

STRATEGIC REVENUE MANAGEMENT



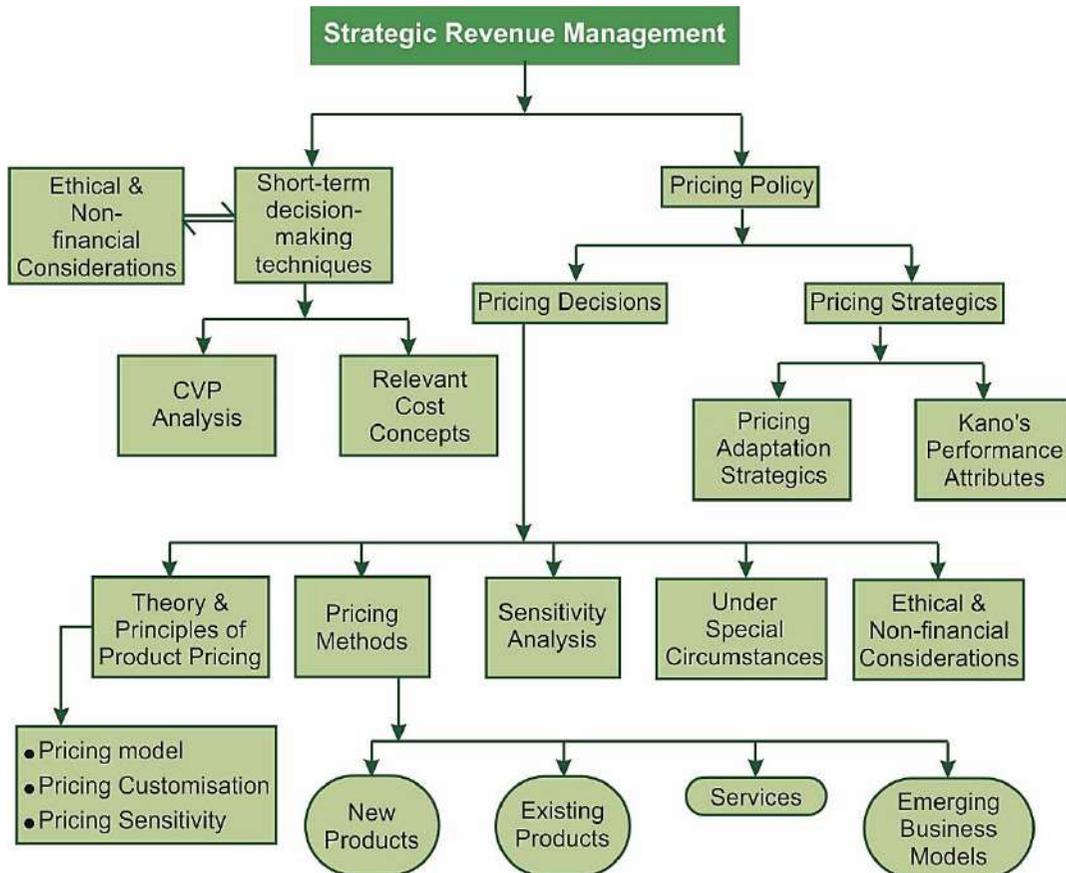
LEARNING OUTCOMES

After studying this chapter, you will be able to:

- ANALYSE short term decisions using CVP analysis and relevant cost
- DISCUSS the ethical issues that may impact decision making
- ADVISE on short term decision considering both the financial and nonfinancial consideration
- EXPLAIN the underlying theories and principles of product pricing and ADVISE pertaining to pricing decisions
- EXPLAIN the factors that influence the pricing of a product (new and existing) or service in addition to under emerging business models
- EXPLAIN the importance of sensitivity analysis in pricing decisions, how pricing decisions under special circumstances, how ethical and non-financial consideration in pricing decisions
- EVALUATE different pricing strategies and calculate price from a given strategy using cost-plus and relevant cost while considering the performance attributes that create the value.



Chapter Overview



Businesses must make different decisions, including strategic, tactical, and operational ones. Such decisions need to be informed decisions hence necessitating the application of both quantitative and qualitative judgments. Many different decision-making techniques have been developed for the same. These decision-making techniques can be classified into the following categories-

- i. **Based upon the time horizon**
 - a. Long-term decision making using discounted cash flow techniques.
 - b. Short-term decisions frequently involve considering contribution.
- ii. **Based upon nature**
 - c. Making decisions with limited or scarce resources.
 - d. Considering risk and uncertainty.

Short-term decisions are distinguished from long term decisions, as earlier ignores the time value of money, and secondly, most fixed costs will be incurred regardless and thus can be ignored as irrelevant costs. These characteristics make short term decisions relatively simpler to make. The main approach in such cases is usually to consider relevant cash flows, which may simplify looking at the impact of the decision on the total contribution. Methods used in this case include–

- a. Cost volume profit (CVP) analysis, including break even analysis (BEP)
- b. Key factor analysis
- c. Linear programming

In the first sections of this chapter, we will consider CVP analysis and relevant cost concepts, followed by Pricing Decisions and Pricing Strategies in sections thereafter, respectively.



A. CVP ANALYSIS

Cost Volume Profit Analysis (CVP Analysis) analyses interrelationships among revenues, costs, levels of activity, and profits. The information from this analysis is useful to management because it indicates levels of production activity that are required to either (i) break-even (point of no profit or no loss) or (ii) to earn a pre-determined target profit. The level of production determines the scale of operations, plant capacity, capital investments in fixed assets, procurement of input resources, etc. This implies that volume is the key driver of many decisions and, thereby, resultant costs / benefits in business operations. This is why volume is traditionally chosen as the cost-driver in the CVP analysis framework.

$$\text{Break even point (in units)} = \frac{\text{Fixed Cost}}{\text{Sales per unit} - \text{Variable cost per unit}}$$

Conventional CVP analysis classifies the costs of an organization as variable and fixed with reference to volume. Volume based cost drivers are units of direct raw materials, direct labour hours, machine hours, etc. Costs such as direct material costs, labour costs, energy costs, etc. increase marginally each time a unit is produced (variable costs). On the other hand, fixed costs (overheads) are incurred irrespective of the volume of production. Examples would be rental, administration expenses, etc. Activities that have volume as their cost driver are also called *unit-level activities*.

Although CVP analysis is most useful for planning, it can also be used to assist with controlling and evaluating decisions. Consider a decision about choosing *additional features for an existing product*, i.e., product modification. Different choices can affect selling prices, variable cost per unit, fixed costs, units sold, and operating income. CVP analysis helps managers make product decisions by estimating the *expected profitability* of these choices.

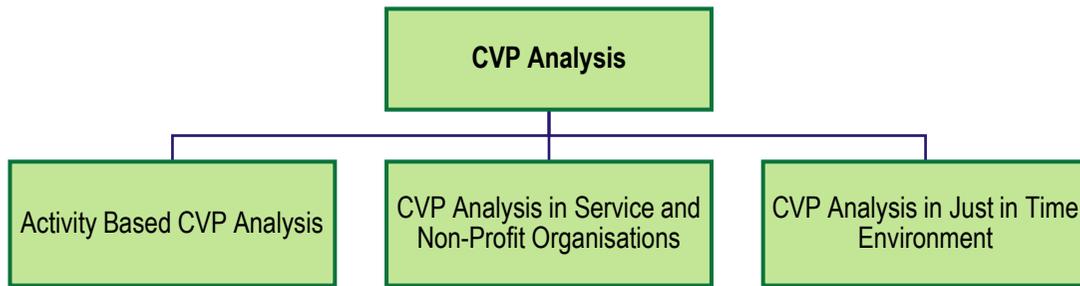


Figure A.1 – CVP Analysis in Different Scenarios

1. Activity Based CVP Analysis

CVP analysis would indicate how many units need to be sold so that the contribution can cover such fixed expenses (overheads) to arrive at the break- even point. This approach would be accurate as long as the majority of the activities have costs as the volume driver. In such cases, the critical activity level for break-even can be clearly identified. However, there are certain activities that are not related to the volume of production at all. They occur irrespective of the volume of production. Such activities can be identified using the activity-based costing approach. Analysis of an organization's activities based on the activity-based costing method can be broadly classified into:

- (i) **Unit level (output) activities:** Activities performed each time a product is manufactured. As explained above, this varies in direct proportion to the volume of production. The *cost driver* would be the production volume. Examples would include direct material costs, direct labour costs, direct overhead costs (like repairs and maintenance, energy consumption).
- (ii) **Batch-level activities:** Certain activities are done for “a batch of production” rather than for “a unit volume of output”. Examples are set-up activities or processing purchase orders (material procurement). An example of setup in a manufacturing context is changing machine specifications to meet product specifications. During this change, the machine cannot produce any output. The same amount of resources would be required during/ for setup, whether the next setup is after a batch size of 50 or 500 units. Resources could be in the form of additional material or labour required to arrange for the machine set-up. Here, instead of volume, it is the number of set-ups done that is the *cost driver*. Similarly, resources for processing purchase orders for material procurement would depend on the number of orders generated and not the volume of production.

Traditionally, these costs have been considered fixed and given costs beyond management control in the CVP analysis. However, as explained above, these activities and resources used are not directly related to the volume of production. Incremental (marginal) costs are incurred only when a set-up is done, or a purchase order is generated and processed. Such decisions are clearly under the managerial decision-making purview.

Total set-up costs per annum = Number of setups per annum × cost of each set-up

While set-up costs would be variable (marginally incremental) in terms of the number of set-ups (cost driver), they need to be charged equally to each unit produced *within that batch*. Therefore, the larger the batch size, the lower the set-up cost that is assigned to each unit within that batch. Hence, lower per unit costs require infrequent setups and large batch sizes.

- (iii) **Product sustaining activities:** These are activities performed to support the production or sale of a specific type of product. Examples of such activities would be designing a product, designing production processes, drawing process charts, maintaining product specifications, developing special testing routines or technical enhancements (engineering change orders), or advertising for a particular product. The incurrence of cost is not dependent on the volume of production. They depend on the additional consumption of resources to enable the performance of these activities. An example of resources used could be additional engineering hours required to design / improve the product, or its production process would require overtime payment for labour, additional materials needed for developing the design, cost of testing, etc.
- (iv) **Facilities level activities:** Activities performed for the general operations of the business. They cannot be traced to any particular product. Examples include the depreciation of a factory building or the rent paid on it, insurance on the building, costs of training employees, etc. Traditionally, these costs have been part of the fixed costs in the CVP analysis.



Do You Know?

How is CVP analysis with Activity Based Analysis relevant?

Conventional CVP analysis classifies cost behaviour as fixed and variable with respect to *volume alone*. Therefore, any overhead that does not vary with respect to volume would be pooled under a common cost pool “fixed cost”. However, as explained above, activities such as production set-ups or product enhancements are not dependent on production volume. Instead, they *vary based on other cost drivers*, such as the number of set-ups or engineering hours.

Following the Activity Based Costing system, when activities are identified within the cost hierarchy mentioned above, it provides management with more information on business operations. CVP analysis using Activity Based Costing can now be formulated as below:

Break-even point (units) = $[\text{fixed cost}^{\#} + (\text{batch level cost driver} \times \text{cost per batch driver}) + (\text{product sustaining cost driver} \times \text{cost per product sustaining cost driver})] / (\text{selling price per unit} - \text{variable cost per unit})$

[#] as identified under Activity Based Costing system

The numerator of the above formula is entirely *non-volume-driven costs*. The BEP will indicate the sales volume required to recover these costs. This analysis can be done at an aggregate level and at an individual cost category level for the product line.

To explain how this information can impact business operations, let us look at the following illustration –

Illustration 1

A company manufactures cycles for both adults and children. Given below is information about cycles made for children–

Particulars	Traditional CVP Analysis	Activity Based CVP Analysis
Monthly Demand and Production	10,000 units	10,000 units
Selling Price	₹8,000 per unit	₹8,000 per unit
Variable Cost per unit	₹7,500 per unit	₹7,500 per unit
Fixed Cost p.m. (as identified under each cost system)	₹ 10,00,000 p.m.	₹ 8,00,000 p.m.

Fixed costs of ₹10,00,000 per month under Traditional CVP analysis are those that do not vary with respect to volume. Following an Activity Based Costing study, fixed cost that does not vary as per volume or any other cost driver has been identified as ₹8,00,000 per month. The study revealed a milling machine is used to cut metal into steer support. Production of these steer support takes place in batches of 25 units.

Once a batch for children's cycles is finished, the next batch will be for adult cycles. Therefore, after each batch, there would be a set-up change. If 10,000 children's cycles have to be produced, the number of set-ups required is 10,000 steer support / 25 per batch = 400 set-ups. Each set-up costs ₹500, comprising material costs like change of oil, jig, etc. This cost was previously pooled together with the fixed cost under traditional CVP analysis.

Required

- (i) FIND the break-even point per month and profit per month under the traditional CVP method and the Activity Based CVP method.
- (ii) As a plant manager, you would like to keep the number of set-ups to a minimum since they reduce the capacity of the machine. Suppose that at any time the milling machine can be used to produce other types of cycles, like adult cycles, sports cycles, etc. Therefore, you propose to increase the batch size of children's steer support to 50 units in one batch. The number of set-ups will reduce from 400 (10,000 units / 25 units) to 200 (10,000 units / 50 units). Due to larger batch production, additional inventory storage area would be required to store, which would cost the company ₹50,000 per month extra. ANALYSE the impact on BEP (units per month) and profits per month.
- (iii) When should labour cost be factored into the calculation of the cost of a set-up? EXPLAIN.
- (iv) How can the number of set-ups and the cost of each set-up impact the flexibility of the milling machine? EXPLAIN.

Solution

- (i) (a) Break-even point (units per month) and profit per month under traditional CVP analysis:

Selling Price per unit	₹8,000
Variable Cost per unit	₹7,500
Contribution per unit	₹500
Fixed Cost per month	₹10,00,000
Break-even Point (per month in units) = Fixed Cost p.m. / Contribution p.u. = ₹10,00,000 / ₹500 per unit	2,000 units
Monthly Demand (units)	10,000 units
Profit per month = {Monthly demand (units) × Contribution per unit} – Fixed Cost per month = (10,000 × ₹500 per unit) - ₹10,00,000	₹40,00,000

- (b) Break-even point (units per month) and profit per month under Activity Based CVP method. The number of units produced per batch is 25. Therefore, the number of set-ups will be 10,000 units / 25 units = 400 per month.

Selling Price per unit	₹8,000
Variable Cost per unit	₹7,500
Contribution per unit	₹500
Fixed Cost per month (per Activity Based method)	₹8,00,000
Break-even Point (per month in units) = {Fixed Cost p.m. + (number of set-ups × cost per set-up)} / Contribution p.u. = {₹8,00,000 + (400 × ₹500 per set-up)} / ₹500 per unit = ₹10,00,000 / ₹500 per unit	2,000 units
Monthly Demand (units)	10,000 units
Profit per month = {Monthly demand (units) × Contribution per unit} – (Fixed Cost per month + Set-up cost per month) = (10,000 × ₹500 per unit) – (₹8,00,000 + ₹200,000) = ₹50,00,000 – ₹10,00,000	₹40,00,000

Although the BEP units and the profit per month are the same under both methods, the Activity Based method has brought forth the point that there are 400 set-ups being performed per month. This would give the management more information to work with in order to improve operations.

- (ii) Break-even point (units per month) and profit per month under Activity Based CVP analysis: Batch size increased from 25 to 50 units; monthly set-ups reduce from 400 to 200 per month.

Selling Price per unit	₹8,000
Variable Cost per unit	₹7,500
Contribution per unit	₹500
Fixed Cost per month (per Activity Based method) Additional cost p.m. for inventory storage = ₹50,000	₹8,50,000
Break-even Point (per month in units) = {Fixed Cost p.m. + (number of set-ups × cost per set-up)} / Contribution p.u. = {₹8,50,000 + (200 × ₹500 per set-up)} / ₹500 per unit = ₹9,50,000 / ₹500 per unit	1,900 units
Monthly Demand (units)	10,000 units
Profit per month = {Monthly demand (units) × Contribution per unit} – (Fixed Cost per month + Set-up cost per month) = (10,000 × ₹500 per unit) – (₹8,50,000 + ₹1,00,000) = ₹50,00,000 – ₹9,50,000	₹40,50,000

Analysis

It can be concluded that by increasing the batch size, the capacity of the machine can be increased. The time freed by reducing setups from 400 per month to 200 per month can now be used to produce parts for other cycles. Since the number of set-ups will be reduced, so will the monthly set-up costs. Even after offsetting the increase in storage cost, profits have increased by ₹50,000 per month (₹40,50,000 - ₹40,00,000 per month). Consequently, the break-even point has been reduced from 2,000 units per month to 1,900 units per month. This reduction is due to the savings in overall set-up costs due to the lower number of set-ups.

- (iii) Inclusion of labor cost in the cost of set-up would depend on their *availability*:
- The cost of temporary labour hired for a particular set-up, or the cost of outsourcing set-up activities would be included in set-up costs.
 - The cost of permanent labour used for set-up, who are otherwise idle, would not be included in set-up costs since the salaries paid to them have to be incurred anyway; it is a sunk cost.
 - However, where permanent labour is used for set-up, who are otherwise fully engaged in the production process and additional labour supplies are unavailable in the short term, and where no further overtime working is possible, the opportunity cost of labour needs to be considered along with the hourly labour rate.
- (iv) Set-ups reduce the production utility of a machine. A lower number of set-ups or a lower set-up time can improve the utilization of the machine. This also gives the company flexibility to keep changing the batches produced at the milling machine to cater to children's cycles and adult cycles as per its requirements. The other factor that impacts flexibility in production would be set-up costs. The lower the set-up costs, the higher the flexibility to change batches produced at the milling machine to cater to each type of cycle.

Illustration 2

Catalyst Ltd. makes a single product with the following details:

Description	Current Situation	Proposed Change
Selling Price (₹/unit)	10	
Direct Costs (₹/unit)	5	
Present number of setups per production period, (Before each production run, setup is done)	42	
Cost per set up (₹)	450	Decrease by ₹ 90
Production units per run	960	1,008
Engineering hours for the production period	500	422
Cost per engineering hour (₹)	10	

The company has begun Activity Based Costing of fixed costs and has presently identified two cost drivers, viz. production runs and engineering hours. Of the total fixed costs presently at ₹ 96,000, after the above, ₹ 72,100 remains to be analyzed. There are changes as proposed above for the next production period for the same volume of output.

Required

- COMPUTE units and production runs Catalyst Ltd. should produce in the changed scenario for break-even.
- ADVISE whether Catalyst Ltd. should continue to break up the remaining fixed costs into activity-based costs.

Solution**Workings**

Statement Showing 'Non-unit Level Overhead Costs'

Particulars	Current Situation	Proposed Situation
No. of Production Runs/ Setups	42	40 $\left(\frac{960 \text{ runs} \times 42 \text{ setup}}{1,008 \text{ units}} \right)$
Cost per Setup	₹450	₹360
Production Units per run	960 units	1,008 units
Production Units	40,320 (960 units × 42)	40,320
Engineering Hrs.	500	422
Engineering Cost per hour	₹10	₹10

Requirement of the Question**(i) Break Even Point (Changed Scenario)**

Break Even Point

$$= \frac{\text{Fixed Cost} + (\text{Setup Cost} \times \text{No. of Setups}) + (\text{Engineering Costs} \times \text{No. of Engineering Hrs.})}{(\text{Price} - \text{Unit Variable Cost})}$$

$$= \frac{\text{₹ } 72,100 + (\text{₹ } 360 \times 40 \text{ Setups}) + (\text{₹ } 10 \times 422 \text{ hrs.})}{(\text{₹ } 10 - \text{₹ } 5)}$$

$$= 18,144 \text{ units}$$

Break Even Point (No. of Production Runs)

$$= \frac{\text{Break Even (units)}}{\text{Production (units per run)}}$$

$$= \frac{18,144 \text{ units}}{1,008 \text{ units}}$$

$$= 18 \text{ Runs}$$

- (ii) A company should adopt Activity Based Costing (ABC) system for *accurate product costing*, as the traditional volume-based costing system does not take into account *Non-unit Level Overhead Costs* such as Setup Cost, Inspection Cost, and Material Handling Cost etc. Cost Analysis under the ABC system showed that while these costs are largely fixed with respect to sales volume, they are not fixed with respect to other appropriate cost drivers. If the remaining ₹72,100 fixed costs consist of only a small portion of these costs, ABC need not be applied.

However, it may also be noted that the primary study has resulted in cost savings. If the savings in cost are expected to exceed the cost of studying and implementing ABC, it may be justified. Further, it is pertinent to mention that ABC offers no increase in product-costing accuracy for single-product setting.

Note- "The use of activity-based costing does not mean that CVP analysis is less valuable. In fact, it becomes more valuable since it delivers more precise understandings concerning cost behaviour. These understandings produce better decisions. CVP analysis within an activity-based framework, however, must be improved".

2. CVP Analysis in Service and Non-Profit Organisations

CVP analysis can also be applied to decisions by service and non-profit organisations. To apply CVP analysis to service and non-profit organisations, we need to *focus on measuring their output*, which is different from tangible units sold by manufacturing and merchandising companies.

Illustration 3

Expert Roadways Services Pvt. Ltd. is planning to run a fleet of 15 buses in Birpur City on a fixed route. The company has estimated a total of 2,51,85,000 passenger kilometers per annum. It is estimated that buses will have a 100% load factor. Buses are purchased at a price of ₹ 44,00,000 per unit, whose scrap value at the end of 5 years life is ₹ 5,50,000. The seating capacity of a bus, excluding a Driver's seat, is 42. Each bus can give a mileage of 5 kmpl. Average cost of fuel is ₹ 66 per liter. The cost of Lubricants & Sundries per 1,000 km would be ₹ 3,300. The company will pay ₹ 27,500 per month to the Driver and two attendants for each bus.

Other annual charges per bus: Insurance ₹ 55,000, Garage Charges ₹ 33,000, Repairs & Maintenance ₹ 55,000. Route Permit Charges upto 20,000 km is ₹ 5,500 and ₹ 2,200 for every additional 5,000 km or part thereof.

Required

- (i) CALCULATE a suggested fare per passenger/km taking into account a markup on cost @20% to cover general overheads and sufficient profit.
- (ii) The Transport Sector of Birpur is highly regulated. The Government has fixed the fare @ ₹ 1.35 for the next 2 years. COMMENT on the two year's profitability taking into consideration the inflation rate of 8%.

Note: Route permit charges are not subject to Inflation.

Solution**(i) Statement Suggesting "Fare per passenger – km (Each Bus)"**

Particulars	Cost per annum (₹)
Fixed Expenses:	
Insurance	55,000.00
Garage Charges	33,000.00
Depreciation	7,70,000.00
Running Expenses:	
Repair and Maintenance	55,000.00
Cost of Lubricants and Sundries	1,38,517.50
Fuel Cost	5,54,070.00
Salary of Driver and Two Attendants	3,30,000.00
Route Permit Charges	16,500.00
Total Cost per annum	19,52,087.50
Add: Markup @ 20% of Total Cost or 16.67% of Total Revenue	3,90,417.50
Total Revenue	23,42,505.00

Rate per passenger- km equals to ₹1.395

Workings

Total Passenger Kms	=	2,51,85,000
Total Buses	=	15
Passenger Kms per bus	=	16,79,000 (2,51,85,000 Kms / 15)
Total Passenger Capacity per bus	=	42 – 2
	=	40
Annual Distance Covered by a bus	=	41,975 Kms. (16,79,000Kms/ 40)

(ii) Regulated Fare per passenger km is ₹1.35

Profitability Statement for Each Bus

Particulars	Year 1 (₹)	Year 2 (₹)
Fixed Expenses:		
Insurance	59,400.00	64,152.00
Garage Charges	35,640.00	38,491.20
Depreciation	7,70,000.00	7,70,000.00
Running Expenses:		
Repair and Maintenance	59,400.00	64,152.00
Cost of Lubricants and Sundries	1,49,598.90	1,61,566.81
Fuel Cost	5,98,395.60	6,46,267.25
Salary of Driver and Two Attendants	3,56,400.00	3,84,912.00
Route Permit Charges	16,500.00	16,500.00
Total Cost	...[A] 20,45,334.50	21,46,041.26
Total Revenue (Regulated)	...[B] 22,66,650.00	22,66,650.00
Profit	...[B] – [A] 2,21,315.50	1,20,608.74
Profit to Total Revenue	9.76%	5.32%

The gross margin is showing a downward trend because the cost components have taken into account the effect of inflation, hence increasing year by year, but the total revenue has remained stagnant due to Government regulations, which resulted in reduction in gross margin per bus.

The company's gross margin to total revenue ratio has come out to be 9.76% and 5.32% in the first and second years, respectively, but initially, the company's desired gross margin to total revenue ratio is 16.67% to cover general overheads and sufficient profit. Though the amount of general overheads is not given, we can safely assume that they may also be subject to inflation, i.e., increase year by year. In such a case, the company needs to maintain or increase its gross margin per bus to maintain its net profit after general overheads, which is not possible in a regulated environment. The information about regulated fare in the given case is regarding the first two years only, but if this regulated fare scenario persists for further years, then the project may not be viable for the company.

3. CVP Analysis in Just in Time Environment¹

In a firm that has implemented *Just in Time*, the variable cost per unit sold is reduced and fixed costs are increased. Direct labor is considered fixed instead of variable. On the other hand, direct material varies with production volume (unit- based variable cost) due to the emphasis on *total quality* and *long-term purchasing*. Waste, scrap, and quantity discounts are removed. Other unit-based variable costs, such as power and sales commissions, also exist. Further, the *batch - level* variable is absent, as in Just in Time, the batch is equal to one unit. Therefore, the cost equation for Just in Time can be expressed as follows:

$$\text{Total Cost} = \text{Fixed Cost} + (\text{Unit variable Cost} \times \text{Number of Units}) + (\text{Engineering Cost} \times \text{Number of Engineering hours})$$

“Managers often use CVP analysis to guide other decisions; many of them are of strategic nature due to the tremendous potential for an increase in profitability and organizational effectiveness.”



B. RELEVANT COST CONCEPTS (In short term decision)



Based on relevant costs



Referred to as tactical decisions



Choosing among alternatives



Often have long-run consequences



Immediate or limited time frame



Small-scale actions that serve a larger purpose

Figure B.1 – Relevant Cost Concept

Short-run decision making involves the act of choosing one course of action among the various feasible alternatives available. Short-term decisions are sometimes referred to as tactical, or relevant, decisions because they involve choosing between alternatives with an immediate or limited time frame. Strategic decisions, on the other hand, are usually long term in nature because they involve choosing between different strategies that attempt to provide a *competitive advantage* over a long-time frame.

¹ Cornerstones of Cost Management 2/e By Don R. Hansen, Maryanne M. Mowen, Cost-Volume-Profit Analysis, p.853

Short run decisions involve evaluation of the costs and benefits of short-term actions, such as whether to make a product or outsource, whether to accept a special order, whether to keep or drop an unprofitable segment, and whether to sell a product as is or process it further. If resources are limited, managers may also have to decide on the most appropriate product mix. While such decisions tend to be *short run* in nature, it should be emphasized that they often have long-run consequences. Suppose that a company is thinking about producing a component instead of buying it from suppliers. The immediate objective may be to lower the cost of making the main product. Yet this decision may be a small part of the overall strategy of establishing a cost leadership position for the firm. Therefore, short-run decisions are often *small-scale actions that serve a larger purpose*².

The tactical decision-making approach just described emphasized the importance of identifying and using **relevant costs**. But how do we identify and define the costs that affect the decision?

For a cost to be relevant to a decision, it must be -

- 1) A future cost, i.e., related to the future.
- 2) A differential Cost, i.e., its level must be different for each of the alternatives under consideration.

Accordingly, only future costs can be relevant to decisions. However, to be relevant, a *cost must not only be a future cost but must also differ from one alternative to another*. If the future cost is the same for more than one alternative, it has no effect on the decision. Such a cost is irrelevant. The ability to identify relevant and irrelevant costs is a vital decision-making skill.



Do You Know?

Decision Making involves Ethical Considerations

Ethics are moral principles that guide the conduct of individuals. Through their behaviour and attitude, managers set the company culture. Guideline for Ethical Conduct³:

- Identify an ethical decision by using personal ethical standards of honesty and fairness.
- Identify the consequences of the decision and its effect on others.
- Consider obligations and responsibilities to those that will be affected by the decision.
- Make a decision that is ethical and fair to those affected by it.

Some ethical problems can be avoided simply by using common sense and not focusing solely on the short term at the expense of the long term.

Firms with a strong code of ethics can create strong customer and employee loyalty. Furthermore, a firm that values people more than profit and is viewed as operating with integrity and honor is more likely to be a commercially successful business⁴.

² Managerial Accounting: The Cornerstone of Business Decision-Making By Maryanne M. Mowen, Don R. Hansen, Dan L. Heitger

³ Financial & Managerial Accounting By Carl S. Warren, James M. Reeve, Jonathan Duchac

⁴ Cost Management: Accounting and Control By Don Hansen, Maryanne Mowen, Liming Guan



Do You Know?

Decision Making involves Non-Financial Considerations

With the increase in competition, dynamic market changes, and changing needs of customers, non-financial information has gained relevance in the decision-making process. Information to which monetary value can be attached is in the nature of financial information. Information about an organization, like the number of employees, employee morale, and customer satisfaction, that cannot be expressed in monetary terms is termed non-financial in nature.

*Non- financial information is **long term focused** and ensures profitability and sustainability in the long term for an organization thereby evaluating the internal performance of the company.*

Non- Financial information on which a company should focus that would turn out to be advantageous while making decisions for the company are:

- Quality
- Employee Satisfaction
- Customer Satisfaction
- Corporate Social Responsibility
- Environmental Factors
- Intellectual Property
- Intangible Assets
- Competitor's Movements
- Brand Name

Decisions made in a business rest on the *balance between the perceived effects of financial and non-financial information*. Following are the Limitations of Non- Financial Information-

- Time and Cost of the company involved.
- Subjective measurement – No proper common denominator to measure performance.
- Improper measures will lead the companies to focus attention on the wrong objectives.
- Lack of Statistical Reliability – Possible chances of error.



Case Scenario

Sprinter Sportswear is a multinational company that has a market presence in 23 countries. Yet the company does not own even a single factory. Production has been entirely outsourced to 175 factories located in places where the cost of operations is low. Factories cater entirely to Sprinter's procurement demands. These factories operate independently; Sprinter plays no role in their operations. Procurement from this supplier network is stored at distribution centers, from where dispatches are made to wholesalers of sportswear and apparel.



Recent news reports from some of the Third World foreign countries have indicated high child labor employment. Child labor, although against the law in these countries, is resorted to in order to keep the cost of operations low. Factories in these countries do not directly employ children. Instead, they subcontract the work to contractors. These contractors, in turn, hire children illegally without the local knowledge of local law enforcement authorities. In addition, working conditions in these factories are very unhygienic and oppressive.

Sprinter initially turned a blind eye to this problem since it only acts as a customer for these factories. Sprinter, as a company, has done nothing illegal as part of company operations. However, the increased focus given to corporate social responsibility has forced the Board members to consider taking action against such factories.

Required

- (i) DISCUSS why Sprinter Sportswear should attempt to address this issue.
- (ii) SUGGEST some of the actions that the company can take to address this issue.

Solution

- (i) Work can be outsourced to locations in countries on the other side of the globe in order to achieve a *low-cost advantage*. A company may not be directly responsible for the faulty practices of its suppliers. However, modern organizations have a *moral duty* of care to a wider range of stakeholders who may not directly be related to the company. In this case, it owes a duty of care towards employees hired by factories within its *supply chain*. The issue it is dealing with relates to the exploitation of child workers by factories, perpetrated by subcontracting work to third party workers. While Sprinter Sportswear has *not done anything illegal*, it owes *moral responsibility* towards these children. Children have a right to education, because of which child labor is illegal in most countries. Since children are employed directly on account of the work that has been outsourced, Sprinter should attempt to address this issue. Also, any negative news about how its products are made could *impact its business*.
- (ii) Sprinter should aim to make its products responsibly. Some actions it can take are:
 - Sprinter can develop a *Code of Conduct* that details the acceptable standards for conducting business. These standards could relate to hiring practices, in which it can be specified that workers should be above a particular age to be employed for manufacturing a product. Others could relate to the workplace environment, safety, and environment sustainability. Sprinter should *insist that suppliers implement these Codes of Conduct* along with other laws. It should insist that the supplier be open to *periodic inspection* by Sprinter to ensure compliance with standards as per its Code.
 - Sprinter can set up an *audit team* that regularly audits factories in the pre-sourcing and follow-up stages. Sprinter should do business only with factories that comply with its standards. Any offenders to the Code of Conduct in the follow-up stages should be appropriately liable to *penalty* or *termination of contract* for serious offences.
 - Sprinter can *list on its website* location wise suppliers from whom it procures its products. It can even give information about products made by each of its suppliers, such as average age, worker diversity, etc. This will enable watch groups to know who the suppliers are and warn the company if there are any labor issues within these factories.

1. Decision Making Model

A general approach to tactical decision making includes:

- Define the problem.
- Identify alternatives, eliminating unfeasible alternatives.
- Identify the costs and benefits of each alternative.
- Examine the total relevant costs and benefits of each alternative.
- Assess non-financial factors and ethical issues.
- Select the alternative with the greatest overall benefit.

Application

Step 1: Define the problem	Due to the economic downturn, it is not feasible to operate the plant at its normal capacity, at least during the quarter.
Step 2: Identify alternatives	<ul style="list-style-type: none"> ▪ Shut down the plant ▪ Operate the plant
Step 3: Identify costs and benefits	Alt 1: <Costs> + Benefits Alt 2: <Costs> + Benefits
Step 4: Total relevant costs and benefits	Alt 1: Relevant <Costs> + Benefits Alt 2: Relevant <Costs> + Benefits Differential Cost
Step 5: Assess non-financial factors	<ul style="list-style-type: none"> ▪ Interest of workers. ▪ Re-establishment of the market for the product. ▪ Plants may get rusted.
Step 6: Make decision	Operate the plant

Illustration 4

Recently, the Ministry of Health and Family Welfare along with the Drug Control Department have come hard on health care centres for charging exorbitant fees from their patients. Human Health Care Ltd. (HHCL), a leading integrated healthcare delivery provider company is feeling the pinch of measures taken by authorities and facing margin pressures due to this. HHCL is operating in a competitive environment, so it's also difficult to increase patient numbers. The Management Consultant of the company has come up with some plan for cost control and reduction.

HHCL provides treatment under a package system where fees are charged irrespective of the number of days a patient stays in the hospital. The consultant has estimated 2.50 patient days per patient. He wants to reduce it to 2 days. By doing this, the consultant has targeted the general variable cost of ₹ 500 per patient day. Annually, 15,000 patients visit the hospital for treatment.

Medical Superintendent has some concerns with that of Consultant's plan. According to him, reducing the patient stay would be detrimental to the full recovery of patient. They would come again for admission, thereby increasing the current readmission rate from 3% to 5%; it means readmitting 300 additional patients. The company has to spend ₹ 25,00,000 more to accommodate this increase in readmission. But Consultant has found blessing in disguise in this. He said every readmission is treated as new admission, so it would result in additional cash flow of ₹ 4,500 per patient in the form of admission fees.

Required

- (i) CALCULATE the impact of the Management Consultant's plan on the profit of the company.
- (ii) Also COMMENT on result and other factors that should be kept in mind before taking any decision.

Solution

- (i) Impact of Management Consultant's Plan on Profit of the HHCL

**Human Health Care Ltd.
Statement Showing Cost Benefit Analysis**

Particulars	₹
Cost:	
Incremental Cost due to Increased Readmission	25,00,000
Benefit:	
Saving in General Variable Cost due to Reduction in Patient Days [15,000 Patients × (2.5 Days – 2.0 Days) × ₹500]	37,50,000
Revenue from Increased Readmission (300 Patients × ₹4,500)	13,50,000
Incremental Benefit	26,00,000

- (ii) Comment

Primary goal of investor-owned firms is shareholder wealth maximization, which translates to stock price maximization. The Management consultant's plan is looking good for the HHCL as there is a positive impact on the profitability of the company (refer to Cost Benefit Analysis).

Also, HHCL operates in a competitive environment, so for its survival, it has to work on plans like above.

But there is also the second side of the coin that cannot also be ignored, i.e., human values and business ethics. Discharging patients before their full recovery will add discomfort and disruption to their lives, which cannot be quantified in money. There could be other severe consequences as well because of this practice. For gaining extra benefits, HHCL cannot play with the lives of patients. It would put a question mark on the business ethics of the HHCL.

May be HHCL would be able to earn incremental profit due to this practice in the *short run*, but it will tarnish the image of HHCL which would hurt profitability in the *long run*.

So, before taking any decision on this plan, HHCL should analyze both *quantitative as well as qualitative factors*.

2. Some Applications of CVP Analysis and Cost Concepts

Short run decisions are many and varied, but some of the more important ones **we shall look in this chapter include:**

- Outsourcing Decision
- Sell or Process Further
- Minimum Pricing Decisions
- Keep or Drop Decisions
- Special Order Decisions
- Product Mix Decision

2.1 Outsourcing Decision⁵

An outsourcing decision is often called a *'make or buy'* decision. It involves a decision about whether to continue 'making' a product versus 'buying' it from an external firm. Outsourcing enables a firm to

- reduce costs *or*
- benefit from supplier efficiencies

Outsourcing decision requires *incremental analysis*. The incremental amounts are based on the difference in the *cost of buying a product or service* compared to the *cost of producing the item or providing the service in house*.

Incremental costs are the additional costs incurred from outsourcing. The main cost is the purchase price of the products or the cost of the services that are being provided by external firms.

Incremental cost savings are reductions in costs that will no longer be incurred as a result of outsourcing. They are often called avoidable costs because if a company outsources, it can 'avoid' certain costs. Variable product cost savings are always incremental. Because they reduce total costs, they cause profits to increase. In some circumstances, a portion of fixed costs, such as equipment rental costs or supervisor salaries, can be avoided.

Opportunity costs are the costs forgone as a result of selecting a different alternative. They are always incremental. For example, if a company decides to outsource, it is able to lease its factory space that the product being outsourced will no longer occupy.

⁵ Managerial Accounting: The Cornerstone of Business Decision-Making By Maryanne M. Mowen, Don R. Hansen, Dan L. Heitger; <http://www.unf.edu/>



Outsourcing Decisions- Accept or Reject?

If incremental cost savings + opportunity costs < incremental costs, reject the outsourcing, unless qualitative factors fiercely impact the decision.

If incremental cost savings + opportunity costs > incremental costs, accept the outsourcing unless qualitative factors fiercely impact the decision.

If incremental cost savings + opportunity costs are = incremental costs, focus primarily on qualitative factors to evaluate the decision.

Qualitative Factors

While considering the decision to outsource, the management should consider qualitative aspects like quality of goods, reliability of suppliers, impact on customers and suppliers, etc.



Test Your Understanding

When should a company outsource?

Hint

A firm generally decides to **outsource**:

- If it costs less than to manufacture it internally.
- If the return on the necessary investment to be made to manufacture is not attractive enough.
- If the company does not have the requisite skilled manpower to make.
- If the concern feels that manufacturing internally will mean additional labour problems.
- If adequate managerial manpower is not available to take charge of the extra work of manufacturing.
- If the component shows much seasonal demand, resulting in a considerable risk of maintaining inventories.
- If transport and other infrastructure facilities are adequately available.
- If the process of making is confidential or patented.
- If there is a risk of technological obsolescence for the component, such that it does not encourage capital investment in the component.

Illustration 5

DBA, manufactures and sells 25,000 table fans annually. One of the components required for fans is purchased from an outside supplier at a price of ₹ 190 per unit. Annually, it purchases 25,000 components for its use. The Production Manager is of the opinion that if all the components are produced at own plant, it is possible to maintain better quality in the finished product. Further, he proposed that the in-house production of the component with other items will provide more flexibility to increase the annual production by another 5,000 units. He estimates the cost of making the component as follows:

	₹ per unit
Direct materials	80
Direct labour	75
Factory overhead (70% variable)	40
Total cost	195

The proposal of the Production Manager was referred to the Marketing Manager for his remarks. He pointed out that to market the additional units, the overall unit price should be reduced by 5% and additionally ₹ 1,00,000 p.m. should be incurred for advertising. The present selling price and contribution per fan are ₹ 2,500 and ₹ 600 respectively. No other increase or decrease in all other expenses as a result of this proposal will arise.

Required

Since the making cost of the component is more than the buying cost, the Management asks you to:

- ANALYSE the make or buy decision on unit basis and total basis.
- RECOMMEND the most profitable alternative.

Solution

- DBA purchases 25,000 units of components to manufacture 25,000 fans annually. The external purchase price per component is ₹190 per unit. It has the option of manufacturing these components in house. The cost structure of manufacturing these components would be as below:

Cost Structure	Cost per component unit (₹)
Direct Materials	80
Direct Labor	75
Variable Factory Overhead (70% of ₹40)	28
Total	183

Analysis

If DBA decides to manufacture the components in-house, the following would be the financial impact:

- Production Capacity will increase from 25,000 fans to 30,000 fans.
- Variable Cost of Production of a fan would be ₹1,710 [(2,500 - 600) - 190] per unit.
- Fixed Factory Overhead of ₹12 per component would be incurred irrespective of whether the component is produced or not. Therefore, this cost is not considered.
- The increase in advertising expenses would be ₹1,00,000 per month or ₹12,00,000 annually.
- Overall, the selling price would be reduced from the current rate of ₹2,500 per fan to ₹2,375 (95% of ₹2,500) per fan.

- (f) Current contribution considering a procurement price of ₹190 per component unit, is ₹600 per fan. As calculated above, if produced in house, the variable cost would be ₹183 per component unit. This would result in an increase in contribution by ₹7 per fan (procurement price of ₹190 per component unit less variable cost of ₹183 per component unit). In addition, there is an impact of ₹125 on account of the reduction in selling price. Therefore, the contribution if component is produced in house would be ₹482 per fan (₹600+₹7-₹125).

To summarize the above figures:

Particulars	Procurement 25,000 Components		Produce 30,000 Components	
	Per Fan ₹	Total ₹	Per Fan ₹	Total ₹
Selling price per fan	2,500	6,25,00,000	2,375	7,12,50,000
Contribution per fan	600	1,50,00,000	482	1,44,60,000

Therefore, the incremental loss by switching to in house production (on a total basis) would be **₹17,40,000** (incremental loss ₹5,40,000 – additional advertising expenses ₹12,00,000). On a per unit basis, it would result in a **loss of ₹58 per fan**.

(ii) Recommendation

As explained above, if production increases from 25,000 fans to 30,000 fans, it would not be profitable to make these components in-house. Overall profit decreased by ₹17,40,000. However, DBA may prefer to make component, even though it could be financially beneficial to buy from an outside supplier. Sometimes qualitative factors become very important and can override some financial benefit. This can be coupled with uncertainty about the supplier's ability or intention to maintain the price, quality, delivery dates of the components, etc.

Alternatively, DBA may continue with the sale of 25,000 units without any price reduction and advertising expenses. The component required for the 25,000 fans may be produced internally at a cost of ₹183 per unit. In this situation, the contribution shall be increased by ₹1,75,000 (₹7 × 25,000 units).

Thus, DBA may choose the alternative after due and careful consideration of facts illustrated above.

2.2 Sell or Process Further

Sell or process further refers to a decision-making situation where an executive has to decide either to sell a component/ product/ raw material as it is or alternatively process it further by incurring additional expenses. For instance, sometime, a redundant material lying in stores for a long time may be sold as scrap at a small value or may be thrown away as waste. This material may, however, be converted into a product of higher saleable value by carrying out some further operations or processes. On further processing, the component/ product/ raw material may not only be improved or reconditioned but will mostly fetch a higher sale value as well. Here, if the *differential sales value is more than the further processing cost*, then it is beneficial to process the product further otherwise sell it without further processing. Such type of decision making problems usually arise in the case of joint products.

There are two rules to follow when ascertaining whether the further processing is worthwhile:

- Only the incremental costs and revenues of the further process are relevant.
- The joint process costs are irrelevant - they are already 'sunk' at the point of separation.

Qualitative Factors

Qualitative factors related to processing further decisions include resource availability, such as the readiness of employees to work extra hours to further process the products and the availability of materials required for the processing. In addition, the influence on customers that prefer the original product should also be considered, as sales to these customers may be lost to competitors.

Example

A process industry unit manufactures three joint products: A, B and C. C has no realizable value unless it undergoes further processing after the point of separation. The cost details for C are as follows:

₹ / p.u.	
Upto the point of separation	
Marginal cost	30
Fixed Cost	20
After the point of separation	
Marginal cost	15
Fixed cost	5
	70

C can be sold at ₹ 37 per unit and no more.

Cost incurred on Product 'C' *upto the point of separation* is irrelevant for decision making as Product 'C' is a Joint Product. Joint Products are the result of the same raw materials and the same process operations.

Cost incurred *after the point of separation* will be considered for decision making as *specifically* incurred for Product 'C'.

After further processing, Product 'C' will *contribute* ₹17 per unit towards 'Joint Production Cost'.

The calculation is as follows –

Particulars	Amount (₹)
Selling Price <i>per unit</i>	37.00
Less: Cost after separation:	
Marginal Cost <i>per unit</i>	15.00
Fixed Cost <i>per unit</i>	5.00
Contribution towards 'Joint Production Cost'	17.00

Hence, *further processing* of Product 'C' is recommended.

If Product 'C' is not a joint product with the same cost structure. In this case, there will be a *negative contribution* to the production of Product 'C'. The calculation is as follows →

Particulars	Amount (₹)
Selling Price per unit	37.00
Less: Marginal Cost (₹30 + ₹15)	45.00
Contribution	(8.00)

Hence, production of Product 'C' will not be recommended.

2.3 Minimum Pricing Decisions

The minimum pricing approach is a useful method in situations where there is a lot of intense competition, surplus production capacity, clearance of old inventories, getting special orders, and/or improving market share of the product.

The minimum price should be set at the incremental costs of manufacturing plus opportunity costs (if any).

For this type of pricing, the selling price is the lowest price that a company may sell its product at usually the price will be the *total relevant costs of manufacturing*.

Illustration 6

XL Polymers, located in the Sahibabad Industrial Area, manufactures high quality industrial products. AT Industries has asked XL Polymers for a special job that must be completed within one week.

Raw material R_1 (highly toxic) will be needed to complete AT Industries' special job. XL Polymers purchased the R_1 two weeks ago for ₹ 7,500 for a job 'A' that was recently completed. The R_1 currently in stock is the excess from that job, and XL Polymers had been planning to dispose of it. XL Polymers estimates that it would cost them ₹ 1,250 to dispose of the R_1 . The current replacement cost of R_1 is ₹ 6,000.

Special job will require 250 hours of labour G_1 and 100 hours of labour G_2 . XL Polymers pays their G_1 and G_2 employees ₹ 630 and ₹ 336 respectively for 42 hours of work per week.

XL Polymers anticipates having an excess capacity of 150 [G_1] and 200 [G_2] labour hours in the coming week. XL Polymers can also hire additional G_1 and G_2 labour on an hourly basis; these part-time employees are paid an hourly wage based on the wages paid to current employees.

Suppose that material and labour comprise XL Polymers's only costs for completing the special job.

Required

CALCULATE the 'Minimum Price' that XL Polymers should bid on this job?

Solution

Opportunity Cost of Labour - The G_2 labour has zero opportunity cost as there is no other use for the time already paid for and is available. However, XL Polymers needs to pay an additional amount for G_1 labour. This amount can be saved if the special job were not there.

G₁ labour:

Hours Required	250
Hours Available	<u>150</u>
Extra Hours Needed	100
Cost per hour (₹630/42hrs)	<u>₹15</u>
Opportunity Cost	₹1,500

Thus, the 'Opportunity Cost of Labour' for completing the special job is ₹1,500.

Opportunity Cost of Material – XL Polymers has no alternative use for the R₁, so they must dispose of it at a cost of ₹1,250. Thus, XL Polymers actually saves ₹1,250 by using the materials for AT Industries' special job. Consequently, the 'Opportunity Cost of Material' is - ₹1,250 (i.e., the opportunity cost of this resource is negative).

The *minimum price* is the price at which XL Polymers just recovers its 'Opportunity Cost'. XL Polymers's 'Total Opportunity Cost' is ₹250 (₹1,500 - ₹1,250). Accordingly, the minimum Price for the Special Job is ₹250.

2.4 Keep or Drop Decisions⁶

Another type of operating decision that management must make is whether to keep or drop unprofitable segments, such as product lines, services, divisions, departments, stores, or outlets.

The decision is based on whether or not the segment's revenue exceeds the costs directly traceable to the segment, including any direct fixed costs.

Incremental Revenue

- Incremental revenue is the difference in revenue between the original sales revenue and the new revenue that is expected to result due to dropping a segment.
- If dropping a product will cause an increase in demand for another product, the additional revenue for the other product should be taken into consideration.

Incremental Cost Savings

- Variable costs associated with a segment to be dropped are incremental cost savings that cause profit to increase.
- Direct fixed costs related to a segment being dropped are avoidable if that segment is dropped because they can be eliminated if the segment is dropped.

Opportunity Costs

Opportunity costs are common in keep or drop decisions. They often arise due to the rental of production space that will become vacant if the decision is made to drop a product. Opportunity costs are always incremental.

⁶ Managerial Accounting: The Cornerstone of Business Decision-Making By Maryanne M. Mowen, Don R. Hansen, Dan L. Heitger; <http://www.unf.edu/>



Decision - Keep or Drop?

- If incremental cost savings > incremental revenue lost, the segment should be dropped, unless qualitative characteristics fiercely impact the decision.
- If incremental revenue lost = incremental cost savings, qualitative effects must be used to make the decision.
- If incremental cost savings < incremental revenue lost, the segment should not be dropped, unless qualitative characteristics fiercely impact the decision.

Qualitative Factors

Qualitative factors related to keep or drop decisions often include considerations of employees that will be terminated if the product is dropped, the effect a layoff might have on employees that are not terminated, the effects of suppliers from which the materials needed for the product will no longer be purchased, and the effect of customers who previously purchased the product being dropped.

Illustration 7

Rabi Ltd. is considering the discontinuance of Division C. The following information is given:

Particulars	Divisions A & B	Division C	Total
Sales (Maximum achievable) (₹)	41,40,000	5,17,500	46,57,500
Less: Variable cost (₹)	20,70,000	2,76,000	23,46,000
Contribution (₹)	20,70,000	2,41,500	23,11,500
Less: Specific avoidable fixed cost (₹)	14,49,000	4,14,000	18,63,000
Divisional Income (₹)	6,21,000	(1,72,500)	4,48,500

The rates of variable costs are 90% of the normal rates due to the current volume of operations. There is adequate market demand.

For any lower volume of operation, the rates would go back to normal rates.

Facilities released by discontinuing Division C cannot be used for any other purpose.

Required

COMMENT on the decision to discontinue Division C using the relevant cost approach.

Solution

As given in the problem, Rabi Ltd. is considering discontinuing Division C, perhaps by seeing Division C's income as a loss of ₹1,72,500. Discontinuance of Division C might save ₹4,14,000 on specific fixed costs to the company, but due to this decision, the company will not only be losing ₹2,41,500 contribution from Division C but also an additional burden of variable costs of ₹2,30,000 to Divisions A & B and Rabi Ltd. as a whole.

Let us assess the decision of Rabi Ltd. with the help of the **Relevant Cost** approach.

Particulars	Amount (₹)
Savings Due to Discontinuance	
Specific Fixed Cost	4,14,000
Total ... (A)	4,14,000
Loss/ Increase in Cost Due to Discontinuance	
Loss of Contribution	2,41,500
Increase in Variable Cost $\left(\frac{₹20,70,000}{90} \times 10 \right)$	2,30,000
Total ... (B)	4,71,500
Excess of Loss Over Savings ... (B) – (A)	57,500

In a nutshell, considering the above analysis, we can conclude that the decision of discontinuing Division C will not be beneficial the Rabi Ltd., and it should review its decision on the basis of a relevant cost approach to reach the right decision.

2.5 Special Order Decisions⁷

Special order decisions focus on whether a specially priced order should be accepted or rejected. These orders can often be attractive, especially when the firm is *operating below its maximum productive capacity*.

Price discrimination laws require that firms sell identical products at the *same price to competing customers* in the same market. This law does not apply to

- Noncompeting customers from the same market.
- Potential customers in markets not ordinarily served.

Special order decisions are based on incremental analysis. Incremental analysis enables managers to put emphasis on the *relevant areas of a decision*.

- Incremental revenues are the additional revenues generated from accepting the special order. Revenue can result from additional sales of products or from providing services.

If the company is operating at less than capacity, the revenue of regular customers will not be affected.

If the company is operating at capacity, it will have to give up some regular sales in order to provide the special order.

- Incremental costs are the additional costs incurred from accepting a special order. Variable operating costs include special packing, commissions, and shipping costs.

Most often, a firm's recurring fixed costs will remain the same in total if a special order is accepted.

Occasionally, the acceptance of a special order may cause additional fixed costs, such as special purpose tool and inspection cost. In these cases, these additional fixed costs are relevant and should be considered in an incremental analysis.

⁷ Managerial Accounting: The Cornerstone of Business Decision-Making By Maryanne M. Mowen, Don R. Hansen, Dan L. Heitger; <http://www.unf.edu/>



Decision - Accept or Reject?

- If *incremental revenue* < *incremental cost*, reject the special order, unless qualitative characteristics fiercely impact the decision.
- If *incremental revenue* = *incremental cost*, qualitative effects must be used to make the decision.
- If *incremental revenue* > *incremental cost*, accept the order, unless qualitative characteristics fiercely impact the decision.



Concept Insight

Dangers of Concentrating Excessively on a Short-Run Time Horizon⁸

All of the costs and revenues are relevant to the decision because some of the costs that were fixed in the short term could be changed in the longer term. Therefore, whether or not a cost is relevant often depends on the time horizon under consideration. Thus, it is vital that the information presented for decision-making relates to appropriate time horizon. If inappropriate time horizons are selected, there is a risk that misleading information will be presented. Our aim should always be to maximize long-term net cash inflows.

Utilizing the idle capacity to increase the range of products produced will make the production process more complex, and consequently, the fixed costs of handling the additional complexity will ultimately increase.

Long-term considerations should therefore always be taken into account when special pricing decisions are being evaluated. In particular, there is a danger that a series of special orders will be evaluated independently as short-term decisions. Consequently, those resources that cannot be adjusted in the short term will be treated as irrelevant for each decision. However, the effect of accepting a series of successive special orders over several periods constitutes a long-term decision. If special orders are always evaluated as short-term decisions, a situation can arise whereby the decision to reduce capacity is continually deferred.

If demand from normal business is considered to be permanently insufficient to utilize existing capacity, then a long-term capacity decision is required. This decision should be based on a comparison of the relevant revenues and costs arising from using the excess capacity for special orders with the capacity costs that can be eliminated if the capacity is reduced.

Illustration 8

BNZ Ltd. is engaged in the manufacture of plastic bottles of a standard size and produced by a joint process of machines. The factory has 5 machines and is capable of producing 40 bottles per hour. The variable cost per bottle is ₹ 0.32 and the selling price is ₹ 0.80 each. The company has received an offer from another company for the manufacture of 40,000 units of a plastic moulded toy. The price per toy is ₹ 30 and the variable cost is ₹ 24 each. In case of the company takes up the job, it has to meet the expenses of making a special mould required for the manufacture of the toy. The

⁸ Management Accounting for Business By Colin Drury

cost of the mould is ₹ 1,00,000. The company's time study analysis shows that the machines can produce only 16 toys per hour. The company has a total capacity of 10,000 hours during the period in which the toy is required to be manufactured. The fixed costs excluding the cost of construction of the mould during the period will be ₹ 10 Lakh. The company has an order for the supply of 3,00,000 bottles during the period.

Required

- (i) Do you ADVISE the company to take up the order for manufacturing plastic moulded toys during the time when it has an order in its book for the supply of 3,00,000 bottles.
- (ii) If the order for the supply of bottles increases to 4,00,000 bottles, will you ADVISE the company to accept the order for the supply of plastic moulded toys? State the reasons.
- (iii) An associate company of BNZ Ltd. has idle capacity and is willing to take up the whole or part of the manufacturing of the plastic moulded toys on sub-contracting basis. The subcontract price inclusive of the cost of construction of mould is ₹ 28 per toy. DETERMINE the minimum expected excess machine hour capacity needed to justify producing any portion of the toy order by the company itself rather than subcontracting.

Solution

Workings

Statement Showing "Contribution / Machine Hour"

	'Bottle'	'Toy'
Demand (units)	3,00,000	40,000
Sales (₹/u)	0.80	30.00
Less: Variable Cost (₹/u)	0.32	24.00
Less: Specific Fixed Cost (₹/u)	---	2.50
Contribution (₹/u)	0.48	3.50
Machine Hours Required per unit	0.025	0.0625
Contribution / Machine Hour	19.20	56.00

Advice on the Supply of 3,00,000/ 4,00,000 Bottles

- (i) BNZ Ltd. can accept a plastic moulded toy's order as a sufficient number of hrs., i.e., 2,500 hrs. (10,000 hrs. - 3,00,000 bottles × 0.025 hrs.) are available and would be able to generate an additional benefit of ₹3.50 per unit on 40,000 units of toys, i.e., ₹1,40,000.
- (ii) If the order for the supply of bottles increases to 4,00,000 bottles, then 2,500 more hrs. will be required to produce the additional bottles. BNZ Ltd. has to decide whether to utilize 2,500 hrs. for existing bottle order or for toy Order.

Machine time is a limiting factor. Therefore, the contribution per machine hour from both activities (i.e., bottles and toys) should be calculated to decide whether the order should be accepted. Contribution per hour is more in the case of toys (refer to workings). Therefore, BNZ Ltd. should utilize the remaining 2,500 hours for manufacturing toys rather than to fulfil the order for the supply of additional bottles.

Prioritizing production based on contribution per machine hour would maximize profits. *However, existing order fulfilment is necessary for building a long term and sustainable customer relationship.* Developing and maintaining long term and close relationships with profitable customers provides valuable benefits to the company. As the relationships between the company and customers grow, a customer who is satisfied with the company's products and services tends to commit to the relationship and buy more over time. *The cost of keeping existing customers is less expensive than the cost of acquiring new ones.*

Hence, BNZ Ltd. should take into consideration long term supplier relations before accepting the toy order based on financial consideration, as the contribution per hour is higher in the case of toys. Further, the company may also explore outsourcing opportunities for the production of toys.

- (iii) Minimum number of toys needed to be manufactured to justify the increase in fixed cost of ₹1,00,000 to make the mould is 25,000 toys {1,00,000/ (₹28 - ₹24)}. Thus, as long as the company has excess capacity available to manufacture more than 25,000 toys, it is cheaper to produce than to buy from a subcontractor.

$$\text{Minimum Expected Excess Capacity hours to justify} = \left(\frac{25,000 \text{ toys}}{16 \text{ toys}} \right) = 1,562.5 \text{ or } 1,563 \text{ hrs.}$$

2.6 Product Mix Decision

Many times, the management has to decide whether to produce one product or another. Generally, decision is made on the basis of the contribution of each product. Other things being the same, the product that yields the highest contribution is the best one to produce. But if there is a shortage or limited supply of certain other resources, which may act as a key factor, like, for example, machine hours, then the *contribution is linked to such a key factor for taking a decision.* For example, in an undertaking, the availability of machine capacity is limited, and the machine hours required for one unit of the two products are different. In such cases, the contribution is to be linked with the machine hour, and the product that yields the highest contribution per machine hour is to be preferred for making decision.

Illustration 9

A company manufactures two products. Each product passes through two departments A and B before it becomes a finished product. The data for the year are as under:

	Product X	Product Y
Maximum Sales Potential (in units)	7,400	10,000
Product unit data:		
Selling Price p.u.	₹ 90	₹ 80
Machine hrs. p.u.		
Department A hrs. @ ₹ 40/ hr.	0.50	0.30
Department B hrs. @ ₹ 60/ hr.	0.40	0.45

Maximum Capacity of Department A is 3,400 hrs. and Department B is 3,640 hrs.

Maximum Quantity of Direct Materials available is 17,000 kgs. Each product requires 2 kg. of Direct Materials. The Purchase Price of direct materials is ₹ 5/ kg.

Required

- (i) FIND the optimum product mix.
- (ii) In view of the aforesaid production capacity constraints, the company has decided to produce only one of the two products during the year. Which of the two products should be produced and sold during the year to maximise profit? FIND the number of units of that product and the relevant contribution.

Solution

(i) Calculation of the Optimum Production Mix

Statement Showing Limiting Factor

Particulars	Material	Hours in Department A	Hours in Department B
Required: X	14,800 kg.	3,700 hrs.	2,960 hrs.
Required: Y	20,000 kg.	3,000 hrs.	4,500 hrs.
Total Requirement	34,800 kg.	6,700 hrs.	7,460 hrs.
Available Resources	17,000 kg.	3,400 hrs.	3,640 hrs.
Shortage	17,800 kg.	3,300 hrs.	3,820 hrs.

Hence, all three resources are limiting factors.

Statement of Rank

Particulars	Product X	Product Y
Sales	90	80
Less: Direct Material	10	10
Dept. A	20	12
Dept. B	24	27
Contribution p.u.	36	31
Contribution per kg. of Raw Material	18	15.5
Rank	I	II
Contribution /hr. of Dept. A	72	103.33
Rank	II	I
Contribution /hr. of Dept. B	90	68.89
Rank	I	II

To find the optimum mix of products that will lead to maximum profits while taking into consideration a shortage of resources (i.e., constraints), we have to use **Linear Programming**.

Let x_1 and x_2 denote quantities of product 'x' and product 'y' respectively.

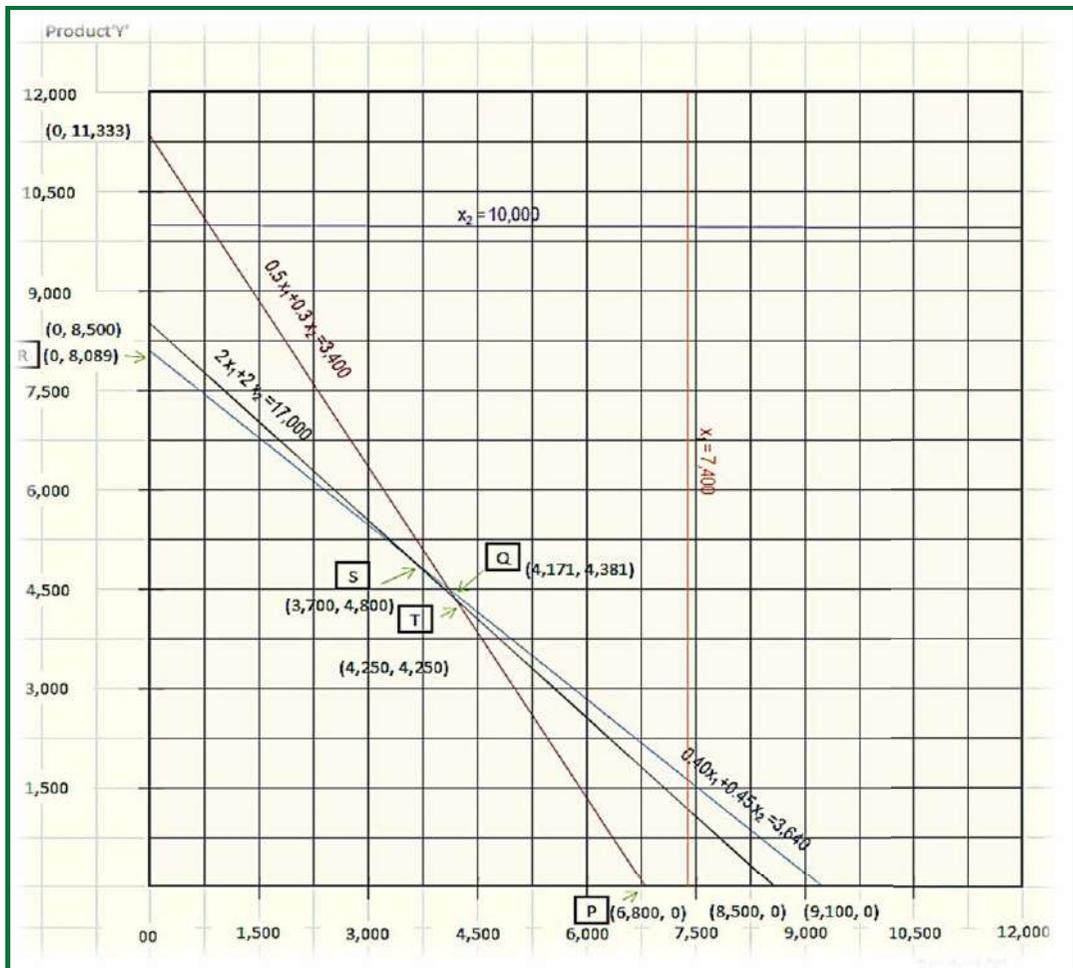
The linear programming model for the given problem is:

$$Z_{\max} = 36x_1 + 31x_2$$

Subject to:

$2x_1 + 2x_2 \leq 17,000$...(for material)
$0.5x_1 + 0.3x_2 \leq 3,400$...(for dept. A)
$0.4x_1 + 0.45x_2 \leq 3,640$...(for dept. B)
$x_1 \leq 7,400$...(demand constraint)
$x_2 \leq 10,000$...(demand constraint)

The graphical solution for the problem is given below:



So, different combinations of the product mix include,

Combination	x_1	x_2	Total Contribution (in ₹)	Rank
P	6,800	0	2,44,800	IV
Q*	4,171	4,381	2,85,967	-
R	0	8,089	2,50,759	III
S	3,700	4,800	2,82,000	II
T	4,250	4,250	2,84,750	I

Note (*)

Combination Q (4,171, 4,381) is not possible as it is satisfying three conditions out of the above four conditions. To produce combination Q (4,171, 4,381), the requirement of the material will be 17,104 Kgs. (2 Kg. \times 4,171 units + 2 Kg. \times 4,381 units). However, material is available for 17,000 Kgs. Accordingly, this combination is not possible.

Therefore, the optimum product mix = X 4,250 units and Y 4,250 units.

(ii) Statement Showing Product with Higher Contribution

Product	Maximum Demand (a)	Maximum Production by Dept. A (b)	Maximum Production by Dept. B (c)	Maximum Production with available materials (d)	Feasible Maximum Production (lower of a, b, c and d)	Contribution (₹)
X	7,400	6,800	9,100	8,500	6,800	2,44,800
Y	10,000	11,333	8,089	8,500	8,089	2,50,759

Therefore, Product Y should be produced at 8,089 units, resulting in a contribution of ₹2,50,759.



C. PRICING POLICY

Revenue is a function of price; hence, to manage revenue strategically, pricing decisions and strategies shall be set in alignment with pricing policy, which must entail the principles that are capable of attaining corporate objectives and vision.

Pricing Decisions and Pricing Strategies are an extended subset of Pricing Policy.



Concept Insight

Policy vs. Strategy

Strategy is a plan of action, while policy is a principle of action. First, we formulate a policy, which is the set of principles or protocols to guide decisions; next, we make a strategy, and finally, a detailed plan to achieve the strategy.

The pricing policy plays an important role in a business because the long-term survival of a business depends upon the firm's ability to increase sales and derive the maximum profit from existing and new capital investment. Although cost is an important aspect of pricing, consumer demand and the competitive environment are frequently far more significant in pricing decisions. These are also known as determinants of pricing or market power. Thus, costs alone do not determine price. Cost is only one of the many complex factors which determine prices. There must, however, be some margin in prices over the total cost of capital to be unimpaired and production maximised by the utilisation of internal surplus. The pricing policy and the relative price structure should:

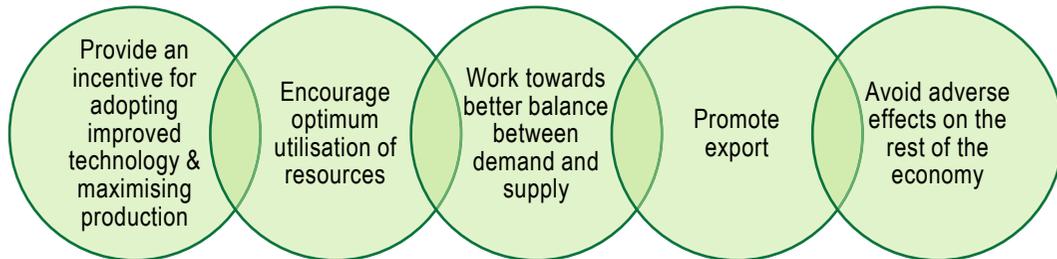


Figure C.1 – Pricing Policy and Relative Price Structure

In this section of the chapter, we will first focus on pricing decisions, then move on to pricing strategies.



D. PRICING DECISIONS

“A pricing decision is one of the most crucial & difficult decision that a firm has to make. Such a decision affects the long- term survival of any profit-oriented enterprise.”

Accounting information is often an important input to pricing decisions. Most firms need to make decisions about setting or accepting selling prices for their products or services. In some firms, the selling price is derived directly from cost information by estimating the future product's cost and adding a suitable profit margin. In others, an established market price is accepted.

Generally, pricing decisions are influenced by the pricing policy followed by an organisation. Pricing policies are made by taking the overall objectives of an organisation into account. Thus, before fixing the price of a product, the objectives of the organisation must be understood first to achieve the organisation's goal. The objective of an organisation may be either to maximise the profit, maximise the sales, maximise the output, or optimize the utilisation of resources, etc.



Concept Insight

Pricing Decisions from the lens of the Marketing Mix

Pricing is the only element of a marketing mix that generates revenue, and it is the most important determinant of the profitability of a business by way of sales volume. It is the profitability of a business by way of sales volume. It is competition that contributes the maximum to the importance of pricing. Customers compare the prices of various products to decide which brand to purchase.

1. Factors Influencing Pricing Decisions

There can be two sets of factors (internal and external, based on the organizational boundary) influencing the pricing decisions of business organisation regarding its products. These factors can be economic, psychological, quantitative, and qualitative in nature.

Internal Factors – It is related to the task environment of the firm, it includes –

- Corporate objectives of the firm.
- Image sought by the firm through pricing.
- Price elasticity of demand for the product.
- Cost of manufacturing and marketing.
- Stage of the product in its life cycle.
- Intensity of competition.
- The characteristics (functions and dimensions) of the product.
- Volume of production and economics of scale.

External Factors – It is related to the macro-economics of the firm, it includes –

- Market composition.
- Buyer's attitude towards the product.
- Bargaining power of buyers.
- Competitor's pricing policy.
- General state of economy.
- Government controls and regulations.
- Societal considerations.

For making pricing decisions at the tactical level in light of pricing policy, understanding the theory and principles of product pricing is essential.



E. PRODUCT PRICING THEORY & PRINCIPLES

1. Pricing Theory

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

Thus, the basic assumption of the pricing theory is that the firm's main objective is to maximise its profits. It also assumes that the firm takes into consideration the position of demand and cost functions and that the firm produces one product.

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

$$TR = mx.$$

Where,

TR = Total revenue line

m = quantity of units sold

x = price per unit.

In most market situations, however, additional units can be sold by reducing the price. This means that although the total sales revenue will increase as more and more units are sold, the increase in total revenue will decline gradually as sales increase. Consider the following example:

Example

A firm's pricing for a product is as under:

20 units @ ₹4.00 per unit.

21 units @ ₹3.90 per unit.

22 units @ ₹3.80 per unit.

The sales figures can be summarised as under:

Quantity	Price (₹)	Total Sales Revenue (₹)	Addition to Total Revenue (₹)
20	4.00	80.00	—
21	3.90	81.90	1.90
22	3.80	83.60	1.70

The reduction in the price of each additional unit reflects a gradual reduction in the steepness of the total revenue curve, as shown in the figure. The total cost curve will, however, register an increase in steepness because as the volume increases, the cost also increases because of the difficulty of expanding output with a given productive resource.

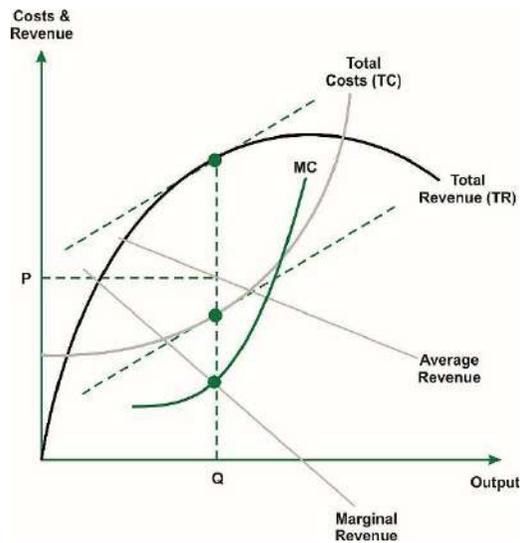


Figure E.1 – Optimum Volume

At point Q, the gap between the total cost line and total revenue is the maximum; thus, Q is the point of optimum volume. Any attempt to increase the volume beyond this point will reduce the profit because the incremental cost will be more than the incremental revenue.

These relations are expressed in terms of marginal revenue and marginal cost. Marginal revenue is the increase in total revenue that results from the sale of one additional unit. In the example given above, the marginal revenue of increasing one unit from 20 units to 21 units is ₹1.90. Marginal cost is the increase in total cost that results from the production of one additional unit.

2. Profit Maximisation Model

Pricing model is a mathematical model which uses the economic theory of pricing.

- (i) As per the economic theory of pricing, Profit is Maximum at a *level of output* where Marginal Revenue (MR) is equal to Marginal Cost (MC), i.e.,

$$\text{Marginal Revenue (MR) = Marginal Cost (MC)}$$

This model determines the level of production up to which production can be continued.

- (ii) The Basic Price equation, which is used to determine the Price where Profit is Maximum. The equation is written as:

$$P = a - bQ$$

Where, P = Price

b = Slope of the Demand Curve, Calculated as $\left[b = \frac{\text{Change in Price}}{\text{Change in Quantity}} \right]$

Q = Quantity Demanded

a = Price at Which Demand is Zero

- (iii) The Marginal Revenue equation is written as

$$\text{Marginal Revenue (MR) = } P = a - 2bQ$$

Example

Aditya Heavy Engineering Ltd. (AHEL) produces its only product, A₇. To manufacture a unit of A₇, variable cost of ₹2,20,000 is incurred. Market research has indicated that at a selling price of ₹ 5,10,000 no order will be received, but the demand for A₇ will be increased by two units with every ₹5,000 reduction in the unit selling price below ₹5,10,000.

To determine the unit selling price for A₇ that will maximize the profit of AHEL. We assume that:

Selling Price per unit of A₇ is 'P', and the Quantity Demanded is 'Q'

The Marginal Cost of a unit of A₇ is ₹2,20,000

Price Equation for 'A₇'

$$P = a - bQ$$

$$P = 5,10,000 - (5,000 / 2) \times Q$$

$$\begin{aligned} \text{Revenue (R)} &= Q \times [5,10,000 - 2,500 \times Q] \\ &= 5,10,000 Q - 2,500 Q^2 \end{aligned}$$

$$\begin{aligned} \text{Marginal Revenue (MR)} &= a - 2bQ \\ &= 5,10,000 - 2 \times (5,000 / 2) \times Q \\ &= 5,10,000 - 5,000 Q \end{aligned}$$

$$\text{Marginal Cost (MC)} = 2,20,000$$

Profit is Maximum where Marginal Revenue (MR) equals to Marginal Cost (MC)

$$5,10,000 - 5,000 Q = 2,20,000$$

$$Q = 58 \text{ units}$$

By Putting the Value of 'Q' in Price Equation, Value of 'P' is Obtained

$$\begin{aligned} P &= 5,10,000 - (5,000 / 2) \times Q \\ &= 5,10,000 - 2,500 \times 58 \text{ units} \\ &= 3,65,000 \end{aligned}$$

At Selling Price of ₹3,65,000 AHEL's Profit will be Maximum.

3. Pricing Under Different Market Structure

The determination of the optimal price can be considered under the following market structures:

3.1 Perfect Competition

In a perfect competitive market, there are **large numbers of sellers** selling a **homogeneous product** using identical production processes, and all of them **have perfect information** about the market and price. A perfect market allows the **free entry and exit** of firms into and out of industry.

Under this type of market, a firm has no pricing policy of its own as the **sellers are price takers** (i.e., they have to accept the price determined by the market) and sell as much as they are capable of selling at the prevailing market price. Since each firm produces and sells a homogeneous product, it cannot increase its price beyond the market price. If it does so, then it has to lose all of its market demand to the competitors.

There is no control over the market price, which will equate the quantities available with the quantities that buyers are willing to buy. The firm has to take a decision in favour of the quantity to sell. The firm can continue to produce as long as its marginal cost is less than or equal to its selling price. Up to the point at which the marginal cost is equal to the price, an increase in output will add to revenue, and thereafter, the increase will add to cost. It can be seen in the following example.

Example

Aditya LLP produces product X, the market for product X is competitive, and the prevailing market price for a unit of product X is ₹40. The following table presents the marginal cost and profit for the product X:

Units	Total Revenue (₹)	Total Cost (₹)	Marginal Cost (₹)	Profit (₹)
0	0	20	-	(20)
1	40	30	10	10
2	80	50	20	30
3	120	85	35	35
4	160	125	40	35
5	200	170	45	30
6	240	217	47	23

The marginal cost for producing 4th unit is equal to the price per unit. Thus, Aditya LLP can maximize its profit at the 4th unit level.

3.2 Monopoly

Monopoly is a market condition where there is only **one supplier** or producer of a **homogeneous product** for which there is **no close substitute** but has **many buyers**. Under the monopoly, **a firm is a price setter**, i.e., it can fix any price, but here also, the pricing is done taking the elasticity of demand for the product into consideration. That means though the seller/ producer can fix any price, but it will go for the price where demand for the product and consequent profit will be maximum.

3.3 Monopolistic Competition

A monopolistically competitive market is one in which there are **a large number of firms producing similar but not identical products**. Since there is a limit to the growth of competitors, the excess profits earned by monopolistic situation attract new competition. This will have a long-run effect on the excess profits, which will tend to diminish because of the price competition with close substitutes. The company will, however, have to compare marginal cost and marginal revenue in maximising its profits.

Under monopolistic conditions, consumers may buy more at a lower price than at a higher price. The profit can be maximised by equating marginal revenue with marginal cost.

3.4 Oligopoly

A market structure where there are **few firms** producing or selling **homogenous or identical products**. In this type of market structure, the firms are aware of the mutual interdependence of investment, production process, advertising, and sales plan of their rival firms. Hence, any change in any variable by a firm is likely to have an equal reaction on the part of other competing firms. It is therefore clear that the oligopolistic firm, *while determining the price for its product, should consider not only the demand for the product but also the reactions of the other firms in the industry to any action or decision it may take.*

If a firm does not follow or adapt its pricing policy in consonance with its competitors, the shift in sales will be sensitive. That means demand will shift towards the lower price. Thus, each firm will study the potential reaction before increasing or decreasing the selling price. The firms in an oligopolistic market maintain the price of the product either by close analysis of each other's behavior or by means of cooperation and collusion.



Concept Insight

Pricing Strategies of Oligopolies

- Predatory Pricing: Keeping price artificially low, often below the full cost of production.
- They may also operate a Limit-Pricing Strategy to discourage entrants, which is also called entry forestalling price.
- Oligopolists may collude with rivals and raise price together, but this may attract new entrants.
- Cost-Plus Pricing: A straightforward pricing method, where a firm sets a price by calculating average production costs and then adding a fixed mark-up to achieve a desired profit level. There are different versions of cost-plus pricing, including full cost pricing, where all costs - that is, fixed and variable costs - are calculated, plus a mark-up for profits, and contribution pricing, where only variable costs are calculated with precision and the mark-up is a contribution to both fixed costs and profits.



Concept Insight

Non-Price Strategies

Non-price competition is the preferred strategy for oligopolists because price competition can lead to destructive price wars. Examples include:

- Trying to improve Quality & After Sales Servicing, such as by offering extended guarantees.
- Spending on Advertising, Sponsorship, and Product Placement.
- Sales Promotion, such as buy-one-get-one-free, is associated with large supermarkets, which is a highly oligopolistic market, dominated by three or four large chains.
- Loyalty Schemes, which are common in the supermarket sector, such as Reliance's *One Card*.

4. Principles of Product Pricing

As already stated, cost should not be considered an important determinant of price. The tendency should be to lower the price in such a way as to choose the right combination of price and output to maximise profits. The important determinants of price, therefore, are competitive situations prevailing in the market and elasticities.

Taking the standard products into consideration, the pricing principles are much the same whether the product is a new one or one already well-established in the market. Both of these will be discussed in detail in the upcoming section of this chapter. However, the environmental situation and information base are different.

To arrive at the right price, keep the following important points in mind:

4.1 Price Customization

Pricing of a product is some time customised keeping taste, preference, and perceived value of a consumer into consideration. Price customisation is done in various ways:

- *Based on product line:* Based on the requirements of the consumers products can be customized and prices accordingly. For example, some may prefer to have a smartphone with 16 GB over 32 GB. In this case, pricing for the product can be based on memory specification.
- *Based on customers' past behaviour:* A customer with a good payment record may be given more discounts than the others.
- *Based on demographics:* Different pricing may be adopted based on age or social status. For example, railway fare concession for senior citizens and concessional price tickets for military personnel.
- *Based on time differential:* Pricing for a product or service is also done based on time differential, i.e., different price for different time period. For example, a discounted price for data usage provided by a broadband service provider if a subscription is paid for six months at a time.

Apart from the above pricing principles, other macro-economic and legal factors should also be given due importance while chalking out pricing strategies.

4.2 Price Sensitivity

It measures the customer's behaviour in relation to the change in price of a product. Nagle⁹ has identified nine factors that contribute to price sensitivity. These factors are:

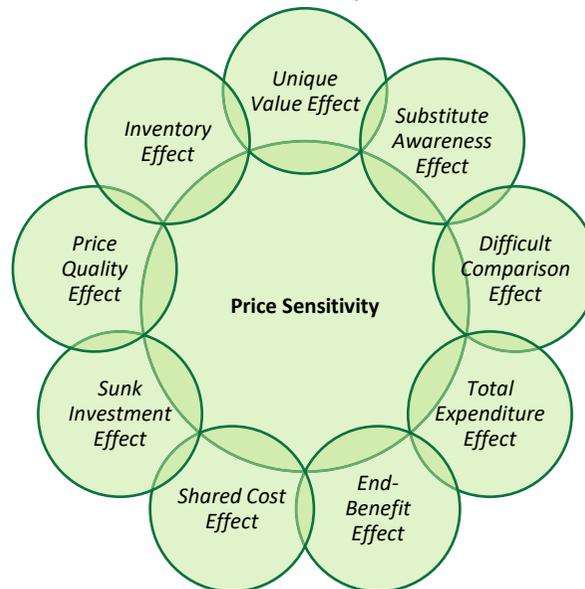


Figure E.2 – Nine factors that contribute to Price Sensitivity

⁹ The Strategy and Tactics of Pricing, Thomas Nagle

- *Unique Value Effect*- More unique the product, lower is the price sensitivity.
- *Substitute Awareness Effect*- If the buyers are aware of substitutes and these perform the same function, then the buyer's price sensitivity will be high.
- *Difficult Comparison Effect*- Price sensitivity will be low if the buyer has difficulty comparing two alternatives.
- *Total Expenditure Effect*- If expenditure on the product represents a low proportion of consumer income, the price sensitivity will be less visible for such a product.
- *End- Benefit Effect*- Buyers are less price sensitive where the expenditure on the product is low compared to the total cost of the end product.
- *Shared Cost Effect*- If the cost of the product is shared by another party, the buyer will be less susceptible to price sensitivity.
- *Sunk Investment Effect*- Price sensitivity is low in products that are used along with assets previously bought.
- *Price Quality Effect*- Higher the perceived quality of the product, lower the price sensitivity.
- *Inventory Effect*- If the product cannot be stored, the buyer will be less price sensitive.

Note: Price sensitivity tracks both the nature of products and buyer's behavior to determine prices.

One of the methods most commonly used for measuring price sensitivity is **controlled experimentation**. In this method, customers are offered different brands at different prices, and customers' responses are obtained. Then the company's brand prices are changed, and the customer's response at each price level is recorded. The price at which demand for the product starts declining is the level where price sensitivity begins, and based on the response level, sensitivity can be measured. It depends on the nature of the product and buyer characteristics.

5. Structured Approach to Pricing Decisions (steps)

The steps involved in pricing procedures are –

Step 1 – Setting the pricing objectives in light of the marketing objectives (marketing mix), organisational objectives and vision.

Step 2 – Determining the demand elasticity for price and estimating the total demand in the market.

Step 3 – Estimating the costs of manufacturing and marketing.

Step 4 – Assess the customer's demand.

Step 5 – Analyse the competitor's cost, prices, and offers.

Step 6 – Selecting a pricing method, keeping in mind the market shares, price image for the brand, types of customer segments, and the life cycle of the product.

Step 7 – Selecting the final price.

Step 8 – Periodical review of sales as well as adjusting prices to meet demand.

Withey and Lancaster¹⁰ suggests the following logical and acceptable way of structuring the process:

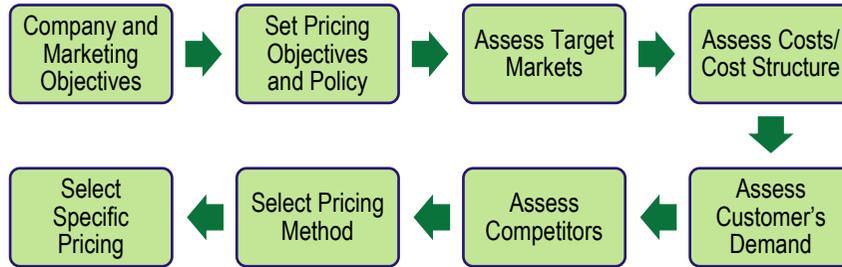


Figure E.3 – Structured Approach



Concept Insight for Pricing Objectives

The company first decides where it wants to position its market offering; the clearer a firm's objectives, the easier it is to set a price. Every business, while setting the price of its products, wants to achieve one or more of these objectives (some of which are mutually exclusive, while others are simultaneous).

- Maximum Current Profit
- Maximum Long-term Profit
- Companies Survival
- Maximum Market Penetration
- Maximum Skimming
- Product Quality Leadership



F. PRICING

Aspects involved in pricing a service are different from pricing a product (an article with a physical substance); even the pricing of a newly developed product or an existing product that is launched in a new market has differences from pricing an exactly established product (finished product). This section will consider pricing in case of newly developed products, existing finished goods, and services apart from pricing in case of emerging business models.

1. Pricing of New Products

The pricing of new products poses a bigger problem because of the uncertainty involved in the estimation of their demand. In order to overcome this difficulty, experimental sales are conducted in different markets using different prices to see which price is suitable. A company may, for example, choose three different markets and by using the same number of sales promotional activities, ascertain what the right price is. In such circumstances, it may even prove that the highest price yielding the largest unit contributory margin need not necessarily maximise the profits. A lower price may well maximise the profits. But at the same time, if a product is priced very low to attract more demand, it may be difficult in the future to raise the price as it may not be acceptable to consumers. So, the pricing of a new product is a very critical issue which should be decided after a thorough market study and consumer behavior analysis.

¹⁰ CIM Course book 06/07 Marketing Fundamentals by Frank Withey, Geoff Lancaster



Concept Insight

A new product is analysed into three categories for the purpose of pricing:

Revolutionary Product: A product is said to be revolutionary when it is new for the market and has the potential to create its own value. This type of product has a revolutionary impact on the market and consumer behaviour. It replaces the existing method or technology, and the approach to doing a work is quite different and unique. These products enjoy the benefit of product differentials and have the potential of being market leader.

A Revolutionary product may enjoy the premium price as a reward for its innovation and taking the first initiative.

Evolutionary Product: A product that introduces an upgraded version with a few additional characteristics of the product is known as an evolutionary product.

The evolutionary products may be priced taking cost-benefit, competitor, and demand for the product into account.

Me-too Product: A product is said to be a me-too product when its emergence is a result of the success of a revolutionary product. These types of products are very similar (in ordinary language imitation) to the revolutionary and/ or evolutionary products of other firms. The firm, while producing me-too products, generally follows the similar production process and technology that are used by other firms. These are known as market followers.

The me-too products are price takers as the price is determined by the market, mainly by competitive forces.

New Product Pricing Situations¹¹



Figure F.1 – New Product Pricing Situations

¹¹ The Price Advantage By Michael V. Marn, Eric V. Roegner, Craig C. Zawada

Independent Situations

Situation	RP/EP/MP	Pricing
An adjustable worktable, like a stool, has been successfully capturing the market. Company X makes a small variant of this product and is trying to enter the market.	Me-too Product (MP)	Market Price that is determined by competitive forces for a successful product.
R & D has just been completed on an innovative computer processor in the shape of a pen, with accompanying pen-like devices to act as keyboard projector and monitor projector. This is expected to get the laptops out of business due to the extreme ease of portability of just 3 pen-like light weight devices.	Revolutionary Product (RP)	Premium Pricing , it can expect to make a tidy profit as a reward for innovation and taking its first initiative.
A successful mobile manufacturing company has built into its latest mobile phone, an additional sliding screen and improved its processor capabilities so that the phone is almost a laptop.	Evolutionary Product (EP)	Demand Based Pricing , Price higher than the earlier version to justify its Costs and Benefits, subject to what amount can be stepped up in the market.

While preparing to enter the market with a new product, management must decide whether to adopt a skimming or penetration pricing strategy.

1.1 Skimming Pricing

It is a policy of high prices during the early period of a product's existence. This can be synchronised with high promotional expenditure, and in later years, the prices can be gradually reduced. The reasons for following such a policy are :

- (i) The demand is likely to be inelastic in the earlier stages until the product is established in the market.
- (ii) The charge of high price in the initial periods serves to skim the cream of the market, which is relatively insensitive to price. The gradual reduction in price in later years will tend to increase sales.
- (iii) This method is preferred in the beginning because, in the initial periods when the demand for the product is not known, the price covers the initial cost of production.
- (iv) High initial capital outlays needed for manufacture result in a high cost of production. Added to this, the manufacturer has to incur huge promotional activities, resulting in increased costs. High initial prices will be able to finance the cost of production, particularly when uncertainties block the usual sources of capital.

1.2 Penetration Pricing

This policy is in favour of using a low price as the principal instrument for penetrating mass markets early. It is the opposite of skimming price. The low-price policy is introduced for the sake of long-term survival and profitability, and hence it has to receive careful consideration before implementation. It needs an analysis of the scope for market expansion, and hence a considerable amount of research and forecasting are necessary before determining the price.

Penetrating pricing means pricing suitable for penetrating the mass market as quickly as possible through lower price offers. This method is also used for pricing a new product. In order to popularise a new product, penetrating pricing policy is initially used. The company may not earn profit by resorting to this policy during the initial stage. Later on, the price may be increased as and when demand picks up. Penetrating pricing policy can also be adopted at any stage of the product life cycle for products whose market is approached with a low initial price. The use of this policy by existing concerns will discourage new concerns from entering the market.

We must distinguish penetration pricing from *Predatory Pricing*. Predatory Pricing (loss leading) is the practice of selling a product or service at a very low price, intending to drive competitors out of the market or create barriers to entry for potential new competitors.

The three circumstances in which a penetrating pricing policy can be adopted are as under:

- (i) When demand for the product is elastic to price. In other words, the demand for the product increases when the price is low.
- (ii) When there are substantial savings on large scale production. Here, the increase in demand is sustained by the adoption of low pricing policy.
- (iii) When there is a threat of competition. The prices fixed at a low-level act as an entry barrier for prospective competitors.

Independent Situations

Situation	Appropriate Pricing Policy
'A' is a new product for the company and the market and is meant for large scale production and long-term survival in the market. Demand is expected to be elastic.	Penetration Pricing
'B' is a new product for the company, but not for the market. B's success is crucial for the company's survival in the long term.	Market Price or Price Just Below the Market Price
'C' is a new product to the company and the market. It has an inelastic market. There needs to be an assured profit to cover the high initial costs, and the unusual sources of capital have uncertainties blocking them.	Skimming Pricing
'D' is a perishable item, with more than 80% of its shelf life over.	Any Cash Realizable Value*

(*) This amount is decreasing with each passing day.



Practical Insight¹²

Samsung has reached unbelievable heights with its smartphones, which helped the brand to become a symbol of quality and reliability for its consumers. Smartphones of Samsung are leading the market with Apple's iPhone. As Apple, Samsung also uses *skimming price* to gain the upper hand over their competitors. For instance, Galaxy S6 and S6 Edge were the new products of Samsung, claiming that they were the most beautiful smartphones ever created. S6 Edge (64 GB) that costs 1,180\$ was smoothly sold around the globe.

¹² <http://inevitablesteps.com/marketing/samsung-marketing-strategy/>

2. Pricing Methods for Existing Finished Products

Costs, Demand, and Competition define different pricing methods that a firm may adopt. Let us understand these methods:

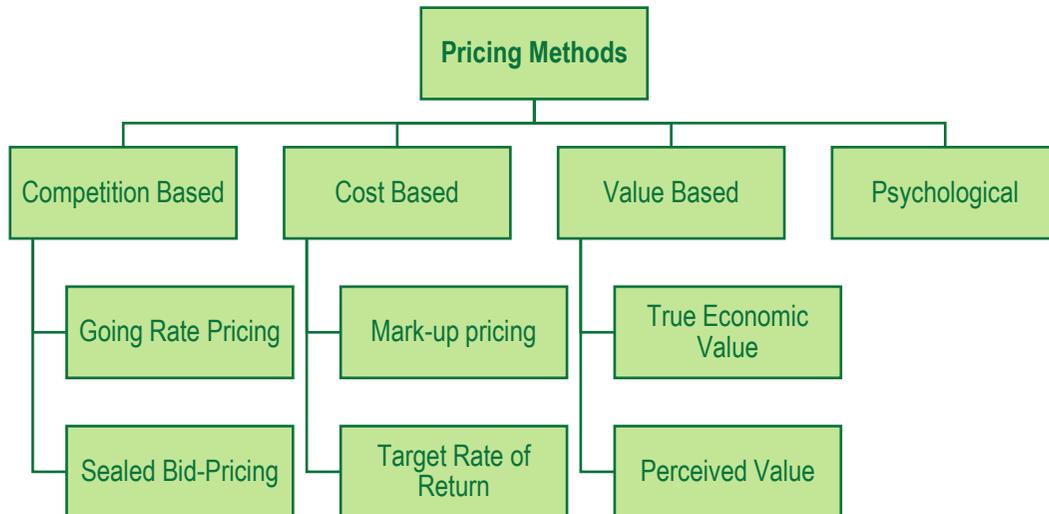


Figure F.2 – Pricing Methods for Existing Finished Products

2.1 Cost-Based Pricing Method

In many businesses, the common method of price determination is to estimate the *cost of a product* and *fix a margin of profit*. The term 'cost' here means **Full Cost** at current output and wages level since these are regarded as most relevant in price determination. If a firm wants to survive and stay in business, it has to maintain its fixed capital intact so that its fixed assets may be replaced at the end of their useful working life out of the funds generated from profits retained in the business. In a period of relatively stable price levels, depreciation based on the historical cost of fixed assets would perhaps be adequate for achieving this objective. In periods when the price level is continuously changing, the firm may not be left with adequate funds generated out of accumulated depreciation at the end of the life of the plant to replace the plant at a higher price. Hence, depreciation should be properly included as a part of the cost so as to leave sufficient profits for asset replacement.

Pricing based on total costs is subject to two limitations. They are:

- The allocation of inter-departmental overheads is based on an *arbitrary basis* and
- The allocation of overheads will require an estimation of normal output, which often cannot be done precisely.

To avoid these complications, **Variable Costs**, which are considered as relevant costs, are used for pricing by *adding a markup* (to include fixed cost allocation as well).

2.1.1 Mark-up pricing – It is the most elementary pricing method. It is made by adding a standard mark-up to the production cost (variable cost mostly).

$$\text{Price} = \text{Cost} + \text{Mark-up}$$

This method is applicable where costs are known, but demand can't be known accurately.

2.1.2 Target Rate of return – Instead of arbitrarily adding a percentage of cost for profit, the firm determines an *average mark-up* on cost necessary to produce a *desired Rate of Return on Investment*. The rate of return to be earned by the firm or industry must depend on the *risk involved*.

$$\text{Price} = \text{Unit Cost} + [(\text{Desired Rate of Return} * \text{Invested Capital})/\text{Number of unit sales}]$$

This method is applicable only when the firm has estimated its unit costs and estimated sales and demand are accurately known. It is more rational to use arbitrarily mark-up.

Cost based pricing is generally suitable when a firm operates in a less competitive environment or deals in products that are customized based on the requirements of the customer.

Illustration 10

Bosch Ltd. has developed a special product. Details are as follows: The product will have a life cycle of 5,000 units. It is estimated that the market can absorb the first 4,500 units at ₹ 64 per unit, and then the product will enter the "decline" stage of its life cycle.

The company estimates the following cost structure:

Direct Labour..... ₹ 6 per hour

Other variable costs..... ₹ 19 per unit

Fixed costs will be ₹ 40,000 over the life cycle of the product. The 'labour rate' and both of these costs will not change throughout the product's life cycle.

The first batch of 100 units will take 1,000 labour hours to produce. There will be an 80% learning curve that will continue until 2,500 units have been produced. Batches after this level will each take the same amount of time as the 25th batch. The batch size will always be 100 units.

Required

CALCULATE the average selling price of the final 500 units that will allow the company to earn a total profit of ₹ 80,000 from the product if the average time for 24 batches is 359.40 hours.

(Note: Learning coefficient is –0.322 for a learning rate of 80%).

The values of Logs have been given for calculation purpose:

log 2 = 0.30103; log 3 = 0.47712; log 5 = 0.69897; antilog of 2.534678 = 342.51; antilog of 2.549863 = 354.70; antilog of 2.555572 = 359.40; antilog of 2.567698 = 369.57

Solution

Average 'Selling Price' of the final 500 units

Particulars	Amount (₹)
Direct Labour [(8,867.50 hrs. + 241.90 hrs. × 25 batches) × ₹6]	89,490
Add: Other Variable Costs (5,000 units × ₹19)	95,000
Add: Fixed Costs	40,000

Total Life Cycle Cost	2,24,490
Add: Desired Profit	80,000
Expected Sales Value	3,04,490
Less: Sales Value (4,500 units × ₹64)	2,88,000
Sales Value (Decline Stage) ... (A)	16,490
Sales Units (Decline Stage) ... (B)	500
Average Sales Price <i>per unit</i> ... (A)/ (B)	32.98

Workings

(i) The cumulative average time *per batch* for the first 25 batches

The usual learning curve model is

$$y = ax^b$$

Where

y = Average time per batch (hours) for x batches

a = Time required for first batch (hours)

x = Cumulative number of batches produced

b = Learning coefficient

The Cumulative Average Time *per batch* for the first 25 batches

$$y = 1,000 \times (25)^{-0.322}$$

$$\log y = \log 1,000 - 0.322 \times \log 25$$

$$\log y = \log 1,000 - 0.322 \times \log (5 \times 5)$$

$$\log y = \log 1,000 - 0.322 \times [2 \times \log 5]$$

$$\log y = 3 - 0.322 \times [2 \times 0.69897]$$

$$\log y = 2.549863$$

$$y = \text{antilog of } 2.549863$$

$$y = 354.70 \text{ hours}$$

(ii) The time taken for the 25th batch

$$\begin{aligned} \text{Total Time for first 25 batches} &= 354.70 \text{ hours} \times 25 \text{ batches} \\ &= 8,867.50 \text{ hours} \end{aligned}$$

$$\begin{aligned} \text{Total Time for first 24 batches} &= 359.40 \text{ hours} \times 24 \text{ batches} \\ &= 8,625.60 \text{ hours} \end{aligned}$$

$$\begin{aligned} \text{Time taken for 25th batch} &= 8,867.50 \text{ hours} - 8,625.60 \text{ hours} \\ &= 241.90 \text{ hours} \end{aligned}$$

2.2 Competition-Based Pricing Method

When a company sets its price mainly on the consideration of *what its competitors (or the market leader, in terms of market share) are charging*, its pricing policy in such a situation is called competitive pricing or competition-oriented pricing. It is not necessary under competitive pricing to charge the same price as charged by the concern's competitors. But under such pricing, the concern may keep its prices lower or higher than its competitors by a certain percentage; called discount pricing or premium pricing, respectively. Its *own costs or demand may change*, but the concern maintains its price because its competitors maintain their prices. Conversely, the concern will change its price when its competitors change their price, even if its own costs or demand have not altered.

Competition Oriented Pricing in Economic Context- *Where a market leader has established a market price with the intention of stabilizing the prices, the smaller firms in the industry may have to go in for parity pricing.*

Different types of competitive pricing in vogue are as follows:

2.2.1 Going Rate Pricing

It is a competitive pricing method under which a firm tries to *keep its price at the average level charged by the industry*. The use of such a practice of pricing is especially *useful where it is difficult to measure costs*. Adoption of going rate pricing will not only yield a fair return but will also be least disruptive for the industry's harmony. It is quite popular in the oil, gas, and fertilizer industry.

Going rate pricing primarily characterizes pricing practice in *homogeneous product* markets. The concern selling a homogeneous product in a highly competitive market has actually very little choice about the setting of its price. There is apt to be a market determined price for the product, which is not established by any single firm or clique of firms but through the collective interaction of buyers and sellers. The concern that is going to charge more than the going rate would attract virtually no customers. The concern should not charge less because it can dispose of its entire output at the going rate.

Thus, under highly competitive conditions in a homogeneous product market (such as food, raw materials, and textiles) the concern really has no pricing decision to make. The major challenge with such a concern is good *cost control*. Since promotion and personnel sales are not in the picture, the major marketing costs arise from physical distribution.

In pure oligopoly, where a few large concerns dominate the industry, the concern also tends to charge the same price as is being charged by its competitors. Since there are only a few concerns, each firm is quite aware of the other's prices, and so are the buyers.

This does not mean that the going price in an oligopoly market will remain in practice indefinitely. It cannot, since industry costs and demand change over time.

2.2.2 Sealed Bid-Pricing

Competitive pricing also dominates in those situations where firms compete on the basis of bids, such as original equipment manufacturer and defense contract work. The bid is the firm's offer price, and it is a prime example of *pricing based on expectations of how competitors will price rather than on a rigid relationship based on the concern's own costs or demand*. The objective of the firm in the bidding situation is to get the contract, and this means that it hopes to set its price lower than that set by any of the other bidding firms. But, however, the firm does not ordinarily set its price below a certain level. Even when it is anxious to get a contract in order to keep the plant busy, it cannot quote a price below the marginal cost. On the other hand, if it raises its price above its marginal cost, it increases its potential profit but reduces its chance of getting the contract.

2.3 Psychological Pricing

Marketers often try to get around consumer's psychological barrier through the psychological price.

To illustrate, a pair of shoes for ₹999 rather than ₹1,000, A laptop priced at 59,999 rather than 60,000, so on and so forth.



Practical Insight

In India, earlier this kind of pricing was known as **Bata Pricing**. Because Bata Shoe Company used to charge in this manner for their footwear.

2.4 Value- Based Pricing Method

There is an increasing trend to price the product on the basis of the *customer's perception of its value*. This method helps the firm in reducing the threat of price wars. Marketing research is important for this method. It is based on:

Objective Value or True Economic Value (TEV)

This is a measure of the benefits that a product is *intended to deliver to consumers relative to other products* without giving any regard to whether the consumer can recognize these benefits or not.

True economic value for a consumer is calculated taking two differentials into consideration:

$$\text{TEV} = \text{Cost of the Next Best Alternative} + \text{Value of Performance Differential}$$

The cost of the next best alternative is the cost of a comparable product offered by another company. The value of the performance differential is the value of additional features provided by the seller of a product.

A firm's product may be superior to the next best alternative in some dimensions but inferior in others.

Example

A customer wants to buy a System for a single year (after which it will be scrapped) with plans to use it for 2,500 hrs.

Cost Structure (similar products):

Particulars	System-X	System-X ²
Operating Cost/ hour	₹ 5	₹ 7.50
Probability of System Crash	10%	0.5%
Price	₹ 37,500	?

Find the TEV for the System-X² if the cost of a System Crash to the buyer is ₹1,00,000.

TEV=

Particulars		₹
Operating Cost	2,500 hrs. × (₹5.00 - ₹7.50)	- ₹6,250
System Crash Savings	₹1,00,000 × (10.00% - 0.50%)	₹9,500
	Value of performance differential	₹3,250
	Price of Next Best Alternative	₹37,500
	TEV	₹40,750

Perceived Value

This is the *value that the consumer understands the product delivers to it*. It is the price of a product that a consumer is willing to spend to have that product.

At the time of fixing the price, it is to be kept in mind that any price that is set below the perceived value but above the cost of goods sold will give incentives to both buyers and sellers. This can be understood with the help of the diagram given below.

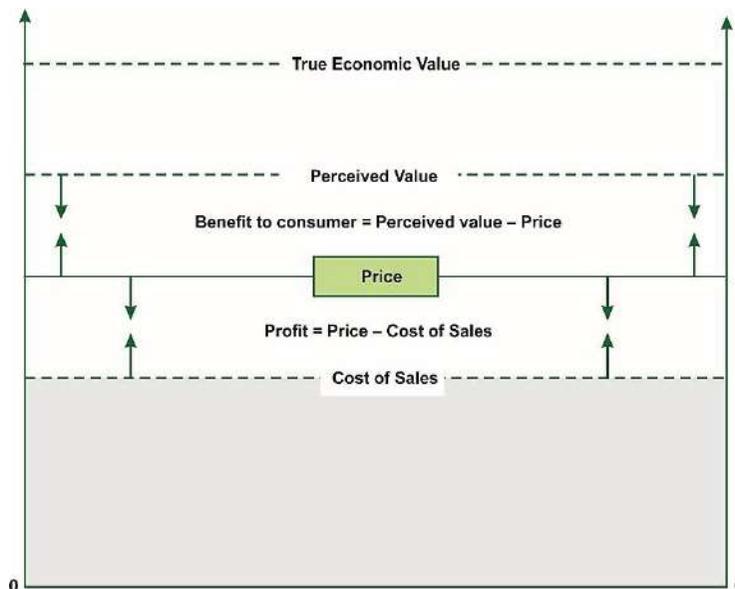


Figure F.3 – Value Based Pricing



Test Your Understanding

What framework should be considered by a firm to create value for its customers?

Hint

Creating value for customers is one of the important objectives of a firm. A firm makes all its efforts to create value, and to achieve this, it formulates its marketing strategy in that direction. Understanding customers' wants and needs is the foundation for building this value. To create value, a firm uses the following framework:

- First, it develops a *product* that satisfies the wants and needs of the customers.
- After identification and development, it designs a *promotion* program to convey the value of the products to the customers.
- It chooses the *right distribution channel* through which its product will reach the customers.
- At last, it has to design a *pricing strategy* that creates an incentive for the purchaser to buy the product and for the seller to sell the product.



Do You Know?

Product life cycle has a strong bearing on the price of the product¹³.

Introduction Stage	Growth Stage	Maturity Stage	Decline Stage
<ul style="list-style-type: none"> ▪ <i>Skimming Policy</i> with high prices, but low profit margin due to high fixed costs. 	<ul style="list-style-type: none"> ▪ Reduce price to penetrate market further. 	<ul style="list-style-type: none"> ▪ Price to match or beat competitor. 	<ul style="list-style-type: none"> ▪ Cut price if not repositioning.
<ul style="list-style-type: none"> ▪ <i>Penetration Policy</i> to enter the market and gain a high share quickly or to prevent competitors from entering. 		<ul style="list-style-type: none"> ▪ Retain higher prices in some market segments. 	<ul style="list-style-type: none"> ▪ Some increases in prices may occur in the late decline stage.



Case Scenario

Netcom Ltd. manufactures and sells a number of products. All of its products have a life cycle of less than one year. Netcom Ltd. uses a four-stage life cycle model (Introduction, Growth, Maturity and Decline).

Netcom Ltd. has recently developed an innovative product. It was decided that it would be appropriate to adopt a market skimming pricing policy for the launch of the product.

However, Netcom Ltd. expects that other companies will try to join the market very soon.

This product is currently in the Introduction stage of its life cycle and is generating significant unit profits. However, there are concerns that these current unit profits will not continue during the other stages of the product's life cycle.

¹³ Marketing Fundamentals 2007-2008 By Geoff Lancaster, Frank Withey

Required

EXPLAIN, with reasons, the changes, if any, to the unit selling price and the unit production cost that could occur when the products move from the previous stage into each of the following stages of its life cycle: (i) Growth (ii) Maturity.

Solution**Growth Stage**

Compared to the introduction stage, the likely changes are as follows:

Unit Selling Prices:

These are likely to be reduced for a number of reasons:

- The product will become less unique as competitors use reverse engineering to introduce their versions of the product.
- Netcom may wish to discourage competitors from entering the market by lowering the price and thereby lowering unit profitability.
- The price needs to be lowered so that the product becomes attractive to different market segments, thus increasing demand to achieve growth in sales volume.

Unit Production Costs:

These are likely to reduce for a number of reasons:

- Direct materials are being bought in larger quantities, and therefore Netcom may be able to negotiate better prices from its suppliers, thus reducing unit material costs.
- Direct labour costs may be reduced if the product is labour intensive due to the effects of the learning and experience curves.
- Other variable overhead costs may be reducing as larger batch sizes reduce the cost of each unit.
- Fixed production costs are being shared by a greater number of units.

Maturity Stage

Compared to the growth stage, the likely changes are as follows:

Unit Selling Prices:

These are unlikely to be reduced any longer as the product has become established in the marketplace. This is a time for consolidation, and whilst there may be occasional offers to tempt customers to buy the product, the selling price is likely to be fairly constant during this period.

Unit Production Costs:

Direct material costs are likely to be fairly constant in this phase and may even rise as the quantities required diminish compared to those required in the growth stage, with the consequential loss of negotiating power.

Direct labour costs are unlikely to be reduced any longer as the effects of the learning and experience curves have ended. Indeed, the workers may have started working on the next product, so their attention towards this product has diminished, with the result that these costs may increase.

Overhead costs are likely to be similar to those at the end of the growth phase, as optimum batch sizes have been established and are more likely to be used in this maturity stage of the product life cycle, where demand is more easily predicted.

3. Pricing of Services

Services have some inherent features such as Intangibility, Inseparability, Variability, and Perishability. Further, services can be classified into the following categories based upon the nature of the work involved and the involvement of receipt –

1. **People Processing Service** - Person is involved (physical presence of the customer at the service system or location).

To illustrate, Consider a haircut and spa.

2. **Product/ Possession Processing Services** - Such services are related to a specific product (limited or no involvement of the customer).

To illustrate, Packers and movers or washerman.

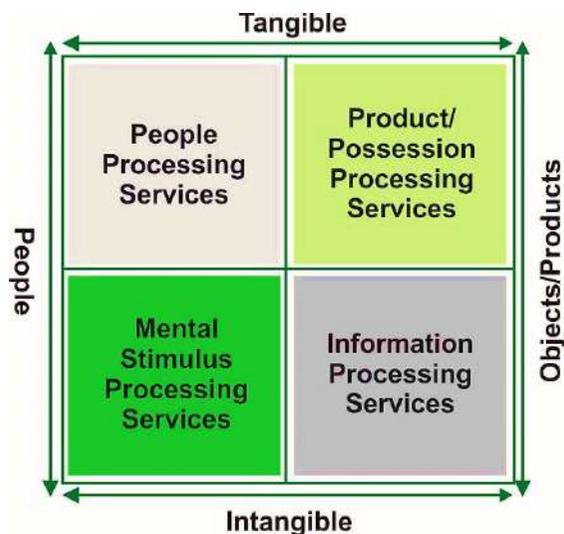


Figure F.4 – Classification of Service

3. **Mental Stimulus Processing Services** - The services that influence the consumer's mental abilities, beliefs, behaviour, and perception.

To illustrate, Watching the match at a stadium, a light show, a movie or visiting a Zoo.

4. **Information Processing Services** - These are a unique form of intangible products where the information acts as a product.

To illustrate, Buying insurance, consultancy.

Together, these features and classifications result in a variety of issues that must be addressed while pricing the services.

To illustrate, in the case of a service of showing a movie in a cinema hall, vacant seats (ideal capacity) are pure waste and hence shall be sold even at discounted prices (similarly in the case of a flight) because of their perishability (no storage is possible).

When services are uniquely tailored to each customer's needs, pricing cannot be easy. Each service transaction is likely to have a *distinct pricing structure*.

In certain services, the customer's participation is essential. The customer may have to incur certain intangible costs over and above monetary costs while making use of a service. The pricing decision for such services should *accommodate the intangible costs* that a customer may have to bear.

Some of the services, like health care, education, communication, transport, etc., are of public importance (more like social or personal services rather than business services). Therefore, the price of those *services tends to be regulated*.

Some services' pricing is determined in a *collective manner*. Trade associations, professional bodies, or other institutions may impose broad guidelines for fixing the price.

Further pricing can be used as a strategic tool to manage and balance the demand for services in a similar manner to tangible products.

To illustrate, the problem of overcrowding in hotels, bars, or cinemas on weekends and ideal capacity on weekdays can be countered by offering discounts and allowances during weekdays, while premium pricing can be charged on weekends.

4. Pricing in Case of Emerging Business Models

Emerging business models are explained in detail in Chapter 5 of this part of the syllabus. Emerging Business Models can be loosely classified into the following three broad categories –

4.1 Hyper Disruptive Business Models

Disruptive business models are those that create, disintermediate, refine, reengineer, or optimize a product or service, role, function or practice, category, market, sector, or industry. Therefore, the pricing decision depends on the underlying disruptions and the possibility (as well as the time and resources required to imitate the same).

4.2 Models Relevant to Sustainability

Pricing Decisions shall reflect social and environmental implications in addition to economic considerations. The influence of social, environmental, and economic factors need not be equal. It is the usual notion that luxury goods can be priced higher, while the prices of essential commodities are regulated through statutory means and/or moral suasion.

4.3 Models Relevant to Emerging National Markets

Emerging national markets are growing markets with huge consumption, but such markets are price sensitive, such as India, Brazil, etc. Hence, value for money (cost effective solution) is a key determinant of the pricing decision.

To illustrate, the prices of global edition and edition specifically published for circulation in the Indian or South and East Asian sub-continent of publication houses are different.

5. Sensitivity Analysis in Pricing Decisions

Sensitivity analysis is very significant in making pricing decisions and striking the right balance in which the price is good-looking enough to generate enough sales yet is also profitable for the firm. It is also important for determining how much can be spent on development, marketing, etc. Simple analysis of past pricing decisions can inscribe poor pricing controls and sources of value leakage, and more sophisticated price sensitivity analysis can identify opportunities to increase or decrease prices to drive sales.

Product pricing decisions must be balanced against costs and competitive market conditions. Sensitivity analysis is required to determine how sales and costs will respond to changes in market conditions.

Sensitivity analysis is performed by choosing the critical parameters upon which we base our proforma computations and systematically changing them to assess how the changes will affect the overall outcome. Some of these factors are external and change according to the market and economy.

This analysis is important towards understanding how the company will withstand external changes, for example, market demand, changes in market prices, and exchange rate fluctuation.

Other factors are typically internal, and in these cases sensitivity analysis is valuable in making important decisions within the company. For example, initial outlay, R & D, production costs, marketing costs, introduction dates, and product prices.

6. Pricing Decision in Special Circumstances

6.1 Pricing decision in periods of Recession

In periods of recession, a firm may sell its articles at a **price less than the total cost but above the marginal cost** for a limited period.

The advantages of this practice are:

- The firm can continue to produce and use the services of skilled employees who are well trained and will be difficult to re-employ later if discharged.
- Plants and machinery can be prevented from deteriorating through idleness.
- The business would be ready to take advantage of improved business conditions later.
- This avoids the competition of securing the business of the firm.

One thing to remember here is that a situation like this should not lead to a drastic price cut, and the orders accepted should not cover a long period extending over the production facilities during a period when business conditions improve.

6.2 Pricing Below Marginal Cost

A firm may also be justified in selling the product at a **price below marginal cost** for a limited period, provided the following conditions prevail:

- Where materials are of a perishable nature.
- Where stocks have accumulated in large quantities and the market prices have fallen. This will save on the carrying cost of stocks.
- To popularize a new product (penetration into the market).
- Where such reduction enables the firm to boost the sales of other products having a larger profit margin.



Concept Insight

Competitive Law Aspects Pertaining to Pricing Below Cost

As per Section 4(2), read with explanation b to Section 4 of the Competition Act 2002, selling goods or services at “predatory price” construes to abuse of dominance. Predatory price means the sale of goods or provision of services at a price that is below the cost as may be determined by regulations of production of the goods or provision of services, with a view to reduce competition or eliminate the competitors.

7. Ethical and Non-Financial Considerations

Pricing decisions and strategies do have a bearing from ethical and non-financial considerations also. The pricing policy that ignores ethical or non-financial considerations may not be sustainable for long. Hence, considering them as important as considering financial factors.

7.1 Ethical Considerations

Pricing a product ethically is a critical decision for any company. Businesses that use ethical pricing strategies to sell their products and profit are far more respected than those that harm and defraud competitors or even customers. To practice ethical pricing, you must be able to identify the ethical issues that obstruct fair pricing.

A pricing strategy that is ethical goes beyond simply following the law. Similarly, not all unethical pricing strategies are illegal or fraudulent. Ethical decisions can be difficult because there is no clear line between what is morally right and wrong. Economic theories sometimes collide with ethical concerns.

To illustrate, the prices of essential commodities or other useful articles during a pandemic.



Practical Insight

Unethical Pricing of cameras and ventilators during the pandemic

Covid-19 pandemic changed the world; the price of many useful articles, apart from essential commodities, hit all time; despite producers, traders, retailers, and regulators being aware of unjustified prices. The phenomenon of charging unjustified and unethical prices was not limited to a particular market or country but prevailed across the world. Just to illustrate, ventilator manufacturers in a developed country went so far as to auction their products to the highest bidder, resulting in severe market inefficiencies. Even more worrying is the fact that ventilators were not necessarily sold to the state or hospital that needed them the most, but to the one that could afford to pay the highest price, leading to the loss of human lives.

Mind it, customers today don't view each transaction in isolation; they care more about establishing long-lasting relationships with brands and companies. The complexity of product offerings is ever increasing, so customers prefer to simplify some of their decisions by relying on brands as trusted partners. A customer being a business partner (under relationship marketing) shall be dealt with respect, charging such high and unethical prices is betrayal upon them.

Hence, the manufacturer or trader who charges such unethical prices will surely lose their customer or will not be able to maintain trustworthy relations with them.

7.1.1 Ethical pricing issues that hurt businesses –

1. Price Fixing (Collusion or cartelization) - A price fixing agreement involves a group of people on the same side of a market agreeing to buy or sell a good or service at a fixed price. Typically, competition for consumers among these participants drives down prices for goods and services.



Concept Insight

Vertical price fixing is allowed in some cases, whereas horizontal price fixing is totally prohibited. Horizontal price fixing is illegal, which means corporations on the same level of the supply chain cannot agree on a target, maximum, or minimum price (among other things) through cartelization or any other means. However, vertical price fixing is allowed. **For example**, wholesale companies can limit how much retailers charge for clothes. A Franchisor or Licensing authority can fix prices for franchisees and licensees.

Students may refer to Section 3 and 4 of the Competition Act, 2002 along with decided case laws, for specific provisions in this regard. The view on allowing vertical price fixing is divided among the courts or regulators across the world, while horizontal price fixing is strict.

2. Price Skimming – It involves the **discrimination** through a timeline, which results in a gradual reduction in price. Price skimming occurs when a product is initially sold at a very high price and then gradually reduced. The goal here is to capture each step on the demand curve; those who need it early have to pay more, while each decrease in price triggers a new group of purchases.

To illustrate – The prices drop within months of a release, and new iterations happen within six to 12 months.

3. Bid Rigging – It involves **favoritism** or collusion. Rather than directly impacting the customer, it hurts them indirectly because the best producer doesn't necessarily receive the work.

To illustrate – A highway tender under the BOT model given to some construction company with a bid higher than it should be as a result of favoritism or bid rigging will result in higher toll charges from commuters.

4. Price Discrimination – It involves **anti-favoritism**. Price discrimination is the strategy of selling the same product at different prices to different groups of consumers, usually based on the maximum they are willing to pay.

5. Super Pricing for article with high perceived value – Sometimes the value that consumers place on a good is much greater than the cost of producing that good. Business if charges a correspondingly higher price, the same shall be considered unjustified, especially where no disclosure is made to such buyers/ customers.

7.2 Non-Financial Considerations

Despite the fact that price in itself is a monetary aspect and the only element of the marketing mix that is a source of revenue, its determination has a strong bearing from non-financial factors such as –

- Brand image - buyer's attitude towards the product.
- Stage of the product in its life cycle.
- Intensity of competition.
- Bargaining power of buyers.
- Features and quality of the product or service.
- Government controls and regulations.
- Societal Considerations.

 **Note** –Students are advised to take note that the above specified list is illustrative only; there may be many more non-financial considerations.

G. PRICING STRATEGIES

Pricing strategies refer to the processes and methodologies businesses use to set prices for their products and services. When selling a product or service, a company can employ a number of pricing strategies. Senior executives must first identify the company's pricing position, pricing segment, pricing capability, and competitive pricing reaction strategy before determining the most effective pricing strategy for the company.

These are also sometimes referred to as Price-adaption Strategy There are a number of different pricing strategies available to a business, as shown below –

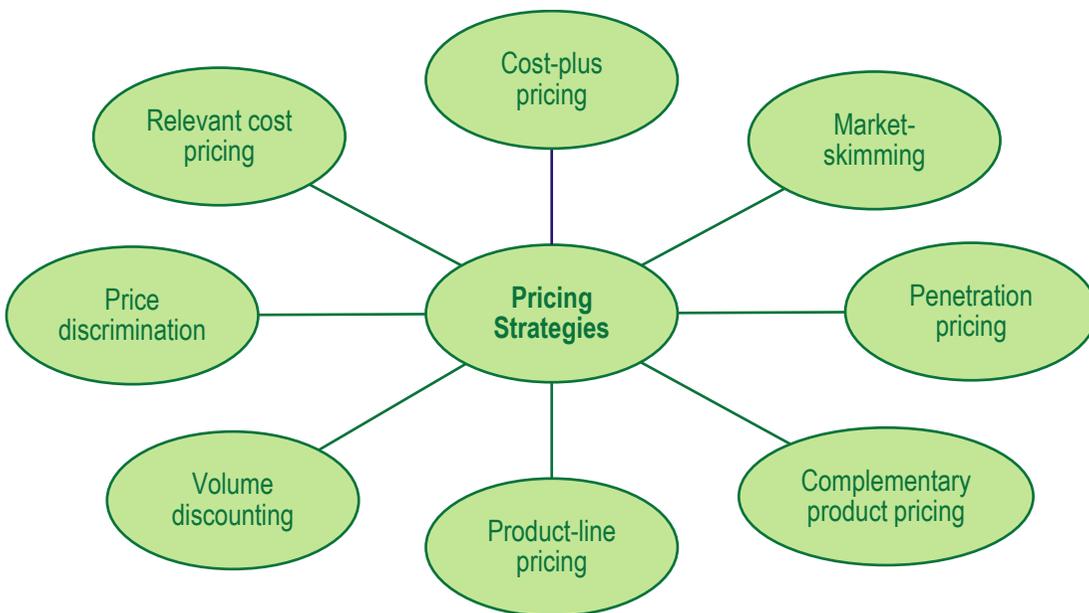


Figure G.1 – Pricing Strategies

 **Note** –Students are advised to take note that the majority of strategies specified above were already discussed in earlier sections and headings of this chapter, and the remaining will be discussed under the upcoming heading.

1. Price Adjustment Strategies

Price adaptation is the ability of a business to change its pricing models. An organisation usually doesn't set a single pricing, instead has a pricing structure that varies with geographical demand and costs, market segments, purchase timing, order levels, delivery frequency, guarantees, and service contracts.

The different price adaptation strategies are –

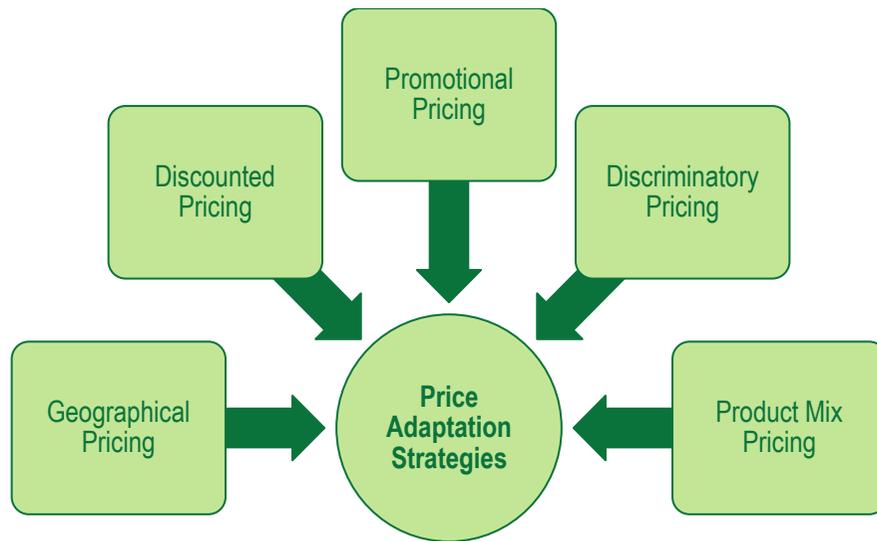


Figure G.2 – Price Adaptation Strategies

1.1 Geographic Pricing

In pricing, a seller must consider the costs of shipping goods to the buyer. These costs grow in importance as freight becomes a larger part of total variable costs. Pricing policies may be established whereby the buyer pays all the freight expense, the seller bears the entire cost, or the seller and buyer share this expense. The strategy chosen can influence the geographic limits of a firm's market, the locations of its production facilities, the sources of its raw materials, and its competitive strength in various geographic markets.

The bottom line is that the business decides the price of a product on the basis of locations and countries. This pricing strategies may include –

Compensation Deals – The seller receives a percentage of the payment in cash and the rest in products.

Barter – There is direct exchange of goods without the involvement of any money or third party.

Buy-back arrangement – The seller sells a plant, equipment, or technology to another country and agrees to accept partial payment for products manufactured with the supplied equipment.

Offset – The seller receives full payment in cash, but it agrees to spend a substantial amount of money in that country within a period.



Concept Insight- Pricing and Incoterms in the context of International Trade

Cost and Freight (CFR); Cost, Insurance and Freight (CIF); and Free on Board (FOB) are the highly prevailing International Commerce Terms (Incoterms) specified by the International Chamber of Commerce's.

1.2 Discounted Pricing - Price Discounts and Allowances

In case of bulk purchases and early payments, the organisations offer discounts, this includes-

Distributor's Discounts (or functional or trade discounts) - It means price deductions that systematically make the net price vary according to the buyer's position in the chain of distribution. These discounts are given to various distributors in the trade channel, e.g., wholesalers, dealers, and retailers. These discounts create differential prices for different customers on the basis of marketing functions performed by them, so these are also called functional discounts.

Quantity Discounts - Quantity discounts are price reductions related to the quantities purchased. It may take several forms. It may be related to the size of the order, which is being measured in terms of physical units of a particular commodity. This is practicable where the commodities are homogeneous or identical in nature, or where they may be measured in terms of truckloads. However, this method is not applicable in the case of heterogeneous commodities, as it is difficult to add them in terms of physical units or truck loads, e.g., textile and drug industries. Quantity discounts are useful in the marketing of materials and supplies but are rarely used for marketing equipment and components.

Cash Discounts - Cash discounts are price reductions based on the promptness of payment. It is a convenient device to identify and overcome bad credit risks. In those trades where credit risk is high, the percentage of cash discount given is also high. If a buyer decides to purchase goods on credit, he has to pay a higher price by foregoing the cash discount.

Seasonal Discount (off days or off hours discounts) – Discounts for buyers who buy the product out of season. During the weekdays, prices of cinemas, pubs, hotels are usually discounted. This can be seen as discriminatory pricing as well.

Allowance – An extra payment designed to gain reseller participation in special programs such as promotional allowance and trade in allowance.

1.3 Promotional Pricing

It includes several techniques to stimulate and coax buyers to make an early purchase. This includes–

Longer Payment Terms – The sellers stretch loans over longer periods, thus lowering the monthly payments.

Special Event Pricing – Special prices are set in special seasons to attract more customers.

Loss Leader Pricing – Dropping or lowering the price on well-known brands to stimulate the customer to visit the outlet and make purchases. There may be additional sales on other items to compensate for the loss.

Cash Rebates – Special cash discounts are given to encourage the purchase.

Warranties and Discounts – Companies offer discounts and extend warranties during the period of warranty; customers get free services and discounts.

Psychological Discounting – Setting high artificial prices and then offering considerable discounts.

1.4 Price Discrimination

Price discrimination means charging different prices, and it takes various forms according to whether the basis is customer, product, place, or time. Price discrimination is possible if the following conditions are satisfied:

- the maker must be capable of being segmented for price discrimination,
- the customers should not be able to resell the product of the segment paying higher price, and
- the chance of competitors' underselling in the segment of higher prices should not be possible.

Under *time differentials*, the objective of the seller is to take advantage of the fact that the buyer's demand elasticity varies over time. For example, airline companies charge a higher price if tickets are booked near travel dates rather than when booked based on pre-planned trips.

1.5 Product Mix Pricing

In this, the organisation looks for a set of prices that maximise the profit on the total product mix. This includes –

Product Line Pricing – Companies introduce product lines rather than single products and introduce price steps.

Optional Feature Pricing – The Organisation offers optional products, features, and services along with the main product.

Captive product pricing – There are some products that make use of ancillary products to keep the price of the core product low and generate profits from the sale of ancillary products.

Two-part pricing – It is usually deployed by a service firm. It consists of fixed fees and variable usage fees. Landline Telephone, Amusement Parks, and Game Zones (Activity fee in addition to entry fee).

By-Product Pricing – The firms earn by selling the by-products, and they charge a lower price on the main product.

Product Bundling Pricing – A seller bundles products and features. There can be two types of bundling –

- a. **Pure bundling** – the business offers the products only as a bundle.
- b. **Mixed bundling** - the business offers the products both as a bundle or individual items; the price of the bundle is less than the price of the single product.



Test Your Understanding

“RPA” Insurance offers a wide range of insurance covers for individuals, including a comprehensive range of term insurance products with the option of paying insurance premium in installments -monthly, quarterly, or half yearly, as well as annually. “RPA” adds a surcharge of ₹30 per payment if the customers choose a mode other than annual payment. It offers an incentive to the customers: 0.5% of the premium amount or ₹200 (whichever is lower) per payment if the customers opt for the ECS facility. Are incentives, discounts, or surcharges justified?

Hint

These charges basically reflect the opportunity cost of capital for “RPA” insurance. If the customer makes one full annual dues, the firm will need less money to finance its working capital, and hence saving in interest. By adding a surcharge for half yearly, quarterly, or monthly payments, the firm is basically recovering the cost of raising working capital. In addition, the firm has to process only one receiving transaction rather than two, four, or twelve. Similarly, the ECS facility reduces transactions costs for the firm by smoothing timely withdrawals -- saving on these costs is justification for the incentives.



H. KANO'S PERFORMANCE ATTRIBUTES

In the earlier section of this chapter, we learned that price is a function of the features of a product renders and value perceived from such features by the customer, among the other determinants of pricing decision. Hence, businesses may charge a higher price to enhance their revenue by striving to include those features that have higher capability to please the customer, while excluding those that have a negative impact on the perceived value. To identify such features (referred to as attributes), Kano Model can be used.

The Kano Model¹⁴ of product development and customer satisfaction is used for prioritizing the most important features in a product roadmap. Developers can use research data to decide which features will make the most positive impact on users, which are considered essential for basic function, and which may help a product stand out in a crowded marketplace.

The model defines the **following attributes** of any product or services –

Threshold attributes (Must-be qualities) (M) - When these characteristics are met, they are taken for granted, but when they are not met, they cause dissatisfaction. Customers expect these qualities and regard them as basic; it is unlikely that they will mention them to the company when asked about quality attributes. **To illustrate** – Touch Screen.

¹⁴ The model of customer satisfaction (known as Kano Model) was published in Japan in 1984 by Noriaki Kano, a professor of Quality Management at Tokyo University of Science.

Performance attributes (One-dimensional qualities) (O) - These are features that, as businesses invest in them, result in a proportionate increase in customer satisfaction. Dr. Noriaki referred to this type of feature as "one-dimensional" due to the direct, linear relationship between the amount of money invested in it and the amount of customer satisfaction it provides. These also include customers who know what they want and consider carefully when deciding whether to buy your product or your competitor's. **To illustrate** - battery life of smart phones.

Excitement or Delight attributes (Attractive qualities) (A) - These characteristics provide satisfaction when they are met but do not cause dissatisfaction when they are not met. They are not usually expected and thus frequently go unspoken. Hence the wow factor therefore yields high ROI.

To illustrate – seat upgrade in a flight/ train.

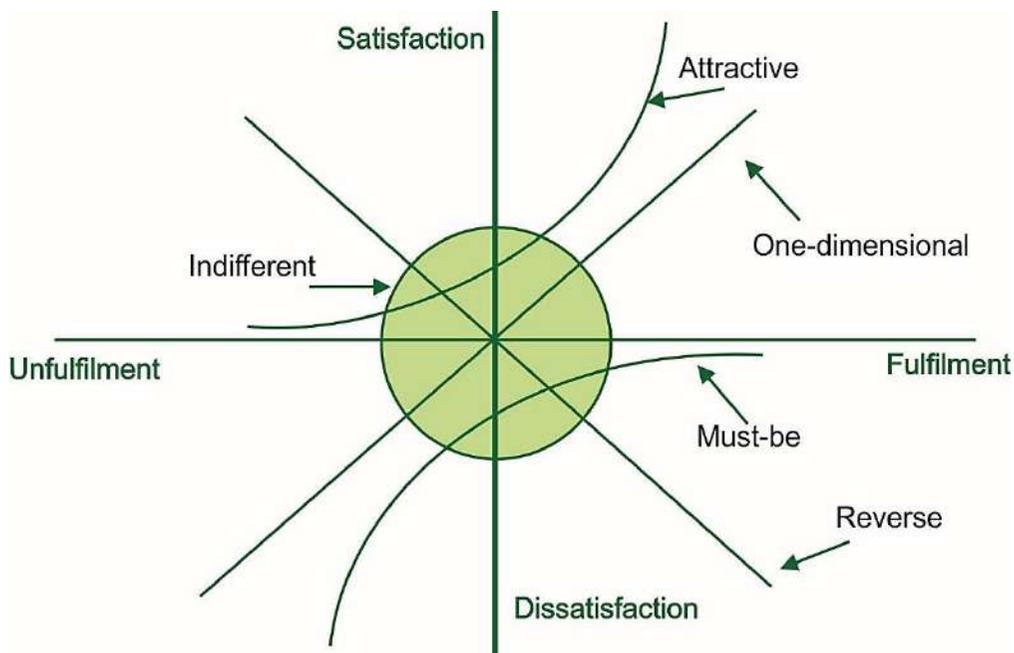


Figure H.1 – Kano's Model

Indifferent qualities (I) - These aspects are neither good nor bad and have no effect, positive or negative, on customer satisfaction. **To illustrate** – look of emoticons in messaging apps, placement of logo on phone, size thereof.

Reverse qualities (R) - If these aspects exist, they lead to dissatisfaction; if they do not exist, they do not lead to satisfaction. **To illustrate** – Pop-up messages appear on phones whenever open apps for approval or have too much complexity to operate.

Questionable attribute (Q) - An ambiguous feature whose presence is doubtful or questionable. It behaves in a similar fashion to reverse quality.



Concept Insight

1. Higher the level of threshold, performance, and excitement attribute, higher the customer's willingness to pay.
2. Perceptions change over time, therefore results in–
Customer expectations of a product can change over time as more competitive products may enter the market.
Customer needs can change according to the environment they're in.
Attitudes may change, meaning that the excitement attribute may become a performance attribute or threshold attribute over time. To illustrate, earlier, 2 GB of RAM and a 2 or 5 Mega Pixel Camera in a phone were considered to be good configuration; these have become basic parameters now.
3. Based upon the above discussion, it can be concluded that a business must make an effort to
 - Include**
 - Basic Threshold
 - Performance
 - Excitement
 - Exclude**
 - Indifference
 - Reverse
 - Questionable



SUMMARY

- ❑ Short run decision making – Based on relevant costs, short run in nature, referred to as tactical decisions, choosing among alternatives, often have long run consequences, immediate or limited time frame, small scale actions that serve a larger purpose.
- ❑ CVP analysis involves analysing the interrelationships among revenues, costs, levels of activity, and profits. It helps in planning, controlling decisions and evaluating decisions.
- ❑ Conventional CVP analysis assumes volume-based measures. Activity based costing provides a more accurate determination of costs because it separately identifies and traces non-unit based costs to products rather than combining them in a pool of fixed costs as volume based approach does.
- ❑ The Break-even can then be expressed as follows:

$$\text{Break-even units} = \frac{[\text{Fixed costs} + (\text{Setup cost} \times \text{Number of Setups}) + (\text{Engineering Cost} \times \text{Number of Engineering Hours})]}{(\text{Price} - \text{Unit Variable Cost})}$$
- ❑ A comparison of the ABC break-even point with the conventional break-even point reveals two important differences. First, the fixed costs differ. Some costs previously identified as being fixed may actually vary with non-unit cost drivers, in this case setups and engineering hours. Second, the numerator of the ABC break-even equation has two non-unit-variable cost terms: one for batch-related activities and one for product- sustaining activities.

- ❑ To apply CVP analysis in service and non-profit organisations, we need to focus on measuring their output, which is different from tangible units sold by manufacturing and merchandising companies.
- ❑ For a cost to be relevant to a decision it must be
 - A future cost, i.e. related to the future.
 - A differential Cost, i.e. its level must be different for each of the alternatives under consideration.

Accordingly, only future costs can be relevant to decisions. However, to be relevant, a cost must not only be a future cost but must also differ from one alternative to another. If the future cost is the same for more than one alternative, it has no effect on the decision. Such a cost is irrelevant cost.

- ❑ Non- Financial information which a company should focus that would turn out to be advantageous while making decisions for a company are– Quality, Employee Satisfaction, Customer Satisfaction, Corporate Social Responsibility, Environmental Factors, Intellectual Property, Intangible Assets, Competitor’s Movements, Brand Name.
- ❑ Decision Making shall be ethical. Identify an ethical decision by using personal ethical standards of honesty and fairness, Identify the consequences of the decision and its effect on others, consider obligations and responsibilities to those that will be affected by decision, make a decision that is ethical and fair to those affected by it.
- ❑ Decision Making Model – Define the problem, identify alternatives, eliminating unfeasible alternatives, identify costs & benefits of each alternative, examine total relevant costs, benefits of each alternative, assess non-financial factors and ethical issues, select alternative with greatest overall benefit.
- ❑ Some Common Applications –
 - (a) Outsourcing Decision – A ‘make or buy’ decision requires incremental analysis.
 - If incremental cost savings + opportunity costs < incremental costs, reject the outsourcing, unless qualitative factors fiercely impact the decision.
 - If incremental cost savings + opportunity costs > incremental costs, accept the outsourcing unless qualitative factors fiercely impact the decision.
 - If incremental cost savings + opportunity costs are = incremental costs, focus primarily on qualitative factors to evaluate the decision.
 - (b) Sell or Further Process – To decide either to sell a component/ product/ raw material as it is or alternatively process it further by incurring additional expenses usually in the case of joint products. Only the incremental costs and revenues of the further process are relevant. The joint process costs are irrelevant - they are already 'sunk' at the point of separation.

- (c) Minimum Pricing Decisions – Relevant where there is a lot of intense competition, surplus production capacity, clearance of old inventories, getting special orders and/or improving market share of the product. The minimum price should be set at the incremental costs of manufacturing, plus opportunity costs (if any).
 - (d) Keep or Drop Decisions – The decision is based on whether or not the segment's revenue exceeds the costs directly traceable to the segment, including any direct fixed costs.
 - (e) Special Order Decisions – Whether a special priced order should be accepted or rejected. Relevant if the firm is operating below its maximum productive capacity. Price discrimination laws require that firms sell identical products at the same price to competing customers in the same market. This law does not apply to - Noncompeting customers from the same market and Potential customers in markets not ordinarily served.
 - (f) Product Mix Decision – Other things being the same the product which yields the highest contribution is best one to produce. But, if there is shortage or limited supply of certain other resources which may act as a key factor like for example, the machine hours, then the contribution is linked with such a key factor for taking a decision.
- ❑ Pricing Policy – Although cost is an important aspect of pricing, consumer demand and competitive environment are frequently far more significant in pricing decisions.
 - ❑ Theory of Product Pricing –The basic approach in most of the micro-economic theory (theory of the individual firm and its relation to other firms) defines the term optimum price as that price which yields the maximum profits (excess of total revenues over total costs). It also assumes that the firm takes into consideration the position of demand and cost functions and that the firm produces one product.
 - ❑ Pricing Model – Pricing model is a mathematical model which uses economic theory of pricing.
 - (i) As per economic theory of pricing, Profit is Maximum at a level of output where Marginal Revenue (MR) is equal to Marginal Cost (MC). This model determines the level of production up to which production can be continued.
 - (ii) The Basic Price Equation, which is used to determine the Price where Profit is Maximum. The equation is written as $P = a - bQ$,
 - (iii) The Marginal Revenue equation is written as:
Marginal Revenue (MR) = $P = a - 2bQ$
 - ❑ Pricing under Different Market Structures
 - (i) Perfect Competition – Under this type of market, firm has no pricing policy of its own as the sellers are price takers (i.e. it has to accept the price determined by the market) and sell as much as they are capable of selling at the prevailing market price.

- (ii) Monopoly – Under the monopoly, a firm is a price setter i.e. it can fix any price but here also the pricing is done taking elasticity of demand for the product into consideration. That means though the seller/ producer can fix any price, but it will go for the price where demand for the product and consequent profit will be maximum.
- (iii) Monopolistic Competition – Under monopolistic conditions, consumers may buy more at a lower price than at a higher price. The profit can be maximised by equating marginal revenue with marginal cost.
- (iv) Oligopoly – The oligopolistic firm, while determining the price for its product, considers not only the demand for the product but also the reactions of the other firms in the industry to any action or decision it may take.

□ Principles of Product Pricing

Creating value for the customers is one of the important objectives of a firm. A firm makes all the efforts to create value and to achieve this it formulates its marketing strategy in that direction.

Two aspects i.e. Price Customization and Sensitivity are critical importance principle of product pricing.

Price Customization is done in various ways (i) Based on product line, (ii) Based on customer's past behaviour, (iii) Based on demographics and (iv) Based on time differential.

Price Sensitivity – It measures the customer's behaviour to the change in price of a product. Nine factors that contribute to price sensitivity are Unique Value Effect, Substitute Awareness Effect, Difficult Comparison Effect, Total Expenditure Effect, End- Benefit Effect, Shared Cost Effect, Sunk Investment Effect, Price Quality Effect and Inventory Effect.

Controlled experimentation for measuring price sensitivity – In this method, customers are offered different brands at different prices and customer's responses are obtained. Then the company's brand prices are changed and the customer's response at each price level is recorded. The price at which demand for the product starts declining is the level where price sensitivity begins and based on the response level, sensitivity can be measured. It depends on the nature of the product and buyer characteristics.

□ Pricing of New Products – A new product is analysed into three categories for the purpose of pricing –

- (i) Revolutionary Product – Revolutionary product may enjoy the premium price as a reward for its innovation and taking first initiative.
- (ii) Evolutionary Product – The evolutionary products may be priced taking cost-benefit, competitor, and demand for the product into account.

- (iii) Me-too Product – The me-too products are price takers as the price is determined by the market mainly by the competitive forces.

While preparing to enter the market with a new product, management must decide whether to adopt a skimming or penetration pricing strategy.

- (i) Skimming Pricing – It is a policy of high prices during the early period of a product's existence. This can be synchronised with high promotional expenditure and in later years the prices can be gradually reduced.
- (ii) Penetrating Pricing, means a pricing suitable for penetrating mass market as quickly as possible through lower price offers. The company may not earn profit by resorting to this policy during the initial stage. Later on, the price may increase as and when the demand picks up.

❑ Pricing Methods for Existing Finished Products

- (i) Cost-Based Pricing Method – estimate the cost of product & fix a margin of profit. The term 'cost' here means Full Cost at current output and wages level since these are regarded as most relevant in price determination.

Pricing based on total costs is subjected to two limitations viz arbitrary allocation of inter-departmental overheads and estimation of normal output.

In order to avoid these complications, Variable Costs which are considered as relevant costs are used for pricing, by adding a markup (to include fixed costs allocation also).

Mark-up can be arbitrary percentage or based upon desired rate of return.

- (ii) Competition-Based Pricing Method – When a company sets its price mainly on the consideration of what its competitors are charging, its pricing policy under such a situation is called competitive pricing or competition-oriented pricing.

Going Rate Pricing – It is a competitive pricing method under which a firm tries to keep its price at the average level charged by the industry. The use of such a practice of pricing is especially useful where it is difficult to measure costs.

Sealed Bid-Pricing – Competitive pricing dominates in those situations where firms compete on the basis of bids, such as original equipment manufacturer and defense contract work.

- (iii) Value Based Pricing Method – to price the product on the basis of customer's perception of its value.

Objective Value or True Economic Value (TEV) = Cost of the Next Best Alternative + Value of Performance Differential

(iv) Psychological Pricing - Marketers often try to get around consumer's psychological barrier in respects of prior through the psychological price.

❑ Pricing and Product Life Cycle

(i) Introduction Stage – *Skimming Policy* with high prices, but low profit margin due to high fixed costs. Growth Stage - Reduce price to penetrate market further. Maturity Stage - Price to match or beat competitor. Decline Stage - Cut price if not repositioning.

(ii) Introduction Stage – *Penetration Policy* to enter the market and gain a high share quickly or to prevent competitors from entering. Maturity Stage - Retain higher prices in some market segments. Decline Stage - Some increases in prices may occur in the late decline stage.

❑ Pricing of Services (Issues) – Each service transaction is likely to have distinct pricing structure, accommodation of the intangible costs that a customer may have to bear with, pricing regulated by government or collective groups like trade associations in certain specific sectors.

❑ Pricing in case of emerging business models

Emerging Business Models can be loosely classified in following three broad categories– Hyper Disruptive Business Models - Pricing decision depends upon the underlying disruptions and the possibility (as well time and resources required to imitate the same).

Models Relevant to Sustainability - Pricing Decisions shall reflect the social and environment implications in addition to economic considerations.

Models Relevant Emerging National Markets - Value of money (cost effective solution) is key determinant of the pricing decision.

❑ Sensitivity analysis is very significant in making pricing decisions, and striking the right balance in which the price is good-looking enough to generate enough sales yet is also profitable for the firm. It is also important for determining how much can be spent on development or marketing, etc.

❑ Pricing Decisions under Special Circumstances

If the selling price is below the total cost but above the marginal cost the contribution will leave an under-recovery of fixed expenses. If the product is sold at marginal cost, the loss will be there to the extent of fixed expenses. If sold at a price less than the marginal cost, the loss will be greater than fixed expenses.

In periods of recession, a firm may sell its articles at a price less than the total cost but above the marginal cost for a limited period.

It may also be justifiable to sell the product at a price below marginal cost for a limited period provided the materials are of perishable nature, stocks are huge and market prices have fallen, reduction results in increased sales of other products having larger profit margin.

Differential selling prices, which is above, the marginal cost but below the total cost is resorted to in order to absorb surplus capacity. This can be done in two ways either dumping of branded products in another market above marginal cost, of the firm may produce and sell a branded article, say product A, which covers the entire fixed overheads and use the surplus capacity to produce another product B, which may be sold at a price above its marginal cost.

- ❑ Pricing decisions and strategies do have bearing from ethical and non-financial considerations also. The pricing policy that ignores ethical or non-financial considerations may not be sustainable for long. Hence considering them as important as considering financial factors.

Ethical pricing issues that may hurt businesses includes Price Fixing (Collusion or cartelization), Price Skimming, Bid Rigging, Price Discrimination, Super Pricing for article with high perceived value.

Non-Financial Considerations - Despite price in itself is monetary aspect and only element of marketing mix that is source of revenue, its determination has strong bearing from non-financial factors such as Brand Image - Buyer's Attitude towards product, Stage of product in its life cycle, Intensity of competition, Bargaining power of buyers, Features and quality of product or service, Government controls and regulations, and Societal Considerations.

- ❑ Pricing strategies refer to the processes and methodologies businesses use to set prices for their products and services. Pricing strategies include Cost-plus pricing, Market-skimming, Penetration pricing, Complementary product pricing, Product-line pricing, Volume discounting, Price discrimination, and Relevant cost pricing.
- ❑ Price adaptation is the ability of a business to change its pricing models. An organisation usually doesn't set a single pricing, instead has a pricing structure that varies with geographical demand and costs, market segments, purchase timing, order levels, delivery frequency, guarantees, service contracts. Price adaptation strategies includes geographical pricing, discounted pricing, promotional pricing, discriminatory pricing, and product mix pricing.
- ❑ The Kano Model is a useful framework that helps the business with limited time and resources in prioritizing functionalities (appropriate mix of features) they believe will delight customers to perceive higher value that in turn leads to higher price (justified or value for money)
- ❑ Understanding your customers' experiences and expectations, and effectively generating innovative ideas for improving your product or service, are key to carrying out Kano Model Analysis successfully.


TEST YOUR KNOWLEDGE- MCQS
MCQ 1

Match the item of list I with that of list II and suggest correct code-

List I - Pricing Strategy	List II – Explanations
A. Customary Pricing	1. Ending price with 99
B. Skimming	2. Pricing a product based on perceived expectation of customers
C. Penetration Pricing	3. Setting a high price which gradually reduces as competitors enter the market
D. Psychological Pricing	4. Setting a low price for a new product during its initial offering

Options

- a. A - 4, B - 1, C - 2, D - 3
- b. A - 3, B - 4, C - 1, D - 2
- c. A - 2, B - 3, C - 4, D - 1
- d. A - 1, B - 2, C - 3, D - 4

Key – c

Reason - Customary Pricing is value based perception oriented pricing, skimming is pricing strategy wherein prices are reduced gradually to capture each point of price curve (those who need the product early on have to pay more), penetration pricing is charging low price with intent to capture more market share; whereas psychological pricing rest on triggering psychological effect (known as Bata pricing in India, because Bata bring this trend to India and price their products say pair of shoes for 999 or 1,499 rather 1,000 or 1,500)

MCQ 2

In a product mix decision, which is the most important factor to consider in order to try to maximise profit?

Options

- a. Contribution per unit of a scarce resource used to make the product
- b. Contribution per unit of the product
- c. Profit per unit of a scarce resource used to make the product
- d. Profit per unit of the product

Key – a

Reason – Product mix decision is short term decisions where bottleneck or limiting factor is involved. Short term decisions have two characteristics that make them relatively easier than longer term decisions. Firstly the time value of money can be ignored, secondly the most of the fixed costs will be incurred anyway so can be ignored as not relevant

In such cases the main approach is usually to consider relevant cash flows, which may simplify to looking at the impact of the decision on **the contribution**. Hence contribution per unit of limiting factor shall be used to make the decisions.

MCQ 3

Modern Gas Limited deals in liquid nitrogen (a standardised product). NGL pay less attention to its own costs or demands and bases its price largely on competitor's prices. The Pricing method adopted by MGL is–

Options

- a. Value pricing
- b. Going rate pricing
- c. Image pricing
- d. Psychological Pricing

Key – b

Reason – Going rate pricing is completion-based pricing method. Going Rate Pricing is a competitive pricing method under which a firm tries to keep its price at the average level charged by the industry. The use of such a practice of pricing is especially useful where it is difficult to measure costs.

MCQ 4

DM Mart is a retail chain. Competition is stiff and revolve around the price among the market player in retail chain segment. DM Mart adopted the practice of pricing some its products below cost, with an intention to destroying the competitor. Such pricing practice/strategy is referred to as

Options

- a. Loss leader pricing
- b. Predatory pricing
- c. Price discrimination
- d. Penetration Pricing

Key – b

Reason – Predatory pricing (loss leading) is the practice of selling a product or service at a very low price, intending to drive competitors out of the market or create barriers to entry for potential new competitors.

Note - One should not confuse penetration pricing with predatory pricing.

MCQ 5

Café coffee hub offer a feature of writing name of customer on the takeaway glass down under the logo of CCH, the size of logo of CCH on glass of coffee is which type of attribute (referring to Kano Model)

Options

- a. Reversal
- b. Delighter
- c. Performance
- d. Indifferent

Key – d

Reason – The size of logo on the takeaway cup of coffee is not really making any difference to value and utility of product or even value perceived by customer hence it is indifferent attribute. Indifferent qualities are neither good nor bad and have no effect, positive or negative, on customer satisfaction.

To illustrate – look of emoticons in messaging apps in phone, placing of logo on phone, size thereof.

MCQ 6

COO of Modern Furniture Limited heard about Kano Model. MFL decided to use Kano Model to enhance customer satisfaction; but not sure which attribute of Kano Model need to be focused **mainly** (in priority over others) in order to enhance the customer's willingness to pay.

Options

- a. Reversal
- b. Delighter
- c. Performance
- d. Indifferent

Key – c

Reason - Most organisations focus on Kano's performance attributes on the basis that the higher the performance attributes, the higher the customer's willingness to pay.



TEST YOUR KNOWLEDGE- DESCRIPTIVE QUESTIONS

1. 'S' manages the school canteen (approximately 1,600 students) at Noida. The current cash payment system requires three clerks (each paid ₹90 per hour), employed for about 4 hours a day. The canteen operates approximately 240 days a year.

'S' is considering a Wireless Cash Management System (WCMS), where a student could just swipe an ID Card for payment. This system would cost ₹1,25,000 to setup and ₹36,000 per year to operate. 'S' believes that he could manage with one clerk if he were to implement the system.

Required

ADVISE 'S' on the choice of a plan, assuming working life of WCMS as 5 years. (Ignore the time value of money)

2. Aayla runs the Planetarium Station in New Delhi, India. The strength of the station lies in its live interactions and programs for visitors, students and amateur astronomers. The station is always active with programs for school and college students and for amateur astronomers. One of the station's key attractions is a big screen IMAX theatre. IMAX is a 70 mm motion picture film format which shows images of far greater size and resolution than traditional film systems. The IMAX cinema projection standards were developed in Canada in the late 1960s. Unlike traditional projectors, the film is run horizontally so that the image width is greater than the width of the film.

The average IMAX show at the station attracts 120 visitors (50 children and 70 adults) at a ticket price of ₹160 for children and ₹200 for adults. Aayla estimates that the running costs per IMAX show are ₹10,000. In addition, fixed costs of ₹7,500 are allocated to each show based on annual estimate of the number of IMAX shows.

The Hobart School has approached Aayla about scheduling an extra show for its class VIII students. One hundred students and five teachers are expected to join the special show on the 'Planets & Solar System', a feature that is currently showing. The school has asked Aayla for a price quote. The special show will take place at 08:30 AM when the IMAX is not usually open.

Required

RECOMMEND the minimum amount that Aayla should charge.

3. The President of Automation Limited, a 150 persons engineering company, decided it was time to fire the company's biggest client. Although the client provided close to 60% of the company's annual revenue, Automation Limited decided that dropping this client was necessary. The client was profitable.

The President of Automation Limited stated "We cannot be a great place to work without employees, and this client was bullying my employees. Its demands for turnaround were impossible to meet even with people working seven days a week. No client is worth losing my valued employees".

The initial impact on revenues was significant. However, Automation Limited was able to cut costs and obtain new customers to fill the void. Moreover, the dropped client later gave Automation Limited two projects on more equitable terms.

Required

DISCUSS the reasons behind dropping of a profitable client by Automation Limited.

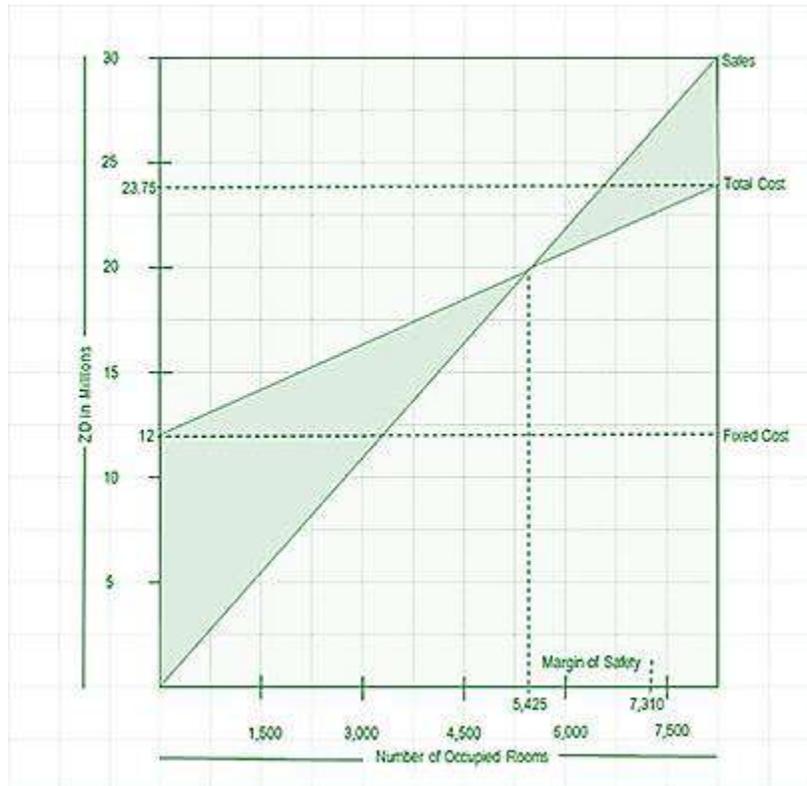
4. Hotel Nikko, Zeeland, an affordable leisure hotel resort is an ideal retreat to escape, unwind and enjoy peace of mind. Set amid expansive tropical greenery in the enclave of Zeeland, Hotel Nikko is designed for pleasure, where services reign supreme and Italian-style architecture of its 25 classic rooms harmonize with nature. Hotel Nikko, Zeeland is a beachfront resort that features a good choice of swim-up pool bar, gym, and variety of restaurants. A wide array of

water sport activities like surfing, sailing, jet skiing etc. are available from beach operators at walking distance. The hotel is synonymous with enjoyment and value for money, with a large choice of very attractive “All Inclusive” packages.

Nikko charges guests ZD 2,700 per room per night, irrespective of single or double occupancy. The variable cost is ZD 900 per occupied room per night. The Nikko is available throughout 365 days a year and has a 75% budgeted occupancy rate. Fixed costs are budgeted at ZD 9 million and are incurred evenly during the year.

During the second quarter (Q2) of the year, usually the room occupancy rates remain substantially below the levels expected at other quarters of the year. Nikko is expecting to sell 900 occupied room nights during Q2. Management is considering strategy to improve profitability, including closing the Nikko for the duration of Q2 or adopting one possible option as follows –

There is scope to extend the Nikko by creating enough space to run a Rustic Chic, Italian Style restaurant to serve its guests. The annual revenues, costs and sales volumes for the combined operations are given in the following graph–



Note

Zeeland's home currency is the ZD.

Required

ANALYZE the profit improvement plan.

5. Y-Connections, China based firm, has just developed ultra-thintablet S-5 with few features like the ability to open two apps at the same time. This tablet cost ₹ 5,00,000 to develop; it has undergone extensive research and is ready for production. Currently, the firm is deciding on plant capacity, which could cost either ₹ 35,00,000 or ₹ 52,00,000. The additional outlay would allow the plant to increase capacity from 500 units to 750 units. The relevant data for the life cycle of the tablet at different capacity level are as under:

Expected Sales	500 units	750 units
Sale Price	₹ 79,600 per unit	₹ 69,600 per unit
Variable Selling Costs	10% of Selling Price	10% of Selling Price
Salvage Value - Plant	₹ 6,25,000	₹ 9,00,000
Profit Volume Ratio	40%	

Required

ADVISE Y-Connections, regarding the 'Optimal Plant Capacity' to install. The tablet's life cycle is two years.

Note: Ignore the time value of money.

6. Color paints is a manufacturer of industrial dyes. It has received an order for 200 kgs of powder dye that needs to be customized to certain specifications. The job would require the following materials:

Material	Total units required	Units already in inventory	Book value of the units in inventory (₹per unit)	Realizable value (₹per unit)	Replacement cost (₹per unit)
A	2,000	0	NA	NA	8
B	3,000	1,200	7	8	10
C	2,000	1,400	12	9	14
D	500	500	9	12	15

- I) Material B is used regularly in production of all types of dyes that Color paints produces. Therefore, any stock used towards this job order would need to be replaced to meet other production demands.
- II) Inventory of material C and D are from stock that was purchased in excess previously. Material C has no other use other than for this special order. Material D can be used as a substitute for 700 units of material Z which currently costs ₹11 per unit. The company does not have any inventory of material Z currently.

Required

ANALYSE the relevant costs of material while deciding whether to accept the order or not?

7. Diezel, is engaged in manufacturing many chemical products. It is using many chemicals some of which are fast moving, some are slow moving and few are in non-moving category. The firm has a stock of 10 units of one non-moving toxic chemical. Its book value is ₹2,400, realizable value is ₹3,500 and replacement cost is ₹4,200.

One of the customers of the firm asks to supply 10 units of a product which needs all the 10 units of the non-moving chemical as an input. The other costs associated with the production of the product are:

Allocated overhead expenses ₹16 per unit.

Out of pocket expenses ₹50 per unit.

Labour cost ₹40 per hour. For each unit two hours are required.

Other material cost ₹80 per unit.

The labour force required for the production of the product will be deployed from among the permanent employees of the firm. This temporary deployment will not lead to any loss of contribution.

Required

- (i) RECOMMEND the minimum unit price to be charged to the customer without any loss to the firm.
 - (ii) ANALYSE with reasons for the inclusion or exclusion of each of the cost associated with the production of the product.
 - (iii) ADVISE a pricing policy to be followed by Diezel in perfect competition.
8. Golden Pacific Airlines Ltd. operates its services under the brand 'Golden Pacific'. The 'Golden Pacific' route network spans prominent business metropolis as well as key leisure destinations across the Indian subcontinent. 'Golden Pacific', a low-fare carrier launched with the objective of commoditizing air travel, offers airline seats at marginal premium to train fares across India. Profits of the 'Golden Pacific' have been decreasing for several years. In an effort to improve the company's performance, consideration is being given to dropping several flights that appear to be unprofitable.

Income statement for one such flight from 'New Delhi' to 'Leh' (GP - 022) is given below (per flight):

	₹	₹
Ticket Revenue (175 seats x 60% Occupancy x ₹ 7,000 ticket price)		7,35,000
Less: Variable Expenses (₹1,400 per person)		1,47,000
Contribution Margin		5,88,000
Less: Flight Expenses:		
Salaries, Flight Crew	1,70,000	
Salaries, Flight Assistants	31,500	
Baggage Loading and Flight Preparation	63,000	

Overnight Costs for Flight Crew and Assistants at destination	12,600	
Fuel for Aircraft	2,38,000	
Depreciation on Aircraft	49,000*	
Liability Insurance	1,47,000	
Flight Promotion	28,000	
Hanger Parking Fee for Aircraft at destination	7,000	7,46,100
Net Gain / (Loss)		(1,58,100)

* Based on obsolescence

The following additional information is available about flight GP-022.

1. Members of the flight crew are paid fixed annual salaries, whereas the flight assistants are paid by the flight.
2. The baggage loading, and flight preparation expense is an allocation of ground crew's salaries and depreciation of ground equipment.
3. One third of the liability insurance is a special charge assessed against flight GP-022 because in the opinion of insurance company, the destination of the flight is in a "high-risk" area.
4. The hanger parking fee is a standard fee charged for aircraft at all airports.
5. If flight GP-022 is dropped, 'Golden Pacific' Airlines has no authorization at present to replace it with another flight.

Required

Using the data available, prepare an ANALYSIS showing what impact dropping flight GP-022 would have on the airline's profit.

9. About Aditya Group

Aditya Group was established in 1975, manufactures and sells electronic personal grooming and beauty products. The group has two 100% subsidiaries AUS Ltd. and ANZ Ltd. AUS Ltd. manufactures luxury products that cater to niche customers who prefer specialized personal grooming and beauty care. ANZ Ltd. caters to regular daily beauty and grooming requirements that has a wide reach within the market. Factories of both companies are located within India. The products are sold to wholesalers, who supply these products to the retail market.

Aditya Group purchases its raw material requirements from both domestic and overseas markets. Additionally, certain products manufactured by AUS Ltd. can be enhanced based on the products manufactured by ANZ Ltd. Therefore, as per production requirements, AUS Ltd. sources some product components from ANZ Ltd.

Aditya Group has a centralized decision-making set-up. Basic policy decisions for functions such as production planning, sales and client relationship, finance and human resources are handled at the group level. Individual units AUS Ltd. and ANZ Ltd. concentrate on the manufacturing alone.

About You

You are an Assistant Manager in Finance and Accounts department of Aditya Group, headed by Director- Finance Ms. Elsea. You assist and report to Ms. Fiona, Manager of your department. Sometimes you also assist Director Finance in analysing financial and non-financial information, drafting reports for board meetings, preparation of presentation and staff trainings.

Business Situation- 1**Yesterday, 5.15 P.M.**

You got an email from Ms. Elsea, with Cc to Ms. Fiona. Ms. Elsea, asked you to prepare a cost statement for making a quotation to a new customer. She has also informed you that the customer can also maintain a long- term business relation with us. You have been requested to gather information related to the specification from Sales Manager.

Yesterday, 5.25 P.M.

You have been called by Ms. Fiona, and provided the product specification received from Sales- Manager for which quotation has to be quoted. Ms. Fiona has also requested you to gather relevant information to prepare cost statement. Due to the expected long term business relationship that AUS Ltd. wants to have with the customer, the sales manager wants to quote the lowest possible price. AUS Ltd. currently has some spare capacity that can be utilized to cater to this entire order. Therefore, only the relevant cost to AUS Ltd. has to be considered to arrive at the quote.

After meeting with your reporting officer, you mailed to various concerned department and requested for data.

The following information has been obtained in relation to the contract:

Today, 10.05 A.M.

You got an e-mail from Production Manager, it has been informed that 40 tonnes of material Dx would be required. This material is in regular use by AUS and has a current purchase price of ₹380 per tonne. Currently, there are 5 tonnes in inventory which cost ₹350 per tonne. The resale value of the material in inventory is ₹240 per tonne.

Further, with regards to components, it has been informed that 4,000 components would be required. These could be bought externally for ₹15 each or alternatively they could be supplied by ANZ Ltd. The variable cost of the component if it were manufactured by ANZ Ltd. would be ₹8 per unit. ANZ Ltd. has sufficient capacity to produce 2,500 components without affecting its ability to satisfy its own external customers. However, in order to make the extra 1,500 components required by AUS Ltd., ANZ Ltd. would have to forgo other external sales of ₹50,000 which have a contribution to sales ratio of 40%. To have uniformity in the quality of the component, it is assumed that AUS Ltd. would procure its entire requirement of 4,000 components either externally or from ANZ Ltd. The transfer pricing policy of Aditya Group for sales between units aims at goal congruence. The unit selling the goods would be allowed to charge any opportunity cost on account of catering to internal demand, while the purchasing unit should ensure that the company is not at a loss.

Today, 10.45 A.M.: You got an e-mail from Personnel Manager, it has been informed that 2,000 high skilled labour hours would be required. The grade of labour required is currently paid ₹5 per hour. Highly skilled labour is in short supply and cannot be increased significantly in the short-term. This labour is presently engaged in meeting the demand for product 'G', which requires 4 hours of highly skilled labour. The contribution from the sale of one unit of product L is ₹24.

It has also been informed that the contract would require a specialist machine. The machine could be hired for ₹15,000 or it could be bought for ₹50,000. At the end of the contract if the machine were bought, it could be sold for ₹30,000. Alternatively, it could be modified at a cost of ₹5,000 and then used on other contracts instead of buying another essential machine that would cost ₹45,000. The operating costs of the machine are payable by AUS whether it hires or buys the machine. These costs would total ₹12,000 in respect of the new contract.

Supervisor

The contract would be supervised by an existing manager who is paid an annual salary of ₹50,000 and has sufficient capacity to carry out this supervision. The manager would receive a bonus of ₹5,000 for the additional work.

Development Time

15 hours of development time at a cost of ₹30,000 have already been worked in determining the resource requirements of the contract.

Fixed Overhead Absorption Rate

AUS uses an absorption rate of ₹20 per direct labour hour to recover its general fixed overhead costs. This includes ₹5 per hour for depreciation.

Today, 11.15 A.M: Ms. Fiona called you in her place as asked you the following:

Required

- (i) CALCULATE the relevant cost of the contract to AUS. You must present your answer in a schedule that clearly shows the relevant cost value for each of the items identified above. You should also EXPLAIN each relevant cost value you have included in your schedule and why any values you have excluded are not relevant. Ignore taxation and the time value of money.
- (ii) DISCUSS two problems that can arise as a result of setting prices using relevant costing.

Business Situation- 2

Today, 5.26 P.M: A memo from Managing Director of the group has been circulated to all officers of the group which stated "*My objective for the forthcoming year is to reduce our quality costs in each of the primary activities in our value chain*". The company is keen to build a reputation for quality and gives a five-year guarantee with all of its products.

Today, 5.37 P.M: Ms. Fiona, called you in her place and asked the following:

Required

- (iii) EXPLAIN, by giving examples, how each of the four types of quality cost could be reduced. You should also IDENTIFY in which primary activity each one of your examples would occur in Aditya Group's value chain.

10. **N2 Co.** is the manufacturer and supplier of firefighting and safety equipment for industrial use and follows the international quality standards and uses the high-grade raw material. It is a fast-growing brand that protects millions of people across the India, every single day. N2 has been offered a bid on a prospective export contract for 20,000 commercial fire extinguishers with following specification from USA buyer and the delivery terms is FOB.

“two-gallon cylinder holding 10 pounds of multi-purpose dry chemical at 380 PSI”

N2 is exporting first time. The price computation per fire extinguisher is as follows:

	₹	₹
Direct Material		
Circle Part Cost	620	
Necking Part	30	
Bottom Part	50	
Fire Extinguisher Powder	590	
Heat Process	50	
Nozzle	60	
Meter	20	
Pipe	50	
Nitrogen	30	1,500
Direct Labor (2 hrs. × ₹40)		80
Leakage Testing		50
Variable Overheads (including packing)		214
Export Clearance Charges on FOB term		36
Fixed Overhead		100
Total		1,980
Add: Markup @ 10%		198
Price		2,178
USD to INR		67
Price in USD		32.51

After quotation of USD 32.51, the buyer is negotiating the price and ready to pay only USD 28.50.

Required

ADVISE whether it is worth accepting at USD 28.50 considering other factors.

11. The budgeted cost data of a product manufactured by Ayudhya Ltd. is furnished as below:

Budgeted units to be produced	2,00,000
Variable cost (₹)	32 per unit
Fixed cost (₹)	16 lacs

It is proposed to adopt cost plus pricing approach with a mark-up of 25% on full budgeted cost basis.

However, research by the marketing department indicates that demand of the product in the market is price sensitive. The likely market responses are as follows:

Selling Price (₹ per unit)	44	48	50	56	60
Annual Demand (units)	1,68,000	1,52,000	1,40,000	1,28,000	1,08,000

Required

ANALYSE the above situation and DETERMINE the best course of action.

ANSWER/ SOLUTION- DESCRIPTIVE QUESTIONS

1. For each day, 'S' spends ₹360 per clerk (₹90 per hr. × 4 hrs.). Therefore, 'S' spends ₹1,080 per day to employ three clerks. Annually, this outlay amounts to ₹2,59,200 (₹1,080 per day × 240 days).

Over five years, the outlay would be ₹12,96,000. If the WCMS is implemented, the initial cost is ₹1,25,000. If we add the annual cost of ₹36,000, the total cost over five years amounts to ₹3,05,000. Since one clerk will be needed as well, 'S' has to incur ₹4,32,000 over five years to pay clerk (₹4,32,000 = ₹90 × 4 hrs. × 1 clerk × 240 days × 5 years). Therefore, the total cost of this option is ₹7,37,000.

Accordingly, there is cost saving of ₹5,59,000 from WCMS implementation.

Relevant Non-Financial Considerations

The WCMS may be a lot more efficient, but more rigid. For instance, what if, a student forgets to bring his/ her card or transaction failure due to connectivity issue, and may not have enough cash to pay. Automated systems may be less able to handle these situations. Having clerks may add an aspect of flexibility and a human aspect that is hard to quantify.

Conclusion

Obviously, WCMS option is more cost effective for 'S' because there is a cost saving of ₹5,59,000. But, non- financial factors should also be taken into consideration.

2. The incremental cost associated with the IMAX show appears to be ₹10,000 i.e. cost of running the show. The allocated fixed cost per show is not relevant because the total amount of fixed costs for the year will not change as a result of the special show. Further, the stated ticket prices are not relevant because the show will take place at 08:30 AM when the IMAX is not usually open – thus, the students will not be displacing any regular visitors. Based on the financial data provided, the minimum price quote appears to be ₹10,000.

Aayla should consider the following factors:

- Does the station have a souvenir shop and/or cafeteria?
If so, many students are likely to buy food and/or souvenir items, thereby increasing the station's contribution. In turn, this would reduce the minimum price quote.
- What is the impact on future revenue?
After seeing the show, many students may return with their parents, thereby increasing future revenue.
- Are there costs linked with the special showing that are not included in the ₹10,000 variable cost number?

For example, will the station have to pay an overtime premium.

Aayla should also consider the educational mission of the Planetarium Station. Such shows directly contribute to this mission, the station, and, hopefully, the betterment of the students. The special shows may be an excellent way to expose some students to earth science – these students may have never gone through the Planetarium Station if it were not for the school excursion.

Overall, the “best” price to charge is unclear and requires some judgment as Aayla needs to balance an array of financial and non-financial factors.

3. With increasing completion, dynamic market changes, changing needs of customers, *non-financial* and *ethical considerations* have gained relevance in the decision- making process. A company may face the dilemma of meeting customers' needs while protecting employees' rights. While there are no clear-cut parameters to measure the impact of such decisions, they have a long-term impact on the company's operations that ensures profitability and sustainability of an organization.

In the given scenario, a customer who contributes close to 60% of Automation Ltd.'s profits has been making turnaround demands that are unreasonable for the company employees to meet. Automation Ltd. has to decide whether to continue doing business with the customer based on the current terms or protecting the work environment of its employees. In the current scenario, it is in Automation's long term interests to protect its employees' rights (a non-financial consideration). Keeping this approach in mind, Automation Ltd. decided to terminate business with the profitable client. While this had a significant impact on revenues in the short term, in the long run Automation Ltd. was able to get business from new clients. Also, realizing the value of service provided, the dropped client came back with projects on equitable terms. Therefore, even though it did not make financial sense in the short run, decisions based on non-financial metrics played an important role in ensuring Automation Ltd.'s long term sustainability.

4. The Present Profit of Hotel Nikko

$$\begin{aligned}
 \text{Total Room Days} &= 25 \text{ Rooms} \times 365 \text{ days} \times 75\% = 6,844 \\
 \text{Profit} &= \text{Total Contribution} - \text{Fixed Cost} \\
 &= 6,844 \text{ room days} \times (\text{ZD } 2,700 - \text{ZD } 900) - \text{ZD } 90,00,000 \\
 &= \text{ZD } 33,19,200
 \end{aligned}$$

If Nikko is Shut Down during Q2

Loss of Contribution {900 Room Days × (ZD 2,700 - ZD900)} = ZD 16,20,000

Nikko should not close its hotel during Q2. The fixed costs will still be incurred and hotel closure would result in lost contribution of ZD16,20,000. This in turn would decrease annual profits by ZD16,20,000. In addition, Nikko could lose guests at other quarters of the year, particularly their regular business customers, who may perceive the Nikko as being *non-reliable*.

Proposal of Opening an Italian Restaurant

Opening a restaurant will increase the fixed costs of the Nikko from ZD 9 million p.a. to ZD 12 million p.a. Thus, annual increment of ZD 3 million.

Average Revenue per occupied room will rise from ZD 2,700 to ZD 3,636.36... (ZD 30 Million / 8,250 rooms) because increasing guest expenditure in Italian restaurant.

The total cost predicted at a level of 8,250 occupied rooms is ZD 23.75 million which means the variable costs must be ZD 11.75 million (ZD 23.75 million – ZD 12 million fixed costs). This is a variable cost per occupied room of ZD 1,424.24... which is an increase of ZD 524.24...

Consequently, the breakeven point has gone up from 5,000 to 5,425 (as shown in the diagram) occupied rooms so the Nikko is required to sell more room nights to cover costs. However, budgeted occupancy is now 7,310 occupied room nights which is 80.11% occupancy (7,310/9,125). This provides a margin of safety of 1,885 occupied room nights or 25.79%. At 7,310 occupied room nights, Nikko's budgeted profit would be ZD 41,70,597 {7,310 × (ZD 3,636.36 – ZD 1,424.24) – 12 million} which is more than present budgeted profit by ZD 8,51,397. So, it is better for Nikko to go for opening an Italian Restaurant.

5. Advice

Based on the above 'Expected Profit' statement, which is purely based on *financial considerations* firm may go for high price – low volume i.e. 500 units level. However, *non-financial considerations* are also given due importance as they account for actions that may not contribute directly to profits in the short run but may contribute significantly to profits in long run. Here, it is important to note that life cycle of product is two years and there is no significant difference between the profits at both levels. In this scenario firm may opt the plant having high capacity *not only to increase its market share but also to establish a long term brand image*.

Workings

Statement Showing "Variable Manufacturing Cost per unit"

Particulars	₹ / unit
Sales	79,600
Less: Contribution (40%)	31,840
Variable Cost	47,760
Less: Variable Selling Costs (₹79,600 × 0.1)	7,960
Variable Manufacturing Cost	39,800

Statement Showing “Expected Profit”

Particulars	('000) ₹ / unit	
	500 units	750 units
Sales	39,800 (₹79,600 × 500)	52,200 (₹69,600 × 750)
Less: Variable Mfg. Cost	19,900 (₹39,800 × 500)	29,850 (₹39,800 × 750)
Less: Variable Selling Cost	3,980 (₹39,800 × 0.1)	5,220 (₹52,200 × 0.1)
Add: Salvage Value	625	900
Less: Cost of Plant	3,500	5,200
Net Profit	13,045	12,830

Development cost is sunk and is not relevant.

6. Material A

The requirement of 2,000 units of Material A has to be purchased in entirety since there are no units in stock. Therefore, the relevant cost will be the replacement cost at ₹8 per unit, which for 2,000 units is ₹16,000 (2,000 units × ₹8 per unit).

Material B

There is a requirement of 3,000 units of Material B, of which 1,200 units are in stock. Material B used regularly in the production of all types of dyes. If the 1,200 units in stock are used, they need to be replenished (replaced) in order to meet production demands of other dyes. In addition, for the special order, additional 1,800 units of Material B is required to be procured from the market. Therefore, 3,000 units of Material B has to be procured if the special order is undertaken. The relevant cost will be the replacement cost at ₹10 per unit, which for 3,000 units is ₹30,000 (3,000 units × ₹10 per unit).

Material C

There is a requirement of 2,000 units of Material C, of which 1,400 units are in stock. The balance 600 units have to be procured at the replacement (market) price of ₹14 per unit, which would be ₹8,400. Material C has no other use, so if the special order is not undertaken the stock of 1,400 units can be sold at ₹9 per unit. So, the opportunity cost of undertaking this order is ₹12,600. Therefore, the relevant cost for Material C is procurement cost of 600 units plus the opportunity cost of not disposing the current stock of 1,400 units, which would be ₹8,400 + ₹12,600 = ₹21,000.

Material D

The entire requirement of 500 units of Material D is in stock. If the special order is not accepted, Color paints has two options (i) sell the excess material at ₹12 per unit or (ii) use it as a substitute for Material Z, which would otherwise need to be procured.

(i) The realizable value of Material D is ₹6,000 (500 units × ₹12 per unit).

- (ii) Material D can be used as a substitute for 700 units of Material Z. Since there is no stock of Material Z currently, if the special order is accepted, the entire quantity would have to be procured at ₹11 per unit. This would cost the company ₹7,700 (700 units × ₹11 per unit).

Both options (i) and (ii) represent opportunity cost if the special order is accepted. The relevant cost for Material D, if the special order is accepted would be higher of either of these two opportunity costs. The higher opportunity cost of that of procuring Material Z from the market at ₹7,700. Therefore, the relevant cost for Material D is ₹7,700.

Therefore, the relevant cost to accepting the special order would be the cumulative of the relevant cost for Materials A, B, C, and D. This works out to ₹74,700.

Note- This question has been solved by considering use of material D as a **rare or infrequent substitute** for material Z. However, this question can also be solved alternatively by considering **perfect substitute**.

7. (i) Diezel has the opportunity to utilize 10 units of non-moving chemical as input to produce 10 units of a product demanded by one of its customers. The minimum unit price to be charged to the customer would be—

Cost Component	Cost per unit of product (₹)
Cost of Material (Realizable value = ₹3,500 / 10 units of chemical)	350
Out of Pocket Expenses	50
Other Material Cost	80
Minimum Unit Price that can be charged	480

Therefore, the minimum unit price that can be charged to the customer, without incurring any loss is ₹480 per unit of product. As explained below in point (ii), allocated overhead expenses and labor cost are sunk costs that have been ignored while calculating the minimum unit price to be charged.

(ii) **Analysis**

- (a) Cost of Material: Relevant and hence included at realizable value. Diezel has 10 units of non-moving chemical input that has a book value of ₹2,400, realizable value of ₹3,500 and replacement cost of ₹4,200. Realizable value of ₹3,500 would be the salvage value of the chemical had it been sold by Diezel instead of using it to meet the current order. This represents an opportunity cost for the firm and hence included while pricing the product. Book value would represent the cost at which the inventory has been recorded in the books, a sunk cost that has been ignored. Replacement cost of ₹4,200 would be the current market price to procure 10 units of the input chemical. This would be relevant only when the inventory has to be replenished after use. This chemical is from the non-moving category, that means that it is not used regularly in production process and hence need not be replenished after use. Therefore, replacement cost is also ignored for pricing.

- (b) Labour Cost: Not relevant and hence excluded from pricing. It is given in the problem that this order would be met by permanent employees of the firm. Permanent employee cost is a fixed cost that Diezel would incur irrespective of whether this order is produced or not. No additional labour is being employed to meet this order. Therefore, this cost is a sunk cost, excluded from pricing.
- (c) Allocated Overhead Expenses: These expenses have been incurred at another Cost Centre, typical example would be office and administration costs. Such costs are fixed in nature that would be incurred irrespective of whether this order is produced or not. Therefore, this cost is a sunk cost, excluded from pricing.
- (d) Out of Pocket Expenses: These are expenses that are incurred to meet the production requirement of this order. These are additional variable expenses, that need to be included in pricing.
- (e) Other Material Costs: These are expenses that are incurred to meet the production requirement of this order. These are additional variable expenses, that need to be included in pricing.

(iii) Advice on Pricing Policy

Under perfect competition conditions, Diezel can have no pricing policy of its own, here sellers are price takers. It cannot increase its price beyond the current market price. The firm can only decide on the quantity to sell and continue to produce as long as the marginal cost is recovered. When marginal cost exceeds the selling price, the firm starts incurring a loss.

Since Diezel cannot control the selling price individually in the market, it can adopt the *going rate pricing* method. Here it can keep its selling price at the average level charged by the industry. This would yield a fair return to the firm. An average selling price would help the firm attract a *fair market share* in competitive conditions.

8. As per the statement given in the problem, FlightGP-022 incurs a net (loss) of ₹158,100. This is the net result of revenue less costs. Revenue is entirely variable depending upon passenger occupancy. Costs are both variable and fixed nature. To analyze the impact of dropping flight GP-022, we need to *re-compute* net gain/ (loss) that Golden Pacific earns when it operates the flight **based on relevant costing principles**.

Net Gain/ (Loss) = Revenue earned from flight operations *less* Variable costs of operation

Revenue earned is the ticket revenue earned from flight operations of GP-022, this is entirely variable. Variable costs of flight operations are those expenses that would be incurred only when the flight is operated. These include variable expenses per passenger, salaries flight assistants, overnight costs for flight crew and assistants, fuel for aircraft, a third portion of flight insurance that is specifically related to this flight sector and flight promotion expense. These are expenses that will not be incurred if the flight is not operated. Hence, relevant for decision making.

Other expenses like salaries of flight crew and hanger parking fees for aircraft are fixed expenses that will be incurred even if the flight does not operate. Loading and flight preparation expense is an allocated cost that will continue to be incurred even if flight GP-022 does not operate. Depreciation of aircraft and liability insurance expense (2/3rd portion not related to a specific flight sector) are sunk costs. These expenses have already been incurred and hence are irrelevant to decision making. Therefore, these fixed, allocated and sunk expenses are ignored while analyzing the decision whether to continue operating flight GP-022.

Flight GP-022
Statement Showing Net Gain/ (Loss)

	₹	₹
Contribution Margin <i>if the flight is continued</i>		5,88,000
Less: Flight Costs		
Flight Promotion	28,000	
Fuel for Aircraft	2,38,000	
Liability Insurance (1/3 × ₹1,47,000)	49,000	
Salaries, Flight Assistants	31,500	
Overnight Costs for Flight Crew and Assistants	12,600	3,59,100
Net Gain/ (Loss)		2,28,900

If Golden Pacific Airlines Ltd. discontinues flight GP-022, profits will be reduced by ₹2,28,900. The statement showing loss in operations of ₹158,100 is misleading for decision making purpose because it accounts for costs that are fixed and irrelevant. However, since flight GP-022 yields a net gain of ₹2,28,900, flight operations should continue.

9. (i) **Statement Showing Relevant Cost**

Type of Cost	Explanation	Amount (₹)
Material Dx (40 tonnes × ₹380)	1	15,200
Components	2	52,000
Direct labour (2,000 hrs. × ₹11)	3	22,000
Specialist machine	4	10,000
Machine operating cost	5	12,000
Supervision	6	5,000
Development time	7	Nil
General fixed overhead	8	Nil
Total relevant cost		1,16,200

Explanation

1. Material Dx is in regular use by AUS Ltd. and must be replaced. Consequently, its relevant value is its replacement cost. The historical cost is not relevant because it is a past cost and the resale value is not relevant because AUS Ltd. is not going to sell it because the material is in regular use.
2. AUS Ltd. would like to procure 4,000 components either from ANZ Ltd. or externally from the market. At the current production level, ANZ Ltd. (seller) has available capacity to accommodate part of AUS Ltd.'s request to the extent of 2,500 components. At this point, ANZ Ltd. would be operating at its maximum capacity. To cater to the remaining demand of 1,500 units from AUS Ltd., ANZ Ltd. has to forego external sales of ₹50,000 to its own customers. Given that the contribution to sales ratio is 40%. Therefore, ANZ Ltd. has to forego contribution of ₹20,000 (40% of external sales foregone ₹50,000) in order to cater to AUS Ltd.'s request. Fixed cost at ANZ Ltd. is irrelevant, since it would be incurred irrespective of whether AUS Ltd.'s order to catered to or not.

Therefore, in spirit of goal congruence, the transfer price that ANZ Ltd. would charge AUS Ltd. would be the variable cost of ₹8 per unit and ₹20,000 towards lost contribution as explained above. Therefore, the transfer price

$$= (\text{₹}8 \text{ per unit} \times 4,000 \text{ components}) + \text{₹}20,000$$

$$= \text{₹}32,000 + \text{₹}20,000$$

$$= \text{₹}52,000 \text{ for } 4,000 \text{ components}$$

Therefore, per component, the price charged would be $\text{₹}52,000 / 4,000 = \text{₹}13$ per component. This is lower than the external market price of ₹15 per unit. Therefore, in the interest of goal congruence the cheaper option is preferred. AUS Ltd. should source its components from ANZ Ltd, for a total procurement cost of ₹52,000.

3. Skilled labour is in short supply and can only be obtained by reducing the production of product 'G', resulting in a loss of contribution of ₹24 (given) or ₹6 per hour of skilled labour. Hence the relevant labour cost will be ₹6 (contribution lost per hour) + ₹5 (hourly rate of skilled labour) i.e. ₹11 per hour.
4. AUS Ltd. has a number of options: (a) If the machine were to be hired it would have a cost of ₹15,000; (b) if the machine were bought and then sold at the end of the work it would have a net cost of ₹20,000; or (c) if the machine were bought and then modified to avoid the need to buy the other machine it would have a net cost of ₹10,000 (₹50,000 plus ₹5,000 modifications less ₹45,000 cost of another machine). Thus, the most economic approach is buy the machine and then modify it so the relevant cost is ₹10,000.
5. The machine operating costs are future costs of doing the work and therefore are relevant.
6. The supervisor's salary is irrelevant, but the bonus needs to be included because it is dependent on this work and therefore is relevant.

7. The development time has already been incurred. Therefore, it is a past cost and not relevant.
 8. General fixed overhead costs and their absorption are not relevant because they will be incurred whether the work goes ahead or not. Depreciation is also not relevant because it is an accounting entry based on the historical purchase of assets. It is not affected by the work being considered.
- (ii) Two main issues arise when pricing work based on relevant costs:
- Profit reporting; and
 - Pricing of future work.

With regard to profit reporting, the decision as to whether to proceed with the work will have been based on the use of relevant costs, but the routine reporting of the profit from the work will be based on the company's normal accounting system. Since this system will be based on total cost, it is probable that the costs of the work reported will be greater than its relevant cost. Consequently, the amount of profit reported to have been made on this order will be lower than expected and may even be a loss. This may cause difficulties for the manager who accepted the work as an explanation will be required of the reasons why there is such a difference in profit.

With regard to the pricing of future work the difficulty lies in increasing the price for similar items for the same customer in future. Once a price is set, customers tend to expect that any future items will be priced similarly. However, where a special price has been offered based on relevant cost because of the existence of spare capacity the supplier would not be able to continue to price on that basis as it does not recover its long-term total costs. There may also be difficulties created by this method of pricing as other customers are being charged on a full cost basis and if they were to discover that a lower price was offered to a new customer they would feel that their loyalty was being penalised.

(iii) **Prevention**

Operations: Preventative maintenance and checking of the calibration of machinery. This would reduce the number of potentially faulty products being produced and therefore reduce guarantee claims.

Appraisal

Inbound Logistics: Reduce costs of incoming inspections by building close links with suppliers and getting them to adopt TQM. If suppliers can guarantee their quality, then inbound inspections could be eliminated.

Internal Failure

Operations: Reduce costs of re-works by training employees on a continual basis e.g., quality circles. This would reduce failure costs and also improve quality.

External Failure

Service: Design quality into the product to try to prevent guarantee claims and therefore the cost of servicing/repairing the product.

10. Workings

Statement Showing Benefit from Prospective Export Contract

	₹
Direct Material	1,500
Direct Labor (2 hrs. × ₹40)	80
Leakage Testing	50
Variable Overheads (including packing)	214
Export Clearance Charges on FOB term	36
Total Relevant Cost	1,880
USD to INR	₹67
Relevant Cost	\$28.06
Price Offered by Customer	\$28.50
Benefit <i>per extinguisher</i>	\$0.44
No. of Extinguishers	20,000
Total Benefit	\$8,800

Advise

From financial perspective, it will be profitable for N2 to accept the contract because of gain of \$8,800 (₹5,89,600) along with export incentives of drawback. Besides this, following consideration should also be taken into consideration while exporting fire extinguishers:

Statutory Compliances

Before exporting to a foreign country or even agreeing to sell to a new customer in a foreign country, N2 should be aware of foreign laws that might affect the sale. Export documentation is important as it plays a significant role in regulating the flow and movement of goods in international markets. Each country has its own prescribed statutory documents to be complied by exporters and importers. Thus, N2 should consider about the documentation and inspection compliances part of new buyer. It may include third party audit, commercial invoice and packaging list requirements, certificate requirements like- no child labour certificate, inspection certificate, reach compliance certificate etc. If any compliance requirement is not met, what will be the consequences? There may be stiff penalty has to be paid owing to non-compliance or failure to accurately comply with the export obligation.

Buyer Creditworthiness

It is necessary that before shipment the exporter to carry out its own credit check on the importer to determine creditworthiness. Thus, N2 should make a proper assessment of the creditworthiness of the foreign buyer and spend sufficient time in cross checking the credit worthiness of his counterpart to avoid any kind of unforeseen situation in future. Such information can be easily availed through contracts or through ECGC. Private agencies also provide information on paid service basis. However, this risk can be covered by asking for LC payment terms or 100% advance or opting for post shipment insurance for goods being exported.

Industry Analysis

Industry analysis involves such things as assessing the competition in the industry; the interplay of supply and demand in the industry; how the industry holds up against other industries that are emerging and providing competitions; the likely future of the industry, especially in light of technological developments; how credit works in the industry; and the exact extent of the impact that external factors have on the industry.

For N2, it is worthwhile to know the current and future demand of fire extinguisher and factors influencing the growth of global fire extinguisher market. N2 can perform industry analysis through three main ways i.e. the Competitive Forces Model (also known as Porter's 5 Forces); the broad factors analysis, also known as PEST analysis; and SWOT Analysis. It may also arrange industry report from trusted sources.

Additional Terms

Ensure that the all terms are clear and suit the business purpose. For instance, delivery terms should provide date of shipment or means of determining the date. In some circumstances, a late delivery penalty may be incurred where goods are not supplied by a specific delivery date. Therefore, N2 should evaluate whether shipment date is attainable or not. If the target shipment date could not be met, what will be the charges? Further, N2 must also check whether the foreign bank charges are subject to beneficiary account. If yes, then the same must be considered in the quotation.

Overall, N2 should accept the proposed contract only after due and careful consideration of above factors.

11. Analysis of Cost *plus* Pricing Approach

The company has a plan to produce 2,00,000 units and it proposed to adopt **Cost plus Pricing** approach with a markup of 25% on full budgeted cost. To achieve this pricing policy, the company has to sell its product at the price calculated below:

Qty.	2,00,000 units
Variable Cost (2,00,000 units × ₹ 32)	64,00,000
Add: Fixed Cost	16,00,000
Total Budgeted Cost	80,00,000
Add: Profit (25% of ₹ 80,00,000)	20,00,000
Revenue (need to earn)	1,00,00,000
Selling Price <i>per unit</i> $\left(\frac{₹ 1,00,00,000}{2,00,000 \text{ units}} \right)$	50 p.u.

However, at selling price ₹50 per unit, the company can sell 1,40,000 units only, which is 60,000 units less than the budgeted production units.

After analyzing the price-demand pattern in the market (which is price sensitive), it is perceived that to sell all the budgeted units of 2,00,000 market price needs to be further lowered, which might be lower than the total cost of production. This action does not seem to be in favor of firm's interest.

Statement Showing “Profit at Different Demand & Price Levels”

	I	II	III	IV	Budgeted
Qty. (units)	1,68,000	1,52,000	1,40,000	1,28,000	1,08,000
	₹	₹	₹	₹	₹
Sales	73,92,000	72,96,000	70,00,000	71,68,000	64,80,000
Less: Variable Cost	53,76,000	48,64,000	44,80,000	40,96,000	34,56,000
Total Contribution	20,16,000	24,32,000	25,20,000	30,72,000	30,24,000
Less: Fixed Cost	16,00,000	16,00,000	16,00,000	16,00,000	16,00,000
Profit (₹)	4,16,000	8,32,000	9,20,000	14,72,000	14,24,000
Profit (% on total cost)	5.96	12.87	15.13	25.84%	28.16%

Determination of the Best Course of Action

- (i) Taking the above calculation and analysis into account, the company should produce and sell 1,28,000 units at ₹56. At this price company will not only be able to achieve its desired mark up of 25% on the total cost but can earn maximum contribution as compared to other even higher selling price.
- (ii) If the company wants to uphold its proposed pricing approach with the budgeted quantity, it should try to reduce its variable cost per unit for example by asking its supplier to provide a quantity discount on the materials purchased. With a reduction in variable cost per unit, the selling price per unit (determined as a percentage of full costs) will also reduce and suitably create demand for 2,00,000 units as budgeted.

