8

Transfer Pricing

LEARNING OBJECTIVES :

Through this chapter you will get a thought that how much profitability can be earned by each of the division of the same organisation and accordingly have a check on the functionality and inter divisional transfer goods.

8.1   INTRODUCTION

The whole organisation can be divided into a number of divisions, the performance of each division can be measured in terms of both the income earned and the costs which are incurred. In profit centred divisional approach the manager of each division is responsible for cost, income and profit of his division. Further he is given freedom to make all decisions affecting his division. In such a decentralised organisation there may be transfer of goods from one division to another division. The price charged for transfer of goods of one division to another division is the cost to receiving division and income of supplying division. It means that the transfer price fix will affect the profitability of both division.

8.1.2   Definition – Transfer Price

Transfer price is the price which one division of an organisation charges for a product or service supplied to another division of the same organisation.

8.2 OBJECTIVES OF TRANSFER PRICING SYSTEM

The main-objectives of intra-company transfer pricing are as below:

i)   Emphasis on Profits

ii)   Maximum Utilisation of plant capacity

iii)   Optimise allocation of financial resources

8.3 METHODS OF TRANSFER PRICING

The methods of pricing usually employed in industry when goods or services are transferred from one unit to the other can be broadly classified under the following three categories:

i)   At cost or variants of cost e.g. actual manufacturing cost; standard cost; full cost and full cost plus mark up.

ii)   At market price.

iii)   At bargained or negotiated prices.

A brief discussion of these methods is given below.

8.3.1 Pricing at Cost

(a)   _Actual manufacturing cost:_

In this method goods or services are transferred at their actual cost of production. It is useful for those units where the responsibility of profit performance is centralised. Under this method, it is difficult to measure the performance of each profit centre.

(b)   _Standard cost:_

Under this method all transfers of goods and services are made at their standard cost. Any difference between actual and standard cost viz., variances are usually absorbed by the supplying unit. In some cases, variances are transferred to the user unit as well. This will result in the inventory being carried at identical standard cost by both the supplying and receiving units. Here also the profit performance responsibility is centralised and thus it cannot be measured for individual units involved.

(c)   _Full cost:_

Full cost means cost of production plus expenses like selling and distribution, administration, research and development cost etc. In this method, the supplying unit is not allowed to make any profit on transfers to other units. But it is free to earn profit on outside sale. One good thing about this method is that the supplying unit is allowed to recover the full cost of the goods/services transferred.

(d)   _Full cost plus mark up:_

Under this method the supplying unit transfers goods and services at full cost plus some mark-up. The markup added to full cost is either expressed as a percentage of full cost or of capital employed. Selling expenses here are recovered by the supplying unit without incurring them, especially when the goods/services are transferred internally. Due to this defect the use of full cost plus method is not appreciated by the internal receiving units. To overcome this defect either the use of standard cost plus or actual cost plus are preferred. Use of either of the preceding method facilitates the task of measuring profit performance and efficiency of the units involved.

8.3.2   Pricing at market price:

Under this method, the transfer prices of goods/services transferred to other units/divisions are based on market prices. In a competitive market goods/services cannot be transferred to its users at a higher price. Such a competitive market provides an incentive to efficient production. Since market prices will, by and large be determined by demand and supply in the long run, it is

claimed that profits which results under this method, will provide a good indicator of the overall efficiency of the various units.

Competitive market prices provide reliable measures of divisional income because these prices are established independently rather than by individuals who have an interest in the results. The main limitations of this method are:

i)   Difficulty in obtaining market prices.

ii) Difficulty in determining the elements of selling and distribution expenses such as commission, discounts, advertisement and sales promotion etc., so that necessary adjustment may be made in the market price to provide benefit of these expenses, to the profit centre, receiving the goods.

Illustration

SV Ltd. manufactures a product which is obtained basically from a series of mixing operations. The finished product is packaged in the company-made glass bottles and packed in attractive cartons. The company is organised into two independent divisions viz. one for the manufacture of the end-product and the other for the manufacture of glass bottles. The product manufacturing division can buy all the bottle requirements from the bottle manufacturing division. The General Manager of the bottle manufacturing division has obtained the following quotations from the outside manufacturers for the supply of empty bottles.

No. of empty bottles	Total purchase value (Rs.)
8,00,000	14,00,000
12,00,000	20,00,000

A cost analysis of the bottle manufacturing division for the manufacture of empty bottles reveals the following production costs:

No. of empty bottles	Total cost (Rs.)
8,00,000	10,40,000
12,00,000	14,40,000

The production cost and sales value of the end product marketed by the product manufacturing division are as under:

Volume (Bottles of end product)	Total cost of end product (excluding cost of empty	Sales value (Packed in bottles)
	Rs.	Rs.
8,00,000	64,80,000	91,20,000
12,00,000	96,80,000	1,27,80,000

There has been considerable discussion at the corporate level as to the use of proper price for

transfer of empty bottles from the bottle manufacturing division to product manufacturing division. This interest is heightened because a significant portion of the Divisional General Manager 's salary is in incentive bonus based on profit centre results.

As the corporate management accountant responsible for defining the proper transfer prices for the supply of empty bottles by the bottle manufacturing division to the product manufacturing division, you are required to show for the two levels of volumes of 8,00,000 and 12,00,000 bottles, the profitability by using (i) market price and (ii) shared profit relative to the costs involved basis for the determination of transfer prices. The profitability position should be furnished separately for the two divisions and the company as a whole under each method. Discuss also the effect of these methods on the profitability of the two divisions.

