Accounting for Financial and Managerial Decision and Control [AFMDC]

Unit 7

Managerial Accounting for Decision Making: Make or Buy Decision and Accept or Reject a Special Offer Decision

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Contents

- Concept, importance and objectives of decision making regarding alternative choices
- Cost classification for managerial decision-making perspectives: Relevant and irrelevant cost
- Avoidable and unavoidable cost, opportunity cost, differential cost and sunk cost
- Decision regarding to:
  - Make or buy
  - Accept or reject a special offer

Learning Objectives

- Understand the concept of decision making under alternative choices
- Describe the importance and objectives of decision regarding alternative choices
- Explain relevant and irrelevant cost, avoidable and unavoidable cost, opportunity cost, differential cost and sunk cost
- Decision regarding to: Make or buy, and accept or reject a special offer

Concept

- Decision making is a fundamental part of management
- Decision making is a future oriented activity
- It involves forecasting, planning and decision under alternative choices
- It is the process of evaluating two or more alternatives leading to a final choice
- Decision making is closely involved with the planning for the future and is directed towards a specific objective or goal
- The act of selecting one course of action among various feasible available alternatives is decision making

Importance of Decision Making Regarding Alternative Choices

- to implement the managerial function
- to evaluate the managerial performance
- helpful in planning and policies
- for the selection of best alternative among the different alternatives
- help in successful operation of the business

Objectives of Decision Making Regarding Alternative Choices

- To choose best alternatives among the different alternatives
- To identify and define the provision the problem for making the decision effective
- To develop the different alternatives available at present
- To evaluate all the alternatives
- To analyze the quantitative and qualitative facts of alternative
- To consult experts and specialists if the alternatives demand
- To make decision with close security and deep thinking
- To take decision for the future course of action on the basis of past experience and present circumstances

Step for Decision Making Regarding Alternative Choices

- Step 1: Define the problem
- Step 2: Identify the alternatives
- Step 3: Identify the costs and benefits
- Step 4: To find out total costs and benefits
- Step 5: Assess qualitative factors
- Step 6: Select an alternative

  (consider quantitative and qualitative factors)

Classification of Costs for Decision Making

- Relevant cost (Avoidable cost)
- Irrelevant cost (Unavoidable cost)
- Differential cost
- Opportunity cost
- Sunk cost (Committed costs)

Example:
Relevant and Irrelevant Costs

CAR
-Petrol
-Tax
-Insurance

OR

Taxi
-Taxi charges

- The cost of petrol will be relevant cost, since this cost will vary depending on which transport is chosen
- The cost of tax and insurance will be irrelevant

Relevant cost

- Future cost and different from each alternative
- A cost that is applicable to a particular decision in the sense that it will have a bearing on which alternative the manager selected
- Only those cost, which may be expected to differ between alternatives are relevant
- This term is synonymous with ***avoidable cost*** and ***differential cost***

Differential costs

- A ***differential cost*** is the amount by which the cost differs under two alternative action
- Any cost that is present under one alternative in a decision-making situation but is absent in whole or in part under another alternative
- Differential costs are also known as ***incremental costs***
- This term is synonymous with ***avoidable cost*** and ***relevant cost***

Opportunity Cost

- The potential benefit that is given up when one alternative is selected over another alternative.
- Opportunity costs are not recorded/reported because they do not occur. The cost is the benefit that you gave up.
- *Example: The opportunity cost of going to college is the amount of money you would have made if you were working.*

Sunk Cost

- Cost that is already paid for and cannot be changed by a decision made now or in the future.

