

Unit 13 Decisions Involving Alternative Choices

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13.1 Introduction

In the previous unit we learnt the principles of marginal costing and CVP analysis. Both are useful tools for the management because of their applications. They are used in providing assistance to the management in decision-making, particularly in short-term operational decisions.

In this unit, we shall understand various such applications of the principles of marginal costing and CVP analysis in business decisions.

Objectives:

After studying this unit, you should be able to:

- explain the steps involved in decision making process
- assess various types of decision situations
- analyse and interpret various decision situations
- evaluate the alternative courses of actions based on marginal costing principle

- make recommendations in various decision situations based on the evaluation

13.2 Cost Identification for Decision Making

“Decision making involves the act of selecting one course of action from among various feasible alternatives available.”

– Khan and Jain

The decisions may be:

- *Long-term decisions* – The long-term decisions are non-routine types of decisions. They involve huge investments and at the same time they involve much uncertainty.
- *Short-term decisions* – The level of uncertainty in short-term decisions is relatively lesser. The type of information required for decision-making depends upon the decision situation under consideration.

In this unit the focus is on the short-term decisions. They are also popularly called “operating decisions”.

The information required for such decision-making is called “relevant data”. The relevant data is obtained from the accounting information with or without modification.

There is a whole gamut of data that is relevant for decisions like production related information, demand related information, sales related information, technical information, legal implications, market related information, availability of inputs, etc.

In addition to all these, the data related to costs are also important. In fact, some of the above aspects like production, technical information etc are finally crystal down to costs. Hence, a thorough analysis of the complete set of costs that is either affected by the decision or affects the decision is required.

In this context, we should first be clear about the relevant costs and irrelevant costs. Costs that are either affected by the decision or affect the decision are called relevant costs. Costs that are neither affected by the decision nor affect the decision are called irrelevant costs.

Given below is a list of relevant costs.

- **Opportunity costs** – These are the monetary benefits foregone for not pursuing the alternative course. When a decision to follow one course of action is made, the opportunity to pursue some other course is foregone.
- **Avoidable costs** – These costs can be avoided in the future as a result of managerial choice. It is also known as discretionary costs. These costs are relevant in decision making.
- **Incremental/Differential costs** – These costs include variable costs and additional fixed costs resulting from a particular decision. They are helpful in finding out the profitability of increased output and give a better measure than the average cost.

Given below is an irrelevant cost.

- **Sunk costs (committed costs)** – These historical costs cannot be recovered in a given situation. These costs are irrelevant in decision making.

It is important to note in this context that the distinction between relevant and irrelevant is with respect to a specific decision on hand. A cost which may be irrelevant for some decision may be a relevant cost for some other decision.

13.3 Differential (Incremental) Analysis

Differential analysis is the process of estimating the consequences of alternative actions that a decision maker may take. In this method, only the change (difference/increment) due to implementing of a decision is analysed.

For example, let us assume that a company's present total sales is Rs.1,85,000 and the present total cost is Rs.1,45,000. The company is contemplating to open another sales outlet to increase the sales. The estimates show that the total sales will be Rs.3,50,000 and the total cost will be Rs.2,75,000.

The incremental analysis is done as shown.

	Before opening the sales outlet Rs.	After opening the sales outlet Rs.	Change (increment) Rs.
Total sales	1,85,000	3,50,000	1,65,000
Total cost	1,45,000	2,75,000	1,30,000
Profit	40,000	75,000	35,000

Incremental analysis is used both for short-term and long-term decisions. Short-term decisions relate to fixing price for the product, selecting a suitable product mix, diversifying the product, etc. Long-term decisions deal with capital budgeting decisions.

Self Assessment Questions

1. Relevant costs are costs that would _____ as a result of the decision.
2. _____ are historical cost that cannot be recovered in a given situation.
3. Opportunity costs are _____ for not pursuing the alternative course.
4. _____ is also known as discretionary cost.
5. Identify the relevant costs and irrelevant costs with respect to the decision on increasing the capacity utilisation level from 60% to 70%.
 - a. Power consumption
 - b. Labour/wages
 - c. Salary of the administration manager
 - d. Raw materials
 - e. Rent of the factory building
 - f. Showroom expenses
 - g. Director's fees
 - h. Depreciation on plant
 - i. Depreciation on factory building
 - j. Auditor's fees

Activity 1:

RD International Ltd. wants to replace an old machinery with a new one for a certain process. List down the possible relevant and irrelevant costs.