Solution

Statement showing profitability of two divisions at two different levels of output using different transfer prices

No. of bottles	8,00,000	12,00,000
	Rs.	Rs.
Sales value (Packed Product) : (A)	91,20,000	1,27,80,000
Less : Costs		
Product Manufacturing Division	64,80,000	96,80,000
Bottle Manufacturing Division	10,40,000	14,40,000
Total costs : (B)	75,20,000	1,11,20,000
Profit :{(A) – (B)}	16,00,000	16,60,000
Profit pro-rated to Bottle Mfg. Division and Product		
Mfg. Division.		
Share of Bottle Manufacturing Division:		
16,00,000 × 10,40,000/75,20,000	2,21,276	
16,60,000 × 14,40,000/1,11,20,000		2,14,964
Balance profit relates to Product Mfg. Division	13,78,724	14,45,036
	16,00,000	16,60,000
	Rs.	Rs.
Transfer prices of bottles		
Costs	10,40,000	14,40,000
Profit as computed above	2,21,276	2,14,964
Total price	12,61,276	16,54,964
Transfer price per bottle	Rs. 1.577	Rs. 1.379

From the above computations, it is observed that shared profit relative to the cost involved is Rs. 2,21,276 (Re. 0.2766 per bottle) at 8,00,000 production level and Rs. 2,14,964 (Re. 0.179

per bottle) at 12,00,000 production level. The profit of Product Mfg. Division is Rs.13,78,724 (Rs.1.723per bottle) at 8,00,000 production level and Rs. 14,45,036 (Rs. 1.2042 per bottle) at 12,00,000 production level.

Profitability based on market price

No. of bottles	8,00,000	12,00,000
Bottle Mfg. Division	Rs.	Rs.
Market price	14,00,000	20,00,000
Less: Cost	10,40,000	14,40,000
Profit (i)	3,60,000	5,60,000
Product Mfg. Division		
Sales	91,20,000	1,27,80,000
Less: Bottle cost	14,00,000	20,00,000
Product cost	64,80,000	
	96,80,000	
Profit (ii)	12,40,000	11,00,000
Total profit : (i) + (ii)	16,00,000	16,60,000

Production level	Profit based on cost (Rs.Lakhs)		Profit based on Market price (Rs.Lakhs)	
	Bottle Mfg. Div.	Product Mfg. Div.	Bottle Mfg. Div.	Product Mfg. Div.
8,00,000 bottles	2.21	13.79	3.60	12.40
12,00,000 bottles	2.15	14.45	5.60	11.00

Observations:

1. Market price methods gives a better profitability to Bottle Mfg. Division at both the production levels.

2. Market price method gives a lower profitability to Product Mfg. Division as compared to Bottle Mfg. Division.

3. Under Cost-based method, there is a better profit at lower level of production in Bottle Mfg. Division. However in Product Mfg. Division 12,00,000 production level gives a higher profit. But in Market price method, the position is quite reverse.

8.3.3 Bargained or Negotiated prices

Under this method each decentralised unit is considered as an independent unit and such units decide the transfer price by negotiations or bargaining. Divisional managers have full freedom to purchase their requirement from outside if the prices quoted by their sister unit are lower. A system of negotiated prices develops business like attitude amongst divisions of the company.

In order to avoid any reduction in overall profits of the company, the top management may impose restriction on the external purchase/sale of goods. In order to have an effective system of intra-company transfer pricing; the following points should be kept in view:

1) Prices of all transfers in and out of a profit centre should be determined by negotiation between the buyer and the seller

2) Negotiations should have access to full data on alternative sources and markets and to public and private information about market prices.

3) Buyers and sellers should be completely free to deal outside the company.

Illustration

Fasteners Ltd. is having production shops reckoned as cost centres. Each shop charges other shops for material supplied and services rendered. The shops are motivated through goal congruence, autonomy and management efforts. Fastner Limited is having a welding shop and painting shop. The welding shop welds annually 75,000 purchased items with other 1,50,000 shop made parts into 12,000 assemblies. The assemblies are having variable cost of Rs. 9.50 each and are sold in market at Rs. 12 per assembly. Out of the total production, 80% is diverted to painting shop at same price ruling in the market. Welding shop incurs a fixed cost of Rs. 25,000 per annum. The painting shop is having fixed cost of Rs. 30,000 and its cost of painting including transfer price from welding shop comes to Rs. 20 per unit. This shop sells all units transferred to it by welding shop at Rs. 25 per assembly.

You are required to:

(a) Find out profit of individual cost centres and overall profitability of the concern.

(b) Recommend course of action if painting shop wishes to purchase its full requirement (at market price which is Rs. 10 per assembly) either from open market or from welding shop at market price of Rs. 10 per assembly.

Give reasons for your recommendations.

Solution

Fastners Limited

(a) Present profitability of individual shops and overall profitability

Particulars	Welding shop			Painting shop		
	Qty. Unit	Rate Rs.	Value Rs.	Qty Unit	Rate Rs.	Value Rs.
Sale in open market	2,400	12.00	28,800	9,600	25.00	2,40,000
Transfer to painting shop	9,600	12.00	1,15,200			
Total sales : (A)	12,000		1,44,000	9,600		2,40,000
Less: Variable cost : (B)			1,14,000	(9600 units × Rs.20)		1,92,000
(12,000 units × 9.50)						
Contribution : {(A) – (B)}			30,000			48,000
Less: Fixed cost			25,000			30,000

Profit	5,000	18,000

Overall profit for the company (Rs. 5,000 + Rs. 18,000) = Rs. 23,000

(b) (i) When painting shop purchases all its requirement from open market at a price of Rs. 10 per unit

	Welding shop			Painting shop		
	Qty. Unit	Rate Rs.	Value Rs.	Qty Unit	Rate Rs.	Value Rs.
Sale	2,400	12.00	28,800	9,600	25.00	2,40,000
Less: Variable cost	2,400	9.50	22,800	9,600	18.00*	1,72,800
Contribution			6,000			67,200
Less: Fixed cost			25,000			30,000
Profit/(Loss)			(19,000)			37,200

Overall profit for the company

Rs. 37,200 – Rs. 19,000 = Rs. 18,200

*It is given in the question that cost of painting including transfer price from welding shop is Rs. 20 per unit. The transfer price from welding shop is Rs. 12 per unit. Therefore, the variable cost of Rs. 8 (Rs. 20 – Rs. 12) is incurred by painting shop exclusively. The painting shop will be purchasing its requirement from open market at Rs. 10 per unit. Therefore, the variable cost per unit in painting shop will be Rs. 18 (Rs. 10 + Rs. 8). This point should be noted carefully.

