Chapter 8 – Divisional Transfer Pricing

Skill Based Q9 – Goal Congruence

Mother Co. Ltd has two business units, viz. a BPO unit engaged into telemarketing, and a KPO unit focusing on business analytics. Recently the CEO was reviewing the half yearly financial data which had the following key indices:

Turnover of BPO unit at 90% capacity utilization	250 Lakhs
Turnover of KPO unit at 60% capacity utilization	550 Lakhs
Profit Margin of BPO and KPO units respectively	18% and 15% respectively
Present number of shared employees from the BPO unit to the KPO unit on requirement basis	10 employees
Number of hours required on cross training of one employee and the rate per hour	Approx. 10 hours at Rs Rs 3,000 per hour

The CEO's next half year overall target for the company is Rs 1,200 Lakhs with a profit margin of 18% for the company as a whole. However, the BPO unit head has told categorically to the CEO that he cannot spare any additional employee as the BPO is working at optimum capacity. The KPO unit head, on the other hand, finds it cost effective to cross train employees of the BPO for specific tasks instead of hiring directly from the market.

Required

(i) Analyze the strategic problem that Mother Co Ltd is facing.

(ii) LIST few suggestions in brief.

Solution

(i) The present position of the units and the overall company is as under:

	BPO	KPO	Combined
Turnover (in Lakhs)	250	550	800
Capacity	90%	60%	67%
Turnover at full capacity (in Lakhs)	278	916	1,194
Profit Margin	18%	15%	16%
Present Profit (in Lakhs)	45	83	128
Profit at full capacity (in Lakhs)	50	138	188

In Mother Co. Ltd., both unit heads are focusing only on their respective unit performances rather than strategizing on the company's performance growth as a whole.

Calculations revealed that the BPO unit is a low margin high manpower-oriented unit as its overall contribution is just 35% share of the overall company, whereas the KPO is a high margin low manpower-oriented unit as its share is 65%.

It is clear that the strategic problem being faced by Mother Co. Ltd is concerned with divisional performance measures in terms of goal congruence. The CEO's target for the next half yearly is really ambitious, and this can be achieved only if goal congruence is met by the heads of both units.

(ii) Few brief suggestions are given below:

- Overall revenue target of 1,200 thousand to be achieved by cranking up the utilization for each division at 100% (still there will be a gap of 6 thousand).
- Company's profit margin of 16% calculated at full capacity, to be increased by 2% through means of cost cutting techniques.
- Cross training can be helpful in proper utilization of work force.
- The KPO should focus on further cost reduction and improve its % of profit margin.

Skill Based Assessment Question Q.29

TRISEL Ltd. makes three products X, Y and Z in Divisions A, B and C respectively. The division X is currently working at 60%, Y is working at 80% and Z is working at 100% of the total production capacity.

The following information is given:

Particulars	X	Y	Z
Direct Material	10	25 (Excl. Material X)	35 (Excl. Material X)
Direct Labour	6	8	10
Variable Overhead	2	3	4
Total Production Capacity	15,000 units	5,000 units	2,500 Units
External Demand	7,500 Units	5,000 Units	3,000 units
Selling price to External Customers	30	83	90

The company has to incur additional fixed cost of Rs. 9,000 for using every 10% of idle production capacity. Production capacity cannot be enhanced beyond total production capacity.

Product X can be used as input material for Y and Z. Product X is available in the market at Rs. 30 per unit. Each unit of Y and Z need one unit of X as their input material.

X supplies the product without any defects, error free for direct use at shop floor without any further quality inspection to Y and Z. If Y gets transfer of material from X, it can be directly used, but if it buys from outside vendor, it has to pay Rs. 30 plus quality inspection charges of Rs. 2.

Z gets material from outside vendor at Rs. 30. If it buys from X, it has to slightly alter the product X which will cost Rs. 3 as alteration cost.

X wants to fix uniform transfer price for both Y and Z. This price will be for divisional transfer only and it has nothing to do with outside sales.

Required

RECOMMEND the best strategy for each division and company as a whole.