Solution to Activity 1**Relevant costs**

Costs of operating the machinery like the wages of technical personnel, maintenance expenses like lubricants, cost of extra space occupied by the machinery, cost of disposing the old machinery, and additional (incremental) depreciation on the machinery.

Irrelevant costs

Fixed operating overheads like administrative staff salaries.

13.4 Types of Decision Situations

The application of incremental or differential costs and revenues for decision making is known as decision situations or types of choice decisions. Such decisions are called “operational decisions”.

In particular, the CVP analysis (marginal costing) is a useful tool for the management with respect to the following operational decisions.

- Product planning
- Activity planning
- Profit planning
- Make or buy
- Purchase or lease
- Shutdown or continue
- Replacement decision
- Product mix decision
- Sales mix decision
- Promotion mix decision
- Channel selection
- Fixing price
- Performance evaluation
- Budgeting

- Capacity utilisation
- Effect of change in price
- Diversification of products
- Alternative course of action
- Retain or replace
- Change or status quo
- Export or local sales
- Expand or contract
- Take or refuse order
- Place or accept special orders
- Select sales territories
- Sell at split-up point or process further

We shall pick some examples from the above to understand the application of marginal costing principle to evaluate the alternative courses of action and to make a decision.

13.5 Make or Buy Decisions

Make or buy decisions arise when a company with unused production capacity considers the following alternatives:

- To buy certain raw materials or subassemblies from outside suppliers
- To use available capacity to produce the items within the company

Illustration 1: The Anchor Company Ltd. produces most of its electrical parts in its own plant. The company is at present considering the feasibility of buying a part from an outside supplier for Rs.4.50 per part. If this is done, monthly costs would increase by Rs.1,000.

The part under consideration is manufactured in department 1 along with numerous other parts. On account of discontinuing the production of this part, department 1 would have somewhat reduced operations. The average monthly usage production of this part is 20,000 units. The costs of producing this part on per unit basis are as follows.

Material	Rs. 1.80
Labour (half-hour)	2.40
Fixed overheads	0.80
Total costs	5.00

Should the company produce this part or should it buy from an outside supplier?

Solution:

Decision Analysis

Particulars	Costs of Making		Costs of Buying	
	Total	Per unit	Total	Per unit
Relevant costs:				
Materials (20000 units)	36,000	1.80	-	-
Labour	48,000	2.40	-	-
Purchasing cost (20000 units)	-	-	90,000	4.50
Additional cost of purchasing from outside	-	-	1,000	0.05
	84,000	4.20	91,000	4.55
Differential costs	7,000 per month			
Favouring making of the parts	0.35 per unit			

The company should continue the practice of producing the part in department 1.

13.6 Addition or Discontinuation of a Product Line or Process

The decision to add or eliminate an unprofitable product is a special case of product profitability evaluation. When a firm is divided into multiple sales outlets, product lines, divisions, or departments, it may have to evaluate individual performance to decide whether to continue operations of each of these segments or not.

Illustration 2: The Hi-tech Manufacturing Company is presently evaluating two possible processes for the manufacture of a toy. The following information is available:

Particular	Process A Rs.	Process B Rs.
Variable cost per unit	12	14
Sales price per unit	20	20
Total fixed costs per year	30,00,000	21,00,000
Capacity (in units)	4,30,000	5,00,000
Anticipated sales (next year, in units)	4,00,000	4,00,000

Suggest:

- i. Which process should be chosen? Substantiate your answer.
- ii. Would you change your answer as given above if you were informed that the capacities of the two processes are as follows: A 6,00,000 units; B 5,00,000 units? Why? Substantiate your answer.

Solution:**Comparative Profitability Statement**

1. Which process should be chosen?

Particulars	Process A Rs.	Process B Rs.
(i) Selling price per unit	20	20
Variable cost per unit	12	14
Contribution per unit	8	6
Total annual contribution (as per anticipated sales)	32,00,000	24,00,000
Total fixed costs per year	30,00,000	21,00,000
Total income	2,00,000	3,00,000
Process B may be chosen		
Total contribution (if utilised to present capacity and sold)	34,40,000	30,00,000
Less : Fixed costs	30,00,000	21,00,000
Total Income	4,40,000	9,00,000

Note: While evaluating two possible processes, fixed cost should be considered.

