Test Series: August, 2018

MOCK TEST PAPER – 1 FINAL COURSE: GROUP – II PAPER – 5: STRATEGIC COST MANAGEMENT AND PERFORMANCE EVALUATION SUGGESTED ANSWERS/HINTS

1. (i) HAL's Control System HAL's current control system is 'focused exclusively' on the manufacturing process and its efficiency even though HAL is also a retailer and installer of industrial ACs. It is suitable for HAL's control system to monitor manufacturing efficiency with the help of the three variances: material usage, material price and manufacturing labour efficiency. No reasons have been given for focusing on these three variances and there may be other variances which can provide useful control information that are not currently computed for example, labour rate and material yield. Although HAL uses standard costing, it is unclear whether it calculates product costs. A lack of product costs computation may be the reason that it was shocked about its 2017 profit margin. Standard costing could be in criticism for misdirecting management's attention. Thus, in the case of a 'Summer-Cool' AC where the highest standards of materials are used, it is pertinent that the quality of the finished product is not compromised. Therefore, it might be proper to accept an unfavorable material price variance to maintain the product's standards. Variance analysis should not be done in isolation but a holistic view needs to be taken about HAL's operations and the current control system may not lead to this. HAL is not currently controlling and monitoring aspects which are important for competitive success. HAL's Critical Success Factors have not been identified yet. There is monthly reporting of variances but in addition to this, there should also be follow-up actions for outcome resulting from these reports. However, a month is not inevitably the relevant reporting period for all aspects of HAL's business. If there is a production problem leading to excessive materials wastages, a month is too long time to wait before remedial action are taken. Therefore, real-time or coexistent reporting may be more relevant for manufacturing operations. A major deficiency of HAL's control systems is that they do not extend to retailing and installation activities. The 'Summer' installation teams are incentivized to complete ACs which could be good for their productivity. However, there is a high level of complaints associated with their work. As there is no evident means of monitoring the installation team's work, the reasons of the complaints cannot be identified.

(ii) Critical Success Factors (CSF) are elements tied to the strategy of business and they represent objectives that business is trying to achieve, as a corporation, as a department or as a business unit. Critical success factors may vary over time and may include items like employee attitudes, manufacturing flexibility etc. There are a range of CSF's which could be appropriate for HAL. They include:

CSF: Installations Quality There are different quality expectations for the two ACs and there have been different levels of quality achieved, can be seen in the historic pattern of complaints. This strongly implies that the quality of installation should be tracked as a separate CSF for each AC. This CSF is important for HAL due to cost implications of rectifications and guarantee claims. It is also important to consider that because of the effect that poor quality will have on HAL's future business.

CSF: Customer Satisfaction Like quality, this CSF will need to be monitored separately for each AC. Customer satisfaction encompass the complete life of a transaction beginning with the initial enquiry about a purchase and continuing after installation for the life of the AC. Customer satisfaction will have an influence on HAL's future business which is dependent, in part, on repeat orders and recommendations. This CSF will also show the market's view of HAL's brand.

CSF: Brand Performance HAL has two distinct brands. They are directed at different market segments and have different associated attributes. 'Summer' ACs offer limited choice to the customer and retail, on average, for ₹ 36,000. HAL would like to maintain this business at its present level (7,000 ACs a year minimum) ₹ 252 million revenue. HAL needs to ascertain where this brand is situated in its life-cycle and what marketing activities may be required to support it. The 'Summer-Cool' brand is aimed at a different market segment and HAL would like to grow this aspect of its business which produces revenue of ₹ 504 million. The success of both brands is important for the continual success of HAL and this CSF indicate a complete view of performance.

CSF: Manufacturing Excellence HAL manufactures all the ACs which it sells and installs. Manufacturing must be a substantial part of HAL's total costs and a significant contributor to profitability. Currently, HAL monitors some limited aspects of manufacturing through its control system. However, there are many other aspects which have not been reported upon, for example- innovation, labour abseentism, manufacturing flexibility and investment in technology. This CSF is much broader than the current control system. It also assists in searching for competitiveness.