(b) (ii) When all the requirements of painting shop is met by transfer from welding shop at a transfer price of Rs. 10 per unit

	Welding shop			Painting shop		
	Qty. Unit	Rate Rs.	Value Rs.	Qty Unit	Rate Rs.	Value Rs.
Sale in the open market	2,400	12.00	28,800	9,600	25.00	2,40,000
Transfer to painting shop	9,600	10.00	96,000			
Total sales	12,000		1,24,800			
Less:Variable cost (12,000 units×Rs.9.50)			1,14,000	(9,600 units×Rs.18)		1,72,800
Contribution			10,800			67,200
Less: Fixed cost			25,000			30,000
Profit/(Loss)			(14,200)			~~37,200~~

Overall profit of the company = Rs. 37,200 – Rs. 14,200 = Rs. 23,000

For the purpose of comparison, the results of the three alternatives are summarised below:

	Welding shop	*Painting shop*
	Rs.	Rs.
Profit under (i)	5,000	18,000
Profit/(Loss) under (b)(i)	(19,000)	37,200
Profit/(Loss) under (b)(ii)	(14,200)	37,200

		Rs.
The overall profit under	(a)	23,000
	b(i)	18,200
	b(ii)	23,000

Alternative (b)(ii) should be accepted due to the following reasons:

(a) It gives a maximum overall profit of Rs. 23,000. The discussion is confined to either b(i) or b(ii).

(b) Each shop is treated as a separate cost centre and not a profit centre.

(c) The policy of overall goal congruence of the company is followed.

Illustration

Division A of Better Margins Ltd. has been given a budgeted target of selling 2,00,000 components COM 21, it manufactures at a price which would fetch a return of 25% on the average assets employed by it. The following figures are relevant:

Fixed overhead	Rs. 4,00,000
Variable cost	Re. 1 per unit
Average assets :	
Sales debtors	2,00,000
Stocks	6,00,000
Plant and other assets	4,00,000

However, the marketing department of the company finds out by a survey that the maximum number of COM 21, the market can take, at the proposed price is only 1,40,000 units.

Fortunately Division B is willing to purchase the balance 60,000 units. The Manager, Division A is willing to sell to Division B at a concessional price of Rs. 4 per unit. But the Manager, Division B is ready to pay Rs. 2.25 only per unit, as he feels he can himself make COM 21 in his Division at that price.

Rather than sell to Division B at Rs. 2.25, the Manager, Division A feels he will restrict the activity of his Division to the manufacture and sale of 1,40,000 components only. By this, he

could reduce Rs. 80,000 in stocks, Rs. 1,20,000 of plant and other assets and Rs. 40,000 in selling and administration expenses.

As a Cost Accountant, you are asked to work out the various computations and show that selling 60,000 COM 21 to Division B at Rs. 2.25 per unit would be in the interest of the organisation.

Solution

Neither selling price nor total sales is given. Division A of Better Margins Ltd. expects a return of 25% on average assets employed i.e., Rs. 12,00,000.

		Rs.
	Total sales will be:	
(a)	Profit (25% of 12,00,000)	3,00,000
(b)	Fixed overhead	4,00,000
(c)	Variable cost (2,00,000 × Re. 1)	2,00,000
	Total sales	9,00,000
	Sales per unit (Rs. 9,00,000 ÷ 2,00,000 units)	Rs. 4.50

	Transfer to Division B and sale to outside parties	*Sale to outside parties only*
Sales (units)	2,00,000	1,40,000
Sales value *(1,40,000 units @ Rs. 4.50)*	6,30,000	6,30,000
(60,000 units @ Rs. 2.25)	1,35,000	Nil
	7,65,000	6,30,000
Less: Variable cost		
(Re. 1 per unit)	2,00,000	1,40,000
Contribution	5,65,000	4,90,000
Less: Fixed overhead	4,00,000	3,60,000 *
Net profit	1,65,000	1,30,000
Average assets employed	12,00,000	10,00,000
Return on investment	13.75%	13.00%

If the component is transferred to Division B as well as sold to outside parties, it is more profitable as the contribution, net profit and return on investment is more than the existing proposal. Therefore selling the components to Division B at Rs. 2.25 per unit is in the overall interest of the company.

*Reduction in selling and administration expenses (fixed in nature) by Rs. 40,000.

Illustration

A boatyard is divided into three profit centres whose managers are rewarded according to results. Transactions between these profit centres are frequent.

Sales centre (S) buys and sells new boats.

If it needs to take part-exchange from a customer in order to sell a new boat, it transfers the part-exchanged boat to B at an agreed price.

Brokerage (B) buys and sells second-hand boats:

(i)   in part-exchange from S (B names the price at which it can buy a comparable boat that is in a suitable condition for resale to an end-user customer, but deducts the likely cost of repairs) and

(ii)   from other sources, on a normal trading basis.

Repairs (R) does repairs for

(i)   B (to put boats into saleable condition) and

(ii)   other customers.

The following situation arises:

Scan sell to a customer for Rs. 35,000 a new boat which would cost Rs. 29,000. To do so, it needs to offer Rs. 16,000 in part-Exchange for the customer's old boat. However, the customer's boat is estimated by R to need repairs that will cost:

Materials	Rs. 300
Labour	60 hours at Rs. 15 per hour

B can buy for Rs. 15,000 a boat comparable to the one being offered by the customer in part-exchange but which needs no repair. B could then sell that boat for Rs. 19,000.

Other data:

R's labour rate per hour is made up as follows:

	Rs.
Variable cost	6.00
Fixed cost	4.50 *(based on 20,000 budgeted hours p.a.)*
Profit	4.50
	15.00

–   45% of R's time is reserved for work from B

–   Annual fixed cost is budgeted at:

    S   Rs. 70,000

    B   Rs. 80,000

You are required, in relation to the above situation, to set out the contribution to profit for each profit centre that would result :

(i)   assuming that all estimates and budgets materialised as expected,

(ii) assuming that all estimates and budgets materialised as in (i), except that the repairs undertaken by R took an extra 10 hours and Rs. 100 of materials due to a problem not noticed by B or R.