Inference: Process B is preferred because total income as per anticipated sales and production is more from Process B than from Process A.

2. If the capacities of both the processes are changed, the choice would be:

Particulars	Process A	Process B
Contribution per unit (as detailed above)	8	6
(ii) Total contribution (if capacity of A of 6,00,000 units and of B 5,00,000 units)	48,00,000	30,00,000
Less : Fixed costs	30,00,000	21,00,000
Total income	18,00,000	9,00,000

Inference: Process A is preferred because total income from Process A is more than that of Process B

Illustration 3: Assume a company is considering dropping product B from its line because accounting statement shows that product B is being sold at a loss.

Product	Income Statement			
	A	B	C	Total
Sales revenue	50,000	7,500	12,500	70,000
Cost of sales:				
D. material	7,500	1,000	1,500	10,000
D. labour	15,000	2,000	2,500	19,500
Indirect manufacturing cost (50% of Direct labour)	7,500	1,000	1,250	9,750
Total	30,000	4,000	5,250	39,250
Gross margin on sales	20,000	3,500	7,250	30,750
Selling and Admn	12,500	4,500	4,000	21,000
Net income	7,500	(1,000)	3,250	9,750

Additional information:

- Factory overhead cost is made up of fixed cost of Rs. 5850 and variable cost of Rs. 3900.
- Variable cost by products are: A – Rs. 3000, B – Rs. 400, and C – Rs. 500.
- Fixed costs and expense will not be changed if product B is eliminated.
- Variable selling and administrative expenses to the extent of Rs. 11000 can be traced to the product: A - Rs.7,500, B - Rs.1500, and C - Rs. 2000.
- Fixed selling and administration expense are Rs. 10000.

Solution:

Product	Income Statement			
	A	B	C	Total
Sales revenue	50,000	7,500	12,500	70,000
Less V.C				
D. Material	7,500	1,000	1,500	10,000
D. Labour	15,000	2,000	2,500	19,500
Factory overhead	3,000	400	500	3,000
Selling and administration cost	7,500	1,500	2,000	11,000
Total	33,000	4,900	6,500	44,400
Contribution	17,000	2,600	6,000	25,600
Less: Fixed cost				
Factory overhead				5,850
Selling and administration overhead				10,000
Total fixed cost				15,850
Net income				9,750

If the sale of product B was discontinued, the marginal contribution would be lost and the net income would be reduced by Rs.2,600.

Assume that after dropping product B, the sales of product A has increased by 10%. The total profit of the firm will not increase by this sales increase. Product A makes only a marginal contribution of 34% (17000/50000).

Sales revenue of product A	50000	100%
Variable cost of product A	33000	66%
Marginal contribution of product A	17000	34%

On additional sales of Rs.5000, the marginal contribution would be Rs.1700.

Sales revenue 10% of 50000	5000
Variable cost 66%	3300
Marginal contribution (34%)	1700

This contribution is less than Rs.2,600 now being realised on the sales of product B. It would take additional sales of product A of approximately Rs.7,647 to equal the marginal contribution of Rs.2,600 now being made by product B:

$$\frac{\text{Marginal contribution of product B}}{\text{Marginal contribution of product A}} = \frac{2,600}{34\%} = \text{Rs.7,647}$$

It is possible that the dropping of product B may result in reduction in some of the fixed costs. Product B now contributes Rs.2,600 towards recovery of fixed costs and expenses. Only if the fixed costs and expenses can be reduced by more than this amount, it is advisable to drop product B.

13.7 Sell or Process Further

A firm is frequently faced with the problem of continuing the existing policies or plans or change to new ones. Such change can be in the form of selling a partially processed product (semi-finished) or process further. While taking a decision about such matters, the management must keep in mind the long-term consequence and the interest of the firm.