- *Example: Tuition for this semester that you have already paid and will not get back for any reason.*

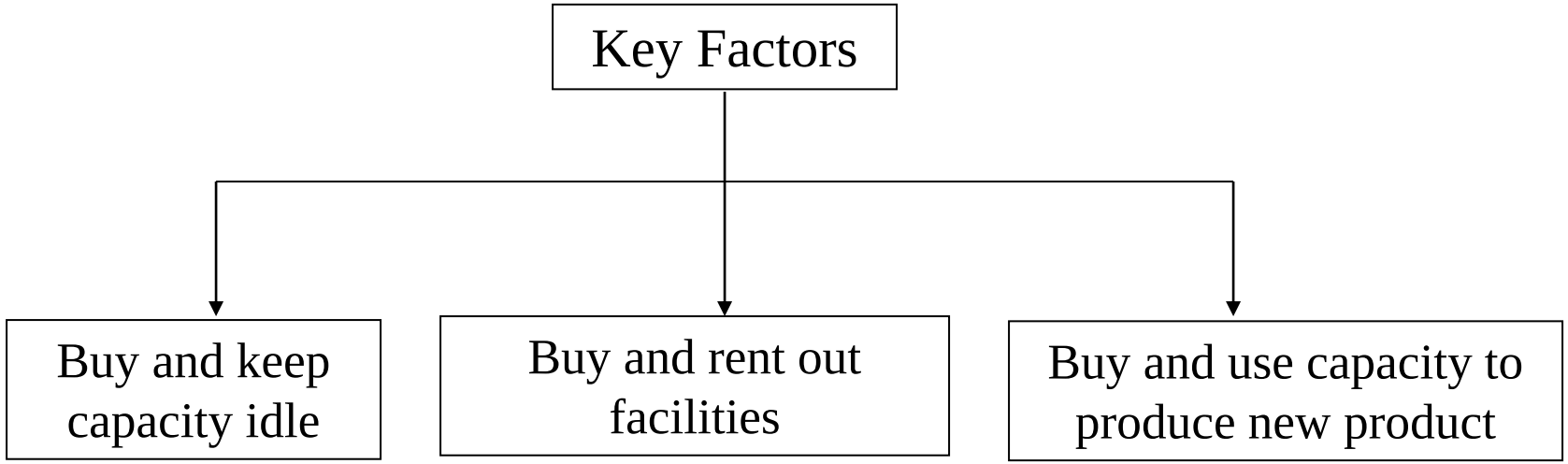
Alternative Decision Questions

- Make or Buy Decision
- Accept or Reject a Special Order Decision
- Drop or Continue Decision
- Sales or Further Processing of Joint Product Decision
- Lease or Purchase Decision

Make or Buy Decision

Make or Buy Decision

- Objective
  - Cost minimization
- Decision based on cost statement
- Identify relevant and irrelevant cost
- Identify additional cost required for making
- Consider opportunity cost, if any
- Think about capacity and alternative use of capacity if buy decision



Question 1

ABC Company limited has manufactured the part number 707 and that the following costs are reported:

Cost details	Cost per unit	Total cost for 10,000 units
Direct Materials	Rs. 2	Rs. 20,000
Direct Labour	3	30,000
Variable Manufacturing Overhead Cost	2	20,000
Fixed Manufacturing Overhead Cost	4	40,000
Total	11	110,000

The fixed manufacturing overhead costs include depreciation, property taxes, insurances, supervisor salaries and allocated other expenses. Another manufacturer offer to supply the same part for Rs. 10 per unit. Should ABC Company make or buy the part, if there is no alternative use the available facilities or capacities?

Solution

Statement showing total relevant costs

Cost details	Make 10,000 Units	Buy 10,000 units	Difference
Direct Materials @ Rs. 2	Rs. 20,000	-	Rs. 20,000
Direct Labour @ Rs 3	30,000	-	30,000
Variable Manufacturing Overhead Cost @ Rs. 2	20,000	-	20,000
Buying Cost @ Rs. 10	-	100,000	(100,000)
Total relevant cost	70,000	100,000	(30,000)

Note: Unavoidable fixed costs of Rs. 40,000 is treated as irrelevant cost.
Decision: As the making cost (Rs. 70,000) is lesser than buying cost (Rs.100,000), the part should be made and save Rs. 30,000.

Question 1: Continue

If ABC Company can rented out for Rs. 35,000 the available resources, do you change the previous decision?

Statement showing total net relevant costs

Cost details	Make	Buy and rent out facilities
Obtaining cost	70,000	100,000
Rent income		(35,000)
Total Net relevant cost	70,000	65,000

Decision: As the making cost (Rs. 70,000) is higher than buying cost (Rs.65,000), the part should be buy and save Rs. 5,000.

