

Ans.

(i) Analysis of Behavioral Consequences

Division 'A' has huge demand for its lenses enabling it to operate at full capacity. External sales yield a contribution of Rs. 30 per lens sold (selling price of Rs. 140 less variable cost of Rs. 110 per lens). Likewise, each sale yields a profit Rs. 15 per lens (selling price of Rs. 140 less cost of production Rs. 125 per lens). This yields an ROI of 12% (profit of Rs. 15 per lens over a cost investment of Rs. 125 per lens). If Division 'A' sells lens to Division 'B' at Rs. 120 per lens, its contribution reduces to Rs. 10 per lens (transfer price ₹120 less variable cost Rs. 110) while overall it shows a loss of Rs. 5 per lens (transfer price Rs. 120 less total cost of production is Rs. 125 per lens). The loss of Rs. 5 per lens is on account of (i) only partial recovery of fixed cost of production and (ii) opportunity cost in the form of loss of profit from external sales. This would therefore result in lower divisional profit for Division 'A'.

Consequently, the manager of Division 'A' would not accept the transfer price of Rs. 120 per lens. Lower profitability due to internal sales may demotivate the division. Due to the benefits of internal procurement, the management of Great vision may want to increase the capacity of Division 'A' or infuse more investment to expand its operations. However, due to inability to recover fixed costs in its entirety from internal sales the ROI of the division is impacted, therefore divisional performance would be perceived to be lower. Therefore, it may oppose decisions as this would lead to higher fixed costs. At an overall level, such opposition may be detrimental to the company, leading to sub optimization of resources.

The current total cost of production for Division 'B' is Rs. 400 per camera. Each sale yields a profit of Rs. 10 per camera (Selling price Rs. 410 less total cost of production Rs. 400 per camera). Therefore, the current ROI is 2.50% (profit of Rs. 10 over cost investment of Rs. 400 per camera). If the lens is procured from Division 'A' at Rs. 120 per lens, Division 'B' can get a benefit of Rs. 50 per camera due to lower procurement cost. If lenses are procured from Division 'A', referring to the cost estimate given in the problem, Division 'B' can earn a contribution of Rs. 110 per lens sold (sale price of Rs. 410 per camera less variable cost of Rs. 300 per camera) and a profit of Rs. 60 per camera (sale price of Rs. 410 per camera less total cost of production of Rs. 350 per camera). Therefore, ROI improves to 17.14% (profit of Rs. 60 over cost investment of Rs. 350 per camera). By procuring the lenses internally, the profit of the division improves substantially. Consequently, the manager of Division 'B' would accept the transfer price of Rs. 120 per camera.

(ii) Analysis of Overall Benefit to the Company (from internal transfer)

While calculating the benefit to the company, the fixed cost of each division is ignored. It is also given in the problem, that only marginal cost (variable cost) is considered for decision making.

As explained above, each external sale yields a contribution of Rs. 30 to Division 'A'. The lost contribution each month from diversion of external sales of Division 'A' towards internal transfer to Division 'B' = 5,000 units × Rs. 30 per lens = Rs. 150,000 per month. This is an opportunity cost to the company.

The current procurement price for Division 'B' is Rs. 170 per lens. The same lens can be manufactured at Rs. 110 (variable cost) by Division 'A'. Therefore, cost of production reduces by Rs. 60 for the company. Savings in procurement cost = 5,000 units × Rs. 60 per lens = Rs. 300,000 per month. This is a savings to the company.

Therefore, the net benefit to the company at an overall level = Rs. 150,000 per month. Please note that the internal transfer price affects profitability of individual division but does not affect the company's overall profitability.

(iii) Range of Transfer Price

As explained above, the company gets a net benefit of Rs. 150,000 per month by procuring the lenses internally. Therefore, the divisional managers should accept the transfer pricing model. At the same time, neither division should be at a loss due to this arrangement. When the transfer price is Rs. 120 per lens, Division 'A' bears the loss, which will impact assessment of the division's performance. Therefore, an acceptable range for transfer price should be worked out. This can be done as below:

When the supplying division operates at full capacity, the range for transfer pricing would be-

(a) Minimum transfer price = marginal cost p.u. + opportunity cost p.u.

Since the supplying division is operating at full capacity, it has no incentive to sell the goods to the purchasing division at a price lower than the market price. If the internal order is accepted, capacity is diverted towards this sale. Hence, the supplying division would additionally charge the lost contribution from external sales that had to be curtailed. By doing so, the division will be indifferent whether the sale is an external or internal one.

(b) Maximum transfer price = Lower of net marginal revenue and the external buy-in price.

Therefore, the minimum transfer price (which would be set by Division 'A', the supplier) = marginal cost per lens + opportunity cost per lens = Rs. 110 + Rs. 30 per lens = Rs. 140 per lens. In other words, the minimum transfer price would be the external sale price of each lens.

The maximum transfer price (which would be determined by Division 'B', the procurer) = lower of net marginal revenue and the external buy-in price.

Net marginal revenue would be the revenue per one additional sale. Net marginal revenue per camera = marginal revenue – marginal cost (i.e. Variable cost excluding the cost of the lens) to Division 'B' = Rs. 410 - Rs. (150+30) = Rs. 410 - Rs. 180 = Rs. 230 per camera. This is the maximum price that Division 'B' can pay for the lens, without incurring any loss. As mentioned before, fixed cost is ignored for this analysis.

The current external procurement price is Rs. 170 per lens.

Therefore, the maximum price that Division 'B' would be willing to pay = lower of net marginal revenue (Rs. 230 per camera) or external procurement cost (Rs. 170 per lens). Therefore, Division 'B' would pay a maximum price, equivalent to the current external price of Rs. 170 per lens. It will not pay Division 'A', price more than the external market price for a lens.

Therefore, the acceptable range for transfer price would range from a minimum of

Rs. 140 per lens and maximum of Rs. 170 per lens. The managers may be given autonomy to negotiate a mutually acceptable transfer price between this range.

(iv) Advise on Alternative to Current Transfer Pricing System

Other alternative transfer pricing models that can be considered are:

Dual Pricing

The supplying division, Division 'A', records transfer price by including a normal profit margin thereby showing reasonable revenue. At the current market price per lens, transfer price for Division A would be Rs. 140 per lens. The purchasing division, Division 'B', records transfer price at marginal cost thereby recording purchases at minimum cost. As per the current production cost, the transfer price for Division 'B' would be the variable cost incurred by Division 'A' to manufacture one lens, that is Rs. 110 per lens. This allows for better evaluation of each division's performance. It also improves co-operation between divisions, promoting goal congruence and reduction of sub-optimization of resources.

Drawbacks of dual pricing include:

(a) It can complicate the records, thereby may result in errors in the company's overall records.

(b) Profits shown by the divisions are artificial and need to be used only for internal evaluations.

Two Part Pricing System

Here, transfer price = marginal cost of production + a lump-sum charge (two part to pricing). While marginal cost ensures recovery of additional cost of production related to the goods transferred, lump-sum charge enables the recovery of some portion of the fixed cost of the supplying division. Therefore, while the supplying division can show better profitability, the purchasing division can purchase the goods at a lower rate compared to the market price.

The proposed transfer price of Rs. 120, is a two-part price that enables Division 'A' to recover the marginal cost of production of a lens as well as portion of the fixed cost. However, as explained in part (i) above, this price is insufficient to provide a reasonable return to Division 'A'. Therefore, the management of Great vision along with the divisional managers have to negotiate a price that is reasonable to Division 'A' while not exceeding the current procurement price of Rs. 170 per lens for Division 'B'. As explained in part (iii) of the solution, in the given case, the range of Rs. 140 to Rs. 170 per lens, would help resolve this conflict.

(v) Range of Transfer Price where Division 'A' has excess capacity

When the supplying division has excess capacity, the range for transfer pricing would be

- (a) Minimum transfer price (determined by Division 'A') = marginal cost per lens = Rs. 110 per lens. This ensures that the Division 'A' is able to recoup at least its additional outlay of Rs. 110 per lens incurred on account of the transfer. Fixed cost is a sunk cost hence ignored. Since capacity can be utilized further, it would be optimum for Division 'A' to charge only the marginal cost for internal transfer. Division 'B' gets the advantage getting the goods at a lower cost than market price.
- (b) Maximum transfer price (determined by Division 'B') = Lower of net marginal revenue and the external buy-in price. As explained in part (iii) above, this would be lower of net marginal revenue of Rs. 210 per camera or external buy-in price of Rs. 170 per lens, Therefore, the maximum transfer price would be Rs. 170, the external market price beyond which Division 'B' will be unwilling to pay a higher price to Division 'A'. Hence, when Division 'A' has excess capacity, the minimum transfer price would be Rs. 110 per lens while the maximum transfer price would be Rs. 170 per lens.