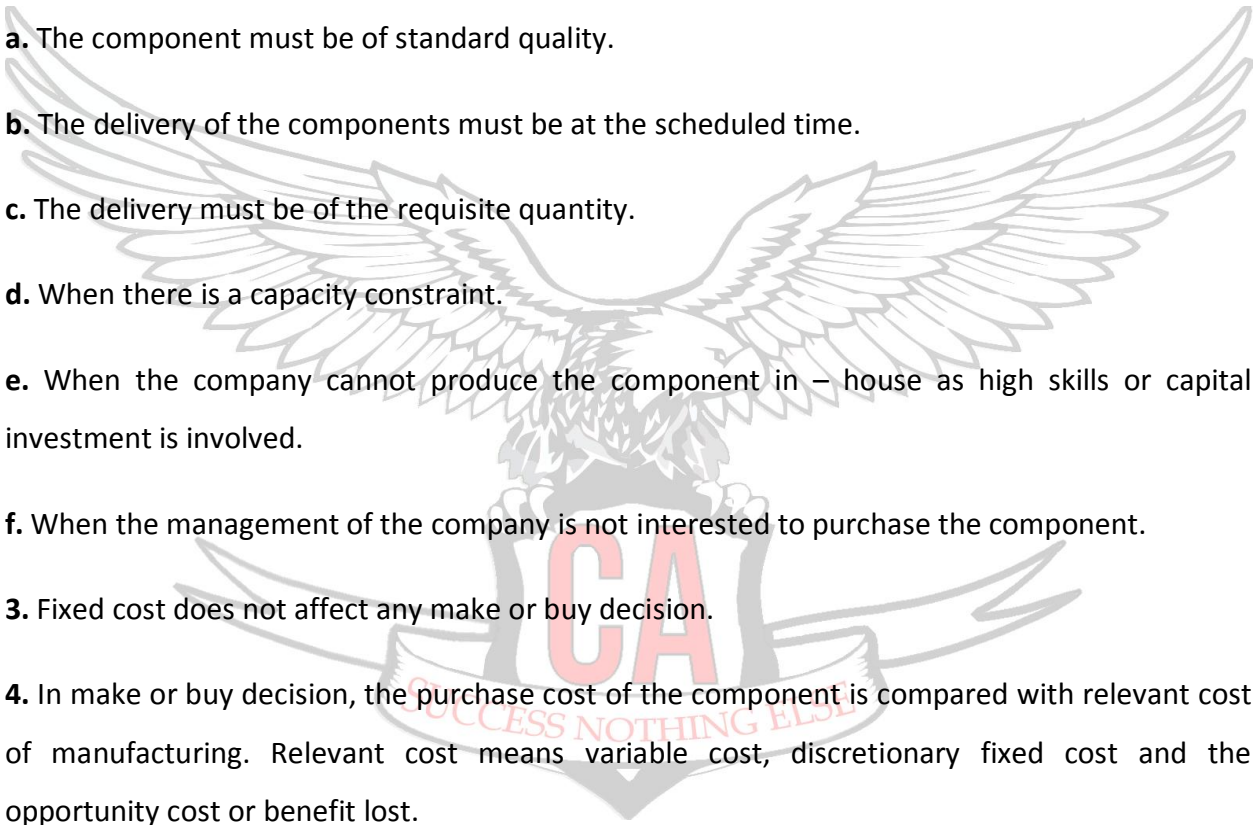


MAKE OR BUY

POINTS TO REMEMBER

1. Make or buy decision is to be applied for the component of a product. If the decision is of product itself then it is to be termed as Subcontracting or Outsourcing.
 2. The non costing factors to be considered in make or buy decisions:
 - a. The component must be of standard quality.
 - b. The delivery of the components must be at the scheduled time.
 - c. The delivery must be of the requisite quantity.
 - d. When there is a capacity constraint.
 - e. When the company cannot produce the component in – house as high skills or capital investment is involved.
 - f. When the management of the company is not interested to purchase the component.
 3. Fixed cost does not affect any make or buy decision.
 4. In make or buy decision, the purchase cost of the component is compared with relevant cost of manufacturing. Relevant cost means variable cost, discretionary fixed cost and the opportunity cost or benefit lost.
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Q-1 A Company manufacturing chemicals furnishes the following data of their activities for the year 2012-13. The company manufactures three products namely Ethelene, EDC and VLC. Ethelene is consumed for making EDC and EDC is consumed for making VLC. One metric ton of Ethelene is required to make one metric ton of EDC and one metric ton of EDC is required is for making one metric ton of VLC.

The other particulars are:

Particulars	Ethelene	EDC	VCL
Production Capacity per annum (metric Ton)	25,000	30,000	30,000
Cost per metric Ton:			
Variable Cost (Rs.)	20	30	40
Product Fixed Cost (Rs.)	20	30	40
Common Fixed Cost (Rs.)	10	15	20
Total Cost per Metric Ton (Rs.)	50	75	100
Selling Price per Metric Ton (Rs.)		150	300
Sales per annum (Metric Ton)		10,000	15,000

The company restricts the manufactures of all its products only to the extent of the sales demand. The management is concerned with the low capacity utilization. In order to achieve fuller utilization of the plant capacity, the company, the company entered into negotiations with various parties. As a result of the negotiations, X who buys one-third of the current sales volume of VLC, offers to buy 20,000 metric tons of VLC per annum at Rs. 250 per metric ton provided the entire quantity of 20,000 metric tons is sold to him.

This purchases is for the captive consumption of X and therefore will not affect the market price of VLC. X also offers to supply EDC for manufacture of VLC to the extent of 5,000 metric tons at a price of Rs. 125 per metric ton. The company can also buy EDC from the open market at Rs.140 per metric ton if the order is for 10,000 metric tones or more.

The bases of various costs given above are as follows:

- (i) Variable costs exclude the cost of internally consumed Ethelene in the manufacture of EDC and costs of EDC consumed in the manufacture of VLC.
- (ii) Fixed costs are based on normal capacity production.

(iii) The product fixed costs can be avoidable only if there is nil production of the product concerned.

(iv) Common fixed costs are to be incurred irrespective of production and sales.

(v) No. closing stock are maintained.

You are required to:

(a) Draw up a statement of profitability in respect of the year. 2012-13 as originally envisaged by the company.

(b) If the company decides to accept the offer of X to buy 20,000 metric tons of VLC at Rs. 250 per metric ton and if the balance quantity of production of VLC can be sold in the market, show the revised statement of profitability of the company.

Solution:

(a) Statement of Profitability for the year 2012-13

Products	EDC	VCL	Ethelene
Annual Production Capacity (MT)	30,000	30,000	25,000
Annual Planned Production (MT)	25,000	15,000	25,000
Cost of Production of Annual Planned Production	Rs.	Rs.	Rs.
Variable Cost (W.N.-1)	7,50,000	6,00,000	5,00,000
Product Fixed Cost (W.N.-2)	9,00,000	12,00,000	5,00,000
Common Fixed Cost (W.N.-3)	4,50,000	6,00,000	2,50,000
Total	21,00,000	24,00,000	12,50,000
Adj. of Cost of 25,000 MT of Ethelene used for EDC	12,50,000	----	----
Total	33,50,000	24,00,000	
Adj. of cost of 15,000 MT of EDC used For VCL	20,10,000	20,10,000	

Cost of Sales (W.N.-4) (10,000 MT of EDC and 15,000 MT of VCL)	13,40,000	44,10,000
Cost of Sales (W.N.-4) (10,000 MT of EDC and 15,000 MT of VCL)	13,40,000	44,10,000
Sales (W.N.-5)	15,00,000	45,00,000
Profit	1,60,000	90,000

Note: Since only 25,000 metric tons of Ethelene is available, only 25,000 metric tons of EDC could be produced. Out of this production, 15,000 metric tons of EDC is consumed for VCL production while the balance of 10,000 metric tons of EDC is sold

Workings notes:

	Products	Ethelene	EDC	VCL
1.	Variable Costs	Rs. 5,00,000 (Rs. 20 x 25,000 MT)	Rs.7,50,000 (Rs. 30 x 25,000 MT)	Rs.6,00,000 (Rs. 40 x 15,000 MT)
2.	Product Fixed Cost	Rs.5,00,000 (Rs. 20 x 25,000 MT)	Rs. 9,00,000 (Rs. 30 x 30,000 MT)	Rs. 12,00,000 (Rs. 40 x 30,000 MT)
3.	Common Fixed Cost (Based on production capacity)	Rs. 2,50,000 (Rs. 10 x 25,000MT)	Rs. 4,50,000 (Rs. 15x 30,000 MT)	Rs. 6,00,000 (Rs.20 x 30,000 MT)
4.	Cost of 25,000 MT of EDC Cost of per tone of EDC- Rs. 134 (Rs.33,50,000/25,000 MT) Cost of 10,000 MT of EDC	----	Rs.33,50,000 Rs. 13,40,000	----

	Cost of 15,000 MT of EDC	----	Rs. 20,10,000	
5.	Sales Revenue	----	Rs. 15,00,000 (10,000 MT x Rs. 150)	Rs. 45,00,000 (15,000 MT x Rs.300)

Revised Statement of profitability

(When the company Decides to Accept offer of X)

Products	Ethelene	EDC	VCL
Annual planned production (MT)	25,000	25,000	30,000
	(Rs.)	(Rs.)	(Rs.)
Cost of Production [see (a) (3) above	12,50,000	33,50,000	----
Variable Cost (Rs. 40 x 30,000 MT)	----	----	12,00,000
Production Fixed Costs (Rs. 40 x 30,000 MT)	----	----	12,00,000
Common Fixed Costs (Rs. 20 x 30,000 MT)	-----	-----	6,00,000
Cost of Purchases (5,000 MT x Rs.125)	-----	6,25,000	-----
Total Cost of EDC used in VCL)			39,75,000
Total Cost of VCL			69,75,000
Total sales of Revenue (20,000 MT @ Rs. 250 per MT and 10,000 MT @ Rs. 300 Per MT			80,00,000
Profit			10,25,000

The above statement shows that the total profit will go up considerably in case the proposal of X is accepted. Hence, the company should accept the proposal.

QUESTIONS FOR PRACTICE

Q-2 You are the management auditor of XYZ Ltd. The Managing Director of the company seeks your advice on the following problem:

The XYZ Ltd produces a variety of products each having a number of component parts. Product B takes 5 hours to produce on a machine no. 99 working at full capacity. Product B has a selling price of Rs 50 and a marginal cost of Rs 30 per unit. A – 10 a component part could be made on the same machine in 2 hours for a marginal cost of Rs 5 per unit. The supplier's price is Rs 12.50 per unit.

(a) Should the company make or buy A -10? Assume that machine hour is available in limited supply.

(b) Would your answer differ if there is a spare capacity?

Q-3 A machine manufactures 10,000 units of a part at a total cost of Rs 21 of which Rs 18 is variable. This part is readily available in the market at Rs 19 per unit. If the part is purchased from the market then the machine can either be utilised to manufacture a component in the same quantity contributing Rs 2 per component or it can be hired out at Rs 21,000.

Recommend which of the alternative is profitable?

Q-4 Auto Parts Ltd has an annual production of 90,000 units for a motor component. The component cost structure is as below:

Material	Rs 270 per unit
Labour (25 % fixed)	Rs 180 per unit

Variable OH	Rs 90 per unit
Fixed OH	Rs 135 per unit
Total	Rs 675 per unit

(a) The purchase manager has an offer from a supplier who is willing to supply the component at Rs 540. Should the component be purchased?

(b) Assume the resources now used for this component's manufacture are to be used to produce another new product for which the selling price is Rs 485. The material cost for this product is Rs 200 per unit. 90,000 units of this product can be produced at the same cost basis as above for labour and expenses.

Discuss whether it would be advisable to divert the resources to manufacture the new product on the footing that the component presently being produced is purchased from the market.

Q-5 On a farm of 200 acres, a farmer plans to use 100 acres for raising crops, 20 acres for growing fodder and the balance of 80 acres for grazing milk cattle. For raising the crop the seed will cost Rs 50 per acre and the fertilisers Rs 70 per acre. The yield will be 30 tonne per acre, which would be sold at Rs 50 per tonne.

The fodder will cost Rs 20 per acre for seed and Rs 50 per acre for fertilisers. The fodder produced will be fed to the cows. On the 80 acres, 40 milking cows will be kept. In addition to the fodder, other feeding stuffs will cost Rs 20,000 in all for the year. It is expected that each cow would produce one calf which will be sold at Rs 100 each together with an annual milk yield sold at Rs 1,200. The resale value of the cows would be diminishing at the rate of Rs 100 per annum. Other farm costs per annum (which are unlikely to change) are:

Farm workers wages	Rs 36,000
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Rates and taxes	Rs 24,000
General garages	Rs 30,000

A suggestion is made that fodder should be purchased instead of growing it. If this is done, it is estimated that fodder will cost Rs 250 per cow per annum.

Prepare statements to indicate to the farmer, whether the fodder should be purchased or grown and released land may be utilised either for raising the crop or grazing milk cattle.

Q-6 A firm needs a component in an assembly operation. If it wants to do the manufacturing itself, it would need to buy a machine for Rs 4 lakhs which will last for 4 years with no salvage value. Manufacturing costs in each of the 4 years would be Rs 6 lakhs, Rs 7 lakhs, Rs 8 lakhs, and Rs 10 lakhs respectively. If the firm had to buy the components from a supplier, the cost would be Rs 9 lakhs, Rs 10 lakhs, Rs 11 lakhs, and Rs 14 lakhs respectively in each of the four years. However, the machine would occupy floor space which would have been used for another machine. This latter machine would be hired at no cost to manufacture an item, the sale of which would produce net cash flows in each of the four years of Rs 2 lakhs. It is impossible to find room for both the machines and there are no other external effects. The cost of capital is 10 % and the present value factor for each of the four years is 0.909, 0.826, 0.751 and 0.683 respectively.

Should the firm make the components or buy from outside?

Q-7 Panchwati Cement Ltd produces 43 grade' cement for which the company has an assured market. The output for 2010 has been budgeted at 1,80,000 units at 90% capacity utilisation. The cost sheet based on output (per unit) is as follows:

	Rs
Selling price	130.00
Direct material	30.00
Component EH	9.40
Direct wages @ Rs 7 per hour	28.00
Factory overhead (50 % fixed)	24.00
Selling and distribution overheads (75 % variable)	16.00
Administrative overhead (fixed)	5.00

The factory overheads are applied on the basis of direct labour hours.

To utilise the idle capacity and to improve the profitability of the company, the following proposals were put up before the Board of Directors for consideration:

a. An order has been received from abroad for 500 units of product 53 grade cement per month at Rs 175 per unit. The cost data are:

Direct material - Rs 56 per unit, direct labour – 10 hours per unit, selling and distribution overhead applicable to this product order is Rs 14 per unit and variable factory overheads are chargeable on the basis of direct labour hours.

b. The company at present manufacture component EH one unit of which is required for each unit of product 43 grade. The cost details for 15,000 units of component EH are as follows:

	Rs
Direct materials	30,000
Direct labour	52,500
Variable overheads	25,500

Fixed overheads	33,000
Total	1,41,000

The component EH however is available for purchase at the market at Rs 7.90 per unit.

c. In the event of company deciding to purchase the component EH from market, the company has two alternatives for the use of the capacity so released, which are as under:

I. Rent out the released capacity at Rs 1 per hour

II. Manufacture component GYP which can be sold at Rs 8 per unit.

The cost data of this component for 15,000 units are:

	Rs.
Direct materials	42,000
Direct labour	31,500
Factory variable overheads	13,500
Total	25,500

Required:

(i) Prepare a statement showing profitability of the company envisaged in the budget.

(ii) Evaluate the export order and state whether it is acceptable or not.

(iii) Make an appraisal of the proposal to manufacture component EH and state whether component EH should be manufactured in the factory or purchased from the market. Assume that no alternative use of spare capacity is available.

(iv) Evaluate the alternative use of the spare capacity and state whether to manufacture or buy the component EH and if your decision is to buy component EH, which of the two alternatives for the use of spare capacity will you prefer?

Q-8 B Ltd. makes industrial power drills, which is made by the use of two components A (electrical and mechanical components) and B (plastic housing). The following table shows the cost of plastic housing separately and the cost of the electrical and mechanical components:

	A	B	A & B
	Rs	Rs	Rs
Sales 1,00,000 units @Rs 100			1,00,00,000
Variable Costs:			
Direct materials	44,00,000	5,00,000	49,00,000
Direct labour	4,00,000	3,00,000	7,00,000
Variable factory overhead	1,00,000	2,00,000	3,00,000
Other variable costs	1,00,000	--	1,00,000
Sales commission @10% of sales	-	-	10,00,000
Total variable costs	50,00,000	10,00,000	70,00,000
Contribution	-	-	30,00,000
Total fixed costs	22,20,000	4,80,000	27,00,000
Operating income			3,00,000

Answer the following questions independently:

(i) During the year, a prospective customer offered Rs 82,000 for 1,000 drills. The drills would be manufactured in addition to the 1,00,000 units sold. B Ltd. would pay the regular sales commission rate on the 1,000 drills. The Chairman rejected the order because "it was below our costs". Calculate operating income if B Ltd. accepts the offer.

(ii) A supplier offers to manufacture the yearly supply of 1,00,000 units plastic housing components for Rs 13.50 each. Assume that B Ltd. would avoid Rs 3,50,000 of the costs assigned to plastic housing if it purchases. Calculate operating income if B Ltd. decides to purchase the plastic housing from the supplier.

(iii) Assuming that B Ltd. could purchase 1,20,000 units (plastic housing components) for Rs 13.50 each and use the vacated plant capacity for the manufacture of deluxe version of drill of 20,000 units (and sell them for Rs 130 each in addition to the sales of the 1,00,000 regular units) at a variable cost of Rs 90 each, exclusive of housings and exclusive of the 10% sales commission. All the fixed costs pertaining to the plastic housing would continue, because these costs are related to the manufacturing facilities primarily used. Calculate operating income of B Ltd if it purchases the plastic housings and manufacture the deluxe version of drills.

Q-9 A company manufactures three components. These components pass through two of the company's departments P and Q. The machine hour capacity of each department is limited to 6,000 hours in a month. The monthly demand for components and cost data are as under:

Components	A	B	C
Demand (units)	900	900	1350
Direct Materials/ unit	Rs 45	Rs 56	Rs 14
Direct Labour/ unit	Rs 36	Rs 38	Rs 24
Variable OH/ unit	Rs 18	Rs 20	Rs 12
Fixed OH: P @ Rs 8 per hour	Rs 16	Rs 16	Rs 12
Q @ Rs 10 per hour	Rs 30	Rs 30	Rs 10
Total	Rs 145	Rs 160	Rs 72

Components A and C can be purchased from market at Rs 129 each and Rs 70 each respectively.

You are required to prepare a statement to show which of the components in what quantities should be purchased to minimise cost.

Q-10 Jolly Fabrics manufactures quality napkins at its unit in Tirupur. The unit has a capacity of 60,000 napkins per month. Present monthly production for April is 40,000 napkins. Cost incurred for production are as below:

Particulars	Rs per unit	Remarks
Direct material	6	No fixed cost
Direct labour	2	Fixed cost 75 %
Manufacturing overhead	4	Variable 25 %
total	12	

The marketing costs per unit is Rs 7 (Rs 5 is variable). Marketing costs include distribution costs and customer service costs. Present selling price is Rs 22.50 per unit.

Due to a strike at its existing napkin supplier, a hotel group has offered to buy 10,000 napkins from Jolly Fabrics @ Rs 11 per napkin for the month of June. No further sales to the hotel are anticipated. Fixed manufacturing costs and marketing costs are tied to the 60,000 napkins. The acceptance of the special order is not expected to affect the selling price to regular customers. No marketing costs involved in special order. Prepare:

- (i) Budgeted income statement for April.
- (ii) Actual income statement under absorption costing for April.
- (iii) Should Jolly Fabrics accept the special order from the hotel or not?