Solution (a)(i)

Statement showing the contribution to profit for each assuming that all estimates and budgets materialised as expected.

Sales Centre (S)	Rs.	Rs.	Rs.
New Board Sold			
– Selling price			35,000
– Purchase price			29,000
Gross margin			6,000
Less: Second hand boat			
Part-exchange of old boat		16,000	
Broker's Price	15,000		
Less: Repairs	1,200	(13,800)	2,200
Contribution			3,800
Brokerage Centre (B)			
Second-hand boat sold			19,000
Less: Paid to Centre S		13,800	
Paid to Centre R		1,200	15,000
Contribution			4,000
Repair Centre (R)			
Sales to Centre B			1,200
Less: Materials		300	
Direct labour variable cost		360	660
Contribution			540

(ii) Assuming Additional Costs

It is noticed that all estimates and budgets are materialised except that repairs undertaken by R took an extra 10 hours and Rs. 100 of materials due to a problem not noticed by B or R.

R is responsible for giving correct repair costs and, therefore, he has to bear the additional cost:

	Rs.	Rs.
Repair Centre (R)'s contribution		540
Less: Extra cost of materials	100	
Extra D.L. variable cost (10 hrs × Rs. 6)	60	160
Revised contribution		380

However, full details are not given in the question. 'B' is a middleman passing on R's costs to S and as such should not bear additional costs. Had the item been noticed originally then S would have paid the cost and perhaps it should be passed back. This would be particularly so if R had insufficient opportunity for a complete inspection. In that case extra cost should be:

	Rs.
Material	100
Labour (10 hrs. × Rs. 15)	150
	250

Reduced contribution of S = Rs. 3,800 – Rs. 250 = Rs. 3,550

	Rs.
Original contribution of R	540
Add.: Saving in variable cost	
[10 hrs × (Rs. 15 – Rs. 6)]	90
Increased contribution of R	630

Note: Other solutions are equally acceptable if well argued and logically justified.

Illustration

Division A is a profit centre which produces three products X, Y and Z. Each product has an external market.

Products	X	Y	Z
	Rs.	Rs.	Rs.
External market price per unit	48	46	40
Variable cost of production in division A	33	24	28
Labour hours required per unit in division A	3	4	2

Product Y can be transferred to Division B, but the maximum quantity that might be required for transfer is 300 units of Y.

The maximum external sales are:

X	800 units	Y	500 units	Z	300 units

Instead of receiving transfers of product Y from Division A, Division B could buy similar product in the open market at a sightly cheaper price of Rs. 45 per unit.

What should the transfer price be for each unit for 300 units of Y, if the total labour hours available in Division A are:

(a)   3,800 hours

(b)   5,600 hours

Solution

Working Notes:

(i)   *Hours required to meet maximum demand:*

External sales	Hours reqd. per unit	Total Hrs.
(i)	*(ii)*	*(iii) = (i) × (ii)*
X 800 units	3	2,400
Y 500 units	4	2,000
Z 300 units	2	600
	Total	5,000

(ii)   *Contribution per unit:*

Product	X	Y	Z
	Rs.	Rs.	Rs.
Selling price	48	46	40
Less : Variable cost	33	24	28
Contribution per unit : (A)	15	22	12
Labour hours required per unit : (B)	3	4	2
Contribution per hour (Rs) : (A) / (B)	5	5.5	6
Ranking	III	II	I

(a)   If only 3,800 hours are available in Division A.

300 units of Z (maximum), which will take*	600 hrs.
500 units of Y (maximum), which will take	2,000 hrs.
400 units of X to use remaining hrs.	1,200 hrs.
	3,800 hrs.

*Note : Labour hours required per unit are given in the question. If 300 units of Y are to be transferred to 'B' division, then 1,200 hours will have to be used for production of Y instead of X. It means Division A will sacrifice production of 400 units of X, which are yielding Rs. 5 per hr. Given above is the optimum mix for Division A for 3,800 hrs. If 300 units of Y are to be transferred to 'B' division with time constraint of 3,800 hours, then additional 300 units of Y will have to be produced sacrificing the production of 400 units of X which is yielding contribution.

*Transfer price*Rs.

(i) Variable cost of Y	24.00

Opportunity cost

(ii) Contribution relating to 'X' forgone for producing additional units of Y (4 hrs × Rs. 5*)	20.00
	44.00

*Y takes 4 hours and in each hour production of X would have generated contribution of Rs. 5.

(b) If 5,600 hours are available

Maximum time required to meet external sales *(Refer to Working note 1)*	5,000 hrs.
Hours now available	5,600 hrs.

(i) It means 600 hrs can be easily used for the production of Y and transfer price will be variable cost only

i.e. (600 hrs. ÷ 4 hrs) × Rs. 24	Rs. 3,600

Note: Y takes 4 hours per unit

(ii) For producing additional 150 units, production of X will be disturbed.

Variable costs

(i) 150 units of X @ Rs. 24	Rs. 3,600

Opportunity cost

(ii) Contribution of 'X' units

   forgone (600 hrs. × Rs. 5)   Rs. 3,000*   6,600

   Total price for 300 units   10,200

   ∴ Average transfer price should be Rs. 34 per unit

   *Contribution per hr. of X forgone.

Illustration

Your company fixes the inter-divisional transfer prices for its products on the basis of cost, plus a return on investment in the division. The Budget for Division A for 1998-99 appears as under:

   Investment in Division A

	Rs.
Fixed Assets	5,00,000
Current Assets	3,00,000
Debtors	2,00,000
Annual fixed cost of the division	8,00,000
Variable cost per unit of product	10
Budgeted volume	4,00,000 units per year
Desired ROI	28%

Determine the transfer price for Division A.

