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CA FINAL – SCM & PE (New Syllabus)

Amendment Batch 2

[Edited Notes For Self Study]

(Notes for Private Circulation only)

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-: Compiled by :-

CA Rakesh Agrawal

[M.Com., Grad. CWA, FCA, SET, DISA]

Gold Medalist in Cost & Management Accounting

About CA Rakesh Agrawal

- He passed his B. Com examination from Ness Wadia College of Commerce, Pune in 1989 with distinction.
- He was the Captain of his college Chess Team.
- He was adjudged as the Best Mountaineer of the College for 1988 – 89 year.
- He received the Gold Medal from University of Pune in the Special subject of Cost & Management Accountancy at B. Com level.
- He passed his M. Com. Exam also from University of Pune (external), with the specialization in Advanced Cost & Management Accounting. Of course, he again cleared this exam with distinction.
- He cleared his ICWA examination in the first attempt in December, 1990 and stood Third in the Pune Chapter of Cost Accountants.
- He started teaching the subject of Costing at Pune Chapter of Cost Accountants in the year 1991, as a visiting faculty.
- He completed his CA Final examination in November 1992 attempt with 32nd Rank in All India Merit.
- He has cleard Information Systems Auditor (ISA) exam of ICAI in the very first attempt.
- He has passed State Eligibility Test (SET) in Commerce in the very first attempt.
- He has also passed the Mutual Fund exam and Derivatives Core Module, conducted by National Stock Exchange.
- He is a Founder of Vidarbha Professional Academy, Nagpur.
- He has launched a free mobile app titled as “Costing Dictionary by CA Rakesh Agrawal”. You may download it from Google Playstore.
- He has an online store www.carakeshagrawal.in. Students can buy video lectures from this website and study anytime anywhere.
- He is a Teacher by Passion and Chartered Accountant by Profession.
- He is well known for Conceptual Coaching and Student Friendly nature. At the same time he maintains classroom discipline.
- He teaches you a subject for your life time. He also tries to co-relate the subject with day to day life.
- He believes that “Education is not merely getting a Degree, but it is gaining Knowledge”.
- He enjoys teaching and he wants all of you to enjoy learning the subject also.

- His contact details are :

  Mobile : 94222 84169
  Email : ngp.rakesh@gmail.com
  Website : www.carakeshagrawal.in

Preface to Amendment Batch 2

Dear Student Friends,

First of all, I would like to thank you for your overwhelming response to the subject of Strategic Cost Management & Performance Evaluation. Many students attended the live or virtual batches of this subject and many more studied this subject through video lectures.

The earlier Amendment Batch 1 received a very good response and students who had attended my first batch got benefitted by attending Amendment Batch1. In the Amendment Batch 1, I had covered RTP of May 2018, Exam Paper of May 2018, Extra Questions, Case Studies, Case Scenario and Mock Test Papers uploaded by ICAI on its website, up to 30th June, 2018.

In the meantime, November 2018 Exam took place, RTP for Nov. 2018 and May 2019 was uploaded by ICAI and revised module (Jan. 2019 edition) was also released by ICAI. Considering the need for continuous amendments due to changes, I am now recording Amendment Batch 2. I hope this batch will also help the present and past students in updating themselves for the exam, without referring any other printed material. Please note that Amendment Batch 2 is a supplement to Regular Batch Notes. It will also help you to revise the subject, before the examination.

The moment ICAI comes out with anything new, there is a question from the students community, Sir will you cover this portion also? Are there any amendments in the subject? Let me first clarify that this subject doesn't have any amendments like direct and indirect taxes. At the most, it will have some additional reading material and questions for you.

Index page of this copy will provide you a brief idea about the coverage of syllabus in this batch. I have included the answers to all the questions at respective places to save your writing time. My objective would be to concentrate more on understanding and interpretation of the question, before developing the solution. At some places, I have modified the answers of ICAI and at some places I have changed the presentation of answer. At few places, I have done the spelling corrections and modified the sentence to provide it a complete meaning.

I hope you will get benefited by attending this batch and will feel more confident to take up the Institute's Exam. Your suggestions and constructive comments are always welcome to make further improvement. You may use my email id for such suggestions. TQM says - "There is always a scope for improvement".

Best of Luck and Happy Learning !

CA Rakesh Agrawal

1 RTP - November 2018

Question 1 : [Case Study]

Control Through Standard Costing System

'HAL' is a manufacturer, retailer, and installer of Cassette Type Split AC for industrial buyers. It started business in 2001 and its market segment has been low to medium level groups. Until recently, its business model has been based on selling high volumes of a standard AC, brand name 'Summer', with a very limited degree of customer choice, at low profit margins.

'HAL''s current control system is focused exclusively on the efficiency of its manufacturing process and it reports monthly on the following variances: material price, material usage and manufacturing labour efficiency. 'HAL' uses standard costing for its manufacturing operations. In 2018, 'HAL' employs 20 teams, each of which is required to install one of its 'Summer' AC per day for 350 days a year. The average revenue per 'Summer' AC installed is ₹ 36,000. 'HAL' would like to maintain this side of its business at the current level. The 'Summer' installation teams are paid a basic wage which is supplemented by a bonus for every AC they install over the yearly target of 350. The teams make their own arrangements for each installation and some teams work seven days a week, and up to 12 hours a day, to increase their earnings. 'HAL' usually receives one minor complaint each time a 'Summer' AC is installed and a major complaint for 10% of the 'Summer' AC installations.

In 2016, 'HAL' had launched a new AC, brand name 'Summer-Cool'. This AC is aimed at high level corporates and it offers a very large degree of choice for the customer and the use of the highest standards of materials, appliances, and installation. 'HAL' would like to grow this side of its business. A 'Summer-Cool' AC retails for a minimum of ₹ 1,00,000 to a maximum of ₹ 5,00,000. The retail price includes installation.

In 2017 the average revenue for each 'Summer-Cool' AC installed was ₹ 3,00,000. Currently, 'HAL' has 7 teams of 'Summer-Cool' AC installers and they can install up to 240 AC a year per team. These teams are paid salaries without a bonus element. 'HAL' has never received a complaint about a 'Summer-Cool' AC installation. 'HAL''s business is generated from repeat orders, recommendations, and local press advertising. It employs three sales executives who earn an annual salary of ₹ 3,00,000 each. It offers a six-month money back guarantee and this has to be fulfilled for 1% of its installations. 'HAL' has always been in profits but was shocked to see that in its results in 2017 it only earned 0.2% net profit on its turnover.

Required :

(i) EVALUATE the appropriateness of 'HAL''s current control system. [8 Marks]

(ii) RECOMMEND four Critical Success Factors (CSFs) which could assist 'HAL' in achieving future success. [8 Marks]

(iii) ADVISE 'HAL' about the changes it could implement in its standard costing and reporting system to achieve improved control. [4 Marks]

Answer 1 :

(i) 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 overhead cost.

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, realtime 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:

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.

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.

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 (7 teams x 240 AC per team x Rs. 3,00,000 each). The success of both brands is important for the continual success of HAL and this CSF indicate a complete view of performance.

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 absenteeism, 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.

Question 2 : [Case Study]

Beyond Budgeting

Magical Stay is a hotel chain that has properties in popular tourist destinations. Each hotel has at least a 50 rooms establishment that has standard, elite and luxury size suites. Currently, the chain has 9 properties spread across World. Magical Stay has its corporate headquarters in Singapore, from where the senior management operate. Operations management executives are based out of each specific property that they cater to. Magical Stay is a public listed company, with majority of its shareholders being institutional investors like mutual funds, banks and insurance companies. Since these investors had a high stake in the company, they had representatives of the board of directors to govern strategic decisions. One of the strategic goals of the company for 2018, was to earn a profit of ₹ 1,500 million and keep increasing this target by 10% each year. Due to recessionary conditions, business has been volatile. Consequently, senior management is under pressure to meet the targets.

In order to have a defined plan for operations, Magical Stay prepares an annual budget for each of the properties as well as one master budget that consolidates at a company level. There is a separate financial and business analysis team that is in charge of this exercise. Key assumptions and future expected trends are discussed at with the operations management of each property. After incorporating the corporate headquarters numbers, the consolidated budget is presented to the senior management for approval. In order to have a uniform policy across locations, key metrics like room rent per day, material procurement for kitchen and rooms, employee hiring, capital investments at each property, advertising and promotional activities are handled directly by the corporate headquarters.

The management at each location is responsible to ensure smooth operations of the hotel chain by implementing these policies. The manager of each hotel property is given a target in terms of revenue to be generated, room occupancy and profit to be achieved. Therefore, the management at each location is also under pressure to perform and meet the target set by the senior management. In the past, if the target had not been met for couple of years, the senior management had closed down the hotel and exited the property. At the same time, best performers are given more liberal budgets to operate on. Hence, competition between various locations has always been fierce. There are constant negotiations for been given a "reasonable / practical target" that has to be achieved.

Monthly meetings are scheduled with the corporate office to explain variance of results from the budget. The recent monthly results have shown that 7 of the 9 properties have consistently not been able to meet the targets in the past six months. The situation is confounded because the tourism industry has been affected greatly by recessionary trends in the global economy. Therefore, the footfalls at the regular tourist places, where the hotel has properties, have reduced considerably. In some places occupancy during peak season has only been 60%. Therefore, operations are bleak and uncertain. At these meetings, the operations management argue that due to this dynamic scenario, the budgeted targets set become obscure since they are not based on the current circumstances.

The corporate office has met with the operations management at each of these properties in order to understand the situation better. Discussions have taken place about how the business can be improved. Few of the suggestions to improve performance are:

(1) When the hotel is not fully booked, especially during off-season, give manager at each property the authority to rent out rooms at an attractive discount. These opportunities have to be encased quickly, therefore the decision about the rate would be better handled by the personnel at the hotel. A guideline on the discount policy can be worked out with the corporate office. This will ensure that room occupancy rates increase, while earning reasonable return.

(2) Allow for procurement of kitchen supplies locally, rather than buying it only from specified authorized vendors. Not only will this be cheaper, it also allows for moderate flexibility with the kitchen menu that can cater to customer demands based on current availability of supplies. Prior approvals can be taken by the management from the quality control department to ensure that customer satisfaction does not suffer.

(3) A monthly reward and recognition program for employees, based on their service record for the month. Recommendations can be from fellow employees or the location manager.

(4) Allow the location management autonomy, with a reasonable budget to cater to purchasing equipment. In order to address certain urgent requirements or repairs, quick response from the operations management is needed. The current process of getting approval from the corporate office is cumbersome since it takes a longer time. Autonomy can help address these issues quickly without much damage done to customer satisfaction. Funding can be quickly procured from banks if required.

Based on these discussions, the senior management has decided to decentralize all of the above decisions. As a pilot project, they have decided against preparing a line-wise detailed budget (sales budgets, operations cost budgets, advertising etc.) for each location. Instead the operations management will be given clear targets at each of the locations regarding the key profitability ratios, liquidity ratios and leverage ratios, as also guidelines on market share, quality and customer satisfaction. These benchmarks have been finalized based on industry research of peer group companies. However, the managers have the autonomy to achieve the expected target based on their individual business scenarios at each location. The focus is therefore not on achieving budget numbers that have been finalized. Instead management gets growth targets to achieve.

One year after implementing this decision, it was found that company was able to meet the shareholders' expectations, have a robust growth and an energetic employee morale.

Required :

(i) DISCUSS the traditional budgeting process had a negative impact on Magical Stay's operations.

(ii) EXPLAIN the philosophy behind "growth based targets" instead of "budget based targets".

Answer 2 :

(i) Magical Stay is operating in a business scenario that is highly competitive and dynamic. Focus of the traditional budget was driven towards achievement of the company's strategic goal, which was profit target of ₹ 1,500 million for the year 2018. Accordingly, the senior management followed a top-down approach to budgeting. Most important policy decisions like room rent per day, material procurement, employee hiring, capital investments at each property, advertising and promotional activities are handled directly by the corporate headquarters. Management in charge of operations at each location only implement it. In a changing business scenario, this budgeting methodology has the following shortcomings:

(a) Budgets based on these policies may not be flexible enough in a fast-changing business environment. Although it is based on assumptions and expectations that the management has made about the business growth, in a dynamic scenario, it is very difficult to predict the future accurately. Therefore, targets or benchmarks set by the traditional budgets may become outdated quickly.

(b) These budgets were based on business functions like sales, advertising, operations etc. While a strategy for these functions is important, they are based on internal benchmarks and assumptions made by the management. However, for the company to be flexible in a changing environment, the focus should also be on external factors.

(c) The management aims to make a yearly profit that is 10% more than the previous year's profit. If previous year profit alone is the benchmark for growth, certain decisions may be shelved because they may decrease current year's profits below target. However, had these decisions been implemented they may have generated value in the long term and ultimately may have been better for earning profits in future years. For example, certain capital expenditures that may need to be undertaken quickly in order to improve customer satisfaction, may not be incurred at all simply because there is no budget for it.

(d) Operations management did not have much autonomy since policies were controlled at the corporate headquarters. At the same time, they were responsible for achieving the targets set out as per the budget. Responsibility without authority creates a negative working environment. Consequently, it might be difficult to retain talented personnel.

(e) In order to meet budget targets, managers may try to negotiate for lower sales targets to achieve, more budget allocations to meet costs etc. This does not foster positive business growth. Managers are more intent in meeting targets rather than focusing on business growth. It leads to lower sales than can otherwise be achieved and leads to protection of costs rather than working towards lowering operational costs.

It can be concluded that the traditional budgeting process was more inward looking. Focus was on achieving budget target rather than implementing strategies that can create more value to the company.

(ii) After receiving feedback from operations managers, the management has given them targets based on growth instead of those based on the budget alone. This is the philosophy of "beyond budgeting". Below are the features of this philosophy that has enabled Magical Stay to achieve better results:

(a) It is a more decentralized and participative way of operating a business. Rather than being made responsible for business decisions, which were not in their control, now the employees are given responsibility, combined with the necessary authority to execute decisions.

(b) Operations management and the personnel at each location are capable of quickly adapting to changing market scenarios. Likewise, since they interact with the customers directly, it enables them to make quicker decisions to ensure customer satisfaction or identify opportunities to generate more revenue.

(c) Targets are based on performance of peer group companies. Benchmarks based on peer group performance will be unbiased and reflects the current business scenario better. Due to this, customer's needs and satisfaction automatically gets priority. It is the customer who ultimately drive business growth. Therefore, rather than having an inward-looking approach, focus has now shifted to the external market conditions. Due to autonomy, managers at various locations need not compete with each other for budget allocation. This channelizes the operational focus to meet challenges from outside competitors rather than having detrimental competition within the organization. At the same time, the targets for the company are also based on guidelines from the corporate office. Therefore, there is congregation of goals with the shareholders' expectations.

(d) Employee morale is also boosted due to the monthly reward and recognition system. It fosters healthy competition among employees.

Since the focus is on growth, beyond budgeting can be a way of achieving better results in challenging business environment.

Question 3 : [Case Study]

Performance Measurement in Not for Profit Sector

The town of Silver Sands is located along the coast of the Caribbean Sea. Known for its beautiful coastline and pleasant weather, the town attracts a lot of tourists from all around the world. The town has two beaches that are maintained by the local government and can be used by the general public. In order to preserve the natural ecosystem, other beaches on the coastline are not accessible to the general public. Tourism is the main source of livelihood for its residents. Consequently, cleanliness of beaches is of paramount importance in order to sustain and develop this industry.

The local government has recently employed a contractor to clean up the beaches using beach cleaning machines. The contractor has been selected through a competitive tendering / bidding process. The contractor uses sand cleaning machines that are pulled by tractors. Sand is scooped onto a conveyor or screening belt. It is either raked through (combed using prongs) or sifted through (filtered), in order to separate the waste from the sand. The cleaned sand is left behind on the beach while the waste is removed. Majority of the litter comprises of plastic waste (bags, bottles etc.) while some portion also includes sea weed, glass, aluminum cans, paper, timber, and cardboard. A detailed log is kept by the contractor about the stretch of beach that has been cleaned, time taken for the clean-up, number of tractors used etc. This log is also checked and signed by a local government official. This record is used to process payments at the end of the month.

In addition to contracting with the vendor to clean beaches, the local government has also placed bins at various locations on the beach for the public to dispose their waste. The town's municipality workers clean these bins every morning. Again, detailed logs of the man power and other resources employed is kept by the responsible department. In addition, the government has opened a mobile messaging system, whereby the public can message the government department if they find litter anywhere in the beach. Depending on whether it is from overflowing bins or buried debris in the sand, the municipality workers or the contractor will take action to clear it within 24 hours. A detailed log of these operations is also maintained. Patrons can also suggest measures for improving cleanliness on the beaches.

Due to its importance to the economy, the local government has allotted substantial budget for these operations. At the same time, it is essential to know if this is sufficient for the purpose of keeping the beaches clean. Therefore, the government wants to assess whether the town is getting "good value for money" from this expenditure. The "value for money" concept can be looked at from three perspectives: (i) economy, (ii) efficiency and (iii) effectiveness. The Internal Audit (IA) department that has been requested to undertake this study, has requested for guidelines on whether the audit should focus on economy and efficiency of the beach cleaning operations or on effectiveness of the same. Economy and efficiency audit would assess whether

the same level of service can be procured at lower cost or resources while effectiveness audit would assess whether better services can be procured at same cost.