Illustration 4: A firm sells semi-finished products at Rs. 9 per unit. The cost to manufacture the semi-finished product is Rs.6. Further processing can be done at an additional cost of Rs.3 per unit and the final product can be sold at Rs.15 per unit. The firm can produce 10,000 units. The analysis is shown below:

	Sell	Process & Sell
Sales revenue (10,000 units)	Rs. 90,000	1,50,000
Less : Manufacturing costs	60,000	90,000
Profit	30,000	60,000

There is a net advantage of Rs.30,000 in processing the product further. The market value of the partially processed product (Rs.90,000) is considered to be the opportunity cost of further processing. The net advantage of Rs. 30,000 can be arrived at in the following manner also:

Revenue from sale of final product (10,000 x 15)		Rs.1,20,000
Less : Additional processing cost (10,000 x 3)	30,000	
Revenues from sale of intermediate product	90,000	1,20,000
Net advantage in further processing		Rs.30,000

13.8 Operate or Shutdown

Various factors both external and internal affect the functioning of a firm. In such situations, it becomes necessary for a firm to temporarily suspend or shutdown the activities of a particular product, department, or a unit as a whole.

Illustration 5: A company operating below 50% of its capacity expects that the volume of sales will drop below the present level of 10,000 units per month. The management is concerned that a further drop in sales volume will create a loss and has under consideration a recommendation that operation be suspended, until better market conditions and selling price prevail. The present operation income statement is as follows:

	Rs.	Rs.
Sales revenue (10,000 units @ Rs.3.00)		30,000
Less : Variable costs @ Rs.2.00 per unit	20,000	
Fixed costs	10,000	
Net income		0

Find the profit/loss status for production levels of shutdown option, 2000 units, 4000 units, 6000 units, 8000 unit, and 10000 units

Solution:

The following income statements have been prepared for sales at different capacities:

Units Produced

Units	Shut down	2,000	4,000	6,000	8,000	10,000
Sales revenue @ Rs. 3	0	6,000	12,000	18,000	24,000	30,000
Variable costs @ Rs. 2	0	4,000	8,000	12,000	16,000	20,000
Contribution	0	2,000	4,000	6,000	8,000	10,000
Fixed costs	4,000	10,000	10,000	10,000	10,000	10,000
Loss	(4,000)	(8,000)	(6,000)	(4,000)	(2,000)	0

Inference: It would appear that the shutdown is desirable when the sale volume drops below 6,000 units per month, the point at which operating losses exceed the shutdown cost.

13.9 Exploring New Markets

Decisions regarding entering new markets whether within or outside the country should be taken after considering the following factors:

- Whether the firm has surplus capacity to meet the new demand?
- What price is being offered by the new market?
- Whether the sale of goods in the new market will affect the present market for the goods?

Illustration 6: The following figures are obtained from the budget of a company, which is at present working at 90% capacity and producing 13,000 units per annum.

	90% Rs.	100% Rs.
Sales	15,00,000	16,00,000
Fixed expenses	3,00,500	3,00,600
Semi- fixed expenses	97,500	1,00,500
Variable overhead expenses	1,45,000	1,49,500
Units made	13,500	15,000

Labour and material costs per unit are constant under present conditions. Profit margin is 10%.

- You are required to determine the differential cost of producing 1,500 units by increasing the capacity to 100%.
- What export price would you recommend for these 1,500 units, considering that the overseas prices are much lower than indigenous prices?

Solution:

Basic Calculation

	Rs.
Sales at 90% capacity	15,00,000
Less: Profit 10%	1,50,000
Cost of goods sold	13,50,000
Less : Expenses (fixed, semi-variable, and variable)	5,43,000
Cost of material and labour	8,07,000
Labour and material at 100% capacity	Rs.8,07,000 x 100/90
	8,96,667

Differential cost analysis can now be done as follows:

Capacity levels	90%	100%	Differential cost
Production (units)	13,500	15,000	1,500
Material and labour	8,07,000	8,96,667	89,667
Variable overhead expenses	1,45,000	1,49,500	4,500
Semi-variable expenses	97,500	1,00,500	3,000
Fixed expenses	3,00,500	3,00,600	100
	13,50,000	14,47,267	97,267

a) Differential Cost = Rs.97,267 (Rs.14,47,267 – 13,50,000)

b) Minimum price for export = $\frac{\text{Rs.97,267}}{1,500}$ = Rs.64.84 per unit

At this price, there is no addition to revenue; any price above Rs.64.84 per unit may be acceptable.

Note: It has been presumed that:

- 1) No capital investment is necessary
- 2) No export charges are incurred
- 3) The export price will have no effect on the home market where the product will continue to be sold at the old price. It has also been assumed that the necessary precaution be taken to ensure that the product is not 'dumped back'.