Solution

The desired rate of return is 28% on investments. Investments include:

(i) Fixed assets after depreciation

(ii) Net working capital.

In the question, current assets and debtors are given but current liabilities and creditors are not indicated. Therefore, these are assumed to have nil value.

   Investments

	Rs.	Rs.
Fixed assets		5,00,000
Net working capital	Rs.	
Current assets	3,00,000	
Debtors	2,00,000	5,00,000
Total investments		10,00,000

   The desired rate of return is 28%

∴ The profit margin will be

$$\left(\frac{28}{100} \times Rs.\,10,00,000\right)$$

	Rs. 2,80,000
Budgeted volume	4,00,000 units
	Rs.
Profit margin per unit (Rs. 2,80,000 ÷ 4,00,000 units)	0.70
Fixed cost per unit	2.00
(Rs. 2,80,000 ÷ 4,00,000 units)	
Variable cost per unit	10.00
Transfer price per unit	12.70

Ilustration

A company is organised on decentralised lines, with each manufacturing division operating as a separate profit centre. Each division manager has full authority to decide on sale of the division's output to outsiders and to other divisions.

Division C has always purchased its requirements of a component from Division A. But when informed that Division A was increasing its selling price to Rs. 150, the manager of Division C decided to look at outside suppliers.

Division C can buy the component from an outside supplier for Rs. 135. But Division A refuses to lower its price in view of its need to maintain its return on the investment.

The top management has the following information :

C's annual purchase of the component	1,000 units
A's variable costs per unit	Rs. 120
A's fixed cost per unit	Rs. 20

Required :

(i) Will the company as a whole benefit, if Division C bought the component at Rs. 135 from an outside supplier ?

(ii) If A did not produce the material for C, it could use the facilities for other activites resulting in a cash operating savings of Rs. 18,000. Should C then purchase from outside sources ?

(iii) Suppose there is no alternative use of A's facilities and the market price per unit for the component drops by Rs. 20. Should C now buy from outside ?

Solution

(i)   **The company as a whole will not benefit if Division C bought the component from an outside supplier at Rs. 135/- per unit**

	Rs.
Purchase cost from outside supplier	1,35,000
(1,000 units × Rs. 135 per unit)	
Less : Saving in variable cost of division	1,20,000
A by reducing Divisions' output	
(1,000 units × Rs. 120 per unit)	
Net cost (benefit) to the company as a whole	15,000

The company as a whole will not benefit, as it will be required to incur an additional cost of Rs. 15,000 if Division C bought the company from outside supplier.

(ii)   **The company will be benefitted if C purchased the component from an out-side supplier and Division A uses the facilities for other activities.**

	Rs.	Rs.
Purchase cost from outside supplier *(1,000 units × Rs. 135)*		1,35,000
Less : Savings in variable cost of Division A for the units purchased by Division C from outside *(1,000 units × Rs. 120 per unit)*	1,20,000	
Cash operating saving of Division A for the use of facilities for other activities	18,000	1,38,000
Net cost (benefit) to the company as a whole		(3,000)

It is advisable that Division C should purchase the component from outside sources as this decision will benefit the company by Rs. 3,000.

(iii)   **The company will be benefitted if C purchased the component from an out-side supplier and there is no alternative use of Division A's facilities.**

Purchase cost from outside supplier

	Rs.
(1,000 units × Rs. 115)	1,15,000
Less : Saving in variable cost of Division A by reducing division's output	1,20,000
(1,000 units × Rs. 120)	
Net cost (benefit) to the company	(5,000)

It is advisable that the Division C should buy the component from outside as this decision will benefit the company by Rs. 5,000.

Illustration

Division Z is a profit centre, which produces four products –A, B, C and D. Each product is sold in the external market also. Data for the period is as follows:

	A	B	C	D
Market price per unit	Rs. 150	Rs.146	Rs.140	Rs.130
Variable cost of production per unit	Rs. 130	Rs.100	Rs. 90	Rs. 85
Labour hours required per unit	3	4	2	3

Product D can be transferred to division Y, but the maximum quantity that might be required for transfer is 2,500 units of D.

The maximum sales in the external market are :

A	2,800 units
B	2,500 units
C	2,300 units
D	1,600 units

Division Y can purchase the same product at a slightly cheaper price of Rs.125 per unit instead of receiving transfers of product D from division Z.

What should be transfer price for each unit for 2,500 units of D, if the total labour hours available in division Z are:

(i)   20,000 hours?   (ii)   30,000 hours?

Solution

Working note :

Ranking of products when availability of time is the key factor

Product	A	B	C	D
	Rs.	Rs.	Rs.	Rs.
Market price per unit	150	146	140	130
Less: Variable cost of production per unit	130	100	90	85
Contribution per unit	20	46	50	45
Contribution per hour	6.66	11.50	25	15
	(Rs.20/3 hrs.)	(Rs.46/4 hrs.)	(Rs.50/2 hrs.)	(Rs.45/3 hrs.)
Ranking	IV	III	I	II

(i) Statement of product mix (when total available hours in division Z are 20,000)

Product (Refer to W.N.)	Maximum demand (units)	Hours per unit	Units produced	Hours used	Balance hours
(a)	(b)	(c)	(d)	(e)=(b)×(c)	(f)
C	2,300	2	2,300	4,600	15,400
					(20,000 – 4,600)
D	1,600	3	1,600	4,800	10,600
					(15,400 – 4,800)
B	2,500	4	2,500	10,000	600
					(10,600 – 10,000)
A	2,800	3	200	600	Nil
					(600 – 600)

Note : *Time required to meet the demand of 2,500 units of product D for division Y is 7,500 hours. This requirement of time viz., 7,500 hours for providing 2,500 unit of product D for division Y can be met by sacrificing the production of 1,725 units of product B (1,725 units × 4 hours = 6,900 hrs) and 200 units of product B (200 units × 3 hours = 600 hours)*

Statement of Transfer Price for each unit for 2,500 unit of D.

Transfer price :	2,500 units of product D	Per unit of product D
Variable cost (2,500 units × Rs. 80)	2,12,500	85.00
Opportunity cost of the contribution foregone by not producing 200 units of A. (200 units × Rs. 20)	4,000	1.60
Opportunity cost of the contribution foregone by not producing 1,725 units of B (1,725 units × Rs. 46)	79,350	31.74
Transfer price	2,95,850	118.34

(ii) Statement of product mix (when total available hours in division Z are 30,000)

Product (Refer to W.N.)	Maximum demand (units)	Hours per unit	Units produced	Hours used	Balance hours
(a)	(b)	(c)	(d)	(e)=(b)×(c)	(f)
C	2,300	2	2,300	4,600	25,400
					(30,000 – 4,600)
D	1,600	3	1,600	4,800	20,600
					(25,400 – 4,800)
B	2,500	4	2,500	10,000	10,600
					(20,600 – 10,000)
A	2,800	3	2,800	8,400	2,200
					(10,600 – 8,400)

Note : *The required time for producing 2,500 units of product D for divison Y is 7,500 hours. This requirement can be met to the extent of 2,200 hours out of the balance hours (as shown in the last column of the above table). The remaining re-quirement of 5,300 hours can be met by sacrificing the output of 1,766.66 units of product A.*

Statement of Transfer Price for each unit for 2,500 units of D

	2,500 units of product D	Per unit of product D
Variable cost *(2,500 units × Rs. 80)*	2,12,500	85.00
Opportunity cost of the contribution foregone by not producing 1,766.66 units of product A. *(1,766.66 units × Rs. 20)*	35.333.20	14.13
Transfer price	2,47,833.20	99.13

Illustration

AB Ltd. manufactures foam, carpets and upholstery in the three divisions. Its oeprating state-ment for 1995-96 showing the performance of these divisions drawn for the use of management is reproduced below :

(Rupees in '000)

	Manufacturing Divisions			Total
Sales revenue				4,000
	Foam	Carpets	Upholstery	
Sales revenue	1,600 (A)	1,200	1,200	4,000
Manufacturing Costs :				
Variable	1,200	700	680	2,580
Fixed (Traceable)	—	100	20	120
	1,200	800	700	2,700
Gross Profit	400	400	500	1,300
Expenses :				
Administration	134	116	172	422
Selling	202	210	232	644
	336	326	404	1,066 (B)
Net Income	64	74		96
Division's Ranking	3rd	2nd	Ist	

(A) Sales include foam tansferred to the Upholstery division at its manufacturing cost of Rs. 2,00,000.

(B) Common expenses of Rs. 1,30,000 and Rs. 1,00,000 on account of administration and selling respectively stand apportioned to these divisions at 10% of Gross Profit in case of administration and 2.5% of Sales in case of selling expenses. Rest of Rs. 8,36,000 of the expenses are traceable to respective divisions.

The manager of the foam division is not satisfied with the above approach of presenting operating performance. In his opinion his division is best among all the divisions. He requests the management for preparation of revised operating statement using contribution approach and showing internal transfer at market price.

You are required to :

(a) Draw the revised operating statement using contribution approach and pricing the internal transfer at market price.

(b) Compute relevant ratios to show comparative profitability of these divisions and rank them in the light of your answer at (a) above. Further, offer your comments on the contention of the manager of foam division.

(c) State why the contribution approach and pricing of internal transfers at market price are more appropriate in realisitic assessment of the performance of various divisions.

Solution

(a)   **Revised Operating Statement using Contribution approach**

(Rs. '000)

Divisions :	Foam	Carpets	Upholstery	Total
Sales revenue	1,680	1,200	1,200	4,080
(Refer to working note 1)				
Less : Variable manufacturing costs :	1,200	700	760	2,660
(Refer to working note 2)				
Contribution : (A)	480	500	440	1,420
Traceable Costs :				
Fixed manufacturing costs	—	100	20	120
Administration expenses	94	76	122	292
(Refer to working note 3)				
Selling expenses	162	180	202	544
(Refer to working note 4)				
Total : (B)	256	356	344	956
Net Contribution or				
Operating income : [(A) – (B)]	224	144	96	464
Less : Common expenses				
(Rs. 130 + Rs. 100)				230
Net income of the company				234

Working Notes :

1. **Computation of sales revenue of Foam division**

	(Rs. '000)
Sales of foam division to outside customers	1,400 (Rs. 1,600 – Rs. 200)
Less : Variable manufacturing costs	1,000
(Rs. 1200 – Rs. 200)	
Mark-up on outside sale	400

Percentage of mark-up 40%

    (Rs. 400/Rs. 1000) × 100

Transfer price of foam to upholstery division	280
Sales of foam division to outside customers	1,400
Total	1,680

2. **Computation of variable manufacturing costs of**

                Upholstery Division in (Rs. '000)

            (Rs. 680 – Rs. 200 + Rs. 280) = Rs. 760

3. **Computation of Traceable Administration Expenses**

(Rs. '000)

Divisions :	Foam	Carpets	Upholstery	Total
Given Administration expenses	134	116	172	422
Less : Common expenses	40	40	50	130
(10% of Gross Profit)				
Traceable Administration expenses	94	76	122	292

4. **Computation of Traceable Selling Expenses**

(Rs. '000)

Divisions :	Foam	Carpets	Upholstery	Total
Given Selling expenses	202	210	232	644
Less : Common expenses	40	30	30	100
(2.5% of Sales)				
Traceable selling expenses	162	180	202	544

(b)   **Comparative Profitability & Ranking Statement**

          (based on contribution approach relevant ratios calculated

                   by using figures of (a) part)

(Rs. '000)

Divisions :	Foam	Carpets	Upholstery
Contribution margin ratio (in %)	28.57	41.67	36.67
	(Rs. 480/1680) × 100	(Rs. 500/1200) × 100	(Rs. 440/1200) × 100
Ranking	III	I	II
Net Contribution	13.33	12	8

ratio (in %) Or (Operating income ratio)	*(Rs. 224/1680) × 100*	*(Rs. 144/1200) × 100*	*(Rs. 96/1200) × 100*
Ranking	I	II	III

Comment : The Manager of Foam Division, appears to be correct in raising objection over the approach used for presenting operating performance of three divisions for the year 1995–1996. His division is the best among all, on the basis of (Net Contribution/Sales) ratio which is the highest inspite of its contribution margin ratio to be the lowest.

(c)   The use of contribution approach for reporting is more realistic for assessing the performance of various divisions as it considers variable and traceable costs only and avoids common costs while finding out profitability. This approach enables the management to rightly interpret the information. Further pricing of internal transfers at market price will give due credit to specific profit centre i.e. transferor.

Illustration

City Instrument Company (CIC) consists of the Semi-conductor Division and the Mini-computer Division each of which operates as an indepedent profit centre. Semi-conductor Division em- ploys craftsmen, who produce two different electronic components, the new-high performance Super-chip and an older product called Okay-chip. These two products have the following cost characteristics :

	Super-chip		Okay chip	
Material	Parts	Rs. 20	Parts	Rs. 10
Labour	2 hours × Rs. 140	Rs. 280	1/2 hour × Rs. 140	Rs. 70

Annual Overhead in Semi-conductor Division is Rs. 40,00,000 all fixed. Owing to high skill level necessary for the craftsmen, the Semi-conductor Division's capacity is set at 50,000 hours per year.

To date, only one customer has developed a product utilising super-chip, and this customer orders a maximum of 15,000 super-chips per year at a price of Rs. 600 per chip. If CIC cannot meet his entire demand, the customer curtails his own production. The rest of the semi-conductor's capacity is devoted to Okay-chips, for which there is unlimited demand at Rs. 120 per chip.

The Mini-computer Division produces only one product, a process control unit, which requires a complex circuit board imported at a price of Rs. 600. The control unit's costs are

	Control Unit	
Material	Circuit board	Rs. 600
	Other parts	80
Labour	5 hours @ Rs. 100	500

The Mini-Computer Division is composed of only a small assembly plant and all overhead is fixed at a total of Rs. 8,00,000 per year. The current market price for the control unit is Rs. 1,400 per unit.

A joint research project has just revealed that with minor modifications, a single super-chip could be substituted for the circuit board currently used by the Mini-computer division. The modifica- tion would required an extra one hour of labour by Mini-computer's staff, for a total of 6 hours per control unit. Mini-computer has therefore asked Semi-conductor division to declare a transfer price at which Semi-conductor division would sell super-chip internally.

Required :

(i) Mini-computer expects to sell 5,000 control units this year. From the overall view point of CIC, how many super-chips should be transferred to Mini-computer Division to replace circuit boards ?

(ii) If the demand for the control unit is sure to be 5,000 units, but its price is uncertain, what should be the transfer price of super-chip to ensure proper decisions ? (All other data unchanged)

(iii) If demand for the control unit rises to 12,000 units at a price of Rs. 1,400 per unit, how many of 12,000 units should be built using Super-chip ? (All other data unchanged.)

Solution :

Working Notes :

1. **Contribution per hour of Super-chips and Okay-chips:**

	Super-chips	Okay-chips
Selling price per unit (Rs.)	600	120
Less : Variable cost per unit (Rs.)	300	80
Contribution per unit (Rs.)	300	40
Hours required per unit	2	0.5
Contribution per hour		150
	(Rs. 300/2 hrs.)	(Rs. 40/0.5 hrs.)

2 . **Details of hours utilised in meeting the demand of 15,000 units of Super-chips and utilising the eremaining hours for Okay-chips out of available hours of 50,000 per annum:**

Hours utilised for manufacturing 15,000 units of Super-chips	30,000
(15,000 units × 2 hours)	
Hours utilised for manufacturing 40,000 units of Okay-chips	20,000
(40,000 units × 0.5 hours)	
	50,000

3 . Contribution of a process control unit (using an imported complex circuit board) :

	Rs.
Selling price per unit : (A)	1,400
Variable costs :	
Circuit board (Imported)	600
Other parts	80
Labour cost	500
(*5 hours × Rs. 100*)	
Total variable cost : (B)	1,180
Contribution per unit (Rs.) {(A) – (B)}	220

4 . Contribution of a process control unit (using a Super chip) :   Rs.

	Rs.
Selling price per unit : (A)	1,400
Variable costs :	
Super chip	300
(*Material + Labour costs*)	
Other parts	80
Labour cost	600
(*6 hours × Rs. 100*)	
Total variable cost : (B)	980
Contribution per unit : {(A) – (B)}	420

5 . Incremental contribution per unit of a process control unit, when instead of using imported complex circuit board Super-chip is used :

Incremental contribution per unit (Rs.) :   200

{*Rs. 420 – Rs. 220*} {*Refer to working notes 3 & 4*}

(i) Super-chip to be trasferred to Mini Computer Division to replace Circuit Boards :

Out of 50,000 available hours 30,000 hours are utilised for meeting the demand of 15,000 units of Super-chips, the rest 20,000 hours may be used for manufacturing 40,000 Okay-chips, which yields a contribution of Rs. 40 per unit for Rs. 80/- per hour (*Refer to Working note 1*) or a contribution of Rs. 160 per two-equivalent hours.

In case the company decides to forego the manufacturing of 20,000 units of Okay- chips in favour of 5,000 additional units of Super-chips to be used by Mini-Computer

Division (instead of complex imported Circuit Board) for manufacturing process control

units. This decision would increase the existing contribution of Mini-Computer Division by Rs. 200/- per two-equivalent hours (*Refer to Working note 5*).

After taking into account the profit foregone of Okay-chips, the existing contribution of Mini-Computer Division of CIC would increase by Rs. 40 per two equivalent hours.

Hence the entire requirement of 5,000 units of Super-chips be produced and transferred to Mini-Computer Division.

(ii)   **Minimum transfer price of Super-chip to Mini Computer Division :**

= Variable cost of a Super-chip   +   Opportunity cost of foregoing the production of an Okay-chip and using the craftman time for Super-chip

= Rs. 300 + 2 hours × Rs. 80

= Rs. 460

(iii)   **Super-chips to be produced for the production of 12,000 units of process con- trol units :**

After meeting out the order of 15,000 Super-chips per year, the concern is left out with 20,000 hours. Use of Super-chips for control units production would increase the existing contribution of Mini-Computer Division by Rs. 200/- per unit. Out of the remaining 20,000 craftmen hours, 10,000 units of Super-chips can be made, which may be used for the production of 10,000 process control units.

8.4 CONFLICT BETWEEN A DIVISION AND THE COMPANY

Usually a conflict between a division of the company and the company as a whole is faced by the management of decentralised units when products or services are exchanged among different divisions of the company. Such a conflict becomes more significant in the case of those concerns where profitability is used as a criteria for evaluating the performance of each division.

The essence of decentralisation is reflected in the freedom to make decisions. Under such a set up it is expected that the top management should not interfere with the decision making process of its subordinates heading different units. In other words, management of decentralised units is given autonomy with regard to decision making. The management of such companies also expects that each division should not only achieve its own objective necessary for evaluating the performance but should also achieve the objective of goal congruence.

In case of failure of a division to achieve the objective of 'goal congruence' the management of the company may dictate their 'transfer price'. Such interference of management of the company is usually the main basis of conflict between a division and the company as a whole.

Further this conflict is aggravated if the management advocates the transfer of goods and services at cost. As such the transfer price will not reflect a good picture about the performance of the transferring division. The profitability of the transferring division will not be known by the use of such a transfer price.

Each division appreciates the transfer of its goods/services at usual selling price/market price so as to arrive at the correct return/profitability figure, used for measuring the performance. There is no incentive to the transferring division if goods and services are transferred at variable cost.

8.5 MULTINATIONAL TRANSFER PRICING

In the discussions above, we have focused on how transfer pricing policies affect the motivation of managers. However, in multinational companies, other factors may dominate. Multinational companies use transfer prices to minimize worldwide income taxes, import duties, and tariffs. For example, Nike might prefer to make its profits in a country, with its maximum corporate tax rate of 28%, rather than in some other place where the rate is 35%.

Suppose a division in a high-income-tax-rate country produces a sub-assembly for another division in a low-income-tax-rate country. By setting a low transfer price, the company can recognize most of the profit from the production in the low-income-tax-rate country, thereby minimizing taxes. Likewise, items produced by divisions in a low-income-tax-rate country and transferred to a division in a high-income-tax-rate country should have a high transfer price to minimize taxes.

Sometimes import duties offset income tax effects. Most countries base import duties on the price paid for an item, whether bought from an outside company or transferred from another division. Therefore, low transfer prices generally lead to low import duties.

Consider a populated PCB maufactured by Alcatel Ltd. (Switzerland) with an 8% income tax rate and transferred to a division in India with a 40% income tax rare. In addition, suppose India imposes an import duty equal to 20% of the price of the item and that Alcatel cannot deduct this import duty for tax purposes. Suppose the full unit cost of a of populated PCB is Rs. 100, and the variable cost is Rs. 60. If tax authorities allow either variable- or full-cost transfer prices, which should Alcatel choose? By transferring at Rs. 100 rather than at Rs. 60, the company gain Rs. 4.80 per unit:

Effect of Transferring at Rs. 100 instead of at Rs. 60

Income of the Swiss division is Rs. 40 higher;therefore it pays 8% x Rs. 40 more income taxes (Rs. 3.20)Income of the Indian division is Rs. 40 lower; therefore it pays 40% x Rs. 40 less income taxes (Rs.16.00) Import duty is paid by the India division on an additional Rs.100 – Rs.60 = Rs.40; there fore it pays 20% x Rs.40 more duty (Rs. 8) Net saving from transferring at Rs. 100 instead of Rs. 60 Rs. 4.80

Financial restrictions imposed by some governments may be avoided by an effective use of transfer price. For example, in case a country restricts the amount of dividend paid to foreign owners, it may be easier for a company to get cash from a foreign division in form of payments for poduct transferred rather than cash dividend.

In summary, transfer pricing is more complex in a multinational company than it is in a domestic company. Multinational companies try to achieve more objectives through transfer-pricing policies, and some of the objectives can confil

SELF-EXAMINATION QUESTIONS

1. What are the three general methods for determining transfer prices?

2. In transfer pricing, what is a common conflict between a division and the company as a whole?

3. A company is organised on decentralised lines, with each manufacturing division operating as a separate profit centre. Each divisional manager has full authority to decide on sale of the division's output to outsiders and to other divisions.

    Division C has always purchased its requirements of a component from Division A. But when informed that Division A was increasing its selling price to Rs. 150, the manager of Division C decided to look at outside suppliers.

    Division C can buy the component from an outside supplier for Rs. 135. But Division Arefuses to lower its price in view of its need to maintain its return on the investment.

The top management has the following information :

C's annual purchase of the component	1,000 units
A's variable costs per unit	Rs. 120
A's fixed cost per unit	Rs. 20

Required :

(i)   Will the company as a whole benefit, if Division C bought the component at Rs. 135 from an outside supplier?

(ii) If A did not produce the material for C, it could use the facilities for other activities resulting in a cash operating savings of Rs. 18,000. Should C then purchase from outside sources?

(iii) Suppose there is no alternative use of A's facilities and the marker price per unit for the component drops by Rs. 20. Should C now buy from outside?

4. Discuss briefly the concept of multinational transfer pricing?

ANSWERS TO SELF-EXAMINATION QUESTIONS

3. (i)   The company as a whole will not benefit, as it will be required to incur an additional cost of Rs. 10,000.

    (ii) The Division C should purchase from outside as it will benefit the company by Rs. 3,000.

    (iii) The Division C should buy the component from outside as this will benefit the company by Rs. 5,000.