Question 1: Continue

If ABC Company can be produced new product XYZ and will generate Rs. 20,000 contribution margin (New product sales revenue minus new product variable costs), do you change the previous decision?

Statement showing total net relevant costs

Cost details	Make	Buy and use facilities to produce new product
Obtaining cost	70,000	100,000
Rent income		(20,000)
Total Net relevant cost	70,000	80,000

Decision: As the making cost (Rs. 70,000) is lesser than buying cost (Rs. 80,000), the part should be make and save Rs. 10,000.

Question 2

ABC Company limited has manufactured the part number 707 and that the following costs are reported:

Cost details	Cost per unit	Total cost for 10,000 units
Direct Materials	Rs. 2	Rs. 20,000
Direct Labour	3	30,000
Variable Manufacturing Overhead Cost	2	20,000
Fixed Manufacturing Overhead Cost	4	40,000
Total	11	110,000

The fixed manufacturing overhead costs include depreciation, property taxes, insurances, supervisor salaries and allocated other expenses. Another manufacturer offer to supply the same part for Rs. 10 per unit. The supervisor salaries amounting Rs. 10,000 can be avoided if purchase parts from the outside supplier. Should ABC Company make or buy the part?

Solution

Statement showing total relevant costs

Cost details	Make 10,000 Units	Buy 10,000 units	Difference
Direct Materials @ Rs. 2	Rs. 20,000	-	Rs. 20,000
Direct Labour @ Rs 3	30,000	-	30,000
Variable Manufacturing Overhead Cost @ Rs. 2	20,000	-	20,000
Fixed Manufacturing Overhead Cost @ Rs. 2	10,000		10,000
Buying Cost @ Rs. 10	-	100,000	(100,000)
Total relevant cost	80,000	100,000	(20,000)

Note: Unavoidable fixed costs of Rs. 30,000 (= 40,000 – 10,000) is treated as irrelevant cost.

Decision: As the making cost (Rs. 80,000) is lesser than buying cost (Rs.100,000), the part should be made and save Rs. 20,000.

Question 3

The Nepal Casting Ltd. specialized in casting at present is producing a component called X used in the casting process. The annual need of component X is 50,000 units. The data relating to produce one unit of component X are presented below:

- Direct Material — Rs. 2
- Direct Labour (0.5 hour @ 6 per hour) — Rs. 3
- Manufacturing Overhead
  (Based on Direct Labour hour 0.5 hour @ Rs.4 per hour) — Rs. 2
- Total Unit Cost of Production — Rs. 7

The company received an offer from a company showing willingness to supply 50,000 units of component at a unit price of Rs. 5 per unit. The company has followed a system of defining its plant capacity in terms of direct labour hours. The normal operation is 1,00,000 direct labour hour per year. The budgeted fixed overhead per annum is Rs. 2,50,000. All manufacturing overheads are applied to production on the basis of direct labour hour at Rs. 4 per hour.

The company at present has sufficient excess capacity unutilized and a sub-contracting of the component will further render idle unutilized capacity having no alternatives uses.

Required: (a) Should the company start purchasing component X from the supplier or continue to produce its own?

(b) Would your answer be different if the excess capacity thus, available could be rented out at an annual rent of Rs. 100,000 ?

Solution

Basic Calculations:

1. Normal Capacity

0.50 DLH is equivalent to 1 units

100,000 DLH is equivalent to 200,000 units

Therefore, Normal Capacity = 100,000 DLH = 200,000 units

2. Fixed Manufacturing Overhead Absorption Rate = Total FMOH / Normal Capacity

= Rs. 250,000 / 200,000 units

= Rs. 1.25 per unit

3. Variable Manufacturing Overhead = Rs. 2 per unit – Rs. 1.25 per unit

= Rs. 0.75 per unit

Solution

(a) Statement showing total relevant costs

Cost details	Make 50,000 Units	Buy 50,000 units	Difference
Direct Materials @ Rs. 2	Rs. 100,000	-	Rs. 100,000
Direct Labour @ Rs 3	150,000	-	150,000
Variable Manufacturing Overhead Cost @ Rs. 0.75	37,500	-	37,500
Buying Cost @ Rs. 5	-	250,000	(250,000)
Total relevant cost	287,500	250,000	37,500

Note: Unavoidable fixed costs of Rs. 200,000 is treated as irrelevant cost.
Decision: Company is benefited by Rs. 37,500 if it purchases the part from outside supplier

Solution

(b) Statement showing total net relevant costs

Cost details	Make	Buy and rent out capacities
Obtaining cost	287,500	250,000
Rent income		(100,000)
Total Net relevant cost	287,500	150,000

Decision:

As per above statement, company can save Rs. 1,37,500 (= Rs. 287,500 - Rs. 150,000 by buying the component from outside supplier instead of making own-self. Such amount can affect measurable financial impact on decision. Therefore, it is better to purchase component from outside supplier.

Accept or Reject a Special Offer Decision

Accept or Reject a Special Offer Decision

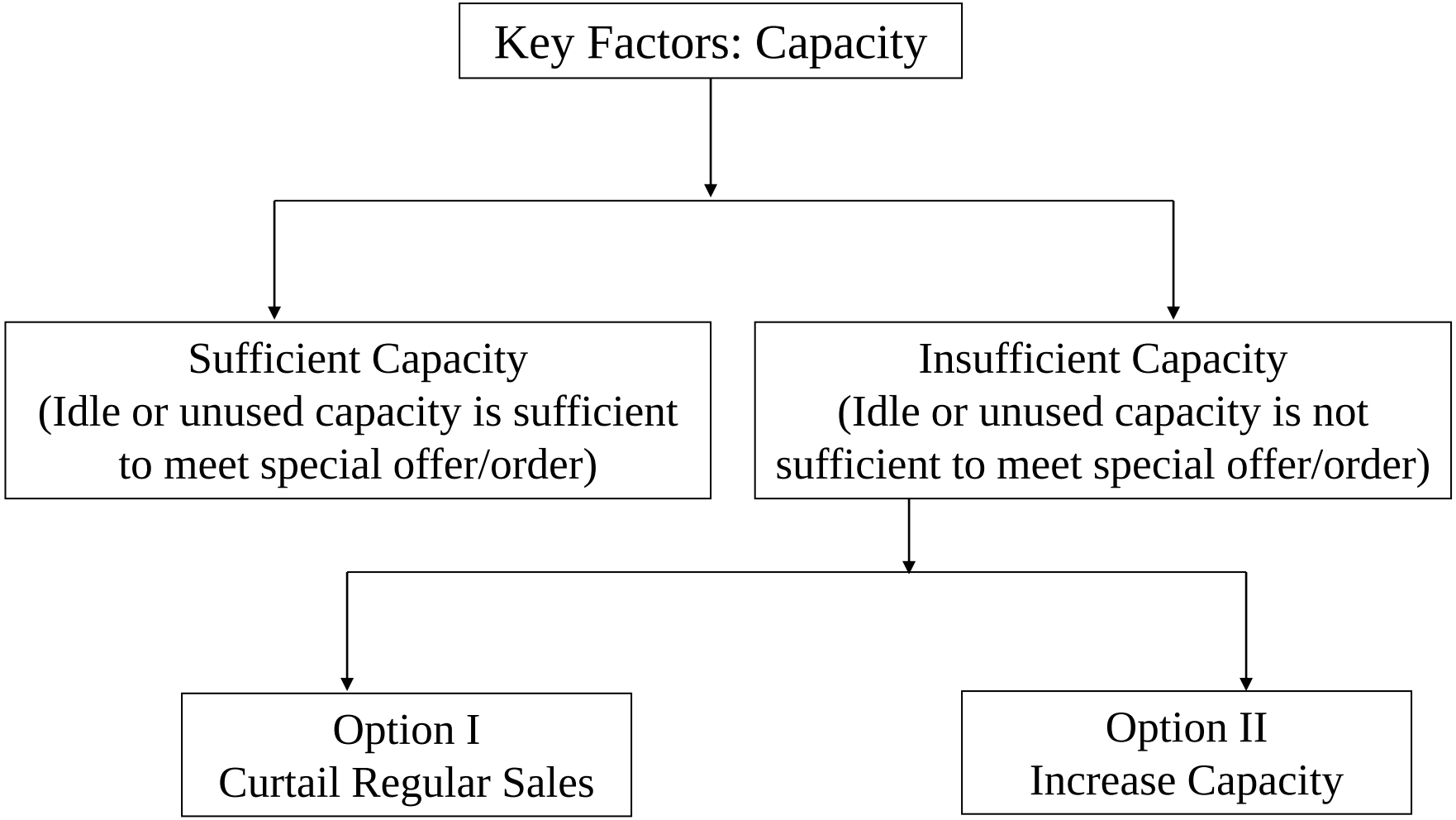
- Objective
  - Profit maximization

- Decision based on income statement
  - Variable costing income statement

- Identify relevant and irrelevant cost
- Identify avoidable cost, if accept the special offer
- Identify additional cost required for special offer
- Consider opportunity cost, if any

Accept or Reject a Special Offer

- Think about capacity and alternative use of capacity



Question 1 (excess capacity)

The normal capacity of plant is 3,000 units per year and current production and sales is 2,000 units. There is no alternative use for the idle facilities. The company receives an offer from a foreign customer to buy 1,000 units at Rs. 100 per unit. The regular market-selling price is Rs. 140 per unit. The current manufacturing and selling costs for 2,000 units are as under:

	Per Unit (Rs)	Total (Rs)
Direct Materials	20	40,000
Direct Labour	30	60,000
Variable Manufacturing Overheads	20	40,000
Fixed Manufacturing Overheads	25	50,000
Total Manufacturing Cost	95	1,90,000
Variable Selling Cost	10	20,000
Fixed Selling Cost	5	10,000
Total Non-manufacturing Cost	15	30,000
Total Cost	110	2,20,000

Question 1 (excess capacity)

Required:

Should the offer be accepted assuming that shipment charges of Rs. 5,000 are to be borne by the seller ? There will be a special packing of the products, which will involve packing cost of Rs. 2.50 per unit. No addition selling cost incurred for special offer.

Solution:

- Normal capacity is 3,000 units
- Current utilization is only 2,000 units
- There is idle capacity for 1,000 units and the offer do not affect the regular sale

Question 1 (excess capacity)

Income Statement (Using Variable Costing)

	Without Special Offer	With Special Offer	Difference
Sales Units	2,000	3,000	1,000
Sales Revenue (2,000 units × Rs. 140/unit)	Rs. 280,000	Rs. 280,000	
(1,000 units × Rs. 100/unit)		100,000	
Total Sales Revenue	280,000	380,000	100,000
Less: Variable Cost			
Direct Materials @ Rs. 20/unit	40,000	60,000	20,000
Direct Labour @ Rs. 30/unit	60,000	90,000	30,000
Variable Manufacturing Overheads @ Rs.20/unit	40,000	60,000	20,000
Variable Selling Cost @ Rs. 10/unit	20,000	*22,500	2,500
Total Variable Cost	160,000	2,32,500	72,500
Contribution Margin	120,000	1,47,500	27,500
Less: Fixed Costs			
Fixed Manufacturing Overheads	50,000	50,000	–
Fixed Selling Cost	10,000	**15,000	5,000
Total Fixed Costs	60,000	65,000	5,000
Net Profit	60,000	82,500	22,500

*Included the special packing cost Rs. 2,500 for special offer only and no other variable selling cost incurred for the offer.