Depending on the outcome of the audits, if required, policy decisions like requesting for additional funding from the state government, alternate policy measures like levying penalty for littering etc. can be taken.

Required :

Prepare a letter addressed to the IA department.

(i) RECOMMEND guidelines to assess economy and efficiency of beach cleaning operations.

(ii) RECOMMEND guidelines to assess effectiveness of beach cleaning operations.

(iii) IDENTIFY challenges involved in assessment of effectiveness?

(iv) RECOMMEND general guidelines, how the audit team may conclude the audit based on the combined outcomes of economy, efficiency, and effectiveness?

Answer 3 :

Date 30- July -2018

Dear Sirs,

Re: The economy, efficiency and effectiveness of beach cleaning activities

(i) Economy and efficiency audit of an operation focuses on the consumption of resources and the output achieved. Economy assesses the financial aspects of the activity i.e. are the objectives of the activity being achieved at reasonable cost? Efficiency assesses the volume of input consumed to derive the desired output i.e. are the resources and funds being consumed to get maximum output?

To look at Economy of Operations, cleaning expenses need to be bifurcated into payments made to the contractor and the expenses of emptying waste from bins. Any further subcategories of these expenses, like labour, material, disposal van expenses etc. also need to be collated from the accounting or cost records. These then have to be compared to the budgets that were approved by the government of Silver Sands. The competitive tendering process can be reviewed to ensure that the contractor getting the order is offering the required quality of service at the lowest price. If the quality of cleaning has been achieved, by staying within budget, the operation is economical. However, if the actual expenses exceed the budget, the government has to compare them with cost of similar cleaning activities carried by neighbouring towns. On comparison, if Silver Sands operations are expensive compared to other towns, it indicates that not only are the operations uneconomical they may not be efficient either.

Efficiency of Operations can be determined by checking the log records maintained for beach cleaning by the contractor and municipality workers. These would have details of activities carried out and the resources utilized for each of them. For each of these services (beach cleaning and emptying out bins), the cost drivers can be identified and certain metrics can be developed for analysis. For example, the cost of running the tractors can be divided by the total number of tractors operated to get the cost of operations per tractor or alternatively, by the kilometres of beach cleaned to arrive at a tractor-kilometre rate. While analysing these activities, certain operational considerations have to be given. For example, certain stretches of the beaches may take more time or resources to clean due to issues like rocks or soft sand. Therefore, if resources for operations are disproportionate for certain parts of the beaches, the cost of maintaining those stretches need to be worked out. Data to get this information will depend on the extent of details maintained in the logs. This information has to be tracked over some period of time in order to understand trends in operations and related expenses.

The data collected from the mobile messaging system should also be investigated. How often and in what stretches of the beach are complaints frequent or maximum? Reasons for these lapses need to be taken from the contractor (for beach cleaning operation) and the concerned department (for emptying bins) in order to find out whether resources are being employed properly.

On this basis, deviations and exceptions should be investigated. The local government can then decide if there can be alternate sites along the coastline that may be more economical and efficient to operate.

(ii) An audit about Effectiveness of Operations would focus how the actual cleanliness of beaches compares with the desired level as laid out in the policy initiative. To assess whether performance has been met, clear guidelines and metrics have to be defined during policy implementation.

To begin with, it should be clear as to what constitutes litter. From an operational angle, it would be difficult to clean out every bit of paper lying on the beach. However, it is possible to pick up every soft drink aluminum can. Hence, the government authorities must be clear on what constitutes litter? Which are the refuse that must be cleared within exception (example food refuse, animal droppings, glass bottles, tin cans, trash bins etc.) and tolerance level for certain other types of litter (e.g. Paper, seaweed etc.) that may get left behind even after cleaning. Quantity of waste collected would be the indicator to make the above assessment.

Certain other parameters like safety standards can also be defined. Safety problems could be cuts from sharp objects like glass, incidents of vector borne diseases in the area or health problems from polluted sea water. Assessment has to be made whether these standards have been met.

For this, the primary source of information about cleanliness would be feedback from the beach patrons. These could be in the form of complaints received directly or those through the mobile messaging system would provide data to work out the metrics. This would be an indicator of "customer satisfaction". Other inputs could also be the suggestions given by the patrons about ways to improve cleanliness on the beach.

Observation by making surprise visits to inspect the beaches immediately after the cleaning operations would also provide sufficient evidence about the effectiveness of operations.

(iii) Challenges Involved in assessment of effectiveness would be:

(a) Defining standards about what constitutes litter and acceptable level of cleanliness? These are subjective guidelines, the perception of which may differ from person to person.

(b) Beach patrons also play an important role in making this initiative effective. There has to be a conscious civic sense of duty not to litter, failing which this initiative will most likely be ineffective. Therefore, while measuring performance for effectiveness, collection of more litter does not necessarily indicate effective operations. More litter requires more cleaning and more resources, therefore is actually not a positive indicator of effectiveness. On the contrary, in the long run, lesser litter collected to maintain desired level of cleanliness would be a good indicator of effectiveness.

(iv) The outcome of the audits can indicate achievement of each one or none of the three parameters of economy, efficiency and effectiveness of the beach cleaning operation. To form an integrated conclusion based on the different outcomes of individual audits, the audit team may consider the following guidelines:

(a) Has the objective of the cleaning operation been achieved as per the guidelines in the relevant policy? i.e. have the operations been effective?

(b) If the answer to (a) is yes, are the expenses within budget. If so, then the operations are economical and efficient. Given that the operations have been effective at the same time economy and efficiency have been achieved, the team can conclude that the cleaning operations policy has been a success.

A cost-over run can also be justified if the operations have been effective. In that case, the audit team has to conclude whether all expenses incurred are indeed justified and that the resources have been put to the best possible use. If not, can the operations be made more economical or efficient?

(c) If the answer to (a) is no, the operation has not been effective, then is the difference from the target marginal or huge? If the operations have not been entirely effective, but only by a marginal gap say 95% success, then analysis of expenses can be made similar to the point (b) mentioned above. However, if the operations have been ineffective to a larger extent, then the cleaning drive initiative has been ineffective. The government has to look at alternate solutions of tackling the problem. These could include imposing heavy penalty for littering, requesting for more funding from the state government to employ better resources etc.

Therefore, it can be seen that achievement of one objective does not automatically lead to achievement of other objectives. A holistic approach would be needed to draw conclusions about the performance of the cleaning operations.

Should you have any further queries, please do not hesitate to ask.

Yours Faithfully

Management Accountant

Question 4 : [Practical Question]

Performance Measurement Through Fitzgerald and Moon Model

Learning Horizons is an educational institute that conducts courses for students in accounting, law and economics. The institute is partially funded by the government. The institute aims to provide quality education to students of all backgrounds. The institute admits students who can fund their education privately as well as those who get sponsorship from the government. Knowledgebase is another educational institute in the same city providing courses similar to Learning Horizons. It is entirely private funded college where students arrange to pay for their own fees. It can be taken as a peer institution for comparison purposes.

Information about their operations for the year ended March 31, 2018 are as follows:

(1) Both Learning Horizons and Knowledgebase offer their courses that last the entire year. All of them are regular classroom lectures conducted through the week.

(2) Budget and actual fee rate structure for the year are the same. Information about the fees for each course are as follows:

Budget and Actual Fees in ₹

Course Type	Learning Horizons		Knowledgebase
	Privately Funded	Government Funded	Privately Funded
Accounting	1,20,000	75,000	1,00,000
Law	1,20,000	90,000	1,50,000
Economics	80,000	60,000	1,00,000

(3) Salary details for lecturers and administrative staff are as follows: Salaries in ₹

Staff Type	Learning Horizons		Knowledgebase
	Budget	Actual	Actual
Lecturers	5,00,000	5,50,000	6,00,000
Administrative staff	3,00,000	3,00,000	4,00,000

(4) Budgeted costs for the year based on 8,500 students per annum for Learning Horizons are as below:

Costs	Amount ₹	Variable Cost %	Fixed Cost %
Tuition Material	40,00,00,000	100%	---
Catering	10,00,00,000	75%	25%
Cleaning	1,00,00,000	25%	75%
Other operating costs*	5,00,00,000	25%	75%
Depreciation	1,00,00,000	---	100%

* includes cost of freelance staff

(5) Actual costs (other than salary costs) incurred during the year:

Costs	Learning Horizon	Knowledgebase
Tuition Material	42,00,00,000	40,00,00,000
Catering	10,00,00,000	13,00,00,000
Cleaning	1,00,00,000	1,50,00,000
Other Operating Costs*	6,00,00,000	5,00,00,000
Depreciation	1,00,00,000	1,50,00,000

* includes cost of freelance staff

(6) Keeping in line with latest technological developments, the management of Knowledgebase is introducing on-line tuition support by its lecturing staff. Learning Horizons on the other hand offers distance learning course. A general feedback from prospective students has revealed that some students would like weekend courses since during the week they focus on their regular jobs. Also, some students have requested for intermediate qualification, in the event that they discontinue the course halfway due to inability to complete the course or for other personal reasons.

(7) Both Learning Horizon and Knowledgebase have a policy to have a lecture staff of 50 throughout the year. When there is a shortfall in teaching staff available, instead of recruiting a fulltime lecturer, Knowledgebase substitutes the requirement with freelance staff for lectures. The cost of freelance staff is much lower than regular staff.

(8) Appendix with further details:

Sundry Statistics

For the year ended 31st March 2018

Particulars	Learning Horizons		Knowledgebase
	Budget	Actual	Actual
Number of students:			
Accounting	4,000	3,800	4,100
Law	2,500	2,550	2,500
Economics	2,000	1,500	1,200
Total students	8,500	7,850	7,800
Student mix (%) for each course:			
Privately funded	80%	70%	100%
Government funded	20%	30%	0%
Number of enquiries received:			
Accounting	4,500	4,500	4,600
Law	2,800	2,700	3,050
Economics	2,200	1,600	1,225
Total enquiries	9,500	8,800	8,875
Number of lecturers employed during the year	50	50	50
Number of lecturers recruited during the year:			
Accounting	2	4	1
Law	1	3	-
Economics	1	3	-
Total recruitment	4	10	1
Number of administrative staff	12	12	9
Pass Rate:			
Accounting	95%	99%	93%
Law	95%	98%	90%
Economics	95%	95%	95%
Overall Pass rates for the courses	95%	97%	93%
Days in a year when freelance lecturers were used	-	-	30
Number of new courses under development	-	-	6

You are the management accountant of Learning Horizons. The results for the year are to be reviewed next week by the management. To assess performance, you want to prepare the report as per the Fitzgerald and Moon model.

Required

(i) Using the "Results" dimension of performance as per the Fitzgerald Moon model prepare a variance ANALYSIS of Learning Horizons actual and budgeted financial performance. Also, based on the information given in the problem, collate the actual financial figures for Knowledgebase, use it as a basis to prepare ANALYSIS of competitiveness of Learning Horizons and Knowledgebase.

(ii) Using the "Determinants" dimension of performance as per the Fitzgerald Moon model EXPLAIN

(a) Quality of service

(b) Flexibility

(c) Resource utilization

(d) Innovation

(iii) Course fees set by the government for various subjects cannot be increased beyond an average of ₹ 75,000 per student. If the costs are maintained within this budget, the government can provide more sponsorship or grants in future. ADVISE a method that the management of Learning Horizons can use to resolve this.

Answer 4 :

(i) Analysis of the "Results" dimension of performance as per the Fitzgerald and Moon model

Financial Performance of Learning Horizons and Knowledgebase :

The original budget had been prepared for 8,500 students, while actual enrollments are 7,850 students. At the very onset, reasons for lower enrollments have to be found and analyzed. For comparison of actual and budget, the budget of Learning Horizons has to be flexed to scale. Hence the budget needs to be scaled down to 7,850 for preparing a variance analysis.

Particulars	Learning Horizons				Knowledgebase	
	Budget		Actual		Actual	
	Number	Amount ₹	Number	Amount ₹	Number	Amount ₹
Revenue :						
(a) Private Funded						
Accounting	2,955	35,46,00,000	2,660	31,92,00,000	4,100	41,00,00,000
Law	1,847	22,16,40,000	1,785	21,42,00,000	2,500	37,50,00,000
Economics	1,478	11,82,40,000	1,050	8,40,00,000	1,200	12,00,00,000
subtotal (a)	6,280	69,44,80,000	5,495	61,74,00,000	7,800	90,50,00,000
(b) Govt. Funded						
Accounting	739	5,54,25,000	1,140	8,55,00,000	---	---
Law	462	4,15,80,000	765	6,88,50,000	---	---
Economics	369	2,21,40,000	450	2,70,00,000	---	---
Subtotal (b)	1,570	11,91,45,000	2,355	18,13,50,000	---	---

Total Revenue (a)+(b)	7,850	81,36,25,000	7,850	79,87,50,000	7,800	90,50,00,000
Expenditure :						
Salaries						
Lecturers	50	2,50,00,000	50	2,75,00,000	50	3,00,00,000
Administrative staff	12	36,00,000	12	36,00,000	9	36,00,000
subtotal of salaries	62	2,86,00,000	62	3,11,00,000	59	3,36,00,000
Tuition Material		36,94,11,765		42,00,00,000		40,00,00,000
Catering		9,42,64,706		10,00,00,000		13,00,00,000
Cleaning		98,08,824		1,00,00,000		1,50,00,000
Other Operating Costs		4,90,44,118		6,00,00,000		5,00,00,000
Depreciation		1,00,00,000		1,00,00,000		1,50,00,000
Total Expenditure		56,11,29,413		63,11,00,000		64,36,00,000
Net Profit		25,24,95,587		16,76,50,000		26,14,00,000

Working Notes :

(1) Original revenue budget is for 8,500 students. Actual enrollments are 7,850 students. For comparison, the budgeted revenue has also been adjusted to 7,850 students. The mix between private and government funded students is 80:20 as per the budget. The adjusted student strength is allocated between the courses based on the original budget student strength.

For example, out of the total strength of 7,850 students, based on the budget ratio, 80% are taken to be privately funded. This works out to 6,280 students. The strength for flexible budget for accounting course will be = (6,280 × 4,000/8,500) = 2,955 students. Likewise, the strength for flexible budget for other courses is calculated in a similar manner.

(2) The budgeted expenses are for 8,500 students. Actual students are 7,850. For comparison, variable costs in the budget have been adjusted for 7,850 students. Fixed costs remain the same. For example, tuition material has a budget of ₹ 40 crore for 8,500 students. This is 100% variable, therefore adjusted budget for 7,850 students would be ₹ 40 crore /8,500 × 7,850 students. The total budgeted cost for 7,850 students is therefore ₹ 36,94,11,765.

Semi-variable costs in the budget, are separated as fixed portion and variable portion for the purpose of recalculation. For example, catering cost is ₹ 10 crore for 8,500 students, of which ₹ 2.5 crore is fixed. The balance ₹ 7.5 crore is for 8,500 students and is variable. For 7,850 students, the variable cost works out to ₹ 6,92,64,706. Adding the fixed cost, the total budget for catering for 7,850 students is ₹ 9,42,64,706.

Likewise, the budgeted cost for cleaning and other operating expenses is calculated in a similar manner.

Analysis of Actual Financial Performance with respect to Budget :

(a) Originally the student strength was expected to be 8,500 in comparison to an actual number of 7,850. The reason for this shortfall in enrollment should be analyzed by looking into non-financial performance measures.

(b) On the revenue side, actual revenue of ₹ 80 crore is marginally lower than the adjusted budget of ₹ 81.4 crore. Since the budget and actual course fee rates are the same, the reason for this difference is on account of the mix between the private and government funded students. Actual enrollments had a greater ratio of government funded students, for which the fees are lower. As per the flexed budget, government funded students were expected to be 1,570 versus an actual of 2,355, higher by 50%. Reasons for the change in student mix from a budget of 80:20 to actual mix of 70:30 has to be analyzed.

(c) On the expenditure side, actual costs of ₹ 63 crore is 12% more than the corresponding budget of ₹ 56 crore. The increase for salaries over budget is because a higher market rate that has to be paid for a lecturer. Given that Knowledgebase also pays a higher rate, the budget may need to be amended to reflect a more realistic salary rate. The other major variance is on account of the tuition materials procured for the students. While the budget for 7,850 students is only ₹ 37 crore, the actual expenditure is ₹ 42 crore. Reasons for this large variation has to be analyzed. Reasons could reflect the quality of education imparted. If in reality better quality study materials costs more, the management has to decide whether they would be willing to incur this additional cost. This might have a further impact on the fees charged to privately funded students and the management may also want to ask for increase in the government sponsored fee rate.

(d) Overspend is noticed in other operating costs as well, actual cost is ₹ 6 crore versus ₹ 4.9 crore budget. As mentioned in the problem, 75% of this cost is fixed in nature, amounting to ₹ 3.75 crore (75% of ₹ 5 crore original budget). This portion of the cost should remain the same irrespective of variation in student enrollments. The remaining portion of the budget ₹ 1.15 crore is variable. The actual spend is ₹ 6 crore, of which ideally ₹ 3.75 crore would be fixed. If there is any variation in fixed cost, it should be looked into. If justified, future budgets need to be adjusted to reflect the higher cost. The remaining variable portion should also be analyzed to understand the reason for the higher spend.

(e) Overall, the impact of lower revenue and higher cost, has resulted in a shortfall of ₹ 8.48 crore (34% shortfall) as compared to the adjusted budget for 7,850 students. Action should be taken by further studying other parameters like competitor's performance and other non-financial factors like quality of education, pass rate, innovation.

Competitive Performance of Learning Horizons and Knowledgebase :

Average Revenue and Cost per student

Particulars	Learning Horizons		Knowledgebase
	Budget	Actual	Actual
Total revenue (₹)	81,36,25,000	79,87,50,000	90,50,00,000
Number of students	7,850	7,850	7,800
Revenue per student (₹)	1,03,646	1,01,752	1,16,026
Total cost (₹)	56,11,29,413	63,11,00,000	64,36,00,000
Number of students	7,850	7,850	7,800
Cost per student (₹)	71,481	80,395	82,513

The cost per student at Learning Horizons is marginally lower than Knowledgebase. However, the revenue per student at Knowledgebase is much higher. Analyzing the components further:

(a) Student Mix: Knowledgebase has higher revenue by more than 10 crore, almost 13.3% higher as compared to Learning Horizons. Reasons could be on account of a higher fee rate structure at Knowledgebase as compared to Learning Horizons, where part of the fee structure is government funded at a lower rate.

(b) Course Rate: Learning Horizons charges ₹ 1,20,000 per year for its accountancy course which is higher compared to Knowledgebase's rate of ₹ 100,000 per year. This might be a reason for a higher enrollment at Knowledgebase of 4,100 students compared to Learning Horizons enrollment of 3,800 for the same course. The management has to verify if this higher rate is sustainable.

(c) Course Rate: Learning Horizons charges ₹ 120,000 for its law course compared to ₹ 150,000 at Knowledgebase. However, despite being lower, the enrollment for the course is almost the same. The management has to look at non-financial parameters related to quality, in order to improve enrollments for this course.

(d) Course Rate: Learning Horizons charges ₹ 80,000 for its economics course compared to ₹ 100,000 at Knowledgebase. Consequently, it is able to have higher enrollment for its economics course.

(e) Compared to Learning Horizons, Knowledgebase is incurring ₹ 2 crore lesser on tuition materials. As pointed out earlier, Learning Horizons must try to find out reasons for its higher cost and try to economize on this expense, if required.

(f) Knowledgebase has been using freelance staff for 30 days in a year to keep its expenses lower. Therefore, although it has a higher pay scale for its lecturers, it uses a lower cost resource to meet its teaching staff requirements. Compared to 1 new recruitment by Knowledgebase, Learning horizons has 10 new recruitments during the year. Knowledgebase has substituted any shortfall in teaching staff by hiring freelancers during the year. At the same time, non-financial aspects like quality of education need to be assessed while using the service of freelancers.

(g) The other indicator of competitive performance could be the take up rate (i.e. the rate of conversion of enquiries from prospective students into enrollments for the course). Reference to the budget here is the original budget prepared for 8,500 students, which represents the capacity that Learning Horizons wants to achieve.

Particulars	Learning Horizons		Knowledge.
	Budget	Actual	Actual
Accounting - number of students	4,000	3,800	4,100
Number of enquiries	4,500	4,500	4,600
Take up rate	89%	84%	89%
Law - number of students	2,500	2,550	2,500
Number of enquiries	2,800	2,700	3,050
Take up rate	89%	94%	82%
Economics - number of students	2,000	1,500	1,200
Number of enquiries	2,200	1,600	1,225
Take up rate	91%	94%	98%

Overall - number of students	8,500	7,850	7,800
Number of enquiries	9,500	8,800	8,875
Take up rate	89%	89%	88%

The take up rate is lower for accounting course at Learning Horizons as compared to Knowledgebase. As explained in point (b), this may be attributed to the higher rate that Learning Horizons charges privately funded students. The higher rate should be justifiable.

The take up rate for law is higher compared to Knowledgebase. As explained in point (c) this could be due to the lower fee rate. Higher enrollment could indicate the popularity of the course. At the same time the comparative pass rate may have to be looked into to judge the quality of the course.

The take up rate for economics is marginally lower than Knowledgebase. However, overall enrollment for this course is much higher compared to Knowledgebase, possibly to the substantially lower rate offered for the course. The management could look at better publicity to improve the take up rate.

(ii) Analysis of the "Determinants" dimension of performance as per the Fitzgerald and Moon model

Quality of Service

The pass rate for each course indicates the quality of course offered. Summarizing from the problem:

Pass rate

Particulars	**Learning Horizons**		**Knowledgebase**
	Budget	**Actual**	**Actual**
Accounting	95%	99%	93%
Law	95%	98%	90%
Economics	95%	95%	95%
Overall Pass rates for the courses	95%	97%	93%

The targeted pass rate of 95% has been met in all courses, thereby it indicates that a satisfactory level of education is being imparted. In comparison with Knowledgebase the pass rate for all courses is higher, which is a good indicator. This could be a reason to justify the use of full time staff instead of substituting it with freelancer staff.

In the case of accountancy, the management can use the higher pass rate to justify the higher course rate, which may lead to better enrollments for the course. In the case of law, it has the potential of becoming a very popular course, lower course fee with higher pass rate. This can be used to improve enrollments. In the case of economics, the pass rates are at par. The management may use the lower course fee to attract students else may find other ways to make the course more attractive to have higher enrollments.

Feedback from current students and the institute's alumni also provide value information about the quality of the courses and opportunities to improve.

Flexibility

The management of Learning Horizons has to consider the feedback from current and prospective students in order to bring in flexibility to their services. While long distance learning offers some flexibility, the management has to look at alternate channels of delivery like online lecture support by faculty similar to the model that Knowledgebase has developed. Also, offering weekend courses could help improve enrollments. Providing the option to get an intermediate degree gives flexibility to students who are not able to cope up with the course. While this cannot be a main objective of the institute, it still can maintain its motto of imparting quality education for students of all backgrounds.

Resource Utilization

The main resource of an educational institute is its staff. Management of Learning Horizon has to look at the teacher student ratio and compare it to benchmarks of peer institutes. Learning Horizons is having a higher recruitment of 10 lecturers for the year as compared to a budget of 4 recruitments for the year. Reasons for the same need to be looked into. One reason could be a higher turnover ratio among lecturers due to lower salary paid in comparison to the market rate. In comparison, Knowledgebase has a more stable staff, having a recruitment of only 1 lecturer during the entire year. This might be due to the use of freelance teaching staff. Learning Horizon can explore options of using freelance teaching staff to meet its teaching needs, without compromising quality of education.

Innovation

From the information provided, Learning Horizons has a better quality of service in terms of pass rates. However, Knowledgebase is planning to offer 6 new courses in the future. Learning Horizons has to explore options to improve on its current course offerings in order to maintain its market share.

(iii) There is a limit to fees sponsored by the government. Currently, government funded revenue is ₹ 18 crore, almost 23% of the total revenue of 80 crore. Average actual cost per student, referring to the table above, is ₹ 80,395. Since, the government is unwilling to spend more than ₹ 75,000 per student, the management could look at target costing methods to resolve this issue. This reduction of ₹ 5,395 per student can be achieved by identifying opportunities to economize on costs. If feasible, the cost per student can be calculated for each of the courses, to identify where these economies can be achieved. This drive should encompass the administration and support services too. Thus, using target costing approach, the cost can be reduced below ₹ 75,000 to make government funded education profitable, within reasonable limits.

Question 5 : [Practical Question]

ROI Leading to Sub-Optimal Decision Making and Lack of Goal Congruence

BYD Alloy Ltd. first opened its door in 1990 for business and now it is a major supplier of metals supporting over a dozen different industries and employs experts to support each industry. These include Wood & Panel Products Manufacturing, Health Products, Site Furnishings, Commercial and Residential Construction etc. It has grown through devotion to its customers, dedication to customer service and commitment to quality products.

The company has two divisions: Division 'Y' and Division 'D'. Each division work as an investment centre separately. Salary of each divisional manager is ₹ 7,20,000 per annum with the addition of an annual performance related bonus based on divisional return on investment (ROI). A minimum ROI of 12% p.a. is expected to be achieved by each divisional manager. If a manager only achieves the 12% target, he will not be rewarded a bonus. However, for every whole 1% point above 12%, which the division achieves for the year, a bonus equal to 3% of

annual salary will be paid subject to a maximum bonus of 20% of annual salary. The figures belonging to the year ended 31 March 2018 are given below:

Particulars	Division 'Y' ('000)	Division 'D' ('000)
Revenue	29,000	17,400
Profit	5,290	3,940
Less: Head Office Cost	(2,530)	(1,368)
Net Profit	2,760	2,572
Non - Current Assets	19,520	29,960
Cash, Inventory, and Trade Receivable	4,960	6,520
Trade Payable	5,920	2,800
Manager Responsible	HAI	FAI

During the financial year 2017-18, FAI, manager of Division 'D' invested ₹ 13.6 million in new equipment including an advanced cutting machine, which will increase productivity by 10% per annum. HAI, manager of Division 'Y', has made no investment during the year, even its computer system needs updation. Division 'Y''s manager has already delayed payments of its suppliers due to limited cash & bank balance although the cash balance at Division 'Y' is still better than that of Division 'D'.

Required :

(i) For each division, COMPUTE, ROI for the year ending 31 March 2018. Justify the figures used in your calculation. [6 Marks]

(ii) COMPUTE bonus of each manager for the year ended 31 March 2018. [4 Marks]

(iii) DISCUSS whether ROI provides justifiable basis for computing the bonuses of managers and the problems arising from its use at BYD for the year ended 31 March 2018. [10 Marks]

Answer 5 :

(i) Calculation of ROI & Bonus :

Particulars	Division 'Y' ('000)	Division 'D' ('000)
(a) Revenue	29,000	17,400
(b) Profit (Controllable)	5,290	3,940
(c) Non - Current Assets	19,520	29,960
(d) Cash, Inventory, and Trade Receivable	4,960	6,520
(e) Trade Payable	5,920	2,800
(f) Net Investment [c + d - e]	18,560	33,680
(g) ROI [b / f x 100]	28.50%	11.70%
(h) Performance above 12% [g - 12%]	16.50%	NIL
(i) Excess performance in whole % points	16%	NIL
(j) Bonus % of Annual Salary [i x 3%]	48%	NIL

Justification :

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 non-current assets, current assets and the current liabilities have been taken into consideration as they are such items over which managers have complete control.

(ii) Calculation of Bonus :

Division 'Y' Manager HAI

Eligible Bonus (as per working above) = ₹ 7,20,000 × 48% = ₹ 3,45,600

However, Maximum Bonus = ₹ 7,20,000 × 20% = ₹ 1,44,000

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

Division 'D' Manager FAI

Performance below target, hence 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 (21% x ₹ 7,20,000 = ₹ 1,51,200; subject to maximum of ₹ 1,44,000) rather than nothing. FAI is being penalized for making decisions which are in the best interest of his division. It is very surprising that he decided to invest, whereas 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'. Higher trade payable leads to reduction in net assets figures and consequently higher ROI. 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. Not 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.

Question 6 : [Practical Question]

Transfer Pricing

Great Vision manufactures a wide range of optical products including lenses and surveillance cameras. Division 'A' manufactures the lenses while Division 'B' manufactures surveillance cameras. The lenses that Division 'A' manufactures is of standard quality that has a number of applications. Due to huge demand in the market for its products, Division 'A' is operating at full capacity. It sells its lenses in the open market for ₹ 140 per lens, the variable cost of production for each lens is ₹ 110, while the total cost of production is ₹ 125 per lens.

The total production cost of a camera by Division 'B' is ₹ 400 each. Currently Division 'B' procures lens from foreign vendors, the cost per lens would be ₹ 170 each. The management of Great vision has proposed that to take advantage of in-house production capabilities and consequently the procurement cost of the lens would reduce. It is proposed that Division 'B' should buy an average of 5,000 lenses each month from Division 'A' at ₹ 120 per lens. The estimated cost of a surveillance camera is as below :

Other components purchased from external vendors	₹ 150
Cost of lens purchased from Division 'A'	₹ 120
Other variable costs	₹ 30
Fixed overheads	₹ 50
Total cost of a camera	₹ 350

Each surveillance camera is sold for ₹ 410. The margin for each camera is low since competition in the market is high. Any increase in the price of a camera would reduce the market share. Therefore, Division 'B' cannot pay Division 'A' beyond ₹ 120 per lens procured.

Great vision's management uses Return on investments (ROI) as a scale to measure the divisional performance and marginal costing approach for decision making.

Required :

(i) ANALYZE the behavioral consequences of each division when Division 'A' supplies lenses to Division 'B' at ₹ 120 per lens? Substantiate your answer based on the information given in the problem.

(ii) ANALYZE if it would be beneficial to the company as a whole for Division 'A' to supply the lenses to Division 'B' at ₹ 120 per lens.

(iii) Do you feel that the divisional managers should accept the inter-divisional transfers in principle? If yes, CALCULATE the range of transfer price?

(iv) ADVISE alternate transfer pricing models that the chief executive of the company can consider in order to change the attitude of the divisional heads if they are against the transfer pricing policy.

(v) CALCULATE the range of transfer price, if Division 'A' has excess capacity and can accommodate the internal requirement of 5,000 lens per month within the current operations.

Answer 6 :

(i) Analysis of Behavioral Consequences :

Division 'A' has huge demand for its lenses enabling it to operate at full capacity. External sales yield a contribution of ₹ 30 per lens sold (selling price of ₹ 140 less variable cost of ₹ 110 per lens). Likewise, each sale yields a profit ₹ 15 per lens (selling price of ₹ 140 less total cost of production ₹ 125 per lens). This yields an ROI of 12% (profit of ₹ 15 per lens over a cost investment of ₹ 125 per lens).

If Division 'A' sells lens to Division 'B' at ₹ 120 per lens, it contribution reduces to ₹ 10 per lens (transfer price ₹ 120 less variable cost ₹ 110), while overall it shows a loss of ₹ 5 per lens (transfer price ₹ 120 less total cost of production is ₹ 125 per lens). The loss of ₹ 5 per lens is on account of (i) only partial recovery of fixed cost of production and (ii) opportunity cost in the form of loss of profit from external sales. This would therefore result in lower divisional profit for Division 'A'.

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

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

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

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

As explained above, each external sale yields a contribution of ₹ 30 to Division 'A'. The lost contribution each month from diversion of external sales of Division 'A' towards internal transfer to Division 'B' = 5,000 units × ₹ 30 per lens = ₹ 1,50,000 per month. This is an opportunity cost to the company.

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

Therefore, the net benefit to the company on overall basis is

= ₹ 3,00,000 - ₹ 1,50,000 = ₹ 150,000 per month.

(iii) Range of Transfer Price :

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

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

(a) Minimum transfer price = Marginal cost p.u. + Opportunity cost p.u.

= ₹ 110 + ₹ 30 per lens = ₹ 140 per lens.

In other words, the minimum transfer price would be the external sale price of each lens.

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

Net marginal revenue per camera

= Marginal revenue – Marginal cost (i.e. variable cost excluding the cost of the lens)

= ₹ 410 - ₹ (150 + 30) = ₹ 410 - ₹ 180 = ₹ 230 per camera.

The current external procurement price is ₹ 170 per lens.

Lower of the above two is ₹ 170 per lens, which is maximum affordable price for the buying division 'B'.

Therefore, the acceptable range for transfer price would be from a minimum of ₹ 140 per lens up to maximum of ₹ 170 per lens. The managers may be given autonomy to negotiate a mutually acceptable transfer price between this range.

(iv) Advise on Alternative to Current Transfer Pricing System :

Other alternative transfer pricing models that can be considered are:

Dual Pricing

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

Drawbacks of dual pricing include:

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

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

Two Part Pricing System

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

The proposed transfer price of ₹ 120, is a two-part price that enables Division 'A' to recover the marginal cost of production of a lens as well as portion of the fixed cost. However, as

explained in part (i) above, this price is insufficient to provide a reasonable return to Division 'A'. Therefore, the management of Great vision along with the divisional managers have to negotiate a price that is reasonable to Division 'A' while not exceeding the current procurement price of ₹ 170 per lens for Division 'B'. As explained in part (iii) of the solution, in the given case, the range of ₹ 140 to ₹ 170 per lens, would help resolve this conflict.

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

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

(a) Minimum transfer price (determined by Division 'A') = marginal cost per lens = ₹ 110 per lens. Here, the opportunity cost to division 'A' is NIL. This ensures that the Division 'A' is able to recoup at least its additional outlay of ₹ 110 per lens incurred on account of the transfer. Fixed cost is a sunk cost hence ignored. Since capacity can be utilized further, it would be optimum for Division 'A' to charge only the marginal cost for internal transfer. Division 'B' gets the advantage of getting the goods at a lower cost than market price.

(b) Maximum transfer price (determined by Division 'B') = Lower of net marginal revenue and the external purchase price. As explained in part (iii) above, this would be lower of net marginal revenue of ₹ 230 per camera or external purchase price of ₹ 170 per lens. Therefore, the maximum transfer price would be ₹ 170.

