accounting-oriented Budget	Decision-oriented Budget.

2. Reference made to the past period Budget.	No reference to past period Budget.
3. Routine and direct approach.	Analytical approach.
4. Top Management decides on cost allocation.	Manager of each Division should justify his budget.
5. Error OR Fraud May exist	Zero Error Budget.
6. Managers may <b>deliberately inflate</b> their Budget Cost Request.	Managers cannot have an adhoc approach for Cost Budgets.

**1. Pre- requisites:** (a) Define objectives, (b) Translate objectives into specific functions, programmes, activities and tasks, for different levels of Management, (c) Quantify realistic and acceptable standards or performance indicators, (d) decentralized responsibility structure and flexible management style, (e) Suitable Accounting and Reporting System.

**2. Advantages:** Performance Budgeting:-

- (a) Lays immediate stress on the achievement of specific goals over a period of time.
- (b) Provides a meaningful relationship between estimated inputs and expected outputs,
- (c) Aims at a continuous growth of the Firm.
- (d) Enables the Firm to be sensitive and adaptive,.
- (e) Requires the preparation of periodic Performance Reports, to find out existing variances

In the absence of instruction, always we should pre assume one product require one hour & then apply formula of efficiency variance

i.e. SH

AH = Efficiency

Or

$$\text{Revised Labour Cost} = \frac{\text{Existing Labour Cost} \times (+\text{inflation Rate})}{(1 + \text{Efficiency Ratio})}$$

**For example:**

Present Labour Cost = Rs. 40 per unit in year 2013

Now in the year 2014, Labour rate Increase by 5% due to inflation & efficiency will go down by 20% in 2014.

Calculate revised labour cost for year 2014.

**Solution:**

Present Labour Cost = 40 per unit

1 FG will require one hour (2013) it means

LC = 1 Hour × 40 Per Hour

Efficiency = 80% in 2014

$$\text{i.e. } 80\% = \frac{SH}{AH}, \quad 80\% = \frac{1HR}{SHrs}$$



$$S.Hrs = 1/80\% = 1.25 \text{ Hrs.}$$

$$\begin{aligned} \text{Revised Labour Cost} &= 1.25 \text{ Hrs per unit} \times 40 \times 1.05 \\ &= 52.50 \text{ Per unit} \end{aligned}$$

Or

$$= \frac{40}{1 - 0.2} \times (1 + 0.05)$$

$$= \text{Rs. } 52.5 \text{ per unit}$$

**Men days = 25 I man for 25 days**

**Men day = 25 25 labors for 1 day.**

**Men days = 25 Labour > 1**

**Day > 1**

**Eg:- 9 Laboures for 5 Days.**

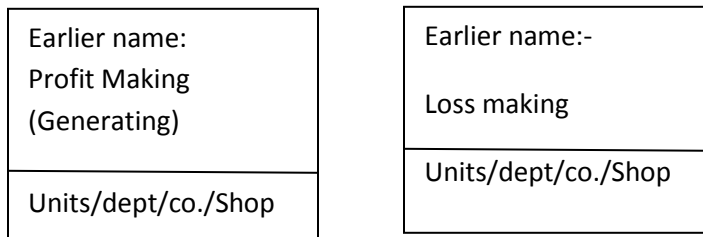
$$\text{Pre-determined/absorption/Recovery rate} = \frac{\text{Budgeted Fixed Overheads}}{\text{Budgeted Hours}}$$

**Managerial level Employee:- Permanent i.e. Inspector, Manager Supervisor, Foreman, their work is to get the work done.**

**No extra payment will be made to Managerial Level employees except Bonus i.e. No overtime is Paid.**

**WORKER LEVEL EMPLOYEE:- Permanent i.e. Employee, worker under utilized, for overtime; they get overtime premium.**

### PROFIT CENTRE AND COST CENTRE



### **PROFIT CENTRE:-**

(Always profit earned) i.e. Profit making unit/CO/Shop/department

Actual Production > BEPT

Actual Production > BEPT

Actual production = to or Total Capacity

Closer to

No Space capacity exists Generally

If offer then Minimum Price = Variable Cost (+) Contribution to be lost

#### **Margin of Safety**



Always Presume = Cost centre ( of Question is silent)

(C) Cost centre:- (Always Loss occurred: but kabhi galti se profit the bhi toh wo itna kam hai ki pehle wale losses ( carry forward ke loss) ko cover nahi karta i.e. why loss mealng units).



Differential Revenue	<u>XXX</u>
Differential Cost	<u>XXX</u>
	<u>XXX</u>

**Points to Remember**

- Fixed Overheads -----NOT Consider----- Sunk
- Commission ----- Not Consider -----If Direct Approach

# CHAPTER:- CVP ANALYSIS

## DECISION MAKING USING COST CONCEPTS AND CVP ANALYSIS

**MARGINAL:-** like to know Minimum price for offer/order or for any decision about acceptance of offer or rejection of offer or Make or BUY decision or utilize the resources in OPTIMUM MANNER.

Beginning of Month OR at end of MONTH in Totality.

Fixed Cost charged from contribution generated from Quantity sold.

Absorption/Traditional/Comentional;- like to know the Total cost of Regular Product.

At the time of Manufacture OR during the month

Just before the production of every product.

### STATEMENT OF COST AND PROFIT (MARGINL COSTING)

Variable Manufacturing cost ( VC X Qty produced)	X		
(+) Opening stock	X		
(-) Closing stock at VC	X		
Variable cost of Qty sold	xx		
(+) Selling & distribution variable Cost	X		
(+) Office & Administration Variable cost	X		
Total Variable Cost	X		
Sales	X		
Contribution	X		
Less: Fixed Cost			
Production	Budget	Inflation	Actual
Office & Administration			
Selling & Distribution			

### **Statement of Profit**

#### **(Absorption Costing)**

Variable manufacture cost	X
(+) Fixed manufacture Cost (Recovery rate X Quantity produced)	X
Total Manufacturing Cost	X
Add: Opening Stock	X
Less: Closing Stock ( Total Manufacturing Cost X Quantity of Closing stock)	X
COGS	X
Sales	X
Gross Margin	X
Less: Variable office/administration/selling/distribution Cost	X
Less: Fixed office/Administration /selling/distribution Cost	X
Profit Before Adjustment	X
Less: Under Recovery	
(Difference between * Actual and * Aborded)	X
Profit after Adjustment	X

### **Marginal & Absorption Costing**

<b>Marginal</b>	<b>Absorption</b>
Closing Stock valued at VC	Closing stock Valued at VC+FC (Recovery rate)
At beginning OR at End of period	During the month (just before production of each product)
No Individual cost sheet is prepared/	Every product will absorb its Burden of FC with help of

Minimum price is required	Recovery rate = $\frac{\text{Budgeted overhead}}{\text{Budgeted Base}}$
For Decision Making	For calculating TC of Regular Product cost plus mark up is required.

## Basic Marginal & CVP & Decision Making

<b>PV Ratio=</b>	$\frac{\text{Total contribution} \times 100}{\text{Total Sales Value}}$ Or $\frac{\text{Contribution per unit} \times 10}{\text{sales price per unit}}$ OR $\frac{\text{Change in Contribution} \times 100}{\text{Change in Sales}}$  $\frac{\text{Change in profit}}{\text{Change in sales} \times 100}$ OR 100% less Variable cost Ratio	
	<b>In Sales Value (Rs.)</b>	<b>In Quantity (units)</b>
BEP =	$\frac{\text{Fixed Costs}}{\text{PV Ratio}}$	$\frac{\text{Fixed Costs}}{\text{Contribution per unit}} = \text{BEPT}$
MOS	Total Sales Less BEP sales = $\frac{\text{Profit}}{\text{PV Ratio}}$	Total sales qty Less BEQ = $\frac{\text{Profit}}{\text{Contribution per unit}}$
Indifference Point	$\frac{\text{Difference in fixed Costs}}{\text{Difference in PV Ratio}}$  $\frac{\text{Difference in Fixed Costs}}{\text{Difference in Variable Cost Ratio}}$	$\frac{\text{Difference in Fixed Costs}}{\text{Difference in Contribution per unit}}$  $\frac{\text{Difference in Fixed Costs}}{\text{Difference in Variable Cost per unit}}$

Particulars	Variable Cost	Fixed Cost
Meaning	Cost which changes or varies proportionately based on output/volume/quantity	Costs which are assumed to remain constant, fro a given period of time, irrespective of level of output during that period.
Items	Direct Materials + Direct Labour + Direct expenses + Variable POH + Variable S&D OH.	Fixed Cost = Fixed Production OH + Administrative OH + Fixed S&D OH.
Examples	Raw Materials, Labour, etc.	Rent, Salary, Insurance, etc,

### IN BEPT: Points to be remember

- FC means Relevant Fixed Cost i.e. cost to be incurred + benefit to be lost.
- VC means Relevant variable Cost
- Required Sale =  $\frac{\text{FC} + \text{Desired Profit}}{\text{P/V Ratio}}$

P/V Ratio means Profit volume Ratio i.e. Ratio of contribution to sales.

### Example:

ORIGINAL	REVISED	REVISED
Qty = 1	If Volume Increase Qty = 2	If Volume remain same But SP increase
SP (Rs.Rs.) 100	SP = 100	SP = 200

ORIGINAL		REVISED	REVISED
VC(Rs.)	80	Total sale = 200	Qty = 1
		Total VC = 160	Sale = 200
Cont/unit	20	Total Cont = 40	VCPU = 80
P/v Ratio	20%	P/v Ratio = 40/200 = 20%	Cont = 120
			P/V Ratio = 120/200=60%

- Break Even Ratio + Margin of Safety Ratio = 100%
- Margin of Safety Sales × PV Ratio = Profit

### COST VOLUME PROFIT

#### BREAK EVEN POINT:-

Minimum Quantity to be produced for next period in order to AVOID LOSS

$$\text{Sales (-) Total Cost} = \text{Profit}$$

$$\text{Qty sold X selling Price (-) Qty sold X Variable Cost per unit (-) Fixed Cost} = \text{Profit}$$

$$X \times \text{Selling Price (-) } X \times \text{Variable Cost (-) Fixed Cost} = 0$$

$$X(\text{Sp (-) Variable Cost}) = \text{Fixed Cost}$$

$$X = \frac{FC}{SP(-)VC}$$

$$\text{Break even Point Quantity} = \frac{\text{Fixed Cost}}{\text{Contribution per unit}}$$

$$\text{Break even point} = \frac{\text{Fixed cost}}{\text{Contribution per unit}} \times \text{Selling price per unit}$$

$$= \frac{FC}{P_v \text{ratio}}$$

Relevant Fixed Cost = Rent

+ Benefit to be lost

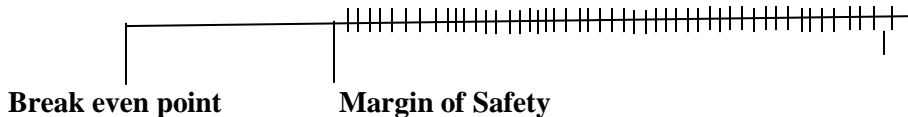
- Benefit achieved

**Variable Cost means:-** Variable cost to be incurred

(+) Benefit to be lost ( Variable Material)

**Margin of Safety Sales:-** Any sales over and above Break with sales will be Margin of Safety Sales.

Break even sales



Total sales----- break even sales (+) margin of safety sales

$$\frac{\text{Total Sales}}{\text{Total Sales}} = \frac{\text{Break even sales}}{\text{Total Sales}} (+) \frac{\text{Margin of Safety sales}}{\text{Total sales}}$$

100% = Break even sales ratio (+) Margin of safety ratio

Sales X P/V ratio = Contribution

Margin of Safety Sales X P/V Ratio = Contribution = Profit

Margin (+) Fixed Cost = Profit

$$\text{MOS Sales} = \frac{\text{profit}}{P_v \text{ratio}}$$

# **BREAK EVEN POINT**

If a company produces different products with combined fixed cost then Management would like to know a group consolidated Break Even point to cover combined fixed cost.

1:- On the bases of Quantity Ratio (**BEPT in units**)

2:- On the bases of Sales volume Ratio (**BEPT in Rs.**)

$$\text{Group/Composite/Overall/Consolidated Break even point} = \frac{\text{Group Fixed Cost}}{\text{Group contribution per unit}}$$

$$\text{Group contribution per unit/weighted contribution} = \frac{\text{Total Contribution}}{\text{Total Quantity Sold}}$$

$$= \frac{\text{Individual contribution X weight of Ind. Contribution} + C2 W2 + \dots}{\text{Aggregate of weights of Individual contribution}}$$

On bases of Sales volume ratio/Mix

$$\text{Group Break even point} = \frac{\text{Fixed Cost}}{\text{Group } \frac{P}{V} \text{ Ratio}}$$

$$\text{Group P/V Ratio /Weighted average P/V ratio} = \text{cotribution ratio 2 X Sales value ratio2}$$

## **Total Sales Value Ratio**

If Group BEPT ( in units) :- Divide in Sales Qty ratio

If Group BEPT (in value 2) : Divide in Sales Value Ratio

## **Indifference point ( 3 Alternatives)**

**STEP1:-** Arrange the given alternative according to fixed cost either in – ASCENDING ORDER  
Descending Order & call these alternatives as a,b,c.

**STEP-2:-** Identify Indifference point between a& b , b & c, & C a and Calculate point.

**STEP-3:-** identify the Proper range for overall Indifference point.

Result 1 can be drawn by comparing A with B with C.

Result 2 can be drawn by comparing C with B with A and

Result 3 will be automatically our balancing figure.

## **CALCULATION OF BREAK EVEN POINT with Semi Variable Cost**

Semi variable cost ( Type –II) lot/batch/group size.

**STEP 1:-** Break even point to cover only fixed cost

$$\text{BE POINT} = \frac{\text{Fixed Cost}}{\text{Contribution per unit}}$$

**STEP 2;-** Cover SVC for STEP-1 be point also i.e. first calculate SVC for be point.

**STEP3:-** Break Even point to cover (+) FC, SVC

$$\text{BE point} = \frac{\text{FC+SVC}}{\text{Contribution per unit}}$$

Be point 2 cover SVC of BE point 1 & not B point 2 so, this is NOT final be point.

**STEP 4:-** Statement of Break even point.

Range/Units above Be point 2

<b>FIXED COST</b>	X	X	X	X
<b>SVC</b>	X	X	X	X
<b>TOTAL</b>	X	X	X	X
<b>CONTRIBUTION PER UNIT</b>	X	X	X	X
<b>Total contribution p.u. = Break even point</b>	X	X	X	X

Test of Final Break even point:-

(Upper limit of Range (-)Break even point + i unit of next Range)X Contribution per unit > Additional SVC for the next Range

If we have any Semi Fixed Cost

OR

Semi Fixed cost along with Semi Variable cost (Type-II) then We should calculate Break even point for each Range individually

Subsidy is part of Revenue to be received from go into for the services product which are essential for society.

# ACTIVITY BASED COSTING

## CONCEPT OF MACHINE HOUR RATE

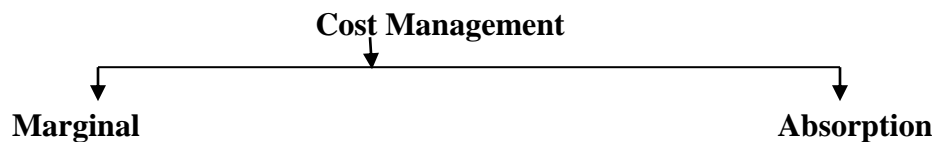
If co. has different dept producing different products then calculate Machine hour rate for each Department separately instead of overall Machine hour rate

### Machine hour Department

<u>X Dept</u>		<u>Y Dept.</u>		
A	B	C	D	
Expenses 1,00,000		10,00,000	11L	
Machine hours	1000 hours	1000 hours	2000 hours	
Sale == $\frac{1,00,000}{1000}$	$\frac{10,00,000}{1,000}$	$\frac{11L}{2000}$		
= 100	=1000	=550		
(right way)	(right way)	( wrong)		

**Cost Driver means** – Allocation Base With the help of which, overhead can be identified with particular products.

$$\text{Material handling overhead rate} = \frac{\text{Overhead of receiving department}}{\text{No. of Receipts}}$$



Marginal technique should be applied before the commencement of production. This technique also known as decision making process i.e. relevant costing. In this approach the burden of fixed cost should be expressed in totality instead of per unit basis. In other words, we can say Fixed cost is also to be known as periodical cost. In this approach it is not possible to analyse individual product profitability.

## Statement of Profit

	Rs.
Sales (All Products)	XX
– Variable Cost	XX
Contribution	XX
(–) Fixed Cost (Budgeted)	XX
+ expenditure Variance	XX
Profit	XX

## Absorption:



If management wants to know the total cost of the product during the production period then we should identify the burden of fixed cost for each unit, with the application of recovery rate, hence fixed cost is to be known as product cost.

	Rs. for example
Factory rent	100000
Supervisor Salary	200000
Electricity rent/Depreciation	200000
Set up cost	500000
<b>Total</b>	<b>1000000</b>

Before the use of machinery whatever cost will be incurred its called setup cost. All Cost are fixed.

<b>Product</b>	<b>A</b>	<b>B</b>	<b>C</b>	<b>Total</b>
Quantity	10000	20000	20000	50000
Material (Actual)	200000	400000	400000	1000000
Labour (Actual)	200000	100000	200000	500000
Fixed (on some basis)	200000	400000	400000	1000000

In absorption technique the fixed overhead can be recovered on the basis of any of the following methods: (oiling, Cleaning and Greasing)

1. On the basis of Output.
2. On the basis of Labour Hours.
3. On the basis of machine hours.
4. On the basis of material cost.
5. On the basis of Labour Cost.
6. On the basis of Prime Cost.

In activity based costing, we should absorb fixed overhead on the basis of activity consumed instead of single recovery rate. In other words, we can say

1. If a product does not consume any activity then that product should not absorb any part of the overhead of that activity.
2. If a product consumes high volume of activity then that product should absorb higher amount of overhead of that activity.
3. In activity based costing, we should prepare the following statement:

# STATEMENT OF COST POOL

## SUMMARY

In ABC, we have two steps:

1. We should prepare a “Statement of Cost Pool.”
2. We should prepare “Statement of Cost”/“Statement of Overhead cost” as per requirement of question. (Given in requirement).

### Statement of Cost (ABC Approach)

Products	X (Rs.)	Y (Rs.)	Z (Rs.)	Total (Rs.)
Material (identified)/Given	XX	XX	XX	XX
Labour (identified) /Given	XX	XX	XX	XX
Overheads	XX	XX	XX	XX
Set up Cost	XX	XX	XX	XX
Stores	XX	XX	XX	XX
Inspection Cost	XX	XX	XX	XX
Packing	XX	XX	XX	XX

### COST POOL

Overheads	Amount Rs.(a) (W.N.)	Activity Cost Driver	No. of Activity Cost Driver(b) (W.N.)	Activity Cost Driver Rate (a/b)
Machine Overhead	XX	Machine Hours	XX	XX
Setup Cost	XX	No. of Setup/Setup hour	XX	XX
Stores	XX	No. of Requisition Slip/Material Cost/Qty.	XX	XX
Inspection Cost	XX	No. of Set up/Production Runs	XX	XX
Packing Charges	XX	No. of delivery	XX	XX
Others	XX	Method of absorption	XX	XX
Engineering	XX	No of order	XX	XX
Ordering Cost	XX	No of orders	XX	XX

Cost Pool means a statement in which all the overheads to be analysed into two parts:

1. Activity related overheads.
2. Non activity oriented overheads in such a manner that all overheads can be covered with the product on the basis of their related activities.

Cost Driver means the allocation base with the application of which the overheads can be identified with the individual product.

### Working Note

- (a) All these overheads to be considered as Budgeted Overheads.

(b) All allocation base should be considered as Budgeted base for Actual output.

## Summary of the topic

# DIRECT PRODUCT PROFITABILITY

Categorization of Indirect Costs for DPP

Categorisation of Indirect Costs for DPP is as follows:—

- 1. Overhead Cost.
- 2. Volume related Cost
- 3. Product batch cost
- 4. Inventory financing Costs

### Direct Product profitability (DPP)

“DPP involves the attribution of both the purchase price and other indirect costs (For example distribution, warehousing and 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 utilizes variety of measures (for example warehousing space and transport time) to reflect the resources consumption of individual products.”

It is basically applicable for Retail Goods (Store)

Where we are selling different Product & common costs are to be incurred.

Costs like warehouse, Cost retail cost, Transportation Cost.

We should calculate Individual profit by allocating these common cost to individual product with the application of suitable cost driver (basis).

It is slightly different from ABC analysis because in ABC we can identify cost driver for allocation factory overhead (where goods are being produced)

But in DPP goods are not to be produced but Purchase & Sale.

### DIRECT PRODUCT PROFITABILITY

**DPP:-** If company produces different types of product and manufacture required to identify Individual Product Profitability follow DPP.

Co. purchase different goods from different market and stores then in a warehouse (s) for a particular period of Time & then transferred to Super Market (Sales outlet)

If remains in Super Market till it reaches in hand of customer.

Capacity of all sales outlets = Capacity of Warehouse(s)

**Bases of apportionment of Indirect case/overhead** →

**Space occupied for the PRODUCT multiplied by the Time Taken**

**Product which require Refrigeration facility**

**Cost of Refrigeration along with Warehouse Cost**

### Statement of Profit

Product	A	B	C
Selling Price	X	X	X
Purchase Cost	X	X	<u>X</u>
Gross Profit	X	X	X

Product	A	B	C
Indirect expenses			
Warehouse			
Store			
Transportation			
Net Profit	X	X	X



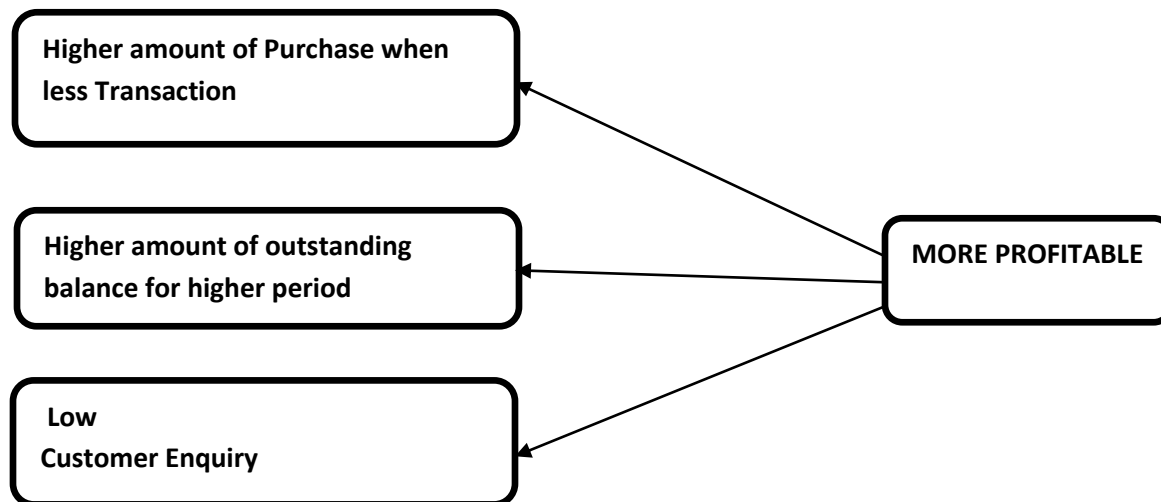
- In DPP cen capt Head office expenses/Facility cost should not be considered. There should be considered in calculating overall profit of the Company.

### Customer Profitability

If a Company has different types of Customers then management would like to know profitability of each group Individually management could frame their Business policy accordingly.

Management may discontinue customer group lowing continuous losses and encourage customer group having Higher Profitability.

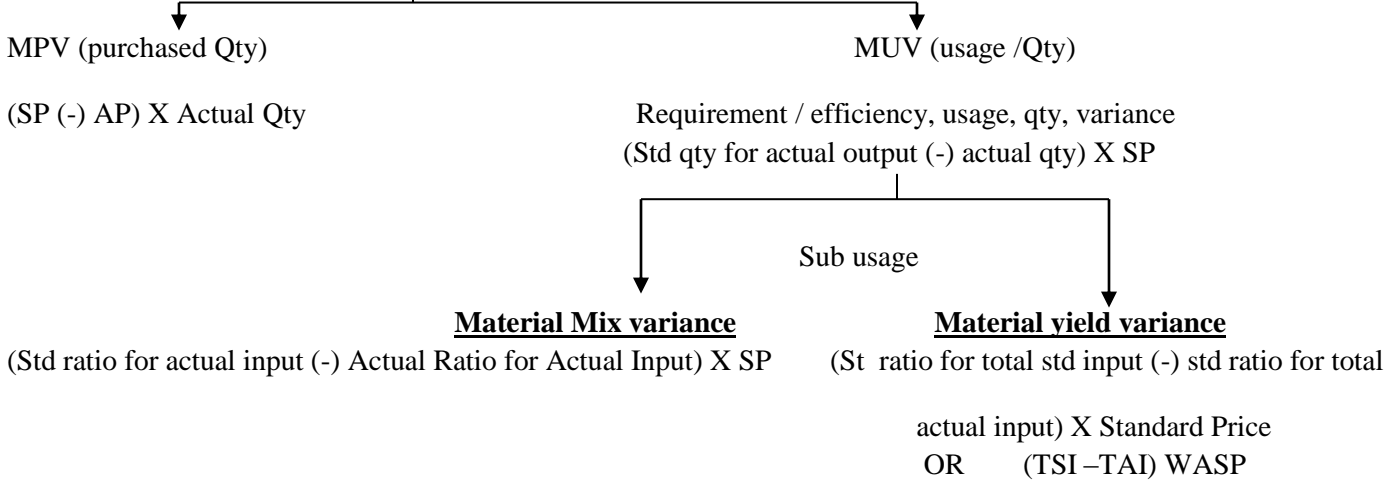
Basis (ATM Wala example)



### Standard Costing

- It is a Technique which Control/Manage the Cost for a particular period
- Manager sets a Target for each Manager
- Actual are compared with such Target.
- Such difference is known as Variance.
- Remedial actions will be considered against such manager ( if impress).
- Cost can be controlled.
- Target/Budget-pre determined
- On bases of Past and Future
- Which should be achieved for next period.

**MCV Standard cost (-) Actual Cost**



- Material OH- Integrated part  
 - Directly identified with products
- Material Cost—Rate X Qty /Kg/Usage
- If material is purchased at beginning of period in Bulk Quantity, Price variance at the time of purchase should be analysed.

Price V =  $(SP - AP) \times \text{A.Q. purchased}$  the absence of Instruction)

- If question is silent, always we should apply MPV at the time of its Usage/consumption

Price V:-  $(Sp-AP) \times \text{A.Q. used}$

**Calculate Consumption of Raw Material**

Stores Department		Production Department	
Opening stock	X	Opening Stock	X
(+) Purchase	X	Rec. from store department	X
(-) Closing Stock	X	Closing stock of RM	X
Transfer to production dept.	X		
		Consumption of Raw Material	<b>XX</b>

**In case of emergency**

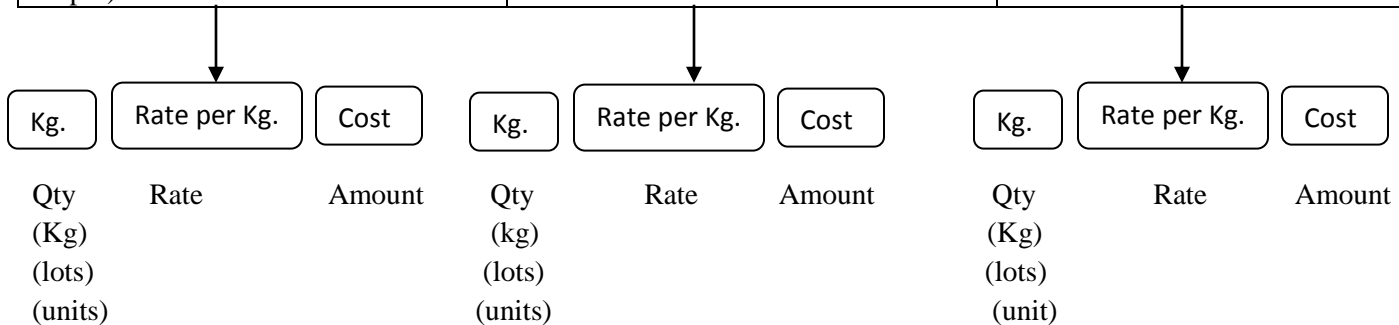
Price Variable =  $(SP - AP) \times (\text{Qty} + \text{rush order units at selling price}^*)$

AP\* (It is price which is for actual qty as well)

Usage variance =  $(\text{Std qty for AO } (-) \text{ Actual Qty}) \times SR + (AP \text{ ( of normal order) } - AP \text{ ( of rush order)}) \text{ rush order.}$

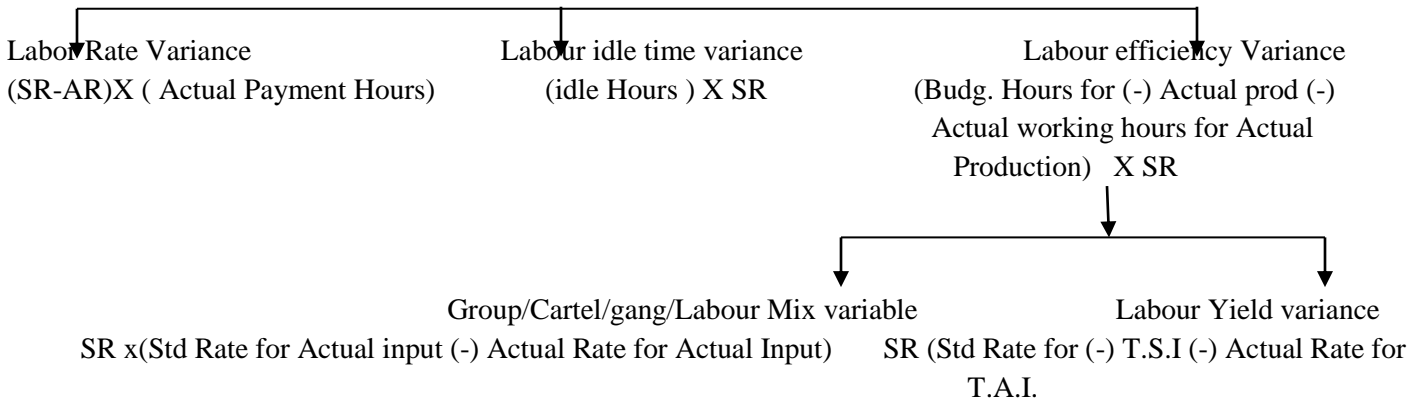
**Data For Material Variable**

Budget	Revised Budget	Actual
(Budgeted Material for Budgeted output)	(Budgeted Material for Actual output)	(Actual Material for Actual output)



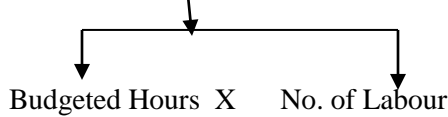
Budgeted Labour Cost for Actual Output (-) Actual Labour Cost = Labour Cost Variance

## LCV



Labour:- Direct Labour

Labour Cost = Rate X Labour Hours



## Losses of labour Hours

Normal Loss	Abnormal Loss	
	Mgt idle Hours	Ineffective working
1:- Factory gate to machine area	1:- Non availability of Material	1:- efficiency Variance (std hours 200 AO (-) Actual Working hrs)
2:- Set up Time	2:- Power Failure	
3:- Lunch Hours	3:- Machine Break down	
4:- Machine area to Factory Gate	4:- Labour Strike	
Sr adjust if Otherwise SR(always assumed to be after considering normal loss)	5:- Idle Variance ( Actual working hours (-) Actual Payment hours) X SR	
SR – Rate /9 already after considering normal loss/		
If Sr given & written---- (a) The Rate is as per payment Register (b) Rate is as per every clock hours		
Normal loss/down time ko adjust karna hai (already kia nahi tha) i.e. Normal loss from SR/Std Hours is to be deducted...		

### DATA FOR LABOUR VARIANCE

#### BUDGET

(Budgeted Labour for  
Budgeted output)

Lab hours      Rate per lab.      Cost  
Hours            Rate per hour      Amt

#### REVISED BUDGET

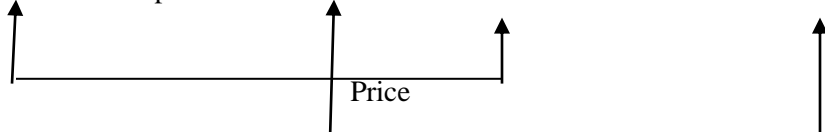
(Budgeted Labour for  
Actual output)

Labor hours      Rate /Lab      Cost  
Hrs                per hour      XX

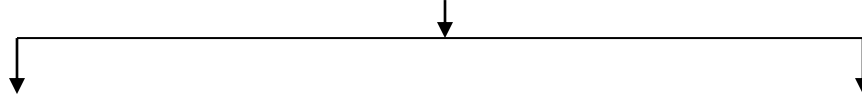
#### ACTUAL

( Actual labour for  
Actual output)

Qty            Rate            Amount  
Hr.            /Hr.            XX



**Variable Overhead Cost Variance**



**Variable O/head Exp. variance**

**Variable O/H efficiency Variance**

**Indirect Material** –  $(\Delta \text{ in price}) \times \text{Actual qty}$   
**Indirect Labour** –  $(\Delta \text{ in Ratio}) \times \text{Actual Hours}$   
**Indirect Expenses-**  $(\Delta \text{ in ratio}) \times \text{Actual hours}$

$(\Delta \text{ in qty}) \times \text{SR}$   
 $(\Delta \text{ in labour hours}) \times \text{SR}$   
 $(\Delta \text{ in Lab. hours}) \times \text{SR}$

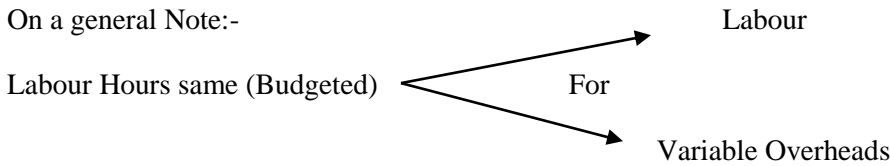
**If Quantity is silent**

Variable overhead consist of Indirect labour Indirect expenses i.e. based on labour hours.

Factory	Office & Administration	Selling & Dist.
IM: Oil, Chemical, Greece, Fuel, coal, Fevicol.	Stationery	Packing Material
IL: Foreman, Supervisor	Manager	Sales Manager
IE:- Power If Variable overheads	Electricity	Adv.

Actual working Hours = actual payment hours because variable overhead will not be incurred during Unproductive Labour hour.

On a general Note:-

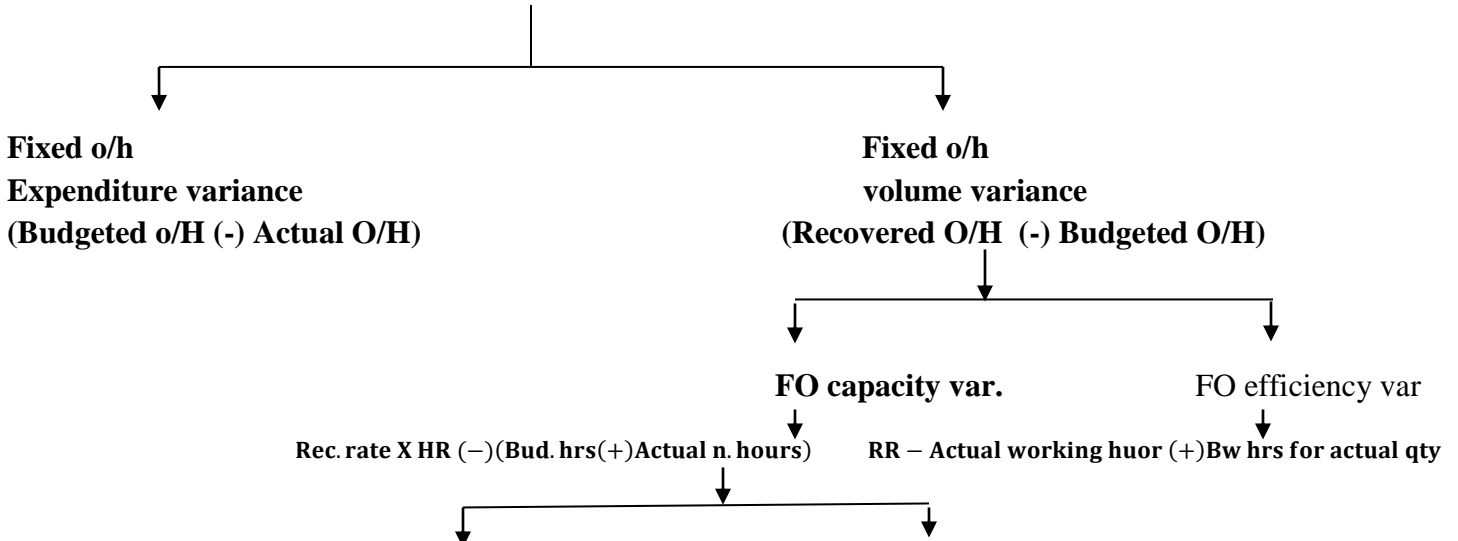


**DATA FOR VARIABLE OVERHEADS VARIANCE**

Budget			Revised Budget			Actual		
(budgeted variable o/h for Budgeted output)			(Budgeted variable o/h for Actual output)			(Actual variable O/H for Actual output)		
Qty (hours)	Rate	Amount	Qty(hours)	Rate	Amount	Qty	Rate	Amount
Hors.	Rate/hrs	Amt.	Hrs.	Rate/hrs	XX	AWH=APH	Rate/hrs	XX

**FIXED OVERHEAD COST VARIANCE**

(A) ABSORPTION/ Convention (Recovered O/H (-) Actual O/H)



Revised capacity Variance

Calendar var. RR/day X ( Actual day – Budgeted day)

**MARGINAL**



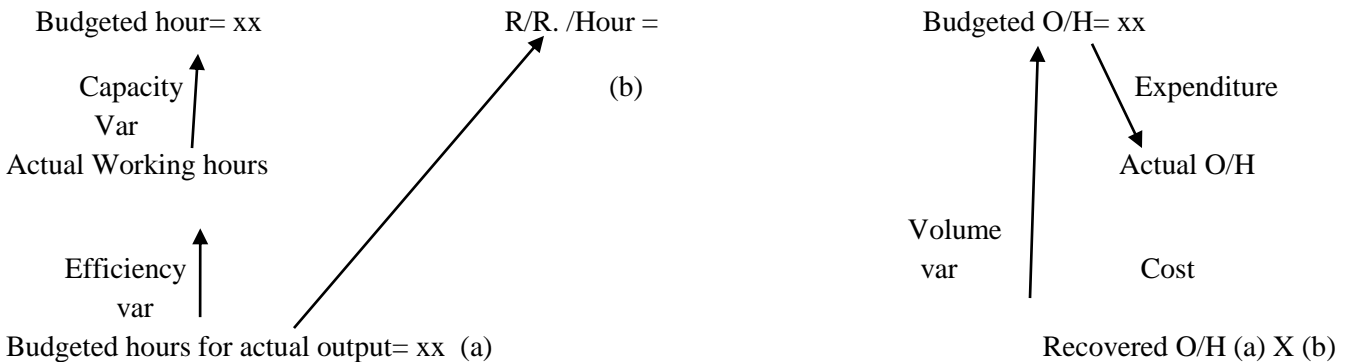
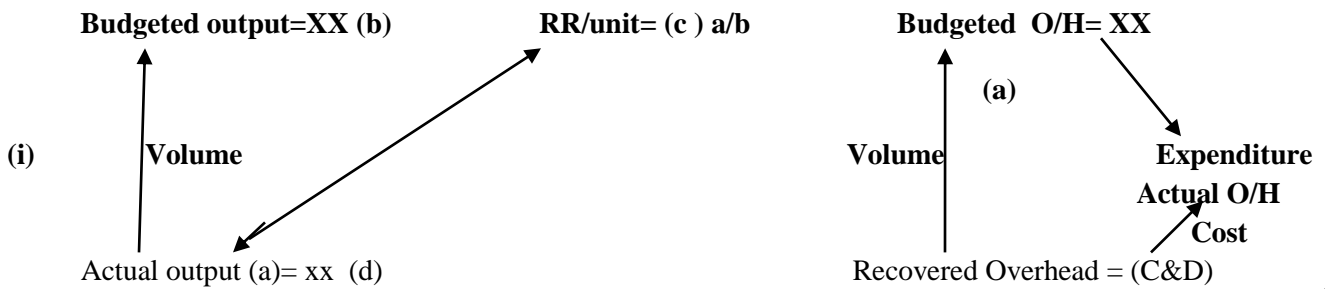
**Fixed Overhead Cost variance**  
**Fixed O/H Expenditure variance**  
 (Budgeted o/h (-) Actual o/h)

$$\text{Recovery Rate/hour} = \frac{\text{Budgeted Overhead}}{\text{Budgeted Hours}}$$

$$\text{Recovery Rate/unit} = \frac{\text{Budgeted o/h}}{\text{Budgeted Output}}$$

$$\text{Recovery Rate/days} = \frac{\text{Budgeted o/h}}{\text{Budgeted Days}}$$

**DATA FOR FIXED OVERHEAD VARIANCE**



**CONCEPT OF RATIO**

\***Capacity Ratio** --- Actual Working hours / Budgeted Hours

$$\frac{\text{Actual Working hours}}{\text{Budgeted Hours}}$$

\***Efficiency Ratio:-** Budgeted Hours for Actual Output/ Actual working hours

$$= \frac{\text{Budgeted hours for Actual output}}{\text{Actual working hours}}$$

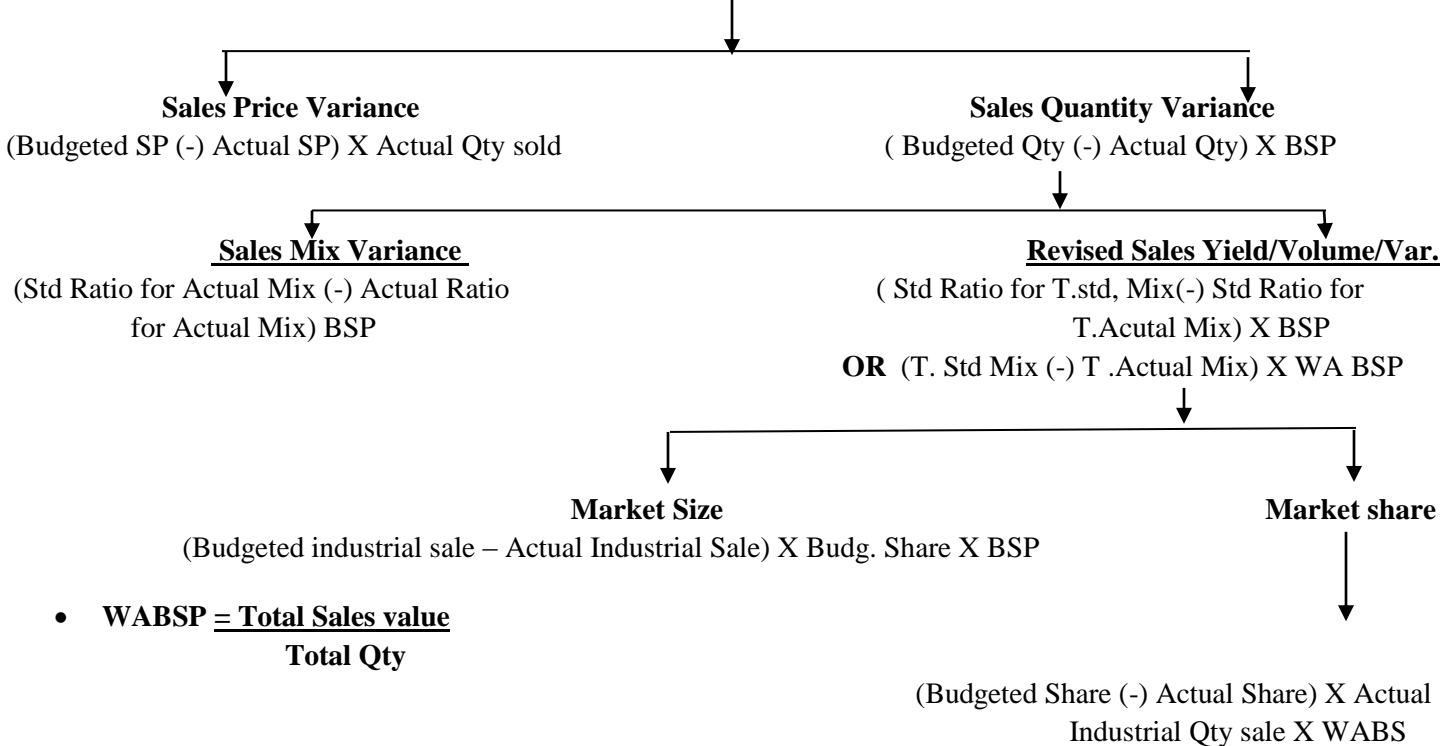
Volume Ratio/ Activity Ratio :- Efficiency Ratio X Capacity Ratio

$$= \frac{\text{Budgeted Hours for AO}}{\text{Budgeted Hours}}$$



## Sales Value Variance (TURN OVER BASED)

**(Budgeted Sales (-) Actual Sales)**

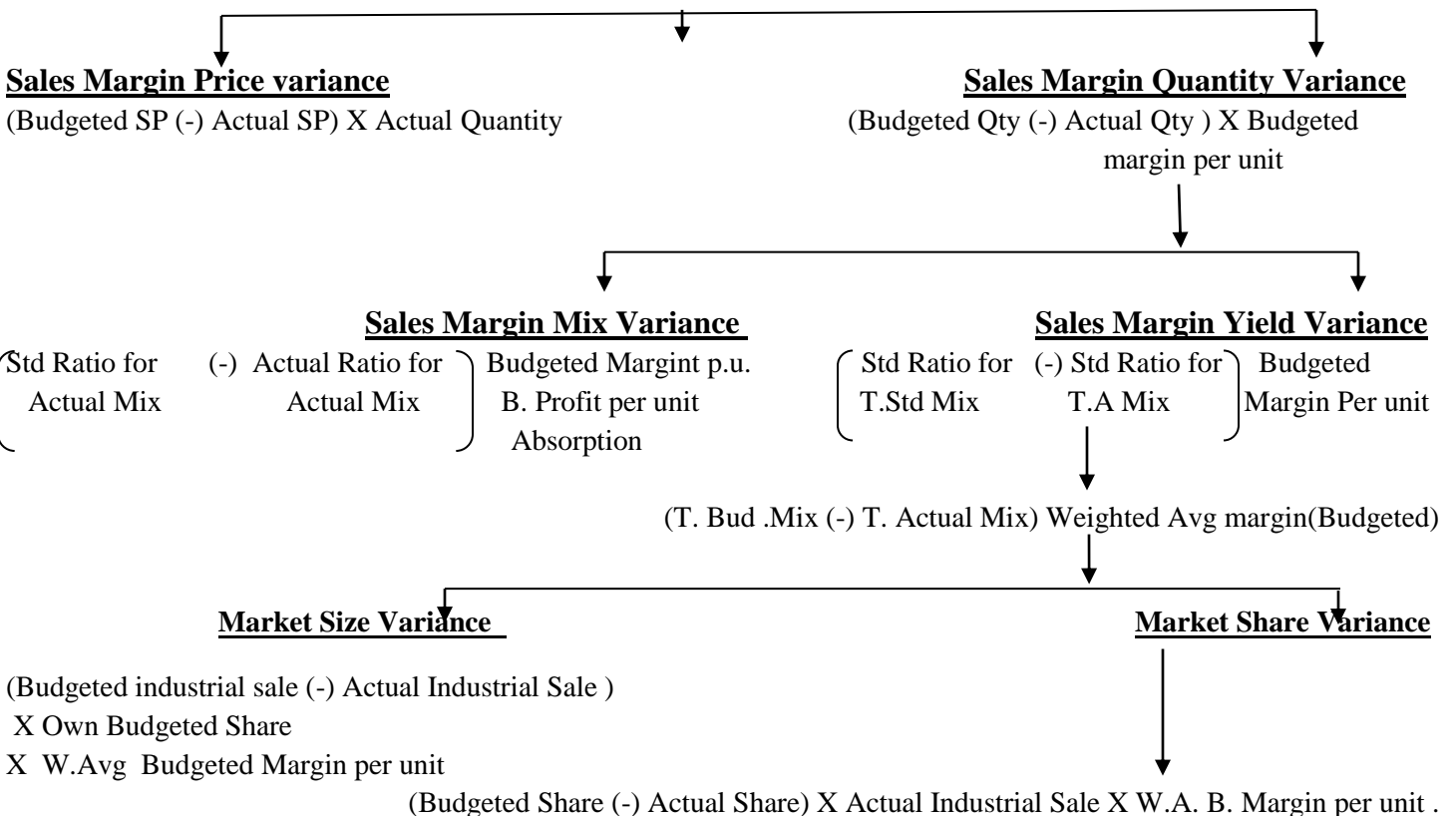


## SALES VARIANCE

**(MARGIN BASED)**

**SALES MARGIN VALUE VARIANCE**

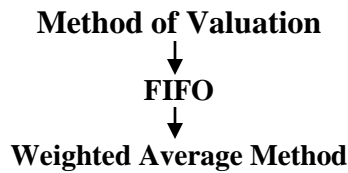
(Budgeted Margin (-) Actual Margin with Budgeted VC)



- Margin means =Contribution in case of Marginal approach

- Margin means = Profit in case of Absorption approach.

### CONCEPT OF WIP (Equivalent Production/units)



For standard Costing ----- Always apply FIFO

Variance = BC For Actual Output (-) AC for Actual Output

Actual output ----- It means Actual working in current period.

Actual output----- It means Actual working in current period.

We should prepare following Statement:-

#### 1:- Statement of Equivalent production ( as per FIFO)

It indicate actual output in respective of MLO in current period

2:- Data for Resource Variance

3:- Statement of Variance

### FIFO

#### STATEMENT OF EQUIVALENT PRODUCTION (FIFO)

Particulars	Qty	Part.	Qty	Material		Labour		Overheads	
Opening WIP	XX	Op.WIP	XX		(100- Completed)		(100- Completed)		(100- Completed)
		Current	XX		100%		100%		10%
		Completed	XX						
Introduce	XX								
Total	XX	TOTAL	XX	----	Complete	----	Complete	----	Complete

↑  
Actual output in respect of  
Material
↑  
Actual output in respect of  
Lab. & Overheads
↑  
Actual output in respect of  
Overheads

#### **IN CASE OF FIFO**

	Material	Labour/Overheads
Current period cost	XXX	XXX
Quantity (Actual output)	XXX	XXX
Cost per unit	XXX	XXX

#### **IN CASE OF Weighted Average**

	Material	Labour/Overheads
Opening Cost	XX	XX
Current cost	XX	XX
Qty( Actual output)	XX	XX
Cost per unit	XX	XX

### **Reconciliation Statement**

<b>Marginal</b>		<b>Absorption</b>	
Budgeted Profit	XXX	Budgeted Profit	XXX
Sales Margin Variance		Sales Margin Variance	
1:- SM Price variance	XXX	1:- SM Price variance	XXX
2:- SM Qty Variance	XXX	2:- SM Qty variance	XXX
Cost Margin Variance		Cost Margin Variance	
1:- MPV		1:- MPV	

2:- MEV		2:- MEV	
3:- LRV	Overall V.C. Variance	3:- LRV	Overall V.C. Variance
4:- LEV		4:- LEV	
5:- Variable overhead P.V		5:- Variable overhead P.V	
6:- Variable Overhead EV		6:- Variable Overhead EV	
	xxx		xxx
F. O/H Expenditure variance	xxx	FO/H expenditure Var.	xxx
F. OH volume variance	NA	F.O/H volume Var.	Xxx
Actual Profit	xxx	Actual Profit	xxx

<b>MARGINAL</b>	<b>ABSORPTION</b>
Sales Margin Variance	Sales Margin Variance
SM QTY variance	SM Qty Variance
(BQ-AQ) X Budgeted contribution per unit	(BQ-AQ) X Budgeted production per unit
<b>COST MARGIN VARIANCE</b>	<b>COST MARGIN VARIANCE</b>
Fixed overhead volume variance	F O/H Volume variance
NA	(BQ-AQ) X Budgeted fixed cost per unit

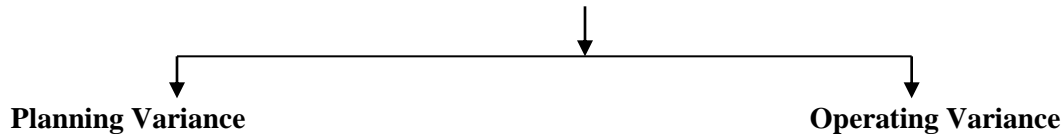
Contribution (-) Fixed Cost = Profit

Contribution -= Profit per unit + Fixed Cost per unit

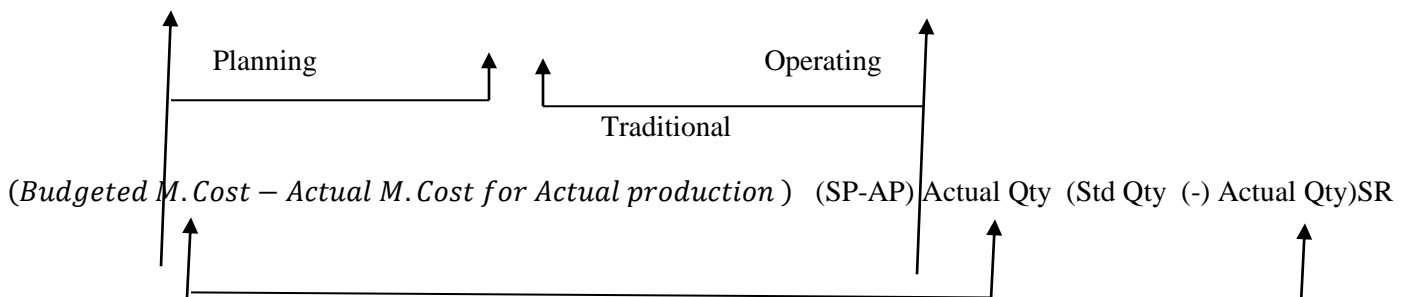
### RECONCILIATION STATEMENT (MARGINAL)

Budgeted Profit	XX
SM Qty Variance	XX
Standard profit for Actual Qty Sold	XX
SM	
Cost Variance	XX
(a) Overall VC Variance	XX
(b) Fixed overhead Expenditure variance	XX
	xxx
Less: CLOSING STOCK	
Actual Production X ( Actual production –Actual Sales)	
Actual profit for Actual Qty Sold	XX

### TRADITIONAL VARIANCE



Original Budget (For actual output)			Revised Budget (How much to be max. Produce)			Actual Budget					
	Qty	Rate	Amount		Qty	Rate	Amount		Qty	Rate	Amount
X	xx	xx	xx	Y	xx	xx	xx	Y	xx	Xx	



**Traditional Variance**

( Original Budget (-) Actual Budget

**Planning Variance**

( Original Budget (-) Retained Budget)

**Operating Variance**

(Revised Budget (-) Actual)

**SINGLE PLAN & PARTIAL PLAN**

<b>SINGLE PLAN</b>	<b>PARTIAL PLAN</b>
<b>Variance job actually mein hua</b>	<b>Variable baad mein niklega</b>
<b>( at the foul of event occurred)</b>	<b>(In assessment year)</b>
<b>Extra Cost</b>	<b>No extra cost</b>
	↓
	<b>This is partial plan</b>

**Material Control Account**

<b>To Balance b/d</b>	<b>(Qty XSR)</b>	<b>By WIP</b>	<b>(BQ for AO X SR)</b>
<b>To Supplier</b>	<b>(AQ Purchased X SR)</b>	<b>By M. Usage (Excess)</b>	<b>(AQ used X SR)</b>
		<b>By balance c/d</b>	<b>(Qty X SR)</b>

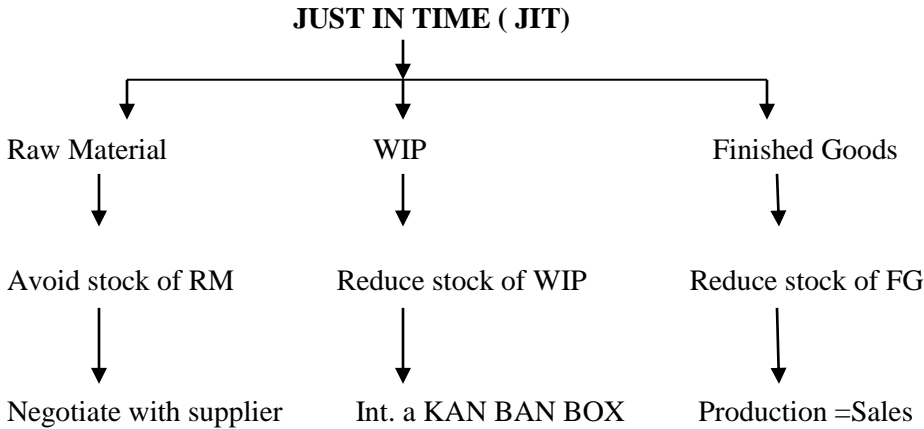
**SINGLE PLAN**

**For Purchase of Material:-**

Material control A/c	Dr.	SR X AQ
MPV	Dr.	difference
TO Supplier		AR X AQ
Supplier Account	Dr.	AR X AQ
To Bank Account		AR X AQ
<b><u>For Labor:-</u></b>		
Labor Control Account	Dr	SR X Actual Hours
LRV ( B/f)	Dr.	Difference
TO Labour payable Account		AR X Actual Hrs.
Labour Payable Account	Dr.	AR X Actual hours
To Bank Account		AR X Actual hours
<b>For Material Consumption:-</b>		
WIP control Account	Dr.	bud qty for product XAO X SR
Labour efficiency variance A/c	Dr.	differ
TO Labor control A/c		Actual Hrs X SR
<b><u>PERIODICALLY</u></b>		
WIP A/c	Dr.	SC
OCV A/c	Dr.	difference
To Overhead Control A/c		AC
<b>ALL variances should be transferred to Costing P/L</b>		
<b>For Debt Variances:-</b>		
Costing P/L A/c	Dr.	X
TO MPV		X
To MUV		X
TO LRV		X
TO LEV		X



# Development in Business Environment



## **KAN BAN BOX**

WIP holding can be reduced by Δing the Plant dayout in a dedicated cell i.e.

All Machines of diff process should be placed adjacent to each other so that

Output of 1-----becomes-----Input of other for this We should place a Box called Kan Ban BOX between these 2 process capacity of Box is restricted to some units.

**OPERATOR OF 1st Process----- OPERATE HIS PROCESS &  
STOP HIS PROCESS**

When such Box is filled by his process output. And continue again to start his process when next operator pick up a unit from this Box.

With this process WIP holding is restricted to very Lower level.

The Idle time of 1<sup>st</sup> operator should be utilized for preventive maintenance.

If JIT system is to be applied for ----- Raw material

WIP

Finished goods

Than prepare

## Statement of Comparative Costs

	<u>Present system</u>	<u>JIT</u>
Storage Cost		
Raw Material ---- Variable	XX	XX
Fixed	XX	XX
WIP-- Variable	XX	XX
Fixed	XX	XX
Finished Goods – Variable	XX	XX
Fixed	XX	XX
Interest on WC Blocked	XX	XX
Relevant Cost	<b>XX</b>	<b>XX</b>

# **TOTAL QUALITY MANAGENT (TQM)**

Reduce Non-value Added Cost

All losses should be reduced/eliminated by running extra costs

Extra Cost – Preventive maintenance Cost

(Every part replaced only at the expiry of theoretical life instead of the break down)

ALL losses- Normal loss & Abnormal loss

Such losses will be occurred in stores/ production department.

Input to stores	XX	R.M. Stat (Raw material Requirement)
(-) Loss (Mishandling)	XX	
Issued to production=output	XX	
(-) Process Loss	XX	
Gross Delivery	XX	
Specification loss	XX	Production detail
(Free replacement)	—	
Actual delivery/Net delivery/ Invoiced	XX	
Before and after TQM		

## **COST OF QUALITY REPORT**

### **Types of Cost:-**

- 1:- Preventive Maintenance cost
- 2:- Break Down Maintenance Cost
- 3:- Internal Failure Cost
- 4:- External failure cost

### **1:- Preventive Maintenance Cost:- Preventive maintenance – would like to analyze that extra expense on preventive maintenance cost will reduce /eliminate**

- A:- staff training Cost
- B:- Supplier evaluation Check
- C:- Design Change
- D:- Extra Maintenance Cost

### **2:- Break Down Maintenance Cost (Appraisal Cost):-**

- |                             |   |               |
|-----------------------------|---|---------------|
| A:- Inspection              | } | Material      |
| B:- Testing                 |   | Labour        |
| C:- Checking                |   | Machine (AMC) |
| D:- Verification            |   | Product       |
| E:- Annual maintenance Cost |   |               |

### **3:- Internal Failure Cost**

- A:- Cost of defective units ( down graded)
- B:- Rework Cost
- C:- Sale of Scrap

### **4:- External Failure Cost**

- A:- Cost of specification goods
- B:- Cost of returned goods- Transportation Cost

C:- Product Liability Claim

D:- Repair (Warranty repair)

E:- Any other financial Expenses ( Non Cost exp) should be covered as external cost.

**TARGET COSTING**

In Pc—Not possible to control Selling Price

In order to maintain profitability of company. We should follow another Technique called TARGET COSTING

**TARGET COSTING**

In addition to Standard Costing

Just in Time

TQ M etc.

In this approach

We predict the Target Cost'

Selling Price	XX
(-) Min. Return	XX
Target Cost	<u>XX</u>

After this compare \* Current feasible cost with \* Target cost.

If current feasible cost is Higher than Target cost then Product should be revised to production Manager & designer to **REDESIGN THIS PRODUCT.**

So that, current feasible cost will get reduce become closer to Target costing.

**THEORY OF CONSTRAINT**

Throughput Contribution:- If nature of Labour becomes permanent instead of casual then, Existing concept will be Revised.

Existing Concept		Revised Concept	
Sale	XX	Sale	XX
VC	XX	(-) Material	XX
FC	XX	(-) Labour	XX
		THROUGH PUT CONTRIBUTION	XX
		(-) Variable overhead	XX
		(-) Fixed Cost	XX
		Profit	<u>XX</u>

**THROUGHPUT CONTRIBUTION:-** Sales (-) Material Cost

**CONVERSION COST** -- Labour & overheads :- Fixed and Variable. But agar variable overhead sath mein diya hua hai material ke to use hum variable hi manenge.

**THROUGHPUT ACCOUNTING RATIO=** Throughput Contribution per 2 of conversion cost

(TA RATIO) ( Labour short supply)

We Should produce the product having Higher Amount of TA Ratio.

Theory of Constraint:-

Labour	Conversion Cost (Rs.)	Throughput contribution per period/ Conversion cost per period.
Machine Hours	Machine Hours	Return per Machine Hour

Labour:- Short Supply (NO)

Labour :- Fixed ( YES)

If we have different machines and Machine hours are limiting factor and different products

Throughput contribution per Machine hour

Use Ranking concept i.e.

Throughput contribution per Machine hour for the Bottleneck Machine/activity



**Bottleneck Machine means the Machine having.**

**HIGHER SHORTAGE OF RESOURCES** i.e. Higher utilization ratio & shortage :- (Requirement > availability)

**Step 1:-** We should identify the Bottleneck Machine & called key element i.e. Higher limiting factor.

**Step 2:-** Calculate Throughput Contribution per bottleneck Machine Hour.

**Step 3:-** Provide Ranking.

**Step 4:-** Prepare Statement of optimum product Mix.

## **THEORY OF CONSTRAINT**

### Elements

1:- Throughput Contribution

2:- Operating Cost

3:- Assets/Investment

### 1:- Throughput Contribution:-

Sales		XX
	- <u>Material cost</u>	<u>XX</u>
Throughput contribution		XX
	- Conversion cost	XX
Project		XX

2:- **Operating Cost:-** Labour Overheads, Rent, depreciation, Salary

3:- **Assets/Investment :-** Fixed assets (+) Working Capital

OR

Building, Plant & Machine & stock deferred Expenses, (Research & Heavy Expenses)

## **SERVICE SECTOR**

When only Services are provided instead of Manufacturing the product then, Management would like to know the cost in terms of Services

- **In Transport :-** Cost per tone per Km =  $\frac{\text{Total Cost}}{\text{Effective Tonne Km's}}$

Effective tone Km :- ( KM X tone) = Weighted Average Cost per passenger per Kilometer.

- **In Hotels:-** Cost per Room per day.
- **In Hospital:-** Cost per patient per day.

OR

Cost per Bed per day.

**Petrol/diesel:-** Variable Cost always

**Fuel:-** per flight/lot :- (Semi variable) because fuel case remain constant for  
:- Every Flight

### **Statement of Profit**

<b>Revenue</b>		<b>XX</b>
(-) Variable Costs		XX
Contribution		XX
(-) SVC		XX
(-) SFC		XX
(-) AVG FC (Avoidable)		XX
Benefit		XX
(-) Unavoidable Fixed Cost		XX
Profit		XX
Rent	XX	

+ Service Tax <u>XX</u>	
Tariff <u>XX</u>	

## NEW TOPICS

### 1:- PARETO ANALYSIS

### 2:- VALUE ADDED SERVICES

### 3- KAIZEN CONCEPTS

### 4:- BACK FLUSH COSTING

#### 1:- PARETO ANALYSIS:-

80% of results---- 20% of activity

80% of revenue ---- 20% of product

80% of profit ----- 20% of customer

80% of cost----- 20% of stock

80% of problems ----- 20% of reasons

**STEP1:-** Transfer the product in descending order in relation to contribution /sales/profit

**STEP 2:-** Calculate their %

**STEP3:-** Calculated accumulated percentage & then analyze the product.

#### 2:- VALE ADDED ACTIVITY:-

**The activity involving cost:-** providing some value added in customer means customer is ready to pay for such types of activity.

if such activity is withdrawn/deleted then, customer satisfaction/customer rating will obviously reduced.

Non-Value Added Activity:- It includes the cost which is incurred but not relevant from customer point of view. i.e. if such type of activities are withdraw/eliminated /introduced then no addition for Customer Rating.

#### 3:- KAIZEN CONCEPTS

<b>KAI</b>	<b>ZEN</b>
Change	Good

Change for Good

IT relates with Reduction in cost i.e. cost Reduction Technique like

**Other Technique :-** Standard

JIT

TQM

Target Costing

In this approach , Management interact with workers, staff & they suggest method/Technique to reduce the Cost.

The Above Technique suggested by workers should be continuously applied Show Technique /method will reduce cost gradually. The rate of reduction is very slow.

This system does not involve any Extra Capital Employed.

Kaizen is different from Target base Target costing is applied in Design stage i.e. before Manufacturing. However Kaizen is applied during Manufacture activities.

It is applied Not Only in Manufacture concern But also for the concern providing services.

In this authority & Responsibility are clearly defined to each worker & management with regular meeting & Training.

4:- **BACK FLUSH COSTING**;- Finished goods production A/c      Dr Qty produced X SC

To Raw material is process

SC

To conversion cost applied

SC

Cost of Goods sold

Dr,

Qty sold X SC

To finished good production A/c

Qty sold X SC

Raw Material in Process A/c

To Supplier

Conversion cost A/c

TO Wages payable Account

To Various A/C

Dr. Account of Material used

Account of Material used

Dr. Account

AC

AC