**Included shipping charges amounting Rs. 5,000 for special offer only.

Variable selling cost with offer

Regular sales (2,000 units @Rs. 10) + Offer (1,000 units @ Rs. 2.50) = Rs. 22,500

Question 1 (excess capacity)

Decision:

It is recommended to accept the special offer:

- Profit is increased by Rs. 22,500
- Capacity utilization is increased
- Market share is increased
- Develop positive attitude of employees toward the organization since profit and sales are increased
- Employees are motivated

Question 2 (No excess capacity)

Required:

- In above question 1, the customer places the special order for 1,500 units instead of 1,000 units. The order can not be split, *i.e.*, it has either to be taken in full or rejected totally.
- The alternatives available to the management are :

Option First:

- To reduce its regular sales to 1,500 units for accepting the special offer 1,500 units.
- Regular sales = 2,000 ⟶ 1,500 (regular sales curtail = 500 units)
- Special offer = 1,500 ⟶ 1,500
- Total need = 3,500 ⟶ 3,000 (normal capacity = 3,000 units)

Option Second:

- To increase its capacity by increasing fixed manufacturing overhead by Rs. 15,000

Solution (Option First: Curtail regular sales)

Income Statement (Using Variable Costing)

	Without Special Offer	With Special Offer	Difference
Sales Units	2,000	3,000	1,000
Sales Revenue (2,000 units × Rs. 140/unit)	Rs. 280,000		
(1,500 units × Rs. 140/unit)		Rs. 210,000	
(1,500 units × Rs. 100/unit)		150,000	
Total Sales Revenue	280,000	360,000	80,000
Less: Variable Cost			
Direct Materials @ Rs. 20/unit	40,000	60,000	20,000
Direct Labour @ Rs. 30/unit	60,000	90,000	30,000
Variable Manufacturing Overheads @ Rs.20/unit	40,000	60,000	20,000
Variable Selling Cost @ Rs. 10/unit	20,000	18,750	(1,250)
Total Variable Cost	160,000	2,8,750	68,750
Contribution Margin	120,000	131,250	11,250
Less: Fixed Costs			
Fixed Manufacturing Overheads	50,000	50,000	–
Fixed Selling Cost	10,000	15,000	5,000
Total Fixed Costs	60,000	65,000	5,000
Net Profit	60,000	66,250	6,250

Variable selling cost with offer

Regular sales (1,500 units @Rs. 10) + Offer (1,500 units @ Rs. 2.50) = Rs. 18,750

Decision: The above income statement shows the incremental profit of Rs. 6,250 by accepting the special offer after curtail its regular sale. So it is recommended to accept the special offer.

Solution (Option Second: Increase its capacity)

Income Statement (Using Variable Costing)

	Without Special Offer	With Special Offer	Difference
Sales Units	2,000	3,500	1,500
Sales Revenue (2,000 units × Rs. 140/unit)	Rs. 280,000	Rs. 280,000	
(1,500 units × Rs. 100/unit)		150,000	
Total Sales Revenue	280,000	430,000	150,000
Less: Variable Cost			
Direct Materials @ Rs. 20/unit	40,000	70,000	30,000
Direct Labour @ Rs. 30/unit	60,000	105,000	45,000
Variable Manufacturing Overheads@Rs.20/unit	40,000	70,000	30,000
Variable Selling Cost @ Rs. 10/unit	20,000	23,750	3,750
Total Variable Cost	160,000	268,750	108,750
Contribution Margin	120,000	161,250	41,250
Less: Fixed Costs			
Fixed Manufacturing Overheads	50,000	65,000	15,000
Fixed Selling Cost	10,000	15,000	5,000
Total Fixed Costs	60,000	80,000	20,000
Net Profit	60,000	81,250	21,250

Variable selling cost with offer

Regular sales (2,000 units @Rs. 10) + Offer (1,500 units @ Rs. 2.50) = Rs. 23,750

Decision: The above income statement shows the incremental profit of Rs. 21,250 by accepting the special offer after increased its capacity. So it is recommended to accept the offer.

Question 3 (No excess capacity)

The Kathmandu Product Ltd; a company engaged in production of specialized goods called 'Kath Craft' has been utilizing its capacity only by 80% of its available capacity. The company received an special offer to supply 25,000 units of its product most similar to one the company at present is selling in the market, but under different brand name. The price offered is 100 per unit. The data relating to produce one unit of regular product are presented below:

- Direct Material Cost 4 units @ Rs. 10 — Rs. 40.00
- Direct Labour Cost 3 hours @ Rs. 10 — Rs. 30.00
- Manufacturing Overhead 3 hours @ Rs. 15 (Based on Direct Labour Hour) — Rs. 45.00

Total Cost per Unit — Rs. 115.00

The company at present is selling its product at Rs. 150 per unit. The company has adopted a policy of defining its capacity in direct labour hour. The annual normal budgeted hour is 3,00,000 hours and the budgeted fixed overhead for the period is Rs. 15,00,000. All manufacturing overheads are applied to production on the basis of direct labour hour at Rs. 15 per hour. The special offer will have no other cost than regular production cost.

Required: (a) Should the company accept this offer and also show how total profit of the company would change by accepting this offer?

(b) Would the company have any opportunity cost of the offer?

Solution (Curtail regular sales)

1. Normal Capacity = 300,000 DLH / 3 DLH
   = 100,000 units

2. Capacity Utilization = 100,000 units × 80% = 80,000 units

3. Regular sales = 80,000 → 75,000 (regular sales curtail = 5,000 units)
   Special offer = 25,000 → 25,000
   Total need = 105,000 → 100,000 (normal capacity = 100,000 units)

4. Fixed Manufacturing Overhead Rate = Total FMOH / Normal Capacity
   = Rs. 1,500,000 / 100,000 units
   = Rs. 15 per unit

5. Variable Manufacturing Overhead = Rs. 45 – Rs. 15 = Rs. 30 per unit.

Solution (Curtail regular sales)

Income Statement (Using Variable Costing)

	Without Special Order	With Special Order	Difference
Sales Units	80,000	1,00,000	20,000
Sales Revenue (80,000 units @ Rs. 150/unit)	1,20,00,000		
(75,000 units @ Rs. 150/unit)		1,12,50,000	
(25,000 units @ Rs. 100/unit)		25,00,000	
Total Sales Revenue	1,20,00,000	1,37,50,000	17,50,000
Less: Variable Costs			
Direct Materials @ Rs. 40/unit	32,00,000	40,00,000	8,00,000
Direct Labour @ Rs. 30/unit	24,00,000	30,00,000	6,00,000
Variable Manufacturing Overhead @ 30/unit	24,00,000	30,00,000	6,00,000
Total Variable Cost	80,00,000	1,00,00,000	20,00,000
Contribution Margin	40,00,000	37,50,000	(2,50,000)
Less: Fixed Manufacturing Overhead	15,00,000	15,00,000	–
Net Income Before Tax	25,00,000	22,50,000	(2,50,000)

Decision: The profit is decreased by Rs. 250,000 when the special order is accept.
So it is recommended to reject it.

(b) Opportunity Cost = Regular sales units sacrifice X Contribution Margin per unit on regular sales
= 5,000 units X (Rs. 150 – Rs. 100)
= Rs. 250,000

Solution (Curtail regular sales)

Alternative Method

Increase in sales revenue = 25,000 units X Rs. 100 = Rs. 25,00,000
Increase in variable cost = 25,000 units X Rs. 100 = (Rs. 2,500,000)
Increase in Contribution Margin = 0
Opportunity Cost = (Rs. 2,50,000)
Increase in Profit (Loss) of accepting special offer = (Rs. 2,50,000)

Decision: The profit is decreased by Rs. 250,000 when the special order is accept.
So it is recommended to reject it.

Additional question

Find out minimum acceptable price for a special offer.

Minimum acceptable price = Offer price + Loss per unit (OR) – Profit per unit
= Rs. 100 + Rs. 250,000/25,000 units
= Rs. 100 + Rs. 10
= Rs. 110

References

- Anthony, R.N., Hawkins, D.F. & Merchant, K.A. (2012). *Accounting: Text and cases*. The McGraw-Hill Companies
- Atkinson, A. A., Kaplan, R. S., Matsumura, E. M., Young, S. M., & Kumar, G. A. (2014). *Management accounting: Information for decision-making and strategy execution*. Pearson Education
- Dangol, R. M. & Dangol, J. (2019). *Accountancy for financial and managerial decision and control*. Taleju Prakashan

Thank You