Accounting for Financial and Managerial Decision and Control [AFMDC]

Unit 12
Cost Information for Pricing and Product Planning

Structure

- Effect of product cost in pricing and product mix decisions
- Short-term product mix and pricing decisions
- Long-term product mix and pricing decisions

After the completion of this unit, you should be able to:

- Differentiate between product line and product mix
- Explain the effects of product cost in pricing and product mix
- Understand the concept of price setter firm and price taker firm
- Discuss the short-term product mix and pricing decisions
- Discuss the long-term product mix and pricing decisions

12.1 Concept of Product Line and Product Mix

The total number of product lines that a company offers to its customers is referred as product mix. Product mix and product lines are not same. The product line is a subset of the product mix. A product line refers to a unique product category or product brand a company offers. It is a group of related products manufactured or marketed by a single company.

In simple words, it can be said that a product line is a group of related products, differentiating by features and price. For example, if a company deals in different categories of products such as readymade dress and shoes. Readymade dress, here, forms a different product line, and as well shoes form a different product line. However, when these both are grouped together, they form the product mix of the company. The product mix has the following four dimensions:

Width: Readymade dress and shoes are two product lines a company, which is known as Width.
Length: The product mix length refers to the total number of products in the mix. Under readymade dress the company produces shirt, trouser and coat. Similarly, under the product line shoes, it produces gent's shoes and ladies' shoes.
Depth: The product mix depth is the measure of variations among all product line. For example, in the above example three sizes are available under each product, which is known as depth of the product readymade dress.
Consistency: The similarity of the product lines in terms of use, production and distribution is referred by product mix consistency. Product mix consistency refers to how closely products are linked to each other. Less the variation among products more is the consistency. For example, a company dealing in just dairy products has more consistency than a company dealing in all types of electronics.

Thus, in the long run it is concluded that product line and product mix are not same. Product line is a group of related products produced or marketed by a company. It is a subset of product mix. Product mix is a group of product lines dealing by the company.

12.2 Effects of Product Cost in Pricing and Product Mix Decision

The amount of cost it takes to produce a product can have a direct impact on both the decisions of pricing and product mix decision. The costs incurred to manufacture a product are product cost. The product cost includes direct cost and indirect cost.

Pricing the product is the next activity of a manufacturer after the determination of total cost. To establish a selling price for a product is known as pricing. Price charge must be higher than total costs. The prices must cover all costs as well as profits. For stay long period in the market a company, its selling price must be:

a) Competitive with the competition price existing in the market
b) Acceptable to customer
c) Recoverable all the costs incurred for its products
d) Include return or profit

Thus, two types of firms are involving in the price fixation. Those are Price Taker and Price Setter. Price taker firm should produce its products at lower amount than their prices. For it the price taker has to take only relevant cost among all cost items. The price taker also has little flexibility toward the capacity of the firm resources. A Price setter firm dominates in the market for the price as well as for the product mix. Such firms have relatively little competition in the market and enjoy large market shares.

12.3 Short-term Product Mix and Pricing Decision

A firm with a negligible market share in the industry is referred as a small firm. Such a firm fixes the price of their product as set by the big firms or leading firms. Similarly**,** such firm has to adjust their product mix in the short term when the market place has determined what prices it can change for its product. For the fixation of changes in price only relevant costs should be taken into account. The relevant costs for the special product mix decisions are short run variable cost. If there is any opportunity cost or any incremental cost, then those costs also have to consider for the price fixation.

The following conditions must be fulfilled for short-term decision of one-time special order:

- Sufficient capacity is available to fulfill the order,
- The special-order price would not affect the future selling price of the product.
- The special-order price must cover any incremental cost.
- The order will utilize unused capacity for only a short period

12.4 Long-term Product Mix and Pricing Decision

Price setter firm makes long-term pricing decision. They use appropriate mark-ups with total cost to determine price. Decision to add a new product or to drop an existing product usually has significant long run implication for the cost structure of a firm. The selling price should

exceed the total cost for adding a new product or continuing the current product. A price setter should not ignore the availability of resources which are using by the firm.

ILLUSTRATION 1 [Short Term Product Mix Decision for Price Taker]

Two companies Large Co. and Small co. produces a similar product. Both companies use Cost plus pricing method and mark-up percentage is 25% on cost. The outputs and costs are as under:

	Large Co. Ltd.	**Small Co. Ltd.**
Normal and actual outputs in units	1,00,000	10,000
Cost per unit:		
Direct material	Rs. 35	Rs. 40
Direct labor	Rs. 15	Rs. 20
Variable manufacturing overhead	Rs. 5	Rs. 8
Total Fixed manufacturing overhead	Rs. 15,00,000	Rs.1,60,000
Total Operating expenses	Rs. 5,00,000	Rs. 60,000

Required: Determine: (a) Selling price per unit of the product of the price setter and the price taker company (b) Operating profit of both companies for the period

SOLUTIONS:

(a) Price setter company is Large co. Ltd. Selling price is determined by the company by applying cost plus pricing i.e. full costing pricing.

$$\text{Fixed manufacturing overhead} = \frac{15,00,000}{1,00,000}$$

$$= \text{Rs. } 15$$

Full cost per unit = Direct material + Direct Labor + Variable manufacturing Overhead + Fixed manufacturing overhead

$$= 35 + 15 + 5 + 15$$

$$= \text{Rs. } 70 \text{ per unit}$$

Selling price per unit = Full cost + mark-up %

$$= 70 + 25\% \text{ on } 70$$

$$= 70 + 17.50$$

$$= \text{Rs. } 87.50 \text{ per unit}$$

Small co. Ltd.: Fixed manufacturing overhead per unit $= \frac{1,60,000}{10,000}$

$$= \text{Rs. } 16$$

Product cost = 40 + 20 +8 + 16

$$= \text{Rs. } 84$$

Small Co. Ltd. is Price Taker Company in the industry. That's why it cannot fixed the price and has to follow the price fixed by Large co. Ltd. i.e. Rs. 87.5

(b) Operating Profit = Sales revenue – Manufacturing cost – Operating expenses

Large Co. Ltd. = (1,00,000 x 87.50) – (1,00,000 x 70) – 5,00,000

= 87.50.000 – 70,00,000 – 5,00,000

= Rs. 12,50,000

Small Co. Ltd. = (10,000 x 87.50) – (10,000 x 84) – 60,000

= 8,75,000 – 8,40,000 – 60,000
= Rs. 25,000 (Loss)

ILLUSTRATION 2 [Pricing Special Order]

Strong Co. Ltd. has enough capacity to produce goods to cover the demands of the customers. At present it is producing and selling 20,000 units and selling price per unit is Rs. 1,000 per unit. The cost information for the product is as under:

Direct material per unit	Rs. 300
Direct Labor per unit	Rs. 200
Variable manufacturing cost per unit	Rs. 100
Fixed overhead	Rs. 40,00,000

A special order has been received for 1,000 units at the rate of Rs. 700 per unit. The company fixes the price based on cost plus pricing.

Required: (i) Total cost per unit for the regular sale
(ii) Total cost per unit for the special offer
(iii) Operating income from both regular and special offer
(iv) Should the Company accept the offer?

SOLUTION:

(i) Total cost per unit for the regular sale = Variable cost per unit + Fixed cost per unit
= (300 + 200 + 100) + $\frac{40,00,000}{20,000}$
= Rs. 800

(ii) Cost per meal for the special offer = Variable cost per unit
= 300 + 200 + 100
= Rs. 600

(iii) Operating profit from regular sale = Sales revenue – Variable cost – Fixed cost
= (20,000 x 1,000) – (20,000 x 600) -40,00,000
= 2,00,00,000 – 1,20,00,000 – 40,00,000
= Rs. 40,00,000

Operating profit from special offer = Sales revenue – Variable cost
= (1,000 x 700) – (1,000 x 600) = Rs. 1,00,000

(iv) The company should accept the special offer, since profit increases by Rs. 1,00,000

ILLUSTRATION 3 [Setting Price for Expand Project]

A company is running at full capacity with 20,000 units of a product. The company is adopting full cost pricing approach for the formation of selling price with 50 % mark-up. The cost information of the product is as under:

	Cost per unit
Raw material	Rs. 30
Labor	Rs. 20
Variable selling overhead	Rs. 10
Total Fixed overhead:	

Manufacturing overhead	Rs. 6,00,000
Administrative overhead	Rs. 2,00,000
Selling overhead	Rs. 1,00,000

The demand of the product is very high in the market and the company is planning to increase the product by 50 %. For expanding its production units company has to purchase a new machine costing Rs. 9,00,000 having useful life of 10 years. The company also has to pay more 50 % per unit for direct material and labour cost.

Required: (i) Current selling price per unit and (ii) Selling price per unit after expansion

SOLUTION:

(i) Current selling price per unit:

Fixed manufacturing overhead = $\frac{6,00,000}{20,000}$

= Rs. 30

Total cost = Variable cost + Fixed manufacturing cost

= (30 + 20 + 10) + 30

= Rs. 90

Selling price per unit = Total cost + Mark-u p %

= 90 + (50 % of 90)

= 90+ 45 = Rs. 135 per unit

(ii) Selling price per unit after expansion:

Annual depreciation of new machine = $\frac{9,00,000}{10}$

= Rs. 90,000

New Variable manufacturing cost per unit = (30 x 1.5) + (20 x 1.5) + 10

= Rs. 85

New Fixed manufacturing overhead cost per unit = $\frac{6,00000 + 90,000}{30,000}$

= Rs. 23

Total cost = Variable cost + Fixed manufacturing cost

= 85 + 23

= Rs. 108 per unit

New Selling price per unit = Total cost + Mark-u p %

= 108 + (50 % of 108)

= 108 + 54

= Rs. 162 per unit

ILLUSTRATION 4 [Long -term product mix decision for Price Setter]

A leading manufacturing company is selling its product in the market @ Rs. 200 each. A small manufacturing company is surviving in the same market by selling the product at the same price because the product cost is Rs. 75 and operating expenses per unit is Rs. 15. But suddenly the leading manufacturing company cut-off the price by 20%.

Required: (a) current profit of small manufacturing company (b) Selling price per unit of small manufacturing company after the decision of leading company

SOLUTION:

(a) Current selling price per unit of small manufacturing company (As per the selling price setting by leading manufacturing company) = Rs. 100

Total cost per unit = 75 + 15
= Rs. 90

Current profit = 100 – 90
= Rs. 10 per unit

(b) New selling price per unit, after the decision of 20 % cut-off the price by leading company
= 100 – 20
= Rs. 80 (As per the selling price setting by leading manufacturing company)

But Rs. 80 does not cover the total cost of small company. So the small company has to drop either its product or has to plan for the cost reduction.

ILLUSTRATION 5 [Special order pricing]

A company is producing finished goods utilizing its capacity only by 80% of its available capacity. The company received a special order to supply 25,000 units of its product which is most similar to the finished goods producing at present. The price offered is 100 per unit. The data relating to produce one unit of regular product are presented below:

Direct Material Cost 4 units @ Rs. 10	Rs. 40.00
Direct Labor Cost 3 hours @ Rs. 10	Rs. 30.00
Manufacturing Overhead 3 hours @ Rs. 15 (Based on Direct Labor Hour)	Rs. 45.00
Total Cost per Unit	Rs. 115.00

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

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

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

SOLUTION:

Working Notes:

1. Normal Capacity $= \frac{3{,}00{,}000 \text{ DLH}}{3 \text{ DLH}} = 1{,}00{,}000$ units
2. Capacity Utilization = 1,00,000 units × 80% = 80,000 units
3. Idle Capacity = 20,000 units

   Regular Sales = 80,000 units

   To accept the special order, Regular Sales have to Curtail by 5,000 units
4. Fixed Manufacturing Overhead Rate $= \frac{\text{Fixed Overhead}}{\text{Normal Capacity}}$

$= \frac{\text{Rs. } 15{,}00{,}000}{1{,}00{,}000 \text{ units}} = \text{Rs. } 15 \text{ per unit}$

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

(a) Income Statement

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

Decision: The profit decreases by Rs. 2,50,000, when the special order is accepted. So it should not be accepted and recommended to reject it.

(b) Regular Sales Price = Rs. 150 per unit

Variable cost per unit = Rs. 100

Now, Contribution margin = 150 – 100

= Rs. 50 per unit

Units Curtails from Regular Sales = 5,000 units

∴ Opportunity Cost = 5,000 units × Rs. 50 per unit = Rs. 2,50,000.

References

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