(iii) Standard Costing and Reporting System HAL may be required to abandon or modify its standard costing and reporting system. The rationale behind this is that the current control system might lead to an inappropriate emphasis being placed on certain aspects of performance. It is noteworthy that the installations for 'Summer' AC is causing a substantial level of complaints whereas there has never been a complaint made about a 'Summer Cool' AC. It could be that the different remuneration arrangements for the ACs' installation teams have led to this and as the complaint level is an important aspect of the CSF i.e. Customer Satisfaction, HAL may *need to modify its remuneration arrangements*. It should also reckon whether it would be benefited from a broader range of variance reporting, for example, it may find reporting useful to report on labour rates and material yield. For all CSFs, HAL will need to determine the appropriate reporting intervals. Although it is useful to synchronize this with the accounting reporting cycle, CSFs and KPIs do not necessarily coexist with accounting period ends. *Some KPI's may require to be reported in real-time*, for example, material wastage, others may be of a longer duration like Customer Satisfaction. There is a strong argument for disassociation of the CSFs reporting from the financial reporting cycles.

2. (i) Product Wise Profitability as per Original Allocation Methodology

Particulars	Grade A	Grade B	Total
Selling price	280	400	680
Direct Material (Refer Table 1)	114	186	300
Direct Labour (Refer Table 1)	76	124	200
Overheads (allocated equally)	75	75	150
Total Expenses	265	385	650
Profit	15	15	30
Profitability	5.36%	3.75%	×

(Figures in ₹ per kilogram of fertilizer produced)

		CC1			CC2			CC3	6	Total	for the	Company
Particulars	Α	В	CC Total	Α	В	CC Total	Α	В	CC Total	Gr. A	Gr. B	Grand Total
Direct Material	27	63	90	60	60	120	27	63	90	114	186	300
Direct Labour	18	42	60	40	40	80	18	42	60	76	124	200

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Product Wise Profitability (activity based costing using environmental management accounting) requires the following *steps*:

- 1. Overhead expenses of ₹ 150 per kilogram of fertilizer produced be first bifurcated into incinerator costs and other overhead costs.
- 2. Incinerator costs of ₹ 90 per kilogram of fertilizer needs to be allocated first to the cost centres. This is done based on the waste generated at each cost centre. The individual cost allocated to each cost centre is again allocated to products based on the waste generated at each cost centre by each product. Refer part a of table 2 for detailed calculations.
- 3. As mentioned in the problem, other overhead costs are allocated to each product at each cost centre level equally. Refer part b of table 2 for detailed calculations.
- 4. The above allocations to each product at a cost centre level is then summed up to get the product wise overhead cost allocation. Refer part c of table 2 for detailed calculations.

Accordingly, the **Revised Product Profitability** would be as follows:

Particulars	Grade A	Grade B	Total
Selling Price	280	400	680
Less: Direct Material (refer table 1)	114	186	300
Less: Direct Labour (refer table 1)	76	124	200
Less: Overheads (refer table 2)	66	84	150
Profit	24	6	30
Profitability	8.57%	1.50%	×

(Figures in ₹ per kilogram of fertilizer produced)

 Table 2 Allocation of Overhead Expenses to each Cost Centre and Product

Product Waste Produced (in tonnes per annum)	CC1	CC2	CC3	Total		
Grade A	2	3	1	6		
Grade B	2	2	5	9		
Total Waste (in tonnes)	4	5	6	15		
Incinerator Cost Allocated to Cost Centres	24	30	36	90		
(based on waste generated)						
Other Overhead Expenses	20	20	20	60		
Total Cost Centre Wise Overhead Cost	44	50	56	150		
Part A: Allocation of Incinerator Cost from Cost Centre to each product						

(Figures in ₹ per kilogram of fertilizer produced)

(based on waste produced at each cost centre by each product)						
Product	CC1	CC2	CC3	Total		
Grade A	12	18	6	36		
Grade B	12	12	30	54		
Total Incinerator Cost	24	30	36	90		
Part B: Allocation of Other Overhead Cost from Co	ost Cen	tre to e	ach pro	oduct		
Product	CC1	CC2	CC3	Total		
Grade A	10	10	10	30		
Grade B	10	10	10	30		
Total Other Overhead Cost	20	20	20	60		
Part C: Total Overhead Cost (Cost Centre and Prod	luct Wis	se i.e. p	oart a +	b)		
Product	CC1	CC2	CC3	Total		
Grade A	22	28	16	66		
Grade B	22	22	40	84		
Total Overhead Cost	44	50	56	150		

Summarizing Product Profitability as per both methods:

Product	(Profit in ₹ pe দ	er kg of fertilizer produced)	Profit %		
	Original Method	ABC (as per EMA) Method	Original Method	ABC (as per EMA) Method	
Grade A	15	24	5.36%	8.57%	
Grade B	15	6	3.75%	1.50%	

(ii) As summarized above, originally the profit generated from Grade A and Grade B products, was ₹ 15 per kilogram. Grade A was the more profitable product giving return of 5.36% compared to Grade B's return of 3.75%. This has been calculated by allocating overheads equally to Grade A and B.

During the year, 15 tons of waste is produced during the manufacturing process. Grade B fertilizer produces more waste that accounts for 60% of the waste. Therefore, Grade B should bear higher amount of the incinerator cost compared to Grade A. Allocation based on this premise, dramatically changes the profitability of the products. As calculated above, Grade A fertilizer, due to lower incinerator cost allocation, generates a profit of ₹ 24 per kilogram of fertilizer. Grade B's profits accordingly are lower, since the product generates more waste and has to bear a larger share of clean-up expenses. Profitability of Grade A increases to 8.57% while Grade B falls dramatically to 1.50%.

- (iii) The company can draw a number of conclusions from this analysis of overhead costs as per environmental management accounting. This analysis has helped the company reach the conclusion that Grade B fertilizer produces more waste. The company could adopt either of the following approaches:
 - (a) To maintain the same level of profitability, the company can increase the price of Grade B by another ₹ 9 per kilogram. This is a 2.25% increase in the sale price of Grade B fertilizer. Depending on the market for this grade of fertilizer, the company has to decide whether to increase the price of the product. While a price increase may be possible if the company has a strong market hold, it might be difficult if competition in the market is high. or
 - (b) The other approach, a more sustainable approach that is the aim of environmental management accounting, would be to reduce the waste produced in the manufacturing process. This analysis, has quantified the waste generated in the process. Better manufacturing techniques, could save the company incinerator costs, that would yield better profits for the company.

3. (i) ROI

Division 'Y'

Controllable Profit = ₹ 5,290K

Net Assets = ₹ 19,520k + ₹ 4,960K – ₹ 5,920K = ₹ 18,560K

ROI = 28.5%

Division 'D'

Controllable profit = ₹ 3,940K

Net Assets = ₹ 29,960K + ₹ 6,520K – ₹ 2,800K = ₹ 33,680K

ROI = 11.7%

In computation of ROI of both division, *controllable profit* has been taken into consideration. The reason behind this is that the Head Office costs are not controllable and responsibility accounting considers that managers should only be held responsible for costs over which they have control. The assets figures being used also depend on the same principal. Figures of current assets and the current liabilities have been taken into consideration as they are such items over which managers have complete control.

(ii) Bonus

Bonus to be paid for *each percentage point* = ₹ 7,20,000 × 3% = ₹ 21,600 Maximum Bonus = ₹ 7,20,000 × 20% = ₹ 1,44,000 **Division 'Y'** ROI = 28.5% (16 whole percentage points above minimum ROI)

16 × ₹ 21,600 = ₹3,45,600

Therefore, manager will be paid the bonus of ₹ 1,44,000 (max.)

Division 'D'

ROI = 11.7% (Zero, percentage point above minimum)

Therefore Bonus = NIL

(iii) Discussion

FAI will not receive any bonus since he has not earned any point above minimum percentage. This is due to the large asset base on which the ROI figure has been computed. Total assets of Division 'D' are almost double the total assets of Division 'Y'. The major reason behind this is that Division 'D' invested ₹ 13.6 million in new equipment during the year. If this investment were not made, net assets would have been only ₹ 20.08 million and the ROI for Division 'D' would have been 19.62% resulting in payment of a bonus ₹1,44,000 (7 × ₹ 21, 600 = ₹ 1,51,200; subject to maximum of ₹ 1,44,000) rather than the nothing. FAI is being penalized for making decisions which are in the best interests of his division. It is very surprising that he decided to invest where he knew that he would receive lesser bonus subsequently. He acted in the best interests of the BYD altogether. On the other hand, HAI has taken benefit from the fact that he has not invested anything even though it was needed for computer system updation. This is an example of sub-optimal decision making.

Further, Division 'Y's trade payables are over double those of Division 'D'. In part, one would expect this due to higher sales (almost 66% more than Division 'D') and low cash levels at Division 'Y'. Higher trade payable leads to reduction in net assets figures. The fact that BYD is rewarding HAI with bonus, even though relationships with suppliers may be badly affected, is again a case of sub-optimal decision making.

If the profit margin (excluding head office cost) as percentage of sales is calculated, it comes to 18.24% for Division 'Y' and 22.64% for Division 'D'. Therefore it can be seen that Division 'D' is performing better if capital employed is ignored. ROI is simply making the division 'D''s performance worse.

FAI might feel extremely disappointed by getting nothing and in the future, he may opt to postpone the investment to increase the bonus. Non- investing in new technology and equipment will mean that the BYD will not be kept updated with industry changes and its overall future competitiveness will be affected.

Briefly, the use of ROI is resulting in sub-optimal decision making and a lack of goal congruence i.e. what is good for the managers is not good for the company and vice versa. Fortunately, Division 'D's manager still seems to be acting for the benefit of the BYD but the other manager is not. The fact that one manager is receiving a much

bigger bonus than the other is not justifiable here and may result in conflict in long run. This is disappointing for the company especially in the situation when the divisions need to work in unison.

4. (a) BPR is the fundamental rethinking and radical redesign of business processes to achieve dramatic improvement in critical contemporary measures of performance, such as cost, quality, service and speed. In other words, BPR is concerned with the result of the process (i.e., with those activities that add value to the process). To implement BPR, firstly, each business process of ANI needs to be divided into a series of processes. Then each business process requires to be documented and analysed to find out whether it is essential, whether it provides support to other valuable processes and whether it is adding value. Any process which does not add value or does not provide essential support to the value adding activities must be removed. Those processes that remain require to be re-engineered/re-structured so that can be as efficient as possible. For ANI, new technology should be introduced to improve these processes. However, ANI must ensure that the statutory compliances regarding these processes are not undermined.

ANI is facing a hyper-competitive marketplace where customers expect a superior experience. BPR activities would help ANI in understanding those processes which ANI's customers value the most and remove those that are not valued. Foreign banks are offering diverse range of services such as direct access to executive management, a single point of contact to coordinate all banking needs, appointment banking to save time, free online banking services 24/7, free unlimited ATM access etc. Clearly these are valuable business processes valued by the customer. ANI should incorporate all these facilities in their banking processes to enhance customer satisfaction and service level.

Opening of new accounts in ANI is complex processes since it requires multiple forms to be complied with. Through BPR, ANI would analyse the whole process and identify the need for only one form that contain all of the necessary customer information. Further, it is also possible to initiate opening of new account through the development of an online application form on ANI's website. Online entry would remove the possibility of forms being lost or incorrect, again enhancing customer satisfaction since customers need not to visit ANI's branch to open account. There should also be online processing authentications/ validations as to ensure that data fields are correctly filled by customers that would result in error reduction. This would also remove unnecessary staff activities in checking and re-processing forms.

It is likely that BPR may increase costs in short-term as investment in technology. However, this would also reduce substantial levels of manual activities and processes thereby providing speedy services to customers. In long term, this would result in high levels of efficiency, profitability and better levels of customer satisfaction and retention.

(b) (i)

Customer's Profitability Statement

Particulars	Customer- A	Customer- B
Sales (units)	350	500
	(`)	(`)
Selling Price per unit	5,400	5,400
Less: Discount (Quantity)	270	270
	(`5,400 × 5%)	(`5,400 × 5%)
Less: Discount (Delivery)		432
		(`5,400 × 8%)
Selling Price (Net of Discounts) per unit	5,130	4,698
Less: Variable Cost per unit	4,420	4,420
Contribution per unit	710	278
Total Contribution	2,48,500	1,39,000
	(`710 × 350 units)	(`278 × 500 units)
Less: Additional Overheads		
Delivery Cost	17,500	
	(5 × `3,500)	
Order Processing Cost	10,000	20,000
	(5 × `2,000)	(10 × `2,000)
Profit per customer*	2,21,000	1,19,000
Profit per customer per unit	631.43	238.00

Analysis

Even though A has lower sales volume (30% lesser from B), it is contributing almost double profit that is being contributed by B as overall discount offered to customer A is quite less.

(ii) Comments on the "Discount Policy on Delivery"

Discount on delivery offered to customer B is `432 per unit. If transport for delivery is provided to customer B then the cost would have been `70 per unit (10 deliveries × ` 3,500 / 500 units), which is lesser by `362. It may also be noted that delivery cost in case of customer A is only `50 per unit (`17,500 \div 350 units). Hence, company needs to review discount policy on delivery but significance of profitability of customer B should also be kept in mind while doing so.

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

Net Gain/ (Loss)

= Revenue earned from flight operations *less* Variable costs of operation

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

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

Flight GP-022

Statement Showing Net Gain/ (Loss)

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

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

(b) The budgetary control system appears to have several very important shortcomings which reduce its effectiveness and may in fact cause it to interfere with good performance. Some of the shortcomings are explained below.

Lack of Coordinated Goals: Mr. Singh had been led to believe high quality output is the goal; it now appears low cost is the goal. He does not know what the goals are and thus cannot make decisions which lead toward reaching the goals.

Influences of Uncontrollable Factors: The actual performance relative to budget is greatly influenced by uncontrollable factors i.e. rush orders. Thus, the variance reports serve little purpose for evaluation of performance.

The Short-Run Perspectives: The monthly evaluation and the budget tightening on a monthly basis result in a very short-run perspective. This will result in inappropriate decisions.

The improvements in the budgetary control system must correct the deficiencies described above. Accordingly:

- Budgetary control system must more clearly define the company's objectives.
- Budgetary control system must develop an accounting reporting system which better matches controllable factors with supervisor responsibility and authority.
- Establish budget values for appropriate time periods which do not change monthly simply as a result of a change in the prior month's performance.

The entire company from top management down must be educated in sound budgetary procedures so that all parties will understand the total process and recognize the benefit to be gained.

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

Aayla should consider the following factors:

Does the station have a souvenir shop and/or cafeteria?

If so, many students are likely to buy food and/or souvenir items, thereby increasing the station's contribution. In turn, this would reduce the minimum price quote.

What is the impact on future revenue?

After seeing the show, many students may return with their parents, thereby increasing future revenue.

Are there costs linked with the special showing that are not included in the ₹10,000 variable cost number?

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

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

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

(b) Variance Interpretation

The sales quantity variance and the sales mix variance describe how the sales volume contribution variance has been affected by a change in the *total quantity of sales* and a *change in the relative mix of products sold*.

From the figures arrived for the sales quantity contribution variance, we can observe that the increase in total quantity sold would have gained an additional contribution of `2,124,600, if the actual sales volume had been in the budgeted sales proportion.

The sales mix contribution variance shows that the variation in the sales mix resulted in a curtailment in profit by `570,600. The change in the sales mix has resulted in a relatively higher proportion of sales of C-2 which is the chemical that earns the lowest contribution and a lower proportion of C-1 which earn a contribution significantly higher. The relative increase in the sale of C-3 however, which has the highest unit contribution, has partially offset the switch in mix to C-2.

Workings

Statement Showing Standard Contribution

	C-1 `/ kg	C-2 `/ kg	C-3 `/ kg
Average Selling Price	17,600	2,560	22,400
Direct Material (C ₂ H ₆ O) Cost	8,000	1,280	9,600
Direct Labour Cost	3,200	480	4,800
Variable Overhead Cost	320	48	480
Contribution	6,080	752	7,520

Sales Contribution Mix Variance

ducts	Actual Quantity	ctual Sales at Budgete Proportion	Difference	Contribution	Mix Variance (`' 000)
Pro	[AQ]	[RAQ]	[AQ – RAQ]	[SC]	SC × [AQ – RAQ]
C-1	900	1,150	250 (A)	6,080	1,520 (A)
C-2	3,875	3,737.50	137.50 (F)	752	103.40 (F)
C-3	975	862.50	112.50 (F)	7,520	846 (F)
	5,750	5,750			570.60 (A)

Sales Contribution Quantity Variance

ducts	Budget Sales Quantity	Actual Sales at Budgeted Proportion	Difference	Contribution	Qty. Variance (`' 000)
Pro	[BQ]	[RAQ]	[RAQ - BQ]	[SC]	6C × [RAQ – BQ]
C-1	1,000	1,150	150 (F)	6,080	912 (F)
C-2	3,250	3,737.50	487.50 (F)	752	366.60 (F)
C-3	750	862.50	112.50 (F)	7,520	846 (F)
	5,000	5,750			2,124.60 (F)