Solution

Recommendations →

Decision on Internal Transfer Price

Division Y's cost of material X from outside is Rs 30 in addition inspection charge of Rs 2 is required to be incurred for outside purchase. Therefore, Division Y would be able to pay equal to total outside cost for internally transferred material X i.e. Rs 32 which it can be directly use.

Division Z's cost of material X from outside is also Rs 30. However, division Z will not pay anything more than Rs 27, since it will have to alter the material transferred from X and incur Rs 3 as alteration cost. Therefore, Division Z would be able to pay only Rs 27 for the product transferred.

Thus, uniform transfer price will be Rs 27 for both Y and Z.

Workings

Statement Showing "Contribution per unit" under different options (Rs.)

Particulars	Division A- "X"			Division B- "Y"		Division C- "Z"	
	Sale To	Internal Transfer to		Purchase from	Transfer from	Purchase from	Transfer from
	Outside	Y	Z	Outside	X	Outside	X
Selling Price	30.00	---	---	83.00	83.00	90.00	90.00
Transfer Price	---	**27.00**	**27.00**	---	---	---	---
Divisional Variable Cost of Production (Excluding Material 'X')	18.00	18.00	18.00	36.00	36.00	49.00	49.00
Purchase Price 'X'	---	---	---	30.00	---	30.00	---
Transfer Price 'X'	---	---	---	---	**27.00**	---	**27.00**
Inspection Cost	---	---	---	2.00	**---**	---	**---**
Alteration Cost	---	---	---	**---**	---	---	3.00
Contribution	**12.00**	**9.00**	**9.00**	15.00	**20.00**	11.00	**11.00**

Decision on Capacity Utilisation

In division Y idle production capacity can be utilised up to 1,000 units which is equal to 20% of total production capacity in the division which requires additional outlay of Rs 18,000 (9,000×2) against the contribution of Rs 20,000 (20×1,000 units) at transfer price of Rs 27 per unit. Therefore, it is economically viable to operate at 100% production capacity, optimal production for division Y will be 5,000 units (i.e. at division's full production capacity).

Since division Z is already operating at full production capacity. So, no further expansion is possible in this case, optimal production for division Y will be 2,500 units only (i.e. 100% of division's production capacity).

Division X is currently operating at 60% capacity i.e. 9,000 units against external demand of 7,500 units. This capacity can be further enhanced by 40% i.e. 6,000 units by incurring additional fixed cost of Rs 36,000 (9,000 × 4). Therefore, division X has excess production capacity to the extent of 7,500 units (1,500 + 6,000) which can be internally transferred.

TRISEL can utilised this additional production to the extent of internal transfer needed for division Y and division Z i.e. 5,000 units for Y and 2,500 units for Z. For these 7,500 units, 1,500 units will be made available through the difference in current operating capacity and existing market demand i.e.

1,500 units and for remaining 6,000 units, operating capacity has to be enhanced i.e. 40% (6,000/15,000 units). This would be needed a cost equivalent to Rs 36,000 (= 9,000 × 4) against a contribution of Rs 54,000 (= 9 × 6,000).

Thus, expansion is completely feasible.

Optimal production for division X will be 15,000 units (i.e. at division's full production capacity).

Workings

Statement Showing "Internal Transfer Decision (units)"

Particulars	**X**	**Y**	**Z**
Maximum External Demand	7,500 units	5,000 units	3,000 units
Total Production Capacity *(given)*	15,000 units	5,000 units	2,500 units
Current Production Capacity	9,000 units (60%)	4,000 units (80%)	2,500 units (100%)
Capacity *that can be added*	6,000 units (40%)	1,000 units (20%)	---
Additional Fixed Cost on Expansion	36,000 (9,000×4)	18,000 (9,000×2)	---
Units that must be sold/ transferred to get amount as contribution at **TP level 27**	4,000 units (36,000/ 9)	900 units (18,000/ 20)	---
External Demand not covered by current production	---	1,000 units	500 units
Decision	Expand and make 15,000 units 7,500 to external market and 5,000 to Y;2,500 to Z	Expand and make 5,000 units (4,000 units + 1,000 units)	Cannot expand as already total production capacity exhausted.

Note- Additional fixed cost of 9,000 for using every 10% of the idle divisional production capacity has been considered.

Conclusion

Recommended Scenario i.e. Best Strategy vs Existing Scenario

Overall, company will gain benefit from the internal transfer of 7,500 units. The company will save outside cost to the extent 12 per unit (which is over and above the variable cost of production of X) on current divisional requirements of 6,500 units (Y & Z), in total 78,000. In addition, company will be able to generate contribution of 29 p.u. (83- 36- 18) on additional external sales (division Y) of 1,000 units, in total 29,000. Moreover, company will save inspection cost of 2 per unit on internally transferred 4,000 units i.e. 8,000. However, have to incur alternation charges @ 3 per unit on internally transferred 2,500 units i.e., 7,500. Total net savings amounting to 1,07,500 against expansion cost (capacity utilisation) of 54,000. Company will yield incremental benefit of 53,500 from this expansion as well as transfer pricing decision.

Workings

Net Gain - Present Scenario

Particulars	X	Y	Z	Total (Rs.)
External Sales	7,500 units	4,000 units	2,500 units	
Internal Transfer	---	---	---	
Contribution - External Sales	90,000 (7,500 units × Rs.12)	60,000 (4,000 units × Rs. 15)	27,500 (2,500 units × Rs.11)	1,77,500
Net Gain				1,77,500

Net Gain - Recommended Scenario

Particulars	X	Y	Z	Total (Rs)
External Sales	7,500	5,000	2,500	
Internal Transfer	5,000 + 2,500	---	---	
Contribution - External Sales	90,000 (7,500 units × Rs.12)	1,00,000 (5,000 units × Rs.20)	27,500 (2,500 units × Rs.11)	2,17,500
Contribution - Internal Transfer	67,500 (5,000 units + 2,500 units) × Rs.9	---	---	67,500
Less: Additional Fixed Cost	36,000	18,000	---	54,000
Net Gain				2,31,000

Skill Based Q.38 – Goal Congruence

A manufacturer of Cell Phones has many operating units within its organization structure. The 'assembly plant' that assembles parts to make the final product. The others are mainly units that manufacture 'component parts' for the cell phone. The management promotes decentralized system of working, where the manager of each unit has the power to take decisions independently. The management only oversees that the impact of major operating decisions such that they promote "goal-congruence" that will benefit or not adversely impact the company.

'Max' is the head of the 'battery manufacturing' division. The division sells most of its output to its final 'assembling plant' division headed by 'Ruby'. Battery is an important component of a cell phone. The company has an overall mission to sell only products that have are of good quality, for which long lasting life of the battery component is critical. In March this year, the engineers of both the previously mentioned divisions created an innovative design to improve battery life. These newly designed batteries will be used in a new range of cell phones that the company plans to produce. The 'battery' division had spent ₹50 lakhs developing a suitable prototype that was acceptable to the engineers from the 'assembly plant' division. The managers are discussing a suitable transfer price for these newly developed batteries.

As mentioned before, part of the sales from the 'battery' division is also to external customers. However, at the current levels the 'battery' division is operating only at 60% capacity producing 60,000

units annually. Its annual capacity is 1,00,000 units. The annual demand for the newly developed batteries would be an additional 40,000 units. By accepting this internal order, the entire annual capacity of the 'battery' division can be utilized.

It is now close to the year end for the company. A very important metric to determine the payout is the division's financial performance. Therefore, there is intense pressure to sell more and cut costs. Each division maintains separate accounting records.

'Max' wants to charge a transfer price of ₹300 per unit of battery. Total manufacturing cost is ₹250 per unit of battery while the variable cost is ₹230 per unit.

'Ruby', the manager of the 'assembly plant' has been trying to convince 'Max' to reduce the transfer price to ₹275 per unit. 'Ruby' argues that the additional production for the new range of cell phones would help utilize unused capacity. In line with the current arrangement, she wishes to get all her batteries from the in-house department due to their higher quality level. However, she finds the cost of ₹300 per unit very high. She shares quotes from other vendors for similar quality batteries where the average market price is ₹275 per unit. She wishes 'Max' to provide her the batteries at this rate, which she feels is a more competitive price.

As per the company's policy, if a cell phone is found defective within 1 year from date of sale, it will be completely replaced by a new phone. Cost of replacement of a cell phone is ₹3,000 per cell phone. The annual demand for the newly developed cell phone range is expected to be 40,000 units per year. Batteries procured from outside vendors could result in 0.1% of sales becoming defective. These will require replacement of the entire cell phone by the company. 'Ruby' argues that this is a miniscule portion of the annual sales. All the same, to keep this at a minimum threshold, quality inspection procedures are in place that costs the company ₹5,00,000 per year. Batteries manufactured in-house have always met the required quality standards. It would not result in any defective products.

'Max', the manager of the 'battery' division justifies the internal transfer price rate of ₹300 per unit on these counts:

1. The quality of in-house batteries is superior compared to the external market providers. They will not result in any sale returns due to defective batteries.

2. Sales policy of the 'battery' division for both external and internal sales is –

Selling price / transfer price = Total Cost + 20% mark up. Therefore, based on a total cost of ₹250 per unit, the transfer price is arrived as ₹300 per unit.

3. The division has spent ₹50 lakhs to develop prototype as per the assembly line requirements. Being a profit center 'Max' insists that this cost be recouped by charging a higher rate.

Both 'Max' and 'Ruby' decide to approach senior management whom they report to in order to resolve their dispute by examine in detail. Assume that currently the opportunity cost of excess capacity is zero. There are no pending sales orders that help utilize the excess capacity. Also given, that the demand for cell phones has been increasing, so the industry is in the cusp of a growth phase.

Required

(i) Impact on the company's financials if (i) Batteries are procured at ₹275 each from external market and (ii) Batteries are procured in-house at ₹300 each.

(ii) As a member of the senior management committee, with the idea of goal congruence of the divisions and the company as a whole:

(a) How would you convince 'Ruby' to buy the batteries from the in-house division?

(b) How would you convince 'Max' to reduce his transfer price from ₹300 for each battery?

Hint: For examine in detail use verb 'DISCUSS'

Solution

Case a: Batteries procured from outside at ₹275 per unit

Cost outflow to the company, incurred by the 'assembly plant' division would be ₹1.162 crores. This comprises of the following:

1. Procurement cost: 40,000 units procured at ₹275 per unit = ₹1.1 crores.

2. Additional quality inspection cost: ₹5 lakhs or ₹0.05 crores.

3. Cost of replacement of defective units at a defect rate of 0.1% of annual sales

= 40,000 units × 0.1% × ₹3,000 per unit = ₹1.2 lakh or ₹0.012 crores

Total outflow = ₹1.1 crore + ₹0.05 crore + ₹0.012 crore = ₹1.162 crores.

When batteries are procured from outside, 'battery' division will not incur any cost outflow. However, the unit has unused / excess capacity. Since currently the opportunity cost of unused capacity is zero, this is a non-quantifiable waste. The company may have to consider scaling down capacity / activities in this division by shutting down some of its machines. However, since it is given that the cell phone industry is in the cusp of a growth phase, it is possible to bring in orders from the external market, to utilize the balance 40% unused annual capacity.

The company should however be cautious since the 'battery' division would be catering to its rival cell phone manufacturers. While the 'assembly plant' would be procuring batteries externally from the battery unit's rivals. It could lead to a situation where the company is working against itself for the sake of maintaining profitability of its individual units. This goes against the concept of goal congruence that could affect the company's ability to sustain business in the long run. This would be a separate study that would need inputs from other senior management executives.

Case b: Batteries procured in house at ₹300 per unit

Net cost outflow to the company will be ₹92 lakhs.

The 'battery' division would earn a revenue of ₹300 per unit while incurring a variable cost of ₹230 per unit. Total cost of production is ₹250 per unit, that includes a fixed cost of ₹20 per unit. However, this has been ignored since it is a sunk cost. Therefore, each internal sale to the assembly plant division would net revenue of ₹70 per unit. The total additional revenue earned from this internal transfer would be 40,000 units × ₹ 70 per unit = ₹28 lakhs. This comes with the additional benefit, that the unit is operating at full capacity, producing high quality component for another unit within the company. Thereby, aiding goal congruence.

The 'assembly plant' division would incur a cost outflow of ₹1.2 crores because of the internal transfer. (40,000 units × ₹300 per unit). Although this is costlier than the option of procuring from the external vendors, it comes with high quality assurance. Sale of defective cell phones can be avoided, thereby improving the company's brand image and customer loyalty.

Net outflow to the company = cost to the 'assembly plant' division – additional revenue for 'battery' division = ₹ 1.2 crores - ₹0.28 crores = ₹0.92 crores or ₹92 lakhs.

At the overall company level, this can also be simply calculated as the marginal cost of producing additional 40,000 batteries = 40,000 units × ₹230 per unit = ₹92 lakhs. Fixed cost of manufacture, a sunk cost, is ignored.

Conclusion: It is better to manufacture the batteries in-house due to the following reasons–

1. External procurement cost is ₹275 per unit while the marginal cost of manufacturing a battery is only ₹230 internally.

2. Quality of in-house production is higher, requiring no additional quality control checks.

3. Promotes goal congruence, where each division will work towards sustaining the company's business growth.

(ii) Negotiating with managers of individual units:

(a) Negotiating with 'Ruby', the manager of 'assembly plant' division:

Ruby argues in favor of procuring similar batteries from the external market at a price of ₹275 per unit that is much lower than the internal transfer price quote of

₹300 per unit. Overall it costs ₹1.162 crore per year to procure the components as against her division bearing an internal transfer cost of ₹1.2 crore. However, by using external batteries, replacement of defective units would be 0.1% out an annual sale of 40,000 units that is 40 units need to be replaced. 'Ruby' may argue that this is a miniscule portion of the annual sales. However, the company's image of providing quality products may take a hit. For the company, procurement cost, along with the cost of replacement and additional quality inspection cost makes it costlier than producing the batteries in-house.

Cost of external procurement = ₹1.162 crore / 40,000 units = ₹290.50 per unit. Cost of manufacturing in-house = marginal cost of production = ₹230 per unit.

The fact internal transfer is the better option has to be reasoned out with 'Ruby'. She in turn should be given the assurance, the company would give importance to other non-financial metrics while evaluating her unit's performance for bonus payouts. One of these could be the number of successful innovative designs collaborated along with other departments such as the 'battery' division. This would have a more positive impact on the employee morale. Excessive emphasis on financial metrics could lead to decisions that may benefit the unit but may be detrimental to the company.

(b) Negotiating with Max, the manager of the 'battery' division:

The 'battery' division is currently operating at 60% capacity. With the additional order to produce 40,000 units, the capacity can be utilized completely. This avoids wastage of resources. Quality of components is another positive feature that the company should give credit to Max's division. Therefore, he is justified in charging a premium for quality. At the same time, the following points need to be reasoned out with him:

1. Development cost of new design of ₹50 lakh is a sunk cost for the company. It need not be passed onto the 'assembly plant' division. Instead during performance appraisal, 'Max' can highlight this as an investment that has paid off in the form a successful design for the new

range of products that the company is planning to manufacture. Such project initiative outflows need to viewed investments and not as costs against the unit. During performance appraisal for bonus payout, the management can consider the payoffs from such project initiatives, how successful they have been and how many did not yield any result. This is Research and Development that is important for the long-term sustainability of the company.

2. It is given that the opportunity cost for excess capacity is nil. Therefore, the unit's excess capacity is waste. Therefore, for determining the transfer price, 'Max' should consider only the marginal cost of producing a battery unit rather than following a cost-plus mark-up pricing policy. As explained above, fixed cost is again a sunk cost to the company.

Therefore, as a senior management committee member, 'Max' has to reasoned out in reducing the transfer price from ₹300 per unit. Ideally, the transfer price should include only the marginal cost of production of ₹230 per unit. Given the decentralized working of the organization, leverage can be given for 'Max' to charge a premium for the quality of his products. Overall, it would not affect the company's financials. However, there has to be a check on how reasonable this premium is since it could lead to decisions that are detrimental to the company. Also, performance evaluation should also include non-financial metrics like quality of products produced, innovative designs and production techniques that are factors that will sustain business in the long run.

Skill based Assessment Question Q.43

AB Cycles Ltd. has 2 divisions, A and B which manufacture bicycle. Division A produces bicycle frame and Division B assembles rest of the bicycle on the frame. There is a market for sub-assembly and the final product. Each division has been treated as a profit centre. The transfer price has been set at the long-run average market price. The following data are available to each division:

Estimated selling price of final product	3,000 p.u.
Long run average market price of sub-assembly	2,000 p.u.
Incremental cost of completing sub-assembly in division B	1,500 p.u.
Incremental cost in Division A	1,200 p.u.

Required

i. If Division A's maximum capacity is 1,000 p.m. and sales to the intermediate are now 800 units, should 200 units be transferred to B on long-term average price basis? COMMENT.
ii. What would be the transfer price, if manager of Division B should be kept motivated? Substantiate your RECOMMENDATIONS with suitable reasons.
iii. If outside market increases to 1,000 units, should Division A continue to transfer 200 units to Division B or sell entire production to outside market? COMMENT.

Solution

(i) In this case there are two options available –

Option A	Rs.
Sell at the sub assembly stage (after completion of Division A)	2,000
Less: Incremental cost in Division A	1,200
Contribution	800

Option B	Rs.
Sell at the final product stage	3,000
Less: Cost at Division A and Division B (Rs.1,200 + Rs.1,500)	2,700
Contribution	300

Therefore it is profitable to sell at the subassembly stage because of higher contribution, provided there is a market.

Hence, if there is market at intermediate stage, first priority is to sell intermediary (sub assembly). Therefore, 800 units should be sold as sale of intermediary.

The balance capacity available of (1,000 – 800) = 200 units should be transferred to B and B should complete the assembly and sell as final product, since the company can earn Rs.300 per unit for each unit of such sale.

(ii) Recommendation

If B Division receives the subassembly at market price of Rs 2,000, plus its own incremental cost of Rs 1,500 will give total cost of Rs 3,500, thereby yielding a loss of Rs 3,500 – Rs 3,000 = Rs 500 per unit, whereas the company makes a profit of Rs 300 per unit.

The loss of ₹500 per unit would demotivate the manager of Division B. This would impact the company as inhouse production of the bicycle does yield a positive result, a profit of ₹300 per unit. In order to keep the manager of Division B motivated, the company can adopt a dual rate transfer pricing policy. Division A can record the transfer price at the long run average market price of ₹2,000 per unit for each bicycle transferred to Division B. This lets Division A show reasonable revenue based on current market conditions, not constraining the "departmental profit center approach" towards operations.

Division B on the other hand can record the transfer price at the marginal cost of production for Division A. The marginal cost for Division A is ₹1,200 per unit. If Division B is allowed to record the transfer price at ₹1,200 unit per sub-assembly unit purchased from Division A, it would show a profit of ₹300 per unit of bicycle sold.

	Rs.
Sell at the final product stage	3,000
Less: Transfer Price for each sub assembly purchased from Division A	1,200
Less: Incremental cost for Division B to process further	1,500
Contribution	300

The problem with Dual transfer pricing system is that it can complicate the records since Division A records the transfer price at ₹2,000 per sub-assembly unit transferred to Division B. Division B records its transfer price at ₹1,200 per sub assembly unit it purchases from Division A. This can lead to errors in the company's overall records.

(iii) Both Division A and the Company make higher contribution by selling to intermediate market. If the market demand increases to 1,000 units, the full quantity should be sold outside as intermediary, and nothing should be transferred to Division B.