13.10 Maintaining a Desired Level of Profit

When deciding between alternative courses of actions, the criterion should be to select the project that yields the greatest contribution.

Illustration 7: A company is considering expansion. Fixed costs amount to Rs. 4,20,000 and are expected to increase by Rs.1,25,000 when the expansion is completed. The present plant capacity is 80,000 units a year. Capacity will increase by 50% with the expansion. Variable costs are currently Rs.6.80 per unit and are expected to go down by Rs.0.40% with the expansion. The current selling price is Rs.16 per unit and is expected to remain same under either alternative. What are the break-even points under either of the alternatives? Which alternative is better and why?

Solution:**Statement of Comparative Profitability**

Particulars	Present		After expansion	
	80,000		1,20,000	
	Per Unit	Amount	Per Unit	Amount
Sales	16.00	12,80,000	16.00	19,20,000
Variable costs	6.80	5,44,000	6.40	7,68,000
Contribution	9.20	7,36,000	9.60	11,52,000
Fixed cost		4,20,000		5,45,000
Profit		3,16,000		6,07,000

$$\text{BEP (units)} = \frac{\text{Fixed costs}}{\text{Contribution per unit}}$$

BEP Before expansion

$$= \frac{4,20,000}{9.20}$$

$$= 45.652 \text{ units}$$

BEP after expansion

$$= \frac{5,45,000}{9.60}$$

$$= 56771 \text{ units}$$

The profitability after expansion is very good and hence it is better to expand.

Illustration 8: Disposal of inventories

ABC Ltd. has 5,000 units of a product on hand that cannot be sold through regular sales. These were produced at a total cost of Rs.1,50,000 and would normally have been sold for Rs.40 per unit. The following three alternatives are being considered.

- i. Sell the items as scrap for Rs.2 per unit
- ii. Repackage at a cost of Rs.20,000 and sell them at Rs.8 per unit
- iii. Dispose them off at the city dump at a removal cost of Rs.500.

Which alternative should be accepted?

Solution:**Decision Analysis**

Alternatives			
Particulars	(I) Sell as scrap	(II) Repackage and sell	(III) Disposal
Sales revenue	Rs.10,000	Rs.40,000	-
Less costs:			
Repackage cost	-	20,000	-
Removal cost	-	-	500
Contribution (loss)	10,000	20,000	(500)

Alternative II should be accepted.

Self Assessment Questions

6. Opportunity costs are _____.
 - a. Out of pocket cash costs
 - b. Relevant costs
 - c. Irrelevant costs
7. Costs incurred in selecting a site for construction is _____.
 - a. Out of pocket cash costs
 - b. Relevant costs
 - c. Irrelevant costs
8. The costs that affect a decision are called _____.
 - a. Out of pocket cash costs
 - b. Relevant costs
 - c. Irrelevant costs
 - d. Sunk costs
9. In differential analysis, _____ costs are analysed.
 - a. Total
 - b. Variable
 - c. Additional
10. Sunk costs are _____.
 - a. Out of pocket cash costs
 - b. Relevant costs
 - c. Irrelevant costs

11. Incremental costs consist of _____ .
- Fixed costs only
 - Variable costs only
 - Both fixed costs and variable costs

13.11 Summary

Let us recapitulate the important concepts discussed in this unit:

- A decision involves selecting among various choices.
- Incremental or differential costs are costs that include variable costs and additional fixed costs resulting from a particular decision. The relevant and irrelevant costs with respect to the decision on hand need to be first identified.
- Normally the operating decisions are made on the basis of marginal costing principle, i.e., charging only the variable costs to the product.

13.12 Glossary

Avoidable (discretionary) costs: Costs that can be avoided in the future as a result of managerial choice.

Irrelevant costs: Costs that are not affected by a decision or course of action.

Opportunity costs: Monetary benefits foregone for not pursuing the alternative course.

Relevant costs: Costs that would change as a result of the decision.

Sunk costs: Historical costs that cannot be recovered in a given situation.

13.13 Terminal Questions

- 1 Avon Garments Ltd. manufactures readymade garments and uses its cut-pieces of cloth to manufacture dolls. The following statement of cost has been prepared.