Hence, when Division 'A' has excess capacity, the minimum transfer price would be ₹ 110 per lens while the maximum transfer price would be ₹ 170 per lens.

Question 7 : [Practical Question]

Environmental Management Accounting

A fertilizer company produces Grade A and Grade B fertilizers. One kilogram of Grade A fertilizer sells for ₹ 280 per kilogram and one kilogram of Grade B fertilizer sells for ₹ 400 per kilogram.

The products pass through three cost centers CC1, CC2 and CC3 during the manufacturing process. Total direct material cost per kilogram of fertilizer produced is ₹ 300 and direct labor cost per kilogram of fertilizer produced is ₹ 200. Allocation between the cost centres is given below:

Particulars	CC1	CC2	CC3	Total
Cost of Direct Material (per kg of fertilizer produced)	₹ 90	₹ 120	₹ 90	₹ 300
Cost of Direct Labour (per kg of fertilizer produced)	₹ 60	₹ 80	₹ 60	₹ 200
Cost Allocation to Grade A	30%	50%	30%	
Cost Allocation to Grade B	70%	50%	70%	

All of expenses (considered to be overheads) per kilogram of fertilizer produced is ₹ 150. This is allocated equally between Grade A and Grade B fertilizer. Pricing decisions for the fertilizers is made based on the above cost allocation.

The management accountant of the company has recently come across the concept of environmental management accounting. Pricing of products should also factor in the environmental cost generated by each product. An analysis of the overhead expenses revealed that the total cost of ₹ 150 per kilogram of fertilizer produced, includes incinerator costs of ₹ 90 per kilogram of fertilizer produced. The incinerator is used to dispose the solid waste produced during the manufacturing process. Below is the cost center and product wise information of solid waste produced:

Waste produced (in tonnes per annum)	CC1	CC2	CC3	Total
Grade A	2	3	1	6
Grade B	2	2	5	9

Based on the impact that each product has on the environment, the management would like to revise the cost allocation to products, taking into account the incinerator cost for waste that each product generates. The remaining overhead expenses of ₹ 60 per kilogram of fertilizer produced can be allocated equally.

Required :

(i) CALCULATE product wise profitability based on the original cost allocation. RECALCULATE the product wise profitability based on activity based costing methodology (environmental management accounting). [12 Marks]

(ii) ANALYZE difference in product profitability as per both the methods. [4 Marks]

(iii) RECOMMEND key takeaways for the company to undertake the above analysis of overhead costs and pricing as per environmental management accounting. [4 Marks]

Answer 7 :

Student Note : On the first reading of question, we find that the Direct Material and Direct Labour cost per kg of fertilizer produced is ₹ 300 + ₹ 200 = ₹ 500 per kg. However, selling price is ₹ 280 and ₹ 400 per kg.; which is lower than the direct cost itself. It will lead to losses and the question will lose its significance. I think there is a mistake in framing the question or the wordings of the question.

However, ICAI has interpreted it as the total cost of producing Grade A plus Grade B fertilizer and hence it is to be apportioned between these two products in the proportion given in the question.

For example, Direct Material as well as Direct Labour Cost of CC1 will be apportioned between A & B in the ratio 30:70. Similarly, cost of CC2 will be apportioned in the ratio 50:30 and so on. Overheads is to be apportioned equally.

It technically means that the cost given in the question was not per kg. of output, but it was given for 1 kg. of A + 1 kg. of B = For 2 kg. of output together.

Based on the above interpretation, the following answer is developed.

(i) Product Wise Profitability as per Original Allocation Methodology

(Figures in ₹ per kilogram of fertilizer produced)

Particulars	Grade A	Grade B	Total
(a) Direct Material Cost of CC1 apportioned in the ratio of 30 : 70	27	63	90
(b) Direct Material Cost of CC2 apportioned in the ratio of 50 : 50	60	60	120
(c) Direct Material Cost of CC3 apportioned in the ratio of 30 : 70	27	63	90
(d) Total Material Cost [a + b + c]	114	186	300

(e) Direct Labour Cost of CC1 apportioned in the ratio of 30 : 70	18	42	60
(f) Direct Labour Cost of CC2 apportioned in the ratio of 50 : 50	40	40	80
(g) Direct Labour Cost of CC3 apportioned in the ratio of 30 : 70	18	42	60
(h) Total Labour Cost [e + f + g]	76	124	200
(i) Overheads (allocated equally)	75	75	150
(j) Total Cost of output [d + h + i]	265	385	650
(k) Selling price (given)	280	400	680
(l) Profit [k - j]	15	15	30
(m) Profitability % to sales [l / k x 100]	5.36%	3.75%	---

Revised Profitability as per Activity Based Costing Methodology :

It requires the following steps: (as per ICAI answer)

(i) Overhead expenses of ₹ 150 per kilogram of fertilizer produced be first bifurcated into incinerator costs and other overhead costs.

(ii) Incinerator costs of ₹ 90 per kilogram of fertilizer needs to be allocated on the basis of waste generated at each cost centre for each Grade. For example - Incinerator costs of ₹ 90 per kilogram will be divided by total waste generated i.e. 15 tons, to get a rate of ₹ 6 per ton. We can use this rate to charge the cost to each product.

(iii) As mentioned in the problem, other overhead costs are allocated to each product at each cost centre level equally. It means, remaining ₹ 60 per kilogram will be divided between each Grade equally.

Accordingly, the Revised Product Profitability would be as follows :

(Figures in ₹ per kilogram of fertilizer produced)

Particulars	Grade A	Grade B	Total
(a) Direct Material (as above)	114	186	300
(b) Direct Labour (as above)	76	124	200
(c) Incinerator costs @ ₹ 6 per ton	36 (6 x 6 tons)	54 (6 x 9 tons)	90
(d) Other Overheads (equally)	30	30	60
(e) Total Cost of output [a + b + c + d]	256	394	650
(f) Selling Price	280	400	680
(g) Profit [f - e]	24	6	30
(h) Profitability % to sales [g / f x 100]	8.57%	1.50%	---

Student Note : The above answer is ICAI answer and according to me, the allocation of overheads is wrong. Waste produced is given in tons per annum and overheads cost is given as cost per kg. of fertilizer produced. In the above calculation, waste per annum is used to allocate cost per kg., which is technically incorrect. Similarly, the overheads cost is assumed to be for all the three cost centers together.

According to me, Overheads cost should have been given on per annum basis, then it would be appropriate to apportion the cost to each Cost Centre on the basis of waste produced per annum. Thereafter, the total overheads so apportioned to each cost centre should be divided by total output quantity (in kgs.) of each cost centre, to get the cost per kg. of output.

Summarizing Product Profitability as per both methods:

Product	(Profit in ₹ per kg of fertilizer produced)		Profit % to sales	
	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 each. 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's incinerator costs, that would yield better profits for the company.

Question 8 : [Practical Question]

Just in Time

A manufacturer is considering implementing Just in time inventory system for some of its raw material purchases. As per the current inventory policy, raw materials required for 1 month's production and finished goods equivalent to the level of 1 week's production are kept in stock. This is done to ensure that the company can cater to sudden spurt in consumers' demand. However, the carrying cost of inventory has been increasing recently. Hence, the consideration to move to a more robust just in time purchasing system that can reduce the inventory carrying cost. Details relevant to raw material inventory are given below:

- Average inventory of raw material held by the company throughout the year is ₹ 1 crore. Procurement of raw material for the year is ₹ 12 crore. By moving to just in time procurement system, the company aims at eliminating holding this stock completely in its warehouse. Instead, suppliers of these materials are ready to provide the goods as per its production requirements on an immediate basis. Suppliers will now be responsible for quality check of raw material such that the raw material can be used in the assembly line as soon as it is delivered at the company's factory shop floor.
- Increased quality check service done by the suppliers as well as to compensate them for the risk of holding the inventory to provide just in time service, the company is willing to pay a higher price to procure raw material. Therefore, procurement cost will increase by 30%, total procurement cost will be ₹ 15.6 crore per year. Consequently, quality check and material handling cost for the company would reduce by ₹ 1 crore per year. Similarly, insurance cost on raw material inventory of ₹ 20 lakh per year need not be incurred any longer.
- Raw material is stored in a warehouse that costs the company rent of ₹ 3 crore per annum. On changing to Just in time procurement, this warehouse space would no longer be required.
- Production is 150,000 units per year. The company plans to maintain its finished goods inventory equivalent to 1 week's production. Despite this, in order to have a complete cost benefit analysis, the management is also factoring the possibility of production stoppages due to unavailability of raw material from the suppliers. This could happen due to of delay in delivery or non-conformance of goods to the standard required. Labor works in one 8 hour shift per day and will remain idle if there is no material to work on. Due to stoppage of production for the above reason, it is possible to have stockout of 3,000 units in a year. Stockout represents lost sales opportunity due to unavailability of finished goods, the customer walks away without purchasing any product from the company. Therefore, in order to reduce this opportunity cost and to make up for the lost production hours, labor can work overtime that would cost the company ₹ 10 lakh per annum. This is the maximum capacity in terms of hours that the labor can work. With this overtime, stockout can reduce to 2,000 units.
- Currently, sale price is ₹ 5,000 per unit, variable production cost is ₹ 2,000 per unit while variable selling, general and administration (SG&A) cost is ₹ 750 per unit. Raw material procurement cost is currently ₹ 800 per unit, that will increase by 30% to ₹ 1,040 per unit under Just in time inventory system.
- On an average, the long-term return on investment for the company is 15% per annum.

Required

(i) CALCULATE the benefit or loss if the company decides to move from current system to Just in Time procurement system.

(ii) RECOMMEND factors that the management needs to consider before implementing the just in time procurement system.

Answer 8 :

The following is ICAI Answer

(i) Calculation of Incremental Profit / Loss due to switching over to JIT System :

Particulars	Current Purchasing Policy (₹)	JIT Procurement System (₹)
Raw material procurement cost per year	12,00,00,000	15,60,00,000
Quality check and material handling cost (No longer required in JIT)	1,00,00,000	---
Insurance Cost on raw material inventory (No longer required in JIT)	20,00,000	---
Warehouse rental for storing raw material (No longer required in JIT)	3,00,00,000	---
Overtime Charges under JIT to reduce Stockouts (WN 1)	---	10,00,000
Stockout Cost (WN 2)	---	40,20,000
Total Relevant Cost	16,20,00,000	16,10,20,000

Therefore, moving to just in time procurement system results in savings of ₹ 980,000 per year for the company. If reinvested, long term return on investment for the company at 15% would yield a return of ₹ 147,000 per year. Therefore, total benefit for the company would be ₹ 11,27,000 per year.

Working Notes :

Note 1: Should overtime cost be incurred to reduce Stockouts?

Contribution per unit = Sale price - Variable production cost - Variable SG&A OH

Revised Variable production cost under the just in time system

= ₹ 2,000 + ₹ (1,040 - 800) = ₹ 2,240 per unit

Contribution per unit = ₹ 5,000 - ₹ 2,240 - ₹ 750 per unit = ₹ 2,010 per unit.

Overtime cost can reduce stockouts from 3,000 units to 2,000 units that is customers' demand of 1,000 units more can be met.

Contribution earned from selling these 1,000 units = 1,000 × ₹ 2,010 per unit = ₹ 20,10,000.

Therefore, the contribution earned of ₹ 20,10,000 is more than the related overtime cost of ₹ 10,00,000. Therefore, it is profitable to incur the overtime cost.

Note 2: Stockout Cost :

Out of the total shortfall of 3,000 units, by spending on overtime 1,000 units of demand can be met. Therefore, actual stockout units is only 2,000 units. As explained above, contribution per unit is ₹ 2,010 per unit. Hence, stockout cost = 2,000 units × ₹ 2,010 per unit = ₹ 40,20,000.

(ii) The company plans to eliminate its raw material inventory altogether. Raw material will be delivered as per production schedule directly at the factory shop floor, from where production will begin. The management should therefore carefully consider the following points:

(a) The entire production process has to be detailed and integrated sequentially. This is essential to know because it should be known in advance when in the sub-assembly process each raw material is required and in what quantity.

(b) Since production is dependent on delivery and quality of raw material, heavy reliance is being placed on suppliers. They should be able to guarantee timely delivery of raw material of the appropriate quality. The company is paying a premium of 30% of original cost, that is ₹ 240 per unit extra in order to ensure the same. Each unit gives a contribution of ₹ 2,010 per unit, which is 40.2% of the sale price per unit. Lost sales opportunities due to unavailability of raw material or non-conformance of the material can result in substantial losses to the company. While, portion of this has been factored while doing the cost benefit analysis of implementing Just-in-time systems, it needs careful consideration and monitoring even after implementation. Therefore, to hedge its loss, the management and suppliers should agree on penalties for the suppliers for any delay or nonconformance in quality of materials beyond certain thresholds.

(c) Accurate prediction of sales trends is important to determine the production schedule and finished goods planning.

(d) Continuous monitoring of the system even after implementation is essential to ensure smooth operations. Management commitment and leadership support is essential for its successful implementation and working.

The following is Author's view & answer

(i) Evaluation of JIT Proposal :

Particulars	**₹ lakhs**
(a) Increase in procurement cost of raw material [12 crore x 30%]	(360)
(b) Savings in quality check and material handling cost [Given]	100
(c) Savings in insurance cost on raw material inventory [Given]	20
(d) Savings in warehouse rent [Given]	300
(e) Overtime wages of workers for reducing stockout by 1,000 units	(10)
(f) Stockout cost of 2,000 units [See working below] i.e. Opp. cost	(40.2)
(g) Savings in inventory carrying cost [1 crore x 15% ROI]	15
∴ Effective net savings	24.80

Conclusion : Net benefit to the company is ₹ 24,80,000 by moving from current system to JIT procurement system. Hence, it should be implemented.

Working of Opportunity Cost due to Stockout :

Particulars	₹
Selling Price per unit	5,000
Less : Variable cost of production	(2,000)
Less : Variable selling, general and administration cost	(750)
Less : Increase in the cost of raw material (800 x 30%)	(240)
∴ Contribution per unit (revised under JIT)	2,010
(x) No. of units of stockout	2,000
∴ Total contribution lost due to stockout i.e. Opp. Cost	40,20,000

Note : Variable cost of production already includes the existing cost of raw material i.e. ₹ 800 p.u. Hence, we need to consider only additional material cost now.

(ii) Factors to be considered before implementing the JIT system :

- The entire production planning has to done in advance to know the exact requirement of raw material i.e. quantity of raw material needed and the time at which it is needed.
- A system need to be developed to communicate the above information to the respective suppliers, without fail.
- As our production is fully dependent on the timely supply of raw material by the suppliers, we should exercise due care while selecting the suppliers. Our team should inspect the quality of management (TQM) of supplier to ensure right quality of raw material in time.
- We should incorporate the penalty clauses in the agreement with suppliers for late delivery and consequential losses.
- Continuous monitoring of the system even after implementation is essential to ensure smooth operations.
- Management commitment and leadership support is also essential for its successful implementation of JIT system.

Student Note : You may choose any one of the above, which you like the most.

Question 9 : [Practical Question]

Relevant Cost Concept

Golden Pacific Airlines Ltd. operates its services under the brand 'Golden Pacific'. The 'Golden Pacific' route network spans prominent business metropolis as well as key leisure destinations across the Indian subcontinent. 'Golden Pacific', a low-fare carrier launched with the objective of commoditizing air travel, offers airline seats at marginal premium to train fares across India.

Profits of the 'Golden Pacific' have been decreasing for several years. In an effort to improve the company's performance, consideration is being given to dropping several flights that appear to be unprofitable.

Income statement for one such flight from 'New Delhi' to 'Leh' (GP - 022) is given below :

(figures per flight)

Particulars	₹	₹
Ticket Revenue (175 seats x 60% Occupancy x ₹ 7,000 ticket price)		7,35,000
Less: Variable Expenses (₹ 1,400 per person)		1,47,000
Contribution Margin		5,88,000
Less: Flight Expenses :		
Salaries of Flight Crew	1,70,000	
Salaries of Flight Assistants	31,500	
Baggage Loading and Flight Preparation	63,000	
Overnight Costs for Flight Crew and Assistants at destination	12,600	
Fuel for Aircraft	2,38,000	
Depreciation of Aircraft	49,000*	
Liability Insurance	1,47,000	
Flight Promotion	28,000	
Hanger Parking Fee for Aircraft at destination	7,000	7,46,100
Net Gain / (Loss)		(1,58,100)

* Based on obsolescence

The following additional information is available about flight GP-022.

1. Members of the flight crew are paid fixed annual salaries, whereas the flight assistants are paid by the flight.
2. The baggage loading and flight preparation expense is an allocation of ground crew's salaries and depreciation of ground equipment.
3. One third of the liability insurance is a special charge assessed against flight GP022 because in the opinion of insurance company, the destination of the flight is in a "high-risk" area.
4. The hanger parking fee is a standard fee charged for aircraft at all airports.
5. If flight GP-022 is dropped, 'Golden Pacific' Airlines has no authorization at present to replace it with another flight.

Required :

Using the data available, prepare an ANALYSIS showing what impact dropping flight GP022 would have on the airline's profit. [10 Marks]

Answer 9 :

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 Relevant costs of operation

Revenue earned is the ticket revenue earned from flight operations of GP-022, this is entirely variable. Relevant 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.

Statement Showing Net Gain/(Loss) using Relevant Cost Approach :

Particulars	**₹**	**₹**
Contribution Margin if the flight is continued		5,88,000
Less: Relevant Flight Costs		
Salaries of Flight Assistants	31,500	
Overnight Costs for Flight Crew and Assistants	12,600	
Fuel for Aircraft	2,38,000	
Liability Insurance (1/3 × ₹ 1,47,000)	49,000	
Flight Promotion	28,000	3,59,100
Net Gain/ (Loss)		2,28,900

Comments : 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.

Student Note : Depreciation is based on obsolescence (i.e. getting outdated). It seems that ICAI assumption is whether one uses the aircraft or not, it will still get outdated and hence it is an irrelevant cost. If the depreciation is based on actual usage, then it may be a relevant cost.

Question 10 : [Practical Question]

Customer Profitability Analysis

ANCA Limited has decided to analyse the profitability of its four retail customers. It buys product 'Bio-aqua' at ₹ 218 per case and sells to them at list price less discount. The data pertaining to four customers are :

Particulars	Customers			
	A	B	C	D
No. of cases sold	7,580	38,350	78,520	15,560
List selling price	₹ 250	₹ 250	₹ 250	₹ 250
Actual selling price	₹ 245	₹ 236	₹ 228	₹ 232
No. of sale visits	6	12	16	10
No. of purchase orders	12	18	35	24
No. of delivery Kilometres	280	350	450	400

It's four activities and cost drivers are:

Activity	Cost Driver Rate
Sale visits	₹ 750 per sale visit
Order taking	₹ 800 per purchase order
Deliveries	₹ 10.50 per delivery km travelled
Product handling cost	₹ 2.50 per case sold

Required :

(i) COMPUTE the customer level operating income.

(ii) ANALYZE the profitability for each customer.

Answer 10 :

(i) Customer's Profitability Statement :

Particulars	A	B	C	D
(a) No. of cases sold	7,580	38,350	78,520	15,560
	(₹)	(₹)	(₹)	(₹)
(b) List Price per case	250	250	250	250
(c) Actual selling price	245	236	228	232
(d) Discount [b - c]	5	14	22	18
(e) Discount % [d/b x 100]	2%	5.6%	8.8%	7.2%
(f) Purchase cost	218	218	218	218

(g) Contribution per unit [c - f]	27	18	10	14
(h) Total Contribution [a x g]	2,04,660	6,90,300	7,85,200	2,17,840
(i) Visit Cost @ ₹ 750 per sale visit	4,500	9,000	12,000	7,500
(j) Order taking @ ₹ 800 per order	9,600	14,400	28,000	19,200
(k) Delivery Cost @ ₹ 10.50 per delivery km travelled	2,940	3,675	4,725	4,200
(l) Product Handling Cost @ ₹ 2.50 per case sold	18,950	95,875	1,96,300	38,900
(m) Total Profit per customer [h - i - j - k - l]	1,68,670	5,67,350	5,44,175	1,48,040
(n) Profit per case sold [m / a]	22.25	14.79	6.93	9.51
(o) % Profit per customer out of total profit earned by the company	11.81%	39.72%	38.10%	10.37%

(ii) Going by volume of cases sold, customer C is the biggest customer accounting for 56% of total sales volume, followed by customer B (27%), customer D (11%) and customer A (6%). However, in terms of profit per customer, Customer B is the most profitable accounting for 39.72% of the profits of ₹ 14,28,235. Customer C contributes to 38.10% of the same. Comparing customers B and C, customer B is more profitable despite accounting for sales volume that is less than half of customer B (customer C's 56% of sale volume versus customer B's 27%). The primary reason for this is because the discount given to customer C (8.8%) is higher than that given to customer B (5.6%). The difference is terms of sale could be due to the fact that customer C is the biggest customer and hence is able to negotiate for a higher discount. Consequently, for each case sold, customer C gets an additional discount of ₹ 8 as compared to customer B. This is reflected in the contribution generated per case. Sale of one case to customer C generates ₹ 10 contribution versus sale of one case to customer B generates ₹ 18 contribution. This has a huge impact on profitability. In terms of profit generated per case sold, customer C has the lowest profit at ₹ 6.93 per case. The company may review whether this difference in terms of sale to each of its customers is justified. If the discount to customer C at 8.8% was initially extended to promote sales, negotiations can be made to reduce this to mutually acceptable rates. However, care must be taken not to lose customer C to competitors.

Customer D is the least profitable accounting for just 10.37% of the total customer profits. In terms of sale volume, this customer ranks third providing 11% volume. However, the customer is not profitable because of the following reasons:

(a) A discount rate of 7.2% is provided to the customer. Each case sold after a discount of ₹ 18 per case, generates a contribution per case of only ₹ 14 per case. This is much lower compared to the contribution per case of customer A (₹ 27 per case) and customer B (₹ 18 per case). This discount policy may need to be reviewed. One scenario where such a high discount may be justified would be where customer D supplies the products that it manufactures at a discounted rate to a sister concern of the company. Therefore, at a parent company / overall level, the higher discount rate for a low volume customer D may be justified.

(b) For a customer that provides 11% of volume, the number of site visits during the year were 10. Customer C giving 56% of volume had only 16 visits and customer B giving 27% of volume had only 12 visits. This indicates that customer D, although a smaller customer, requires more visits than regular customers. Therefore, site visit costs are higher for this customer. The reason for a higher handholding by the company for this customer has to be analyzed. For example, one possible reason could be that

customer D requires the cases customized to its production requirement. This may require more site visits by the company's personnel. To resolve this, due to the extra work involved, the company may wish to charge a higher sale price for the cases customized for customer D. In another scenario, it may choose to charge the customer a fixed rate for each site visit.

(c) For a customer that provides 11% of volume, the number of orders placed in a year are 24. Customer C giving 56% of volume placed 35 orders in a year and customer B giving 27% of volume placed 18 orders in a year. This indicates that customer D, although a small customer, places orders more frequently than other larger customers. Therefore, order processing costs are higher for customer D. The company may revise ordering schedule for this customer or find out the reason for higher proportion of purchase orders, in order to pass on some of the cost to the customer. For example, let us say, customer D has an agreement with the company to provide cases "just in time" resulting in more frequent orders as compared to other customers. Therefore, the company is providing flexibility in procurement to customer D. For this convenience, it may pass on some of the ordering cost to customer D by way of a higher selling price or a lower discount.

(d) Again, given the volume, the number of deliveries to customer D (400) is at a higher proportion compared to the larger customers C (450) and B (350). The company may revise delivery schedule for this customer or find out the reason for higher proportion of deliveries, in order to pass on some of the cost to the customer. For example, let us say, customer D has an agreement with the company to provide cases "just in time" resulting in more frequent deliveries as compared to other customers. Therefore, the company is providing flexibility in procurement to customer D. For this convenience, it may pass on some of the delivery cost to customer D by way of a higher selling price or a lower discount.

Customer A is the smallest customer providing only 6% of total sale volume. However, with a contribution per case at ₹ 27 per case and a profit per case at ₹ 22.25 per case, it is the most profitable of all customers. The primary reason for this is the discount of 2% offered is much lower than other customers. Each case sold to customer A yields a contribution of ₹ 27 as compared to a contribution of ₹ 10 from customer C, the biggest customer. Possible reason for a lower discount maybe customer A, being a smaller player, may have lesser bargaining power compared to other customers. If the company wishes to have a longer business relationship with customer A, it may wish to provide more favorable discount terms to this party. However, since customers B and C are much larger customers, any benefit passed onto customer A should not impact the company adversely in the long run. For example, in order get more orders from customer A, the company gives a 10% discount to the party. Consequently, the profitability of customer A will decrease. Let us say customer A places huge orders due to which there are capacity constraints within the company. Sales to customers B and C, the current larger customers, may be impacted. This could affect the company adversely in terms of lost sales to customers B and C and loss of business relationships with these parties. Therefore, careful consideration should be given before extending discounts to improve sales from customer A.

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2 November 2018 Exam Paper

*Question No. **1** is compulsory*

*Answer any **four** questions from the remaining **five** questions*

Question 1 :

JK Ltd., is following Life Cycle Costing. its four products P4, P3, P2 and P1 are in the market respectively in Introduction, Growth, Maturity and Decline stages (phases). The Management wants to analyse the marketing challenges faced by the products to take strategical measures to stabilise the products in the market. For this purpose the Board directed the Secretary to get a product-wise report from the marketing chief of each product. The chiefs were asked to give one characteristic possessed by the product because of which the product is being classified in the respective stage and two strategical measures to be taken to overcome the market challenges faced at that stage (phase). The Secretary received the report from all the chiefs and handed them over to the computer operator to get it printed in a tabulated form. But the operator, without understanding the significance of the products, phases, characteristics and strategies, mixed all the twelve items [(1 + 2) x 4] and got it printed as a list as given below :

(i) Over capacity in the industry.

(ii) The company can continue to offer the product to our loyal customers at a reduced price.

(iii) Few competitors produce basic version of our product.

(iv) Product features may be improved or enhanced to differentiate our product from that of the competitors.

(v) Attracting customers by raising awareness about our product through promotion activities.

(vi) High volume of business and increase in competition.

(vii) Use the present product as replacement product for launching another new product successfully in the market.

(viii) Value based pricing strategies may be considered.

(ix) Profits start declining and at times become negative.

(x) Maintain control over product quality to assure customer satisfaction.

(xi) Strengthening or expanding channel and supply chain relationships.

(xii) Prices may have to be reduced to attract the price sensitive customers.

The items are required to be tabulated as in the format given below:

Required :

(i) Complete the table given below by entering the twelve items under appropriate category columns. You need not rewrite the items. Write the serial numbers of the items only in columns (3) and (4). [4 + 8 = 12 Marks]

Products (1)	Phases / Stages (2)	Characteristics (3)	Strategies (4)
P4	Introduction		
P3	Growth		
P2	Maturity		
P1	Decline		

(ii) List down the importance (any four) of the Product Life Cycle Costing. [4 Marks]

(iii) State the benefits (any four) of Product Life Cycle Costing. [4 Marks]

Solution 1 :

Comments : This question is from Chapter 4 i.e. Cost Management Techniques. The topic is Product Life Cycle Costing. Considering 20 marks, it was very simple question and would hardly take 10 minutes to solve. It was a bonus question and you will find almost the entire answer in our classroom notes.

(i) Table showing Characteristics and Strategies for the four products :

Products (1)	Phases / Stages (2)	Characteristics (3)	Strategies (4)
P4	Introduction	(iii)	(v), (xi)
P3	Growth	(vi)	(x), (viii)
P2	Maturity	(i)	(iv), (xii)
P1	Decline	(ix)	(ii), (vii)

(ii) Importance of the Product Life Cycle Costing :

- As a planning tool, it characterizes the marketing challenges in each stage and posses major alternative strategies, i.e. application of Kaizen.
- As a control tool, the PLC concept allows the company to measure product performance against similar products launched in the past.
- As a forecasting tool, it is very important because sales histories exhibit diverse patterns and the stages vary in duration.
- It leads to appropriate strategy formulation depending on the stages of the product life cycle.

(iii) Benefits of Product Life Cycle Costing :

- The product life cycle costing results in earlier actions to generate revenue or to lower costs than otherwise might be considered. There are a number of factors that need to the managed in order to maximise return on a product. This helps in proper planning.
- Better decisions should follow from a more accurate and realistic assessment of revenues and costs, at least within a particular life cycle stage.
- Product life cycle thinking can promote long- term rewarding in contrast to short-term profitability rewarding.
- It provides an overall framework for considering total incremental costs over the entire life span of a product, which in turn facilitates analysis of individual phases, where cost effectiveness might be achieved.

Question 2 :

Zen Ltd., forms a Committee consisting of its Production, Marketing and Finance Directors to prepare a budget for the next year. The Committee submits a draft budget as detailed below :

Particulars	**₹**	**₹**
Selling price per unit		50
Direct material cost per unit	9	
Direct labour cost per unit	9	
Variable overheads (3 hrs. @ ₹ 2)	6	24
Contribution per unit		26
Budgeted sales quantity		25,000 units
Budgeted contribution (25,000 x 26)		6,50,000
Budgeted Fixed Cost		5,00,000
Budgeted Profit		1,50,000

The management is not happy with the budgeted profit as it is almost equal to the previous year's profit. Therefore, it asks the Committee to prepare a budget to earn at least a profit of ₹3,00,000. To achieve the target profit, the Committee reports back with the following suggestions :

The unit selling price should be raised to ₹ 55.

The sales volume should be increased by 5,000 units.

The attain the above said increase in sales, the company should spend ₹ 40,000 for advertising.

The production time per unit should be reduced.

To win the acceptance of the workers in this regard the **hourly rate** should be increased by ₹ 3 besides an annual group bonus of ₹ 30,000.

There is no change in the amount and rates of other expenses. The company has sufficient production capacity.

As the implementation of the above proposal needs the acceptance of the work force to increase the speed of work and to reduce the production time per unit, the Board wants to know the extent of reduction in per unit production time.

Required :

(i) Calculate the target production time per unit and the time to be reduced per unit.

[14 Marks]

(ii) Identify the other problems that may arise in production due to decrease in unit production time and also suggest the remedial measures to be taken. [4 Marks]

(iii) State the most suitable situation for the adoption of Target Costing. [2 Marks]

Solution 2 :

Comments : This question is again from Chapter 4 i.e. Cost Management Techniques. The topic is Target Costing. Considering 20 marks, it was again a simple question.

Approach : We should first calculate Total Sales. Then deduct desired profit from such sales to get the total cost. Now deduct all other costs (other than labour related cost) from such total cost, to get the labour & variable OH cost as balancing figure. Divide such cost by a combined Labour + Variable OH rate per hour to get total hours and then divide total hours by number of units to get hours per unit.

(i) Calculation of Target Production Time :

Particulars	**₹**	**₹**
(a) Budgeted sales revenue [30,000 units x ₹ 55]		16,50,000
(b) Budgeted total profit [given]		3,00,000
(c) Budgeted total cost [a - b]		13,50,000
(d) All costs other than labour related cost :		
Direct material [30,000 units x ₹ 9]	2,70,000	
Budgeted fixed cost	5,00,000	
Extra expenses for advertising	40,000	
Annual group bonus to labour	30,000	8,40,000
(e) Balance cost for labour and variable OH [c - d]		5,10,000
(f) Revised labour + variable OH rate/hr. [*6 + 2]		8
(g) Total target hours needed for production [e/f]		63,750 hrs.
(h) Hours required per unit [63,750 / 30,000 units]		2.125 hrs.
(i) Target reduction in time per unit [3 - 2.125]		0.875 hrs.

***Note :** Labour cost per unit Rs. 9 is given in the question. If we divide this cost by 3 hours p.u. we get wage rate of Rs. 3 per hour. This rate will further increase by ₹ 3 per hour and will now become ₹ 6 per hour.

(ii) Identification of other problem areas and remedial measures :

Possible Problems :

The target costing method is applicable particularly for repetitive manufacturing. It should however be recognised that some products often bear a high degree of repetition and some may not. For achieving reduction in time per unit, we may have to improve product design or production process. Such improvements need considerable time and resources. Working under pressure to finish new design assignments or to re-engineer production processes in a short time may cause unnecessary pressure on existing resources. In such case, there is a risk of not achieving the targets given to the target costing team. In short, decrease in unit production time may lead to unwanted pressure on design and its implementation stage.

Remedial Measures :

As a remedial action, organisation should retain strong control over the design teams headed by a good team leader. This person must have an exceptional knowledge of the design process, good interpersonal skills and a commitment to staying within both time and cost budgets for a design project. If the time is too short even an organisation may reject a project for the time being. Later, it can be tried out with new cost reduction methods or less expensive materials to achieve target cost.

(iii) Most useful situation for adoption of Target Costing :

Target costing is most useful in situations where the majority of product costs are locked in during the product design phase. This is the valid case for most of the manufactured products but not for services. In the service industry, such as consulting, the bulk of the activities can be reconfigured for cost reduction during the 'execution phase', which is when services are being provided directly to the customer. In the services environment, the 'design team' is still present, but is more concerned with the streamlining of activities conducted by the employees and not concerned with designing of activities. Thus, in manufacturing industry, the scope for adoption of target costing is higher.

Question 3 :

Fast Cook Ltd., is a pressure cooker manufacturing company doing business through wholesalers and retailers. The company is following Activity Based Costing system. Average cost per cooker is ₹ 600 and the listed price is ₹ 1,000. But cookers are sold at a discount of 25% on listed price on orders for the above 200 units and at a discount of 20% on orders for 200 units or less.

The company wants to analyse the profitability of two of its wholesale customers A and B and two of its retail customers X and Y on the basis of the business with them during last year. This is to explore the opportunities to increase the profitability from the customers. The relevant data pertaining to the last year are given below :

Customer	A	B	X	Y
No. of purchase orders	50	65	230	270
No. of cookers purchased per order	500	300	40	30
No. of visits to customers place	10	15	25	22
No. of ordinary deliveries	45	50	175	200
No. of speed deliveries	5	15	50	65

The activity, cost driver and the rate are as follows :

Activity	Cost Driver	Cost per unit of Driver (₹)
Order processing	No. of purchase orders	1,300
Visiting customers	No. of customers visited	7,400
Ordinary delivery	No. of ordinary deliveries	2,000
Speed delivery	No. of speed deliveries	6,000

Required :

(i) Evaluate the customer profitability by calculating the profit per cooker from each customer. [12 Marks]

(ii) Recommend steps to be taken to improve profitability from less profitable customers. [4 Marks]

(iii) List down the service organisations for which customer profitability analysis is useful. [2 Marks]

(iv) Explain the specific benefits of customer profitability analysis. [2 Marks]

Solution 3 :

Comments : This question is from Chapter 10 i.e. Strategic Analysis of Operating Income. The topic is Customer Profitability Analysis using Activity Based Costing. Considering 20 marks, it was again a simple question. Such questions are covered in our classroom notes.

(i) Customer's Profitability Statement :

Particulars	A	B	X	Y
(a) No. of cookers purchased per order	500	300	40	30
(b) No. of purchase orders	50	65	230	270
(c) Total no. of cookers sold [a x b]	25,000	19,500	9,200	8,100
	(₹)	(₹)	(₹)	(₹)
(d) List Price per cooker	1,000	1,000	1,000	1,000
(e) Discount % on list price [given]	25%	25%	20%	20%
(f) Actual selling price [d - e]	750	750	800	800
(g) Average cost per cooker	600	600	600	600
(h) Contribution per unit [f - g]	150	150	200	200
(i) Total Contribution [c x h]	37,50,000	29,25,000	18,40,000	16,20,000
(j) Order processing @ ₹ 1300 per order	65,000	84,500	2,99,000	3,51,000
(k) Visiting customers @ ₹ 7,400 per customer visit	74,000	1,11,000	1,85,000	1,62,800
(l) Ordinary delivery @ ₹ 2,000 per ordinary delivery	90,000	1,00,000	3,50,000	4,00,000
(m) Speed delivery @ ₹ 6,000 per speed delivery	30,000	90,000	3,00,000	3,90,000

(n) Total Profit per customer [i - j - k - l - m]	34,91,000	25,39,500	7,06,000	3,16,200
(o) Profit per cooker sold [n / c]	139.64	130.23	76.74	39.04
(p) % Profit per customer out of total profit earned by the company	49.50%	36%	10.02%	4.48%

(ii) Steps to improve Customer's Profitability :

- It may be noticed from the above customer profitability analysis that the wholesale customers are more profitable than the retail customers. Specially, Customer 'Y' is least profitable customer. Hence, we need to think about improving the customer profitability.
- We can think of reducing the discount offered to the Retailers 'X' and 'Y'. Instead of a discount of 20% on list price, we should offer them 10% discount on list price or at the most 15% discount. This itself will help us to improve our profitability substantially.
- We can redesign our discount policy as : (a) Orders for 200 units or less but up to 101 units per order - discount 20%; (b) Orders for 100 units or less but up to 51 units per order - discount 15%; (c) Orders for 50 units or less - discount 10%.
- This will help us to improve the size of the order and therefore will reduce number of deliveries and the resultant costs i.e. order processing cost and delivery cost.
- We should set a maximum limit for number of free visits to customer place. Beyond this limit, we should charge them separately.
- Similarly, we should also set a maximum limit for free speed deliveries. Beyond this limit, we should charge them separately.

(iii) List of Service Organisations, for which customer profitability analysis is useful :

- Hotels
- Banks
- Vehicle service centers
- Hospitals
- Professionals or Consultants etc.

(iv) Benefits of Customer Profitability Analysis :

- It helps the supplier to identify which customers are eroding overall profitability and which customers are contributing to it.
- It can help to provide a basis for constructive dialogue between buyer and seller to improve margins.

Question 4(a) :

Cool Air Ltd., manufactures and sells 25,000 table fans annually. One of the components required for fans is purchased from an outside at a price of ₹ 190 per unit. Annually it is purchasing 25,000 components for its usage. The production Manager is of the opinion that if all the components are produced at own plant, it is possible to maintain better quality in the finished product. Further, he proposed that the in-house production of the component with other items will provide more flexibility to increase the annual production by another 5,000 units. He estimates the cost of making the component as follows :

Particulars	**₹ / unit**
Direct material	80
Direct labour	75
Factory overheads [70% variable]	40
Total Cost	195

The proposal of the Production Manager was referred to the Marketing Manager for his remarks. He pointed out that to market the additional units, the overall unit price should be reduced by 5% and additionally ₹ 1,00,000 p.m. should be incurred for advertising. Present selling price and contribution per fan are ₹ 2,500 and ₹ 600 respectively. No other increase or decrease in all other expenses as a result of this proposal will arise.

Since the making cost of the component is more than the buying cost, the Management asks you to :

(i) Analyse the make or buy decision on unit basis and total basis. [8 Marks]

(ii) Recommend the most profitable alternative. [2 Marks]

Solution 4(a) :

Comments : This question is from Chapter 6 i.e. Decision Making. The topic is Make or Buy Decision. The decision can be taken after comparing relevant cost of making with relevant cost of buying.

(i) Analysis of Make or Buy Decision on Unit Basis :

Particulars	**₹ / unit**	**₹ / unit**
(a) Relevant Cost of Making :		
Direct material	80	
Direct labour	75	
Variable factory overheads [70% x 40]	28	183
(b) Cost of buying from outside [given]		190
(c) Saving per unit if manufactured [b - a]		7

Decision : On per unit basis, making is cheaper than buying the component.

Analysis of Make or Buy Decision on Total Basis :

Particulars	₹
(a) Present contribution per fan (given)	600
(b) Reduction in overall sales price of fan [2,500 x 5%]	125
(c) Saving in variable cost of component [190 - 183]	7
(d) Revised contribution per unit [a - b + c]	482
(e) Revised total contribution [30,000 units x 482]	1,44,60,000
(f) Additional advertising cost [1,00,000 p.m. x 12 months]	12,00,000
(g) Present total contribution [25,000 units x 600]	1,50,00,000
(h) Incremental Profit / (Loss) [e - f - g]	(17,40,000)

Decision : On overall basis, buying of component is more profitable than manufacturing.

(ii) Recommendation :

If we consider only financial prudence, then we should continue the purchase of components from outside supplier. However, as the Production Manager claims that own manufacture will improve the quality and flexibility of production, we should also consider such non-financial aspects in decision making.

Increase in production from 25,000 units to 30,000 units will also help the company in increasing its market share. Else, if we restrict our production to 25,000 units only, without decreasing the selling price and without incurring additional advertisement cost, then it will help in improving the profitability of the company by ₹ 1,75,000 (i.e. ₹ 7 per unit x 25,000 units). In such case, the proposal will also become financially viable.

Question 4(b) :

The Board of Directors meeting of T.K. Motors Ltd., a car manufacturing company is to be scheduled to be held in another ten days. One of the items, as per agenda, to be discussed in the meeting is the present budgeting system of the company. Your organisation is at present, using budgets for control which are prepared mostly on traditional basis. The CEO of your company wants to propose to the Board to use Beyond Budgeting instead of traditional budgeting in the company on experimental basis.

Therefore, you, the Management Accountant has been asked by your CEO to explore the possibilities of introducing Beyond Budgeting (BB) system in the company. Specifically, you are required to prepare notes to your CEO to be used for his presentation at the meeting on :

(i) The major limitations of traditional budgets.

(ii) The advantages available in Beyond Budgeting.

(iii) The nature of Beyond Budgeting.

(iv) The benefits that can be enjoyed from Beyond Budgeting.

(v) The suitability of Beyond Budgeting to the company.

[10 Marks]

Solution 4(b) :

Comments : This question is from Chapter 11 i.e. Budgetary Control. The topic is Beyond Budgeting. It was purely a theory question, no calculations. You will find the entire answer in our classroom notes itself.

(i) Limitations of Traditional Budgeting :

- Time-consuming and costly to put together
- Constrain responsiveness and flexibility
- Often a barrier to change
- Rarely strategically focused and are often contradictory
- Add little value, especially given the time required to prepare
- Concentrate on cost reduction and not on value creation
- Developed and updated too infrequently, usually annually
- Are based on unsupported assumptions and guesswork
- Reinforce departmental barriers rather than encourage knowledge sharing
- Make people feel undervalued.

(ii) Advantages of Beyond Budgeting (BB) :

BB identifies its two main advantages.

- It is more 'adaptive process' than traditional budgeting.
- It is a 'decentralised process' unlike traditional budgeting where leaders plan and control organisations centrally.

(iii) Nature of Beyond Budgeting (BB) :

- Budgeting is *evolving*, rather than becoming obsolete, - it depends on trust and transparency.
- Shift from the top-down, centralised process to a more *participative*, bottom-up exercise in many firms.
- It highlights the level of *improvement* that can be achieved even with relatively simple modifications and a great deal of trust.
- Budgeting has changed, the change has been neither dramatic nor radical. Instead, *incremental improvements*, with traditional budgets being supplemented by new tools and techniques.
- *Forecasting* in fact is more important.

(iv) Benefits of Beyond Budgeting (BB) :

- Beyond budgeting helps managers to work in coordination to beat the competition. Internal rivalry between managers is reduced as target shifts to competitors.
- Helps in motivating individuals by defining clear responsibilities and challenges.
- It eliminates some behavioral issues by making rewards team based.
- Proper delegation of authority to operational managers who are close to the concerned action and can react quickly.
- Operational managers do not restrict themselves to budget limits and focus on achieving key ratios.

- It establishes customer orientated teams.
- It creates information systems which provide fast and open information throughout the organisation.

(v) Suitability of Beyond Budgeting (BB) :

- Industries where there is a rapid change in the business environment - Flexible targets will be responsive to change.
- Industries using management methods such as TQM – Continuous improvement will be the key.
- Industries undergoing radical change like BPR – Targets may be hard to achieve in such circumstances.

Since T.K. Motors Ltd., is a car manufacturing company and presently adopting Traditional Costing system, it would be suitable for such company to shift to Beyond Budgeting to gain the advantages over traditional budgeting.

Question 5(a) :

Sun Chemicals Co., is engaged in manufacturing many chemical products. It is using many chemicals, some of which are fast moving, some are slow moving and few are in non-moving category. The company has a stock of 10 units of one non-moving toxic chemical. Its book value is ₹ 2,400; realisable value is ₹ 3,500 and replacement cost is ₹ 4,200.

One of the customers of the company asks to supply 10 units of a product which needs all the 10 units of the non-moving chemical as an input. The other costs associated with the production of the product are :

Allocated overhead expenses ₹ 16 per unit

Out of pocket expenses ₹ 50 per unit

Labour cost ₹ 40 per hour. For each unit two hours are required.

Other material cost ₹ 80 per unit.

The labour force required for the production of the product will be deployed from among the permanent employees of the company. This temporary deployment will not lead to any loss of contribution.

Required :

(i) Recommend the minimum unit price to be charged to the customer without any loss to the company. [4 Marks]

(ii) Analyse with reasons for the inclusion or exclusion of each of the cost associated with the production of the product. [4 Marks]

(iii) Advice a pricing policy to be followed by Sun Chemical in perfect competition. [2 Marks]

Solution 5(a) :

Comments : This question is from Chapter 7 i.e. Pricing Decision. You need to calculate minimum price using Relevant Costing approach. Give justification for each item of cost included or excluded from your calculations. You may also refer Relevant Costing topic from Chapter 6 for such questions.

(i) Calculation of Minimum Price :

Particulars	₹
(a) Realizable value of non moving chemical	3,500
(b) Out of pocket expenses [50 per unit x 10 units]	500
(c) Other material cost [80 per unit x 10 units]	800
(d) Total relevant cost [a + b + c]	4,800
(e) Minimum unit price [4,800 / 10 units]	480

(ii) Reasons for inclusion or exclusion of each item of cost :

(a) Non-moving toxic chemical : It is already in stock and hence book value is a sunk cost and irrelevant. We don't need it and hence replacement cost is also irrelevant. However, if we don't need it, then we can sale it and realize ₹ 3,500. However, if we use it in the production, we will lose an opportunity to earn ₹ 3,500, hence it is a relevant cost of manufacture.

(b) Allocated overheads : Allocated overheads means common or general overheads charged as per absorption costing policy. There will not be any additional cost due to extra production, hence irrelevant.

(c) Out of pocket expenses : It is an incremental cost, hence relevant.

(d) Labour cost : These are permanent employees and their temporary deployment will not lead to any loss of contribution. Hence, there is no incremental cost of production and no opportunity cost, hence irrelevant.

(e) Other material cost : It is an incremental cost, hence relevant.

(iii) Pricing Policy under Perfect Competition :

Under perfect competition conditions, Sun Chemicals cannot have pricing policy of its own. In such case, sellers are price takers and not the price deciders. It cannot increase its price beyond the current market price. In short, in such case, the company should follow 'Going Rate' pricing strategy. It can keep its selling price at the average level of price charged by the industry.

The company should keep on selling the goods as long as the marginal cost is recovered. However, if the marginal cost exceeds the selling price, then the firm starts incurring losses. Selling at the prevailing market prices (i.e. going rate pricing), would yield a fair return on investment to the firm as per industry standard. It would also help the firm to attract a fair market share under the competitive conditions.

Question 5(b) :

Apple Ltd., is following three variances method to analyse and understand production overhead variances. The three variances for a particular year were reported as given below :

Production overhead expenditure variance	₹ 94,000 A
Production overhead volume variance	₹ 1,00,000 F
Production overhead efficiency variance	₹ 48,000 F

The other particulars furnished from the records of the company are :

Standard machine hours for the year	11,500
Closing balance in the production overhead control account	₹ 18,00,000
Fixed overhead rate per hour	₹ 125
Variable overhead rate per hour	₹ 80

Required :

Compute the following by considering the additional information also :

(i) Actual machine hours

(ii) Budgeted machine hours

(iii) Total Fixed Production Overhead amount

(iv) Applied Production Overhead amount

Additional Information :

- Expenditure variance was computed totally for fixed and variable overheads.
- Volume variance is applicable to fixed overhead only.
- Efficiency variance is applicable only to variable overhead and fixed overhead efficiency variance was already included in volume variance.

Solution 5(b) :

Comments : This question is from Chapter 12 i.e. Standard Costing. According to me, this is the question which should be left out as an optional question.

Such question is nowhere covered in ICAI Module or RTP. From students point of view it is "Out of the syllabus question". This type of question was once asked in Nov. 2000 exam (old syllabus). This question is based on "Three Variance Method" for Production Overheads.

As this is a new type of question, I have solved it in the classroom with full explanation and got it recorded for you. You will find this lecture on my You Tube Channel. Just search for "Rakesh Agrawal CA Coaching Classes" on You Tube. You will find my you tube channel. You may subscribe this channel, so that you will keep getting the notifications for such type of updates in future also.

(i) Calculation of Actual Machine Hours :

Variable OH Efficiency Variance = SRR/Hour x (Std. Hours - Actual Hours)

Hence, 48,000 (F) = 80 x (11,500 - AH)

∴ 48,000 / 80 = 11,500 - AH

∴ 600 = 11,500 - AH ∴ Actual hours = 10,900

(ii) Calculation of Budgeted Machine Hours :

Fixed OH Volume Variance = SRR/Unit x (Bud. Output - Actual Output)

Using conversion formulae, we can convert the above as -

Fixed OH Volume Variance = SRR/Hour x (Bud. Hours - Std. Hours)

∴ 10,000 (F) = 125 x (BH - 11,500)

∴ - 10,000 / 125 = (BH - 11,500)

∴ - 800 = BH - 11,500 ∴ Budgeted hours = 10,700

(iii) Calculation of Total Fixed Production OH :

Student Note : Actually ICAI wanted you to calculate 'Budgeted Fixed Production OH', but there was a typing error and the word 'Total' got printed instead of 'Budgeted'.

Using 'One by Six' formula, we can calculate it as

Budgeted Fixed OH = Budgeted Hours x SRR/Hour for Fixed OH

= 10,700 (as above) x ₹ 125

= ₹ 13,37,500

(iv) Calculation of Applied Production OH :

Student Note : It means Overheads applied or overheads recovered or overheads charged or overheads absorbed. The word used is 'Production OH'. I think, ICAI wants you to calculate Total Production OH Applied (i.e. Variable + Fixed).

Overheads applied = SRR/Units x Actual Output

Using conversion formulae, we can convert the above as -

Overheads applied = SRR/Hour x Standard Hours

= (125 + 80) x 11,500

= ₹ 23,57,500

Note : There is one more approach of solving this question. However, we will get different answers due to mistake in the data given. The mistake is in the figure of actual total production overheads i.e. Rs. 18,00,000.

I am happy to inform you that ICAI has agreed with all my views including alternate answers, as calculated below :

Alternate Answers for (iii) & (iv) above -

(iii) Calculation of Total Fixed Production OH (i.e. Budgeted Fixed OH) :

Total OH Expenditure Variance (i.e. Variable + Fixed OH Expenditure variance)

= [(SRR/Hr. for Variable OH x Actual Hours) + Budgeted Fixed OH] - Actual Total OH

∴ 94,000 (A) = [(80 x 10,900) + Bud. Fixed OH] - 18,00,000

∴ - 94,000 + 18,00,000 = [8,72,000 + Bud. Fixed OH]

∴ 17,06,000 = 8,72,000 + Bud. Fixed OH

∴ Bud. Fixed OH = Rs. 8,34,000

Note : The difference between the earlier answer and this answer is Rs. 5,03,500

(iv) Calculation of Applied Production OH :

Total OH Cost Variance = Total OH Expenditure Variance + Fixed OH Volume Variance + Variable OH Efficiency Variance

= 94,000 (A) + 1,00,000 (F) + 48,000 (F)

= Rs. 54,000 (F)

Total OH Cost Variance = OH Applied - OH Incurred

∴ 54,000 (F) = OH Applied - 18,00,000

∴ 54,000 + 18,00,000 = OH Applied

∴ Production OH Applied = Rs. 18,54,000

Note : The difference between the earlier answer and this answer is Rs. 5,03,500 again.

Comment : The figure of actual total production overheads should have been Rs. 23,03,500 instead of 18,00,000. Due to such printing mistake, ICAI has awarded marks to alternate answers also.

Question 6(a) :

Usha Products Co., operates a Pulp Division that manufactures Wood Pulp for use in the production of various paper goods. The following informations are available :

Particulars	**₹/kg.**
Selling price	210
Less : Variable expenses	126
Contribution	84
Less : Fixed expenses (based on a capacity 1,00,000 kgs. p.a.)	54
Net Income	30

Usha Products has just acquired a small company that manufactures paper cartons. This company will be treated as a division of Usha with full profit responsibility. The newly formed Carton Division is currently purchasing 10,000 kgs of pulp per year from supplier at a cost of ₹ 210 per kg. less a 10% quantity discount. Usha's President is anxious that the Carton Division begins purchasing its pulp from the Pulp Division if an acceptable transfer price can be worked out.

Required : (Answer any 2 items from situations I, II and III below)

Situation I

If the Pulp Division is in a position to sell all of its pulp to outside customers at the normal price of ₹ 210 per kg, will the Managers of the Carton and Pulp Division agree to transfer 10,000 kgs of pulp next year at a determined price? Explain with reasons. [5 Marks]

Situation II

Assuming that the Pulp Division is currently selling only 60,000 kgs of pulp each year to outside customers at the stated price of ₹ 210 per kg, will the Managers agree to a mutually acceptable transfer price for 10,000 kgs of pulp next year? Explain with reasons. [5 Marks]

Situation III

If the outside supplier of the Carton Division reduces its price to ₹ 177 per kg, will the Pulp Division meet this price? Explain. If the Pulp Division does not meet the price of ₹ 177 per kg, what will be the effects on profits of the company as a whole? [5 Marks]

Solution 6(a) :

Comments : This question is from Chapter 9 i.e. Divisional Transfer Pricing. According to me, it was a bonus question. If you know how to calculate the Minimum Transfer Price for Transferor Division and Maximum Transfer Price acceptable to Transferee Division, you can answer this question. You will find similar questions in our classroom notes.

Situation I :

The Pulp Division is in a position to sell all its pulp to outside customer at the normal price of ₹ 210 per kg., it would ask the Carton Division to pay for Variable Cost plus Opportunity Cost i.e. the present selling price of ₹ 210 per kg.

Carton Division is presently buying the pulp from outside supplier at 10% discount i.e. 210 - 10% = ₹ 189 per kg. This division won't be ready to pay anything more than ₹ 189 per kg.

As can be observed from the above, Pulp Division won't sell below ₹ 210 per kg. and Carton Division won't pay above ₹ 189 per kg.; these divisions won't be able to reach at an agreeable price. Hence, no transfer would take place.

Situation II :

If Pulp Division is selling only 60,000 kg. in the outside market, then it will be left with a surplus capacity of 40,000 kg. For using spare capacity, the incremental cost of manufacture would be only variable cost i.e. ₹ 126 per kg. and no opportunity cost. It means, Pulp Division would be ready to transfer at any price above ₹ 126 per kg. The requirement of Carton Division is only 10,000 kg., which is within the available surplus capacity.

Carton Division is presently buying the pulp from outside supplier at ₹ 189 per kg. and would be ready to buy it at any price below ₹ 189 per kg.

Thus, both the divisional managers would agree to a price between the range of ₹ 126 per kg. to ₹ 189 per kg. In such case, the transfer would take place.

Situation III :

If we assume that Pulp Division has a spare capacity for internal transfer, then it should transfer to Carton Division at a price of ₹ 177 per kg. The incremental cost for Pulp Division is only ₹ 126 per kg. and it will still earn an incremental profit of ₹ 5,10,000 on internal transfer.

Calculation of incremental profit = 10,000 kg. x (177 - 126) = ₹ 5,10,000.

However, if Pulp Division doesn't have the spare capacity, then it will not transfer the pulp to Carton Division @ ₹ 177 per kg.

Question 6(b) :

A company manufactures a single product, which requires three components. The company purchases one of the components from three supplier. DJ Ltd., PJ Ltd. and ZJ Ltd. The following informations are available :

Particulars	DJ Ltd.	PJ Ltd.	ZJ Ltd.
Price quoted by supplier (per hundred units)	₹ 240	₹ 234	₹ 260
Percentage of defective of total receipts	3%	5%	2%

If the defectives are not detected, they are utilised in production causing a damage of ₹ 200 per 100 units of the component. Total requirements is 12,000 units of the components.

The company intends to introduce a system of inspection for the components on receipt. The inspection cost is estimated at ₹ 26 per 100 units of the components. Such an inspection will be able to detect only 90% of the defective components received. No payment will be made for components found to be defective in inspection.

Required :

(i) Advice whether inspection at the point of receipt is justified. [8 Marks]

(ii) Which of the three supplier should be asked to supply? [2 Marks]

Solution 6(b) :

Comments : This question is from Chapter 2 i.e. Modern Business Environment. It is from the topic of TQM and Cost of Quality.

You need to calculate Total Cost of Purchase including cost of defectives and inspection cost, at present i.e. if no inspection is done and if inspection is done.

Compare the two costs i.e. without inspection and with inspection for all the three suppliers. You can select the supplier with lowest cost per good unit.

(i) Analysis of the three suppliers without inspection :

Particulars	DJ Ltd.	PJ Ltd.	ZJ Ltd.
(a) Total requirement of components (units)	12,000	12,000	12,000
(b) Percentage of defective items	3%	5%	2%
(c) No. of defective items [a x b]	360	600	240
(d) No. of good units received [a - c]	11,640	11,400	11,760
	(₹)	(₹)	(₹)
(e) Purchase price per unit (Price / 100)	2.40	2.34	2.60
(f) Total cost of purchase at present [a x e]	28,800	28,080	31,200
(g) Cost of damage [c x 200/100]	720	1,200	480
(h) Total cost [f + g]	29,520	29,280	31,680
(i) Cost per unit [h / d]	2.5361	2.5684	2.6939

Analysis of the three suppliers with inspection :

Particulars	DJ Ltd.	PJ Ltd.	ZJ Ltd.
(a) Total requirement of components (units)	12,000	12,000	12,000
(b) Percentage of total defective items	3%	5%	2%
(c) Total No. of defective items [a x b]	360	600	240
(d) No. of defective items not detected and hence accepted after introducing the system of inspection [c x 10%]	36	60	24
(e) No. of defective items detected & rejected on inspection [c x 90%]	324	540	216
(f) Payment to be made for [a - e]	11,676	11,460	11,784
	(₹)	(₹)	(₹)
(g) Purchase price per unit [Price/100]	2.40	2.34	2.60
(h) Total cost of purchase [f x g]	28,022.40	26,816.40	30,638.40
(i) Cost of damage [d x 200/100]	72	120	48
(j) Inspection cost [a x 26/100]	3,120	3,120	3,120
(k) Total cost with inspection [h + i + j]	31,214.4	30,056.4	33,806.4
(l) Good units received [a - c] (in units)	11,640	11,400	11,760
(m) Cost per good unit [k / l]	2.6816	2.6365	2.8747

Advice : As can be observed from the above two tables, cost per good unit without inspection is lower than the cost after inspection is carried out. Hence, we can conclude that inspection at the point of receipt is not justified.

(ii) Decision About Supplier :

The lowest cost per good unit is ₹ 2.5361. Hence, we should prefer supplier DJ Ltd.

* * * * *

3 RTP - May 2019 Exam

Question 1 : [Case Study]

Competitive Advantage and Control System for Airline Industry

Wings International is a major airline operating from India. It is the biggest airline operator within the domestic airline segment and is a well-established player in the international airline segment. Except for a period of few years as outlined below, Wings International has been operating for the last 3 decades in a segment that caters primarily to the business and premium segment travellers. On its international routes and certain long distance, yet busy domestic routes, the airline offers full service on-board. The ticket price includes on board entertainment, transfer of baggage between flights, more leg room, option to upgrade from economy to business class seats, meals and beverages etc. Baggage allowance is liberal with each flyer being allowed 2 checked in baggage and a cabin baggage. A tag line in its advertising goes "GRAB YOUR BAGS, THEY FLY FREE". In the domestic segment, the airline operates across major metro cities and certain other tier-2 cities. International flights operate only from these major metro cities.

Indian aviation industry has been growing exponentially in the recent years due to a thriving economy. Consequently, there have been many new entrants in the domestic segment, offering low-cost fares to customers. These airlines have been offering tickets at huge discounts, thereby attracting a sizable chunk of customers away from Wings International. To counter this and maintain its market share, Wings International also followed suit. For a period of five years, tickets on various domestic routes were offered at low competitive price. At the same time, low fares can be offered only if it is profitable to do so. Therefore, certain cost management measures were undertaken. Wings International converted to a "no-frills" airline on most of the domestic routes. Now a ticket covered only the cost of the seat and 1 checked in baggage and 1 cabin baggage. Going further, baggage allowance was reduced to economize on space and fuel requirements. To avail any other facility, the flyer had to purchase extra. Another measure taken was to offer last-minute deals of tickets at a heavy discount if the flight is not fully occupied. Vacant seats are "perishable", therefore instead of letting them go empty, the flight can be filled at cheaper rates. This management measure based on capacity utilization was expected to yield increase in market share and subsequently the airline's revenue. Tickets could be booked online using the internet rather than through ticket kiosks maintained by the airline at various locations in selected cities.

In order to quickly respond to a competitor's move, the pricing and marketing staff were given sufficient autonomy to make this price war work. Therefore, in many situations, decisions could be taken even without the prior approval of the top management. Meanwhile adding to the stiff competition, fuel prices have been soaring in the last few years. Maintenance of aircrafts, staff compensation and other overheads have also been increasing. Landing fees in major airports have increased manifold due to congestion and limited slots on account of multiple airline operators vying for limited slots.

Given this scenario, after 5 years of operations, the management at Wings International found that they were not able to generate sufficient profits on many of the domestic routes. A price discount by a competitor had to be matched with a similar price discount by Wings International and vice versa. Offering last minute deals to fill up capacity did not generate additional revenue. The volume of last minute flyers was low. It was found that most flyers booking at the last minute were anyway "price indifferent". Had the deals not been offered, the flyer would have been willing to pay more money anyway to use the airline. Therefore, neither did these deals generate extra customers nor extra revenue.

Wings International has always been perceived to cater the premium segment traveler, therefore participating in this price war had been contrary to its image of a premium quality airline. This left a section of the customers confused about the product offering. Therefore, the management of Wings International decided to discontinue its discount pricing strategy and exit the "low cost" airline business. The tickets are now being offered at its usual “full service” rates. This strategy is proposed to be followed for both current and prospective projects and operations.

The government has been formulating policies that are aimed at changing the landscape of the aviation sector. Airports are being built in smaller cities and towns that until date did not have one. This will improve connectivity within the country. It will increase air traffic as the public now has an alternate means to travel other than road and rail transport. Instead of flying between two small airports directly, Wings International proposes to develop a model where flyers from smaller towns are connected to one of the major metro cities which will serve as a main hub. For Wings International, the cost of operations will be lower as compared to flying point to point between the two small airports. For the passengers, better connectivity and more route options will be available. For example, a flyer from a smaller city, wanting to go to a destination abroad can now reach the nearest hub by flying with Wings. From the hub, Wings International can fly the passenger further to the desired destination abroad in its international fleet. For the flyer, this is a better alternative as compared to reaching the hub by say road transport. For Wings International, the proposition broadens its customer base. To this effect, Wings International is already scouting the market for smaller aircrafts that can be operated more economically on the hub-spoke route. Also, it is in talks with for partnership with other airlines, hotels, car rentals in order to offer attractive holiday packages to customers. Since most of the other airlines do not have the scale of operations to achieve the “hub-spoke” model or the ability to offer holiday packages, Wings International identifies this as a unique proposition that it can offer its customers. This time the proposed tag line for its advertisement would be “WINGS TO FLY ANYWHERE, ANYTIME”. Also, Wings International proposed to increase the turnaround time of flights for better capacity utilization.

Ticket booking is still offered over the internet. In the past, customers like this option due to the convenience it offered. Dedicated customer service lines available 24×7 to resolve issues is proposed.

The management of Wings International wants to have a seamless implementation of this project. This could be a game changer for the company that will help to consolidate its position in the aviation industry. Therefore, a meeting has been called to discuss critical reporting that needs to be in place that ensures a successful launch.

Required

(i) EVALUATE the strategy adopted by Wings International in becoming a “no frills” airline.

(ii) IDENTIFY the strategy adopted by Wings International for the proposed project.

(iii) The entire strategy of Wings International for the proposed project depends on information available about the future outlook in the industry. RECOMMEND guidelines to the management to put in place a control reporting mechanism that can enable Wings International to take preventive measures to avoid errors in its strategy.

(iv) In its previous venture, it took 5 years for Wings International to decide to exit the “no frills” airline operations. To avoid a delay in taking such decisions, RECOMMEND guidelines to the management to put in place a control reporting mechanism that can enable Wings International to correct its errors and make changes in its operations in a more- timely manner.

Solution 1 :

(i) Wings International is a premium segment airline charging "full service" rates for its ticket. However, due to intense competition in the domestic market, it adopted a "low-cost advantage" strategy. Low-cost advantage or cost leadership was achieved through following measures:

(a) Becoming a "no-frills" airline, where the ticket included only the seat and 1 each of cabin and checked in baggage. All other facilities had to be purchased extra.

(b) Baggage allowance reduced to economize of space within the flight and save on fuel costs.

(c) Online ticket booking facilitated so that the number of ticket kiosks maintained by the airline were reduced.

Cost leadership enabled it to offer "low cost" fares to the customers that was generated through (a) giving huge discounts on ticket prices and (b) management of ticket price based on capacity utilization of the flight. Although, due to its long-standing image as a premium airline, the transformation to a "no frills" airline could have caused confusion about the product offering in the minds of discerning traveler, who expect higher service quality. This could have eroded the customer base in this segment.

This "Low-cost advantage" strategy did not work due to the following reasons:

(a) Price war from competitors reduced the ticket prices to levels that were unviable to Wings International.

(b) Variable prices to fill up flight capacity worked against the airline, since it was found that these flyers, due to their immediate need, might have paid a higher price for the ticket than what was offered as part of the deal. These flyers were "price indifferent" which should have been used to Wings International's advantage and not against it.

(c) Cost of operations including fuel prices, aircraft maintenance, staff compensation, overheads such as landing fees had been rising in the recent years.

Due to the above reasons, Wings International's venture as a low-cost airline became unviable.

(ii) Wings International plans to foray into offering its service to flyer from smaller cities. This time it has adopted a "differentiation advantage" strategy. It is marketing in the following ways as being different from its competitors:

(a) Offering a "full service" price where high quality facilities are provided to the traveller. Facilities offered ranging from on flight meals and entertainment, better seating options, liberal baggage allowance and transfer facility etc. differentiate Wings airlines from its "low cost, no frills" competitors.

(b) Ability to offer more connectivity to flyers as compared to other airlines using its unique "hub-spoke" model. "Wings to fly anywhere, anytime" is a catchy line to present this concept to potential customers.

(c) Ability to offer vacation packages due to strategic tie-ups with other airlines and hospitality providers like hotels, car rentals etc.

(d) Product differentiation can also be made between the road and rail transport providers. It can be based on relative facilities offered and better connectivity, if not based on relative cost of travel.

(e) Dedicated customer service lines providing support to customers to resolve issues.

Superior quality, customer responsiveness and innovation will enable Wings International to consolidate its position in the industry in the long run.

(iii) Management Control Report – Feed-forward Control Report

Management control is required to set performance measure to determine if the desired objectives of the company are being achieved or not. Control is required at every stage before the activity commences, while the activity is being performed and after the activity has been completed. Accordingly, control reports generated could be Feed-forward reports (prior), concurrent reports (during) and feedback reports (after).

When the management of Wings International wants to have a reporting system that enables to take preventive measures, it would need to have a "Feed-forward" control. This control will help measure the error before it actually takes places. Preventive measure can then be taken to change the operational variables to achieve the desired result. Guidelines to implement a "Feed-forward" control are as follows:

(a) Thorough planning and analysis is required. In the case of Wings International, the proposal should be planned and analysed at various levels. The strategy of selection of appropriate routes, "full service" pricing, strategic partnerships, financing the proposal etc. need to be taken at a higher level of management. Decisions relating to flight operations, procurement of supplies like fuel, marketing, human resource planning etc. can be done by the management in charge of operations.

(b) Careful discrimination must be applied in selecting input variables. Planning and analysis should be done in an integrated fashion. There should be synergy in the thinking at an operational level and top management strategic level.

(c) Feed forward mechanism should be kept dynamic. Wings International should keep a close watch on the government policies and its implementation in the civil aviation sector. Reporting may be done in pre-determined intervals say a monthly feed forward reporting can be decided upon. Changes to plans should be made in a timely fashion to make them relevant.

(d) A model control system should be developed. Authority and responsibility for various functions need to be determined and clearly defined while developing this model.

(e) Data on input variables should be collected regularly. For example, Changes in fuel prices, which form a large share of expenses, has to be tracked continuously. If the prices are expected to fluctuate widely, hedging options or long term price agreements with suppliers can be considered.

(f) Feed-forward control requires action. At the time of implementation, the control model developed should be followed in order to establish a systematic course of operations.

(iv) Management Control Report – Feedback Control Report

These are control reports that provide feedback about the operations. It tracks the actual results with the budgeted / forecasted results. These reports in themselves do not cause a change in performance. The management has to take timely action to correct the errors and change its operations, if required.

Guideline to implement this reporting system are as follows:

(a) Feedback report should disclose both accomplishment and responsibility. As discussed in the feed forward report, Wings International would have already put in place an organizational structure defining individual authority and responsibility. Performance should be tracked accordingly, so that individual performance can be assessed.

(b) Feedback reports should be extracted promptly. The management has to decide the interval at which these reports need to be generated. The interval should be such, that changes required can be assessed and action can be taken in a timely manner. In the previous instance, Wings International had given autonomy to the marketing and pricing division to take decisions to meet the competitor's actions. It took five years to determine that the project was unviable. However, a timely reporting mechanism such as a

feedback report should have been in place to appraise the top management about the decisions taken. This information would have enabled the top management to make an earlier assessment as to the viability of "no frills" airline.

(c) Feedback reports should disclose trends and relationships. Trends could be customer travelling preferences, deals offered by competitors or other changes in flight operations. Relationships could be supplier relationships, customer relationships, strategic partner relationships etc. Information generated from all these areas should be collated in order to provide proper feedback to the management.

(d) Feedback reports should disclose variations from standards. These standards could be from financial budgets or from non-financial metrics identified as key performance indicators. For example, delay in flight operations could be a non financial metric that can be tracked against an expected standard set in the planning stage. The information metric for actual operations should be assessed in the same manner with which the standard was set. For example, a flight delay in operations could be a delay in arrival beyond 15 mins. The same standard should be used to assess actual performance.

(e) Feedback reports should be in a standardized format. It should be easily understood and well presented to the management. Facts should be stated without ambiguity and in a standard manner.

Question 2 : [Case Study]

Business Excellence Model for Clothing Industry

As a guest lecturer at a symposium for Business Excellence where you are giving a lecture on "Sustaining Business Excellence". A manufacturer of a fashion clothing line is one of the participants at the symposium. He has the following query:

"We are an apparel company that manufacture and sell our fashion clothing and accessories directly through 30 stores spread across India. Shortly we are planning to establish similar outlets overseas. Our business is under constant change due to changing customer trends. At the same time, we are the largest company in our industry segment in India, both in terms of market share and profits. We have a satisfied base of customers who are loyal to our brand. Shareholders are also satisfied stakeholders due to good returns provided on their investments. What would be the relevance of Business Excellence model to our company?

Thank you !"

You are required to frame an appropriate response to this query.

Required

(i) EXPLAIN the importance of business excellence to an organization.

(ii) LIST the tools available to achieve and sustain excellence.

(iii) APPLY the fundamentals of EFQM model on the apparel company.

(iv) EXPLAIN the relationship between various criteria of the model in general terms.

Solution 2 :

(i) Business Excellence is a philosophy for developing and strengthening the management systems and processes of an organization to improve performance and create value for stakeholders. Stakeholders in an organization are not limited to shareholders alone. They include also customers, employees and society. An organization does impact all the stakeholders in different ways, yet they are all interlinked to each other. Customers' needs are of paramount importance to companies. Yet given uncertain conditions, shareholders demand challenging return on their investments. Employees need more from their company than just their pay-check. They want the company to enable to grow their knowledge and experience that can improve their career growth. Society expects companies to operate ethically and for the overall betterment of the society and environment.

For several years businesses have been operating under challenging circumstances. For example, landline phones have been entirely replaced by mobile phones. Television programs can be watched seamlessly on internet enabled mobile phones. Not just this, today's smartphones have computing capability much more than the computers that were used in Apollo Mission to send the first man to moon! The proliferation of mobile phones has changed not just the telecom industry but also others like communication, banking, e-commerce etc. The pace of change is both exhilarating and challenging.

To manage this complex scenario, a company cannot focus on only one aspect of their operations. Optimize processes, delivery quality to customers, manage employee talents, earn required return on investment while managing to be a socially responsible organization. In short, the company should achieve excellence in all aspects of its operations. This is business excellence. Business excellence principles emerged because of development of quality drive into traditional business management. It is imperative not just to achieve excellence but also to sustain it.

Business excellence models are holistic tools that help companies develop stakeholder focused strategy. Each operation within a company enables a corresponding result. Business models present a formal, standardized cause effect relationship between different operations and their resultant consequences. If the company want to achieve a different result, it has to do things differently. This can be better analysed through these models. Continuous improvement on various operations will ultimately lead to excellence. More importantly, these models need to be used to sustain and maintain excellence to retain their competitive advantage. They are not to be taken as one time exercise by the company. Assessments using this model have to be made periodically so that timely action can be taken to achieve the desired result.

(ii) Some of the popular business excellence models are (i) the European Foundation Quality Management (EFQM) model (ii) Baldrige Criteria for Performance Excellence (iii) Singapore BE Framework (iv) Japan Quality Award Model and (iv) Australian Business Excellence Framework.

(iii) The apparel company is a well-established player in the industry. It is a growing company that is looking to expand its operations overseas. To achieve business excellence in this environment, the company could adopt the EFQM model, which is a popular model.

The EFQM model was developed by the European Foundation for Quality Management. The model provides an all-round view of the organization and it can be used to determine how different methods fit together and complement each other. It can help the company understand the cause and effect relationships between what their organization does and the results it achieves. Creating an EFQM Management Document gives the organization a holistic overview of its strategic goals, the key approaches it has adopted and the key results it has achieved.

The fundamental concepts for excellence are the basic principles that describe the essential foundation for any organization to achieve sustainable excellence. With respect to the company they can be detailed as below:

(a) Adding value to customers: Companies need to understand their customers, their needs, anticipate their needs and make use of opportunities to fulfill their expectations.

In the current case, fashion apparel business is ever changing and dynamic due to the changing trends in customer's tastes. This could differ across locations within India and abroad. In the era of e-commerce, competition would be cut-throat. Before going to "how" it can meet customer's needs, the company should be clear on "what" need of the customer it can satisfy. For example, should the company cater to Indian apparel market, western apparel market, men or women or children apparel market etc. Once the "what" is clear, the company should have mechanisms in place to find out and anticipate customer tastes. Accordingly, it should structure its operations to add value to the customers in terms of quality, availability, support, and experience.

(b) Creating a sustainable future: Society and environment (People and Planet of Triple Bottomline concept) play a major role in ensuring the sustainability of business. A company should have as much positive impact on its surroundings and try to minimize any negative impact on the same. Here, the company should assess the environmental impact of its operations, measures to minimize adverse impacts, business impact on the society etc. For example, leather is contended to be harmful to the environment since it requires the skin of animals specially cattle hide, needs huge amount of energy and chemicals to process it. This has a negative environmental impact. As regards societal impact, suppliers of cloth to the apparel company should not indulge in labor malpractice like child labor and should adhere to safety standards within its factories. The company should procure cloth only from suppliers who adhere to such standards.

(c) Developing Organizational Capability: Companies need to manage change within the organization and beyond. The company should identify "what it is capable of being great at?" in order to differentiate it from its competitors. For example, the apparel company may have the capability of tracking its inventory at the stores on real time basis. As soon as the inventory falls below a certain level, the stores issues fresh products to stock up. This ensures that there are no stock outs at the retail outlet. This ability to track inventory real time and ability to stock up quickly may be unique to the company that gives it a competitive edge. Another can be the ability to quickly change the apparel production to meet changing trends. Likewise, the company should identify and develop unique capabilities to have a competitive edge in the market.

(d) Harnessing creativity and innovation: Continuous improvement and innovation brings value to the company. The company should promote a working environment that enables and appreciates creativity and innovation. For example, new apparel designs can be promoted to test the market. If found feasible, the company can go for mass production of the same.

(e) Leading with vision, inspiration, and integrity: The tone at the top defines the rest of the company. The leaders and management of the company should have a clear vision of what the company wants to achieve, develop strategy to achieve it, work with integrity and ethics. Leaders shape the future of the organization.

(f) Managing with agility: Agility would be the capability to identify and effectively respond to opportunities and threats. For example, although the apparel company is in an expansionary phase, it should consider the threat, yet opportunity of using e-commerce as a platform to reach out to customers directly. Brick and mortar stores are becoming largely redundant due to online platforms, a threat the company should recognize and act upon.

(g) Succeeding through the talent of people: An organization is only as good as the people who work in it. There should be an atmosphere of teamwork that enable achievement of organizational and personal goals. Performance evaluation, reward and recognition programs, training and talent network are ways to cultivate talent within the organization.

(h) Sustaining outstanding results: Use of EFQM model is not a onetime exercise. Constant and periodic evaluation is required to keep up and sustain excellence.

(iv) The criteria of the model are comprised of 5 enablers and 4 results. Enablers covers what an organization does (its objective) and how it does it (strategy, use of resources to achieve it).

(a) Leadership: A leader defines the organization's culture. They enable the organization to achieve its goals by taking the correct decisions at the correct time. To do this they should have sufficient skill, work as per the company's code of conduct and should be ethical in their dealings.

(b) Strategy: Operations should be planned and directed as per a clearly defined strategy. The company's vision and mission statement with respect to its various stakeholders are the goals that the organization wishes to achieve. Strategy (plan) enables the company to achieve these goals.

(c) People: Excellence is possible only if the people working in the company wish to achieve it. They must be motivated, recognized, and managed to enable them to work towards the company's vision and mission. The work culture should be that this opens up opportunities for personal development as well. This would cultivate a bond with the organization, which enables people working within to strive for excellence.

(d) Partnerships and resources: Effective management of partnerships that the company has with other organizations is critical to success. Partners could be external vendors, suppliers, and service providers. The services of partners enable business to operate smoothly. Resources, both tangible and intangible should be managed optimally. Tangible resources can be financial (cash, bank accounts) and physical assets (machinery, building, land etc.). Intangible resources would be intellectual property rights, information technology, licenses etc. Proper management of resources enables optimal results.

(e) Processes, Products, and Services: A company exists because of its processes, products, and services. They should be managed and continuously improved to create value to the stakeholders.

Results are what the organization achieves following its operations and decisions. As explained before, the stakeholders of the company are investors (business), people (employees), customers and society. In order to track performance, the company has to develop Key Performance Indicators (KPI)s for each of the stakeholder groups. Results should be tracked periodically. Changes to targets and benchmarks should be continuously made to reflect the current objectives that the company wants to achieve. Some of the results that the company can look at are:

(a) Customer results: Are the customers of the company satisfied with the products and service? How does the company fare in terms of brand loyalty? Is the customer base growing to indicate increasing market share?

(b) People results: Does the company have skilled and motivated employees? What is the employee turnover with reasons for the same? Does the company have proper access to hire required talent? Are the employees motivated, trained, recognized, and rewarded for their performance? What is performance measurement system, is it robust and accurate to measure performance?

(c) Society results: Is the company a good corporate citizen. Are the objectives of corporate social responsibility being met? If the organization is a not for profit organization, is it meeting its objectives and goals?

(d) Business results: Is a for profit organization achieving the required return on investment, profitability that the shareholders and other investor demand? Has the company been able to manage financial and other risks properly?

Enablers enable achievement of results. EFQM model documents this flow in a structured way. It highlights the strength and weakness of the enablers. With this information, the company can alter its operations and strategy to achieve desired results. On assessment, there is a flow from results to enablers. If the results have been achieved, enablers continue to operate status quo. If the results fall short of targets, changes have to be made to enablers to improve performance.

Therefore, it can be concluded that the EFQM model encourages constant self assessment to achieve excellence. When a company wins an excellence award based on a business excellence model, it gains in stature within the industry. This recognition could work to its advantage financially and otherwise.

Question 3 : [Case Study]

Note : The same case study appeared in Nov. 2018 RTP also. It was Q.3 in Nov. 2018 RTP with the same title as Silver Sands. Hence, it is excluded here to avoid duplication of work.

Question 4 : [Case Scenario]

Porter's Five Forces Model - Industry 'Paper Tubes'

WDG is a family owned business. The family owns 80% of the shares. The remaining 20% is owned by six non- family shareholders. It manufactures Cardboard Boxes for customers which are mainly manufacturers of shoes, clothes, crackers etc. Now, the board is considering to join the Paper Tubes market as well. Paper Tubes, also known as Cardboard Tubes, are cylinder-shaped components that are made with Cardboard. Paper Tubes can be used for a wide range of functions. Paper Tubes are usually ordered in bulk by many industries like - food processing, shipping and the postal service, automotive manufacturing, material handling, textile, pulp and paper, packaging, and art etc. The Paper Tubes cost approximately 1% - 3% of the total cost of the customer's finished goods. The information about Paper Tubes is as follows:

(i) The Paper Tubes are made in machines of different size. The lowest cost machine is of ₹1,89,000 including GST @ 5% and only one operator is required to run this machine. Two days training program is required to enable untrained person to run such a machine efficiently and effectively. A special paper is used in making Paper Tubes and this paper remains in short supply.

(ii) Presently, five major manufacturers of Paper Tubes have a total market share of 75%. They offer product ranges which are similar in size and quality. The market leader currently has 24% share and the four remaining competitors hold on average 12.75% share. The annual market growth is 3% per annum during recent years.

(iii) A current report "Insight on Global Activities of Foreign Based MNCs" released the news that now MNC's are planning to expand their packaging operations in overseas market by installing automated machines to produce Paper Tubes of any size.

(iv) Another company, HEG manufactures a small, however increasing, range of Plastic Tubes which are capable of housing small products such as foils and paper-based products. Currently, these tubes are on an average 15% more costly than the equivalent sized Paper Tubes.

Required

ASSESS whether WDG should join the Paper Tubes market as a performance improvement strategy?

Note: Use Michael Porter's Five Forces Model

Solution 4 :

To assess the feasibility of joining Paper Tubes market, Michael Porter's 'five forces model' can be used. It analyses the competitive environment of an industry. It is an important tool for understanding the competitive structure of a particular industry. This complete analysis includes five forces: buyer's bargaining power, supplier's bargaining power, the threat of substitute products, the threat of new entrants and the intra industry competition.

While applying this model to the above case, it can be observed that the low cost of the machine along with the fact that an untrained person will only need two day's training as to be able to operate a machine, will form comparatively low costs of entry to the market. Therefore, WDG may reasonably consider *high threat of new entrants*.

Customer's (buyer) power could be high since customers buy Paper Tubes in bulk along with the fact that there is insignificant difference between the products of alternative suppliers. Paper Tubes cost approximately 1% - 3% of the total cost of the customer's finished goods also indicates that *customer's power is high*.

The fact that the special paper from which the tubes are made remain in short supply, signals *high threat from suppliers*. Hence, suppliers may raise their prices that would result in reduction of profit.

Five major players with 75% market share, offer product ranges which are similar in size and quality, besides, the market is a slow growing i.e. annual growth of 3% p.a., indicate *high rivalry among competitors*.

A *little real threat from a substitute product* exist since HEG manufactures a narrow range of Plastic Tubes. This threat might go up if the product range of HEG is expanded or the price of Plastic Tubes goes down sharply.

Major threat from potential new entrants can be seen, as foreign-based MNCs are planning to joining this market and it seems that these giant corporations might be able to gain economies of scale from automated machines and large production lines with manufacturing flexibility.

WDG might enter this market due to low capital investment but this would also lead to other potential entrants. The easy entry, threat of substitute, the existence of established competitors in the market, the possible entry of a MNCs, and competitors struggling due to slow growth market are putting the potential of WDG into the question to achieve any sort of competitive advantage.

Joining this market might be a good move, if WDG would be able manufacture Paper Tubes at lowest cost within the industry. To assess feasibility, WDG must take into consideration *all possible synergies* between its existing operations of Card Boxes and the proposed operations of Paper Tubes.

From the available information, joining the market for Paper Tubes does not seem to be attractive. Thus, WDG should go for other alternative performance improvement strategy.

Question 5 : [Practical Question]

Benchmarking - Delivery Services

PHL, South Asia's premier express air and integrated transportation & distribution firm, offers a wