RTP - May 2022

PAPER 5 : STRATEGIC COST MANAGEMENT AND PERFORMANCE EVALUATION

Question 1 : Case Study

Topic : Performance Evaluation using ROI and RI

Integrity Limited engaged in the manufacturing of water pumps, pipes (of all types and range), and sanitary fittings. These three businesses (pump, pipe, and fittings) are managed separately as distinct investment centres. Integrity Limited named these as division GG, YY and NN. Since the performance evaluation of divisional head and employees working under him/her is linked with performance (using financial measure ROI) of division, hence divisional head as well as employees trying their level best to improve divisional ROI (return of investment).

Integrity Limited in recent fiscal only started a practice of thorough component-wise (Profitability rate and Investment turnover) analysis of ROI; so that appropriate corrective measures can be applied. Management of Integrity Limited is of the firm belief that ROI is the best-used performance measurement tool, hence they completely ignore the newly appointed CFO's advice to use Residual Income (RI) in addition to some non-financial performance measures, for performance evaluation. CFO also said accounting profit has its own set of limitations, but the board is not convinced with this remark too.

The Integrity Limited provides you following table (which is incomplete) –

Particulars	Division GG	Division YY	Division NN
Investment	₹ 4 Crores	₹ 40 lacs	?
Revenue	?	₹ 80 lacs	₹ 60 lacs
Income	?	₹ 8 lacs	₹ 6 lacs
Profitability rate	5%	?	?
Investment turnover	2 times	?	?
Return on investment	?	?	12%

Required :

(i) IDENTIFY the reason for poor performance along with ADVICE to improve the same.

(ii) If the required rate of return at Integrity Limited is 8%, then COMMENT on the performance of divisions using RI (residual income) with the same set of information and compare it against your findings in requirement (i) above.

(iii) STATE the benefit of using RI.

(iv) LIST major shortcomings of accounting profit, ROI, and RI.

(v) Why Integrity Limited needs to use non-financial performance measures? EXPLAIN.

Answer 1 :

Student Note : Though not asked, but we need to find out the missing data first. It is will help us to frame the comments. You need to recall the CA Inter FM formulae of ROI, Profitability Ratio and Investment Turnover Ratio.

ROI = Income / Investment x 100

Profitability Rate = Income / Turnover x 100

Investment Turnover = Turnover / Investment

Hence, ROI = Profitability Rate x Investment Turnover

Using these formulae, one can easily find out the missing figures first as follows :

Working Note :

Particulars	Division GG	Division YY	Division NN
Investment	₹ 4 Crores	₹ 40 lacs	₹ 50 lacs
Revenue	₹ 8 Crores	₹ 80 lacs	₹ 60 lacs
Income	₹ 40 Lacs	₹ 8 Lacs	₹ 6 Lacs
Profitability rate	5%	10%	10%
Investment turnover	2 times	2 times	1.2 times
Return on investment	10%	20%	12%

(i) Advise

Division YY : Considering the ROI 20%, division YY outperforms the division NN (12%) and GG (10%) by the margin. The reason for the better relative performance of division YY is the high rate of profitability i.e. 10% (income/revenue) as well as high investment turnover i.e. 2 times (revenue/investment).

Division GG : Despite having a turnover rotation of 2 times to its investment (at par to division YY) is able to generate a return on investment only half a rate to division YY because of poor profitability (only 5%). Hence division GG needs to focus on the value chain (either to enhance price by high perceived value to customers or reduction in cost by eliminating non-value-added activities and features) to enhance the profitability.

Division NN : Despite having a profitability rate of 10% (at par with division YY) is able to generate a return on investment of 12%, because of poor investment turnover (only 1.2 times). Hence division NN need to focus on its marketing mix as well as strategic trimming of the investments (identify non-revenue generating assets and liquidate them).

(ii) Residual income (RI) is an excess of the controllable contribution over a predetermined organization-wide minimum hurdle rate (required rate of return) on the investment controllable by the divisional manager. So higher the residual income means the better performance of the investment centre.

RI can be computed using the following formula -

Operating income – (Investment x Required rate of return)

1. Division GG

RI = 40 lacs – 8% of 400 lacs = 40 lacs – 32 lacs = ₹ 8 lacs

2. Division YY

RI = 8 lacs – 8% of 40 lacs = 8 lacs – 3.2 lacs = ₹ 4.8 lacs

3. Division NN

RI = 6 lacs – 8% of 50 lacs = 6 lacs – 4 lacs = ₹ 2 lacs

Comment :

Considering RI, the best performing division is 'division GG' that generated the residual income of ₹ 8 lacs followed by division YY (₹ 4.8 lacs) and then division NN (₹ 2 lacs). RI being **absolute** measure, is largely impacted by the size of division in term of investment made and managed by it. Hence despite being the best performer division YY in terms of ROI earns less residual income than division GG whose ROI is lowest among the three.

Note : ROI is a relative measure, whereas RI is an absolute measure.

(iii) The benefit of using RI for performance evaluation :

If residual income is used to measure the managerial performance of investment centres, there is a greater probability that managers will be encouraged, when acting in their own best interests, also to act in the best interests of the company.

(iv) Major shortcomings –

1. While calculating the accounting profit, the cost of equity capital is ignored, unlike the cost of debt. A company can generate wealth, only when it earns the return in excess of the return required by providers of capital, which includes both equity and debt.
2. Accounting profits can easily be distorted by the manipulative choice of accounting policies.
3. Accounting Profit is a short-term measure (apart from being historical in nature too), it ignores the longer perspective from the preview of the organisation as a whole.
4. ROI leads to a lack of goal congruence.
5. RI being an absolute measure, is not capable to be used as a tool for making the comparison between the divisional performances of different sizes.

(v) Reason – Why Integrity Limited needs to use non-financial measures too?

Since financial performance measures such as ROI are profit-oriented and can inspire managers to become short-term oriented, but the strategy needs to be sustainable apart from being just profitable, hence in order to overcome the inadequacy and unjustifiable nature of financial performance indicators, non-financial performance indicators need also to be applied.

Non-Financial Performance Indicators are sustainable action-based indicators. For example, employee training will increase the profit & let them feel empowered, putting effort into research and development will result in a high brand image & high intellectual property right.

Question 2 : [Case Scenario]

Topic : Ethical and Non-Financial Consideration

Star Cellular Limited (SCL) engaged in the manufacturing of mobile handset batteries. One of the battery types which SCL is currently producing is the BL-5C battery. SCL sells this battery to many handset manufacturers. One of the quality circle team recently discovered an issue with the BL-5C battery, that if it gets heated beyond a limit, it gets burst and cause in explosion in handset, which may harm the user (burn injuries & injury Severity Score is high too). Management is considering the issue based upon the following facts –

The engineering team provided a solution that they can change the materials (metals, components currently in use with the new materials that is more resistant to heat and has auto-cooling feature) and modify the processes of producing the battery to eliminate such incidents of explosion completely. But this will lead to an increase in production cost by ₹ 80 per battery.

In order to understand the severity of the issue, the technical team makes an estimate that next month it is estimated that 120 such issues may take place out of 1,80,000 batteries that SCL is expected to manufacture and sell. The technical team also suggests that out of 120 such explosion incidences only in 10% cases the users will be able to identify that explosion in the handset has taken place due to the bursting of battery BL-5C.

Legal team estimates and suggests, if such 10% of users take legal action, then SCL will lose the suit. In no case SCL can defend itself and have to pay ₹ 10 lacs as compensation in each such case (including the cost of suit).

Required :

EVALUATE the viability of the solution provided by engineers.

Answer 2 :

Cost of increasing the quality through changing the materials and processes – The number of batteries that SCL is expected to manufacture and sell is 1,80,000 batteries. The cost of changing the materials and modify the processes of producing the battery to eliminate such incidents of explosion completely per handset is ₹ 80. Hence, the total cost of increasing the quality will be **₹ 144 lacs** (i.e. 1,80,000 x ₹ 80).

Cost of losing lawsuits – Number of explosion incidences are estimated to be 120 instances. But the number of instances when the user is able to identify that explosion in the handset has taken place due to bursting of battery BL-5C will be 10% of the 120 instances i.e. 12. Hence, the number of lawsuits will be 12 (presuming all those who are aware of the fact that explosion in handset has taken place due to bursting of battery BL-5C will file a lawsuit). The resultant cost of losing lawsuits is **₹ 120 lacs** (i.e. ₹ 10 lacs in each case x 12 suits), because in no case SCL can defend itself.

Based upon **the above analysis** and **monetary facts** of the case, SCL should ignore the solution provided by the engineering team, because the cost of increasing quality is **₹ 24 lacs** (144 - 120) more than the cost of losing the lawsuits.

However, there is hardly any management decision that has only financial implications. Usually, the strategic decisions of management have qualitative (i.e. non-financial) implications too; and cost management decisions are no exception thereto. Hence, management of SCL need to consider the following -

1. **Ethical as well as social aspects –** incident of bursting a battery causes explosion in the handset which may harm the user in the form of burn injuries and injury Severity Score is high too. Hence, the cost of the safety of its user (consumer) shall also need to be considered. SCL shall consider this in light of its organisational value and code of ethics.

2. **Brand equity of SCL -** Brand value and reputation are key to success (attaining competitive advantage) in the competitive business environment, hence hardly any company will try to save money at the cost of loss of their brand equity. This may impact the sale of other products of SCL too. So, the loss of reputation (fall in goodwill) should be considered in decision making.

3. **Unnecessary diversion and engagements -** The SCL needs to respond to laws suits filed against it. It will consume Management's time apart from the monetary resources and may cause unnecessary diversion (or overload) for management; that can otherwise be completely avoided.

4. **Regulations and interventions –** Safety of life of citizens and consumers is the responsibility of government and regulator respectively. Hence if such incidences take place regularly, then the regulator and government will intervene and may impose restrictions / fines. It may also lead to the forced closure of production of BL-5C batteries.

5. **Competitive advantage –** The improved battery will enhance the customer experience hence may result in either increase in the sale price or an increase in sale quality. Hence, the marketing team also need to be consulted on these scenarios and their input should be considered while making the decision.

Overall, SCL would be able to get some monetary benefits in short run by ignoring solution provided by the engineering team, but it will tarnish the image of the SCL which would hurt profitability in long run. Therefore, before taking any decision, SCL should consider qualitative factors also.

Question 3 :

Topic : Environmental Management Accounting

SY Industries operates in two different lines of business first one is SY Paper Mart (SPM) and another is SY Glass Limited (SGL).

SPM is a paper manufacturer (deals in different sizes – A3, A4, and A5 and GSM) that obtained ISO 14001:2004; Environmental Management Systems (revised ISO 14001:2015) certification couple of year ago. Then CEO of SPM was committed to Environment Cost Management. At his superannuation, the new CEO replaced him, who believes apart from avoiding the legal consequences, there is no sensible reason for considering Environment Cost Management. SPM hardly practice the requirement contained in standard (of environment certifications) afterwards, it seems they obtained the certificate to fulfil the legal requirements (of different tenders and trade partnerships as well as improving image) only.

SGL, being the manufacturer of glasses, use (hence release) cadmium (as per WHO, Cadmium exerts toxic effects on the kidneys as well as the skeletal and respiratory systems. It is classified as a human carcinogen in red ruby glass (a glass containing 0.03% of selenium, 0.06% of cadmium, and 0.03% of sulphur, to produce a ruby colour). At SGL only ruby red glass is responsible for all of its cadmium emissions but the cost accounting system allocated a portion of this cost to all products. The turnover of SGL during the immediate previous year was ₹ 248 crores, which was around 17% higher than what it was a year ago.

During the immediate previous year, at SGL the cost of disposing of the toxic material costs ₹ 82 Lacs. The cost of recycling products and scrap was ₹ 1.05 crores and ₹ 64 lacs respectively. Cost of committee (responsible for environmental certifications and formulating organisational policy on the environment) proceeding was ₹ 24 lacs which includes ₹ 2 lacs fees for renewal of the certification and ₹ 3 lacs for boarding (and other connected arrangements) of inspection team who made visit prior to renewing the environment clearance certificate. Environment monitoring and employee training (regarding environmental safety) cost was ₹ 37 and ₹ 8 lacs respectively. Monitoring cost includes the Audit fees of ₹ 2 lacs. Inspection costs inside SGL to ensure compliance to environmental standards and their own policy matter is ₹ 7 lacs.

During the immediate previous year, a penalty order of ₹ 75 lacs passed by adjudicating authority against SGL for cadmium emission beyond the allowed limit by the regulator; against this order SGL made an appeal. Appellate authority upheld the order of adjudicating authority but reduced the penalty to 40%.

Required :

(i) EVALUATE the belief of the new CEO of SPM.

(ii) COMMENT on the current pattern of allocation of environmental cost pertaining to cadmium emissions at SGL, in regard to cost of product produced by SGL. ADVISE the better approach which cost accounting system should adopt.

(iii) PREPARE the common-size environmental cost statement for the immediate previous year at SGL as per the classification suggested by 'Hanson and Mendoza', to equip the management for comparison over the periods.

(iv) Briefly ANALYSE the environment cost structure with a piece of ADVISE for management.

Note – State the assumptions clearly.

Answer 3 :

(i) The belief of the new CEO of SPM, that apart from avoiding the legal consequences, there is no sensible reason for considering Environment Cost Management is fallacious and unfounded.

Apart from regulatory requirements (legal requirements involving huge fines for non compliance), Environmental Cost Management is becoming increasingly important due to the following reasons (which is sensible and alarming too) -

Environmental costs can be large for some sectors - especially the businesses where natural resources are largely involved and used as the core of the value chain. Ranganathan and Ditz reported that Amoco's environmental costs at its Yorktown refinery were at least 22 per cent of non-operating costs against the estimates of only 3%.

Society in which business operates cares for the environment – hence expects businesses (as a corporate citizen) to focus on their environmental (triple bottom line) footprint and manage the same. Companies who behave in an environmentally responsible manner enjoy a better brand image and are capable to sell more or at a higher price.

Hence the need for companies to develop a system of measuring, reporting, and monitoring environmental costs is inevitable.

(ii) It was clearly mentioned in the case that only ruby red glass is responsible for all of its cadmium emissions at SGL but still the cost accounting system allocated a portion of this cost to all products. This practice of allocating specifically traceable cost over all the products produced by SGL will surely result in under costing of ruby red glass, whereas the cost of other products being overstated.

The cost accounting system at SGL should adopt the ABC (activity-based costing) concept for the purpose of allocation of environmental costs. The environmental costs should be determined in full and accumulated as separate cost pools and traced to the products or processes that caused the costs using ABC concepts. Hence the environmental costs pertaining to cadmium emissions shall be charged to ruby red glass only (not all the products).

The use of ABC, apart from ascertaining correct costs, will be helpful in determining the scope of reducing environmental cost as well as emission in the environment.

(iii) Common-size environmental cost statement for the immediate previous year at SGL :

Student Note : Hensen and Mendoza had suggested the classification of Environmental costs on the same lines as the classification of 'Cost of Quality'. That is : Prevention cost, Appraisal cost, Internal failure cost and External failure cost.

Particulars	Turnover was ₹ 248 crores	
	Amount (in ₹ lakhs)	% to turnover
Environmental Prevention Costs :		
Employee Training	8	0.032
Cost of Committee (24 – 2 – 3)	19	0.077
Obtaining Certification (2 fees + 3 boarding)	5	0.020
Recycling products	105	0.423
Sub-Total (a)	**137**	**0.552**
Environmental Appraisal Costs :		
Monitoring (37 – 2 audit fees)	35	0.141
Inspection Cost	7	0.028
Environmental Audit Fees	2	0.008
Sub-Total (b)	**44**	**0.177**
Environmental Internal Failure Costs :		
Recycling Scrap	64	0.258
Disposing of Toxic Material	82	0.331
Sub-Total (c)	**146**	**0.589**
Environmental External Failure Costs :		
Penalty [75 lacs x 40%]	30	0.121
Sub-Total (d)	**30**	**0.121**
Total environment cost (a + b + c + d)	**357**	**1.439%**

Student Note : For some of the items of environmental costs, your classification may be different from ICAI classification. It doesn't matter. You need to make a suitable assumption, wherever there is a chance of difference of opinion. Questions itself says : 'State the assumptions clearly'.

(iv) The total environmental cost is ₹ 357 lacs, which is 1.439% of turnover. The composition of the environmental costs is very much balanced because the cost on prevention (137) and detection (44) is ₹ 181 lacs. It is marginally lower than the total failure cost i.e. 146 + 30 = ₹ 176 lacs.

Penalty cost can be completely avoided by minor increment in inspection cost. Hence, SGL must look forward in that area, apart from this management also need to focus on modifying the process in order to reduce the recycling cost of product and scrap. Together it is (105 + 64 = ₹ 169 lacs), which is approximately 47% (169/357) of the total environmental cost. Management also needs to look into the nature of toxic material and possible substitute if any. SGL should increase expenditure on employee training, which will reduce all other environmental costs.

Question 4 :

Topic : Total Productive Maintenance

DIVY Enterprises is known for quality products and processes across the industry. It operates in two shifts of 9 hours each on 26 days in a calendar month. In its drive for efficiency and enhanced productivity, it adapted the TPM and tried to minimise the 6 big losses. Top bosses in the presence of few board members conducted the review meeting (for TPM) with the head of the maintenance department - Mr. Hukum Singh and the head of production and operation - Mr. Kartik Viswakarma.

Mr. Kartik said 'breakdown maintenance', that is currently in practice under pillar 3 (planned maintenance) of TPM, is failed to make an impact in terms of improving productivity. He further suggested, DIVY Enterprises must move to 'preventive maintenance'. He mentioned that during the most recent month 14 incidents of breakdown happened which lead to downtime of 32 hours on the assembly line.

Mr. Sadanand Tripathi who is a board member and engineer by education immediately responded that why 'preventive maintenance' why not 'predictive maintenance'? and also raised the concern regarding, How the efficiency of 'preventive maintenance' will be measured?

On this Mr. Kartik replied, MTBF and MTTR can be used for measuring efficiency. Regarding 'predictive maintenance', he said the IT team will be in a better position to suggest data analytics capabilities hence further cross-functional deliberation is required to reach the conclusion.

Mr. Hukum opposes Mr. Kartik because the maintenance department is already under pressure and hence not in a position to practice 'preventive maintenance'. Mr. Kartik said despite multiple rounds of training, the operators are not able to perform maintenance on their own (under pillar 1 of TPM, i.e. autonomous maintenance) hence maintenance department becomes responsible to keep all machines in order.

After considering the viability of other sorts of maintenance too (corrective and periodic maintenance), ultimately top bosses decided to shift to 'preventive maintenance' for three months with the condition of review after the third month. Mr. Kartik asked to send a manpower requirement report to cope-up with over-occupancy (burden). After three months Mr. Kartik reported that only 6 incidents of breakdown took place in the recent month (third month), which caused 15 hours of downtime.

Note – During the third month production unit remained operative only for 14 days due to forced lock-down on account of COVID-19.

Required :

(i) ANALYSE the effectiveness of 'preventive maintenance' using MTBF (mean time between failures) and MTTR (mean time to repair).

(ii) ADVISE should DIVY Enterprise continue with 'preventive maintenance' or move back to 'breakdown maintenance' (in brief).

Answer 4 :

Student Note :

MTBF and MTTR is nowhere defined and explained in ICAI module. It appeared for the first time in this RTP. However, ICAI has explained this concept in this RTP itself. I would request you to first read the 'Concept Insight' and then the answer, so that you can understand the answer better.

Concept Insight :

Mean time between failure (MTBF) describes the average time elapsed from one failure (or breakdown) to the next failure. MTBF can be calculated by using the following formula -

$$MTBF = \frac{\text{Operating time (up-time)}}{\text{Number of failures (breakdown)}}$$

Mean time to repair (MTTR) is the average time that it takes to repair something (either machine/ tool/ assembly) after a failure or breakdown. MTTR can be calculated by using the following formula -

$$MTTR = \frac{\text{Total down time}}{\text{Number of failures (breakdown)}}$$

Note – Both MTBF and MTTR are important KPI for measuring the effectiveness of the preventive maintenance, hence maintenance department is keen to measure and monitor these.

Workings :

Calculation of MTBF and MTTR :

Particulars	Before (Month Zero)	After (Third Month)
Total operation time in hours	468 hours 26 days x 2 shifts x 9 hours per shift	252 hours 14 days x 2 shifts x 9 hours per shift
Number of breakdown incidents	14	6
Downtime in hours	32 hours	15 hours
Up-time in hours (i.e. Operating time, based upon data given in question)	436 hours (468 - 32)	237 hours (252 - 15)
MTBF in hours	31.14 (436/14)	39.50 (237/6)
MTTR in hours	2.29 (32/14)	2.50 (15/6)

(i) Analysis :

Higher the MTBF is preferable because it represents the time between two breakdowns. It is clearly evident from the above table that 'preventive maintenance' results in enhanced productivity because the time between two breakdowns increased to 39.5 hours from 31.14 hours. It means, now incidence of breakdown occurs after 39.5 hours from the previous breakdown event.

Whereas lower the MTTR is preferable because it presents the time required to repair (in case of breakdown). It is evident from the above table that MTTR increased to 2.50 hours from 2.29 hours. The most probable reason may be under the 'preventive maintenance' more care is taken because maintenance needs to be performed to prevent the breakdown (rather after the breakdown happens). Hence, the scope of maintenance is wide.

(ii) Advise :

It is advisable to continue with preventive maintenance because MTBF improved significantly. In time to come, it is possible that MTTR may also get reduced. In order to cut down the MTTR, training of maintenance staff is required apart from identification of critical parts of machines/assembly line wherein usually breakdown occurred.

But if, in another quarter or two, if MTTR doesn't come down, then DIVY enterprise must consider moving to alternative i.e. predictive maintenance.

Question 5 :

Topic : KPI (Retail Sector – Ready Made Garments)

Paridhaan is the ready-made garment brand of Vignesh Apparel and Garment Limited (VAGL). VAGL has a chain of retail stores / outlets throughout the country, wherein they offer a range of readymade garments under the brand Paridhaan for all ages, genders, and regions. The decisions of pricing and advertising are taken place at the strategic level (head office) and stores are bind by that.

Mr. Pradeep Shukla, who is the Zonal Manager for the north zone surprised to notice the variation between the performances of the different stores. During the zonal meeting, the manager of different stores offered their key pieces of information, which was complex and insufficient to make a proper comparison of performance among the stores. Mr. Sanjay Tripathi the chief management accountant of VAGL was also present during the review meeting.

Some of the stores despite being large in the size (space and holding large quantum of stock), are not able to register the sale comparable to size; whereas some of the small stores have high conversion and basket size.

For instant the monthly details pertaining to three stores located in the same city on different locations are tabled below -

Particulars	**Sadar Bazaar**	**Central Market**	**Model Town**
Total number of items* received	7,884	4,280	5,750
Total number of items sold	6,920	3,615	5,641
Total customer walked-in (footfall)	10,890	1,768	4,207
Total number of invoice / bills	3,216	1,242	4,045
Total actual sale (in ₹ '000)	8,416	2,546	5,477
Target sale (in ₹ '000)	9,000	2,800	5,000
Last month sale (in ₹ '000)	8,116	2,612	4,890
Store size (area in square feet)	7,280	4,800	980

*Item represents an independent unit that can be billed (be it a shirt, trouser, pair of socks, saree, jeans or even neck-tie and handkerchief).

During the strategic meet of all the zonal heads and top officials of the VAGL, Mr. Sanjay expressed the importance of linking Key Performance Indicators (KPIs) to Critical Success Factors (CSFs) and CSFs to Objectives (goals), in order to attain the strategy. He stressed to use of a uniform KPI scorecard for all the stores across the nation so that comparison becomes easy.

Hence it was mutually decided to develop the set of KPI that can measure the store's internal efficiency and performance. Mr. Pradeep is interested in knowing, that how store managers can improve the performance of the store in terms of a set of KPIs at his own level without using many resources. He mentioned that the quality of the product is a factor that is beyond the control of the store manager.

Required :

(i) RECOMMEND the set of KPIs that can be put to use at VAGL to measure and compare the stores' internal efficiency.

(ii) COMMENT on the performance of three stores based upon the set of KPIs, by making a comparison inter-se.

(iii) ADVISE the store managers, the marketing initiatives (other than quality, pricing, advertising and value-chain of product) which they can practice in order to improve the performance of the store in terms of a set of KPIs suggested at their own level without significant application of resources. Also state their effectiveness.

Answer 5 :

Student Note : The answer to this question will differ from student to student. One has to imagine a set of KPI's for readymade garment sector, based on the available information given in the question. One should use some general knowledge and common sense to answer this question.

(i) Set of KPIs that can be put to use at VAGL to measure and compare the stores' internal efficiency.

The following set of KPIs (which can also be termed as store's internal efficiency parameters or store's performance parameters in the case of VAGL, as it operates through a chain of garment retail stores) are recommended to VAGL for reporting and monitoring the health of each of its stores. The uniform KPIs dashboard will make measurement and the comparison of performance easy among the stores.

1. **Basket Size** signifies **how many number of items** (units/pieces) each billed customer purchased on an average. This can also be termed as units per transaction (UPT) or average basket size (ABS) or items per cash memo (IPCM).

$$\text{Basket Size} = \frac{\text{Total Number of Items Sold}}{\text{Total number of Bills}}$$

2. **Ticket Size** signifies **the amount** for which each billed customer has shopped on an average. This can also be termed as average ticket size (ATS) or average bill value (ABV).

$$\text{Ticket Size} = \frac{\text{Total Sales value in ₹}}{\text{Total Number of Bills}}$$

3. **Conversion Rate** signifies how much customers **actually shop** out of those who walked in the store.

$$\text{Conversion Rate} = \frac{\text{Total Number of Bills}}{\text{Total number of customers walked in the store (footfall)}} \times 100$$

Conversion rate generally expresses the number of bills as a percentage of the total footfall, but this calculation has significant limitation. There is mostly a single bill of entire family or group who did shopping collectively. Hence, the stores where customers' visit along with the family or in a large group and then shop (billed collectively) or vice versa; conversion rate may be misleading.

4. **Average Selling Price** signifies the average value (price) of **all the sold items.**

$$\text{Average Selling Price} = \frac{\text{Total Sales in ₹}}{\text{Total Number of items sold}}$$

5. **Sale per Square Feet (SPSF)** signifies the **commercial usage of the space** by a store in terms of sales made. It expresses the total sales (in ₹) in relation to the area of the store.

$$\text{Sales per Square Feet} = \frac{\text{Total Sales in ₹}}{\text{Store size (in square feet)}}$$

6. **Sale Through Ratio** signifies the **stock clearance**. It is expressed as the number of items sold during a period as a percentage of units received.

$$\text{Sales Through Ratio} = \frac{\text{Total Number of items Sold}}{\text{Total Number of items Received}}$$

7. **Trend Analysis** and **Target v/s Achievement** signifies the sale performance over the period or during the period against the benchmark.

$$\text{Trend Analysis} = \frac{\text{Current period's Sale in ₹}}{\text{Previous period's Sale in ₹}} \times 100$$

$$\text{Target v/s Achievement} = \frac{\text{Current period's Actual Sale in ₹}}{\text{Current period's Target Sale in ₹}} \times 100$$

(ii) Comparison of performance of three stores based upon the set of KPIs :

(Figures : Sales in ₹, Area in square feet, and rest in no. of units)

Particulars	Sadar Bazaar (SB)	Central Market (CM)	Model Town (MT)	Comments
Basket Size (items per bill)	6,920 / 3,216 **= 2.15**	3,615 / 1,242 **= 2.91**	5,641 / 4,045 **= 1.39**	CM Store outperform the others by selling more items per bill.
Ticket Size (amount per bill)	8,416,000 / 3,216 **= ₹ 2,617**	2,546,000 / 1,242 **= ₹ 2,050**	5,477,000 / 4,045 **= ₹ 1,354**	SB Store outperform the others by selling more in value term.
Conversion rate (customer those who actually shop)	3,216 / 10,890 x 100 **= 29.53%**	1,242 / 1,768 x 100 **= 70.25%**	4,045 / 4,207 x 100 **= 96.15%**	MT Store outperform, and SB store has poor conversion.

Average selling price per item sold	8,416,000 / 6,920 **= ₹ 1,216**	2,546,000 / 3,615 **= ₹ 704**	5,477,000 / 5,641 **= ₹ 971**	SB store sold expensive items and CM store sold low priced items.
Sales per square feet	8,416,000 / 7,280 **= ₹ 1,156**	2,546,000 / 4,800 **= ₹ 530**	5,477,000 / 980 **= ₹ 5,589**	MT store uses space most optimally and sells more per area.
Sale through ratio (items sold to items received)	6,920 / 7,884 **= 0.88**	3,615 / 4,280 **= 0.84**	5,641 / 5,750 **= 0.98**	MT store clears the stock at a faster pace and has a better turnover.
Trend Analysis (this month versus last month)	8,416 / 8,116 x 100 **= 103.70%**	2,546 / 2,612 x 100 **= 97.47%**	5,477 / 4,890 x 100 **= 112%**	MT and SB store registers positive growth, whereas the CM store witness dip in sale.
Target v/s Achievement	8,416 / 9,000 x 100 **= 93.51%**	2,546 / 2,800 x 100 **= 90.93%**	5,477 / 5,000 x 100 **= 109.54%**	Only MT store is able to sale more than the target.

Comment on the overall Performance :

- SB store performed reasonably well in all the parameters except conversion rate and target v/s achievement. The conversion rate is below 30% which is a severe problem and requires an immediate response.
- CM store except for the basket size, performs inadequately, especially sale per square feet and this month versus last month sales. Root cause analysis shall be performed for such poor performance.
- MT store outperforms other stores on many parameters but needs to work on the basket and ticket size. MT stores needs to perform up-selling in order to sell high-priced items.

(iii) The initiatives which stores managers can take in order to improve the performance of their store –

Since in the requirements of the case, it is clearly stated that marketing initiatives shall be practiced at store manager levels (without intervention or support of top management) without significant application of resources and on the aspects other than quality, pricing, advertising, and value-chain of the product; hence the best that store manager can do is to practice all or any of following -

1. **Up selling** – It is the practice of encouraging customers to purchase a comparable higher-end product than the one in question (than they had in mind).
2. **Cross-selling** – It is the practice of encouraging customers to purchase an additional (but related or complementary) product of another segment.
3. **Add-on selling** – It is an effort wherein an additional item (may be related, complementary, even identical, or purely different) sold to a buyer of a main product or service.

Note – The success of these techniques depends upon the time and place apart from the way in which these techniques are applied. Add-on selling is **wider than** cross selling. It includes cross selling but is not limited to it. Cross selling depends on specific connections or relationships between the two products. Add-on selling is the activity linked with selling any additional products and services to current customers.

Each of these 3 techniques has its own set of **effects on KPIs** detailed in part 1 of the answer, the same are summarized below.

KPI / Technique	Up-sale	Cross-selling	Add-on selling
Conversion	No Impact	No Impact	No Impact
Average ticket size	Positive Impact	Positive Impact	Positive Impact
Average basket size	No Impact	Positive Impact	Positive Impact
Average sale price	Positive Impact	Depends	Depends
Sales through	No Impact	Positive Impact	Positive Impact
Target v/s Actual	Positive Impact	Positive Impact	Positive Impact

Note – In this question, alternative interpretations / views are also possible.

Question 6 :

Topic : Transfer Pricing

Curable Limited is a pharmaceutical company that has many divisions. One of its divisions (Division A) produces chemical vials that can be used for storage of medicines. These chemical vials have both internal and external market. Division B is another department of the same company, which uses these vials to package some of the medicines it produces.

Following is the information regarding production at Division A :

- Annual Capacity : 35,00,000 chemical vials.
- Actual annual production : 25,00,000 chemical vials.
- Internal transfer to Division B (annual) : 10,00,000 chemical vials per year.
- Annual External sales : 15,00,000 chemical vials per year.

Division A incurs a variable cost of production ₹ 800 per vial. The fixed cost of production of Division A is ₹ 50 crore. Out of this, ₹ 15 crore is for machinery and production infrastructure for the internal sales to Division B. This has been procured to produce (modify) vials exactly as per the specifications of Division B.

As per the company's procurement policy, since Division A is operating at less than full capacity, Division B has to purchase its entire annual requirement from Division A. Division A charges Division B at full cost plus 2% as its transfer price. This is in tune with the company's overall transfer pricing policy that is used for inter departmental transfers. Performance assessment of each departmental manager gives emphasis on the overall financial performance of the department.

Recently, the manager of Division B has received a proposal from an external vendor where chemical vials can be procured for ₹1,050 per vial. The product specifications would be suitable for the requirements of Division B and hence they are comparable with the customized production that Division A makes for Division B.

Required :

The manager of Division B would like to purchase vials from the external vendor. You are required to :

(i) CALCULATE the internal transfer price based on full cost plus 2% mark up.

(ii) DISCUSS the current transfer pricing methodology (pros and cons).

(iii) Should the management permit Division B to procure chemical vials from the external vendor ? ADVISE.

Answer 6 :

(i) Calculation of transfer price at full cost plus 2% :

Sr. No.	Cost Component	Cost per Vial (₹)
1.	Variable Cost per vial	800
2.	Fixed Cost :	
	Special Equipment for Division B (₹ 15,00,00,000 / 10,00,000 units) Note 1	150
	Remaining Fixed Cost (₹ 35,00,00,000 / 25,00,000 units)	140
3.	Total Cost per Vial (1) + (2)	1,090
4.	Markup @ 2% on 1,090	21.80
5.	Total Internal Transfer Price (3) + (4)	1,111.80

Note 1 : Specific fixed cost related to the cost of special equipment should be borne only by Division B. They need to be spread over the number of units produced for Division B that is 10,00,000 per year. The remaining fixed cost will be absorbed by the entire annual production that is 25,00,000 units per year.

(ii) Pros and cons of full cost plus 2% internal transfer price policy :

The full cost plus 2% internal transfer price policy is a uniform policy followed throughout Curable Ltd. Performance assessment of department managers is based on financial results.

Allowing for a 2% mark up over full cost has the following advantages :

(a) Charging based on full cost allows the supplying division (Division A) to recoup its entire cost of production.

(b) The supplying division has an incentive to cater to internal sales since the 2% mark-up will reflect in the profit earned by the department. Financial performance is considered during the performance assessment of the manager of Division A. The mark-up on internal sales will also be perceived as a means of earning profits that can bolster the department's performance. Therefore, Division A will not perceive it as an activity yielding no income.

The problem with full cost-plus mark-up costing are as follows :

(a) The method allows the entire cost incurred by Division A to be absorbed by the total units produced by it. As per the transfer pricing policy, Division A can recoup the entire cost it incurs plus earn a mark up. Thus the financial performance would always reflect a profit in the books of Division A. There is no incentive for Division A to attempt to reduce any of its cost components, either variable or the fixed costs.

Division A is not producing at its full capacity, it is currently operating at around 71.43% of its full capacity (25,00,000 units of actual production / 35,00,000 units total capacity). The total annual cost of production is ₹ 250 crores per year, comprising of variable cost of ₹ 200 crores per year (25,00,000 units of vial produced per year x ₹ 800 per vial) plus fixed cost of ₹ 50 crores per year.

Out of the fixed cost of ₹ 50 crores, cost specific to Division B is ₹ 15 crores absorbed by the production of vials for Division B alone. The balance ₹ 35 crores of fixed cost is absorbed by all the vials produced for both internal and external sales. This component of ₹ 35 crore fixed costs i.e. 14% of total costs (₹ 35 crore / ₹ 250 crore) would partly include costs related to idle capacity. Example : depreciation of underutilized machinery, rental for factory building that is not completely utilized, under-utilized storage space etc. However, this cost is being passed on to both Division B and the external customers. Division A is not taking any steps to lower the fixed costs since it is able to pass on the cost and earn a mark up on it too. Therefore, there will be no attempt by Division A to keep the costs at the optimal level, that might be comparable to external market vendors of similar vials. Thus, cost-competitiveness, which is an essential part of product pricing is lost.

(b) Division B would view the transfer price of ₹ 1,111.80 per vial as variable cost. This may be considered as a packaging cost for the medicines it produces which is variable cost per vial. In reality, as explained above, the transfer price of Division A has components that are fixed in nature that partly relate to the idle capacity of Division A. The cost of this under-utilization is borne by Division B, which distorts cost structure for Division B's financial performance. Moreover, Division B may be unwilling to pay ₹ 1,111.80 per vial because it can obtain the same quality vial @ at ₹ 1,050 from an outside supplier.

(iii) Considerations of producing in-house versus outsourcing procurement of chemical vials for Division B :

The external vendor is offering a similar vial at ₹ 1,050 while Division A is charging ₹ 1,111.80 per vial. The internal cost is higher by ₹ 61.80 per vial. Overall for 10,00,000 vials per year, Division B pays ₹ 618 lakhs extra just to have the vials produced internally by Division A.

Keeping the long run business interest in mind, the management of Curable Ltd. should direct Division A to find ways of optimizing its cost and make it cost competitive with the external market. If there is no expectation that the idle capacity would be utilized in the long run future, Division A has to scale down its operations to only that much capacity that can be utilized optimally. The management of Curable Ltd. can even think of outsourcing the procurement of vials to external vendors.

While re-evaluating the transfer price with respect to the external market price, the company should also adjust the price for costs that are not typically incurred for internal sales. Adjustments may be required for a variety of costs that may be incurred at a much lower price for internal sales, namely packing costs, storage and transportation costs, administrative costs, practically no selling and distribution costs etc. Adjustment should also be made to give effect to the estimated profit margin that the external vendor earns from sale of the vial at ₹1,050 per vial. Given these adjustments, the

transfer price should be made more competitive as compared to the external market price for a similar vial.

If Division A is able to achieve cost reduction and make it competitive as compared to the market, the management may continue its current policy of internal procurement.

Even otherwise, the specific cost or relevant cost for internal transfer is ₹ 950 per vial (i.e. 800 VC + 150 specific FC), which is lower than the outside purchase price. It means, internal transfer of vials is in the best interest of the entire company to achieve goal congruence.

Question 7 :

X is a leading toy manufacturing firm. .....

The same question is covered at : Q.4/6, Volume III, Version 4 notes.

Question 8 :

'A to Z' is one of the largest laundry service provider .....

The same question is covered at : Q.19/118, Volume V (CSD), Version 4 notes.

Question 9 :

During September 2021, Mr 'W' offers bundling and items packing .....

The same question is covered at : Q.20/119, Volume V (CSD), Version 4 notes.

Question 10 :

Topic : Basic Concepts

Swastik Ltd. manufactures and sells 4 Valve Engine (DTK-I). Company appoints Mr. Watson to coordinate shipments of the DTK-I from the factory to distribution warehouses located in various parts of the India, so that goods will be available as orders are received from customers. Swastik Ltd. is unsure about how to classify his annual salary of ₹ 24,00,000 in its cost records. The company's cost analyst says that Mr. Watson's salary should be classified as manufacturing cost; the finance controllers says that it should be classified as selling cost; and the managing director says that it does not matter which way Mr. Watson's salary cost is classified.

Required :

Which view point is correct ? COMMENT.

Answer 10 :

ICAI View :

Selling costs would include all costs necessary to secure customer orders and get the finished product into the hands of customers.

The responsibility of Mr. Watson as described in the problem is coordination of shipments of DTK-I from the factory to distribution warehouses and same would appear to fall in this class.

Accordingly, the finance controller is correct in his view point that the salary cost should be classified as selling cost.

My Personal View :

Mr. Watson's salary is surely not a manufacturing cost. Because, he is involved in the post production activity. Hence, cost analyst's view is wrong.

Managing director says that it does not matter which way Mr. Watson's salary cost is classified. He is also wrong, because most of the financial decision are based upon the cost data and hence classification of cost should be correct.

Selling cost is the cost incurred **to generate the demand** e.g. advertisement cost, sales promotion cost etc. **Distribution cost** is the **cost incurred to satisfy the demand** e.g. carriage outward, distribution channel's cost, FG storage cost etc. In my personal opinion, Mr. Watson's salary should be better classified as 'Distribution Cost'.

Question 11 :

Identify the correct pair of statement :

1.	The 'five forces' model provides a clear and precise methodology for analysing an organisation's industry environment to determine its _____.	1.	Procurement
2.	The more substitutes buyers have for an industry's products or services, the _____ the bargaining power of buyers, so_____ the industry profitability.	2.	Six Sigma
3.	The higher the barriers to entry into an industry, the _____the threat of new entrants, and the _____ the industry profitability.	3.	Differentiation
4.	A fast-food Co. has opted to offer a limited range. The strategy most likely be _____.	4.	Generic
5.	_____ refers to when an organisation concentrates its efforts on a narrower part of the market.	5.	Market Price
6.	Diversification involves developing new products and services to sell in new markets. The _____ risk option.	6.	Profitability
7.	The secondary activity dealing with acquisition of inputs is said to be _____.	7.	Lower, higher
8.	_____seek to improve the quality of the output of a process by identifying the causes of defects.	8.	Cost plus
9.	_____ advantage can be achieved by the superior customer responsiveness.	9.	Higher, lower
10.	By understanding how the 'Value Chain' is designed or configured, encompassing the efficiencies, costs and value that can be created for customers, the organisation can better position itself against industry competitors and pursue its chosen _____ strategy.	10.	Customer satisfaction
11.	Target cost means a product cost estimate derived by subtracting a desired profit margin from a competitive_____.	11.	Push
12.	_____ pricing might seem like an attractive option, but its problem is that it ignores 'market conditions' and thus may lead to a price that is too high or low.	12.	Equipment breakdown

13.	The Performance Pyramid is based on a range of objectives for both 'external effectiveness' (related to_____) and 'internal efficiency' (related to productivity)	13.	Balanced scorecard
14.	In TPM, 'Unplanned Downtime' loss includes_____ and unplanned maintenance.	14.	Recruitment
15.	Six Sigma can be used with _____ by providing more thorough measurement system based on statistics.	15.	CSFs
16.	W manufactures the toy 'baby' in lots of seven thousand and then approaches various independent toy shops, trying to convince them to stock toy 'baby' on their shelves. This is an example of a _____ supply chain.	16.	Supplier
17.	_____ should include expected response time to technical queries.	17.	SLA
18.	A service provider such as a reputed CA from 'WY' depends on quality staff to deliver quality service. This is an example of _____ markets.	18.	CAP
19.	A supermarket sets up a Just in Time arrangement with a supplier for short-life items, such as ready to eat food, in order to retain customer interest in an instant food product. This is an example of _____ markets.	19.	Referral
20.	A bank refers customers to providers of insurance services. This is an example of _____ markets.	20.	Business operating systems
21.	W insurance firm was worried about the poor performance of one of its types of policy. It found that the policy was not profitable when sold to recently retired people. Otherwise, it was profitable. This is an example of _____ analysis.	21.	CSFs
22.	Improving the position of a firm in search engine listings for key terms or phrases, relates to _____	22.	Financial
23.	_____ tie into the organisation's overall strategy.	23.	Low-cost focus
24.	_____ for 'efficient production' could include- maximum litres of acetic acid (consumables) wasted	24.	Focus
25.	The principle of 'controllability' is required to be considered when using _____ measures to assess divisional performance.	25.	Highest
26.	'Not distorted by inflation' is benefit to an organisation of using _____ performance measures	26.	KPIs
27.	W has set its staff targets relating to improvements in the number of customer complaints received (in relation to 'Performance Pyramid'). It is related to _____ level.	27.	Non-financial
28.	Under the 'Building Block' model, the _____ for the business are referred to as 'Dimensions'.	28.	Customer acquisition.

Answer 11 :

ICAI Answers :

1	6	**2**	9	**3**	7	**4**	23	**5**	24	**6**	25	**7**	1	**8**	2	**9**	3	**10**	4
11	5	**12**	8	**13**	10	**14**	12	**15**	13	**16**	11	**17**	17	**18**	14	**19**	16	**20**	19
21	18	**22**	28	**23**	15	**24**	26	**25**	22	**26**	27	**27**	20	**28**	21				

My Views & Comments :

- First of all, it is a good variety of question to test the general understanding of the entire subject of SCM&PE. A student who has studied casually, cannot answer these simple looking questions.
- To be honest, I have myself tried these questions first and got only 20 correct (as per ICAI) out of 28 questions asked.
- ICAI has used SMS language i.e. short forms like : CSF, KPI, SLA, CAP etc., which may be difficult for someone to interpret.
- I don't agree with ICAI answer 100% but majority pairs are correct. In my personal opinion, all the pairs formed by ICAI are not convincing and may have two choices or opinions. I feel, the options given itself should have been different at few places. Anyway, boss is always right.
- However, the above questions may be viewed as an indication that, in future if ICAI decides to ask Multiple Choice Questions (MCQ's), then such questions can be framed tactfully as above.

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