Particulars	Readymade garments	Dolls	Total
Direct material	Rs.80,000	Rs.6,000	Rs.86,000
Direct labour	13,000	1,200	14,200
Variable overheads	17,000	2,800	19,800
Fixed overheads	24,000	3,000	27,000
Total cost	1,34,000	13,000	1,47,000
Sales	1,70,000	12,000	1,82,000
Profit (loss)	36,000	(1,000)	35,000

The cut-pieces used in dolls have a scrap value of Rs.1,000 if sold in the market. As there is a loss of Rs.1,000 in the manufacturing of dolls, it is suggested to discontinue the manufacturing. Advise the management.

- The ABC Company Ltd. produces most of its own parts and components. The standard wage rate in the parts department is Rs.3 per hour. Variable manufacturing overheads is applied at a standard rate of Rs.2 per labour hour and fixed manufacturing overheads are charged at a standard rate of Rs.2.50 per hour.

For its current year's output, the company will require a new part. This part can be made in the parts department without any expansion of existing facilities. Nevertheless, it would be necessary to increase the cost of product testing and inspection by Rs.5,000 per month. Estimated labour time for the new part is half an hour per unit. Raw materials cost has been estimated at Rs.6 per unit.

The alternative choice before the company is to purchase the part from an outside supplier at Rs.9 per unit. The company has estimated that it will need 2,00,000 new parts during the current year.

Advise the company whether it would be more economical to buy or make the new parts. Would your answer be different if the requirement of new parts was only 1,00,000 parts?

3. The annual budget of ABC Ltd. at 60% and 80% level of performance is as under.

Particulars	60% Rs. ('000)	80% Rs. ('000)
Direct material	360	480
Direct labour	480	640
Production OHs	252	276
Administration OHs	124	132
Selling and distribution OHs	136	148
	1352	1676

The company is experiencing difficulties in selling its products and at present the capacity level is 50%.

Sales revenue for the year is estimated to be Rs.9,90,000. The Directors are seriously considering suspending operations till the market picks up.

Market research undertaken by the company reveals that in about 12 months, the sales will pick up and the company can comfortably operate at 75% level of performance. and earn sales income of Rs.18 lakh in that year.

The sales personnel of the company do not want to suspend operations for the fear of adverse reactions in the market, but the directors want to decide the issue purely on financial considerations.

If the manufacturing and other operations of the company are suspended for a year, it is estimated that:

1. The present fixed costs could be reduced to Rs.2,20,000 p.a.
2. The settlement cost of personnel not required would amount to Rs.1,50,000.
3. The maintenance of plant has to go on and that would cost Rs.20,000 p.a.
4. On resuming operations, the expenditure connected with reopening after the shut down would amount to Rs.80,000.

Submit a report to the Directors and indicate whether it would be advisable to suspend the company's operations in the current year or not. It must be based purely on financial considerations.

13.14 Answers

Self Assessment Questions

1. Change
2. Sunk cost
3. Monetary benefits foregone
4. Avoidable cost
5.
 - a. relevant
 - b. relevant
 - c. irrelevant
 - d. relevant
 - e. irrelevant
 - f. irrelevant
 - g. irrelevant
 - h. relevant if depreciation is charged based on usage, irrelevant if depreciation is charged based on time.
 - i. irrelevant
 - j. irrelevant
6. b
7. a
8. b
9. c
10. c
11. c

Terminal Questions

1. Discontinue manufacturing of dolls

	Readymade garments	Dolls	Total
Total cost	134000	13000	147000
Profit (loss)	36000	(1000)	35000

2. Decision analysis
200000 units – The company is advised to make the new part. The differential costs favouring the decision of making the component is Rs.40000

Decision analysis

100000 units – The company is advised to buy from an outside supplier.
Total cost to manufacture 100000 units is Rs.9,10,000.

3. Decision analysis

Particulars	Operate the factory (at 50%)	Shutdown the factory
Sales revenue	9,90,000	-
Less: variable costs		
Direct material	3,00,000	-
Direct labour	4,00,000	-
Variable OHs		
Production OHs	60,000	-
Administration OHs	20,000	-
Selling and distribution OHs	30,000	-
Contribution	1,80,000	-
Less: Fixed costs		2,20,000
Production OHs	1,80,000	
Administration OHs	1,00,000	
Selling and distribution OHs	1,00,000	
Settlement cost (personnel)	-	1,50,000
Maintenance of the plant	-	20,000
Overhauling costs	-	80,000
Net income (loss)	(2,00,000)	(470000)

Recommendation:

Shutdown loss is higher. Therefore the company should continue operations.

Working notes:

Segregation of OHs into fixed and variable

	Total at		Difference for 20%	Difference for 1%	Total	
	60%	80%			Variable OHs at 60%	Fixed OHs
Production	252000	276000	24000	1200	72000	180000
Administration	124000	132000	8000	400	24000	100000
S&D	136000	148000	12000	600	36000	100000

13.15 Case Study

Budget

RD International Ltd. produces 20,000 units by operating at 60% of the capacity and sells at a price of Rs.30 per unit. The budgeted figures for the year 2008 are as follows:

Statement of Cost (20,000 units)

	Total Rs.	Per unit Rs.
Raw materials @ 4.25	85,000	4.25
Direct labour @ Rs.5.75	1,15,000	5.75
Variable factory overhead @ Rs.7.75	1,55,000	7.75
Fixed factory overhead	1,25,000	6.25
Variable selling costs 2.75% of selling price		
Fixed selling and administrative costs	72,500	3.625
Total	552500	27.625

The company receives a special order for 10,000 units from a firm.

The company desires to earn a profit of Re.1.00 per unit and no selling expenses are to be incurred for the special order.

Discussion Questions:

- Prepare a statement showing pricing of the special order.
- Prepare a statement showing profit if the special order is accepted.
- What are the precautions that the company should take if it wants to accept this special order?
- Suppose the customer of the special order wants a price of (i) Rs.18 per unit (ii) Rs.17 per unit, can the order be accepted? Substantiate your recommendations with explanations.

Source: Raman, B. S., Management Accounting, United Publishers

Solution to the case study

(a)

Pricing of Special Order

	(10,000 units) Rs.
Variable costs to be incurred:	
Raw materials	4.25
Direct labour	5.75
Variable overhead	<u>7.75</u>
Variable cost per unit (no selling expenses)	
Desired profit	17.75
Minimum price	<u>1.00</u>
Increase in sales = 10,000 units x Rs.1,87,500	<u>18.75</u>

(b)

Income Statement

	Without special order (Rs.)	Special order (Rs.)	With special order (Rs.)
Sales	<u>6,00,000</u>	<u>1,87,500</u>	7,87,500
Less: Variable costs:			
Raw materials	85,000	42,500	1,27,500
Direct labour	1,15,000	57,500	1,72,500
Variable factory overhead	1,55,000	77,500	2,32,500
Variable selling costs (2.75% of selling price)	<u>16,500</u>	<u> </u>	<u>16,500</u>
Total variable costs	<u>3,71,500</u>	<u>1,77,500</u>	<u>5,49,000</u>
Less: Fixed costs:			
Fixed factory overhead	1,25,000	<u> </u>	1,25,000
Fixed selling and administrative costs	<u>72,500</u>	<u> </u>	<u>72,500</u>
Total fixed costs	<u>1,97,500</u>	<u> </u>	<u>1,97,500</u>
Total costs	<u>5,69,000</u>	<u>1,77,500</u>	<u>7,46,500</u>
Net income before taxes	31,000	10,000	41,000

(c) From the above analysis, it is clear that the acceptance of the special order will increase the profit by Rs.10,000. Also the bid price (Rs.18.75) is significantly less than the normal price of Rs.30. However, before arriving at a proper decision, the management should consider factors

other than just the immediate impact on income. An important point is the effect on regular customers. If regular customers are paying more for the products, they may demand price reduction or quit buying from the firm and seek another source of supply. Another consideration is the possibility of special order customers being the regular customers.

- (d) The price of Rs.18 per unit may be accepted as it is above the marginal cost per unit of Rs.17.75 and the company will make an additional profit of Rs.0.25 per unit and a total additional profit of Rs.2500 (i.e., Rs.0.25 per unit x10000 units).

However the price of Rs.17 per unit cannot be accepted as it is below the marginal cost per unit of Rs.17.75 and the company will face a loss of Rs.0.75 per unit. This reduces the total profit by Rs.7500 (i.e., Rs.0.75 per unit x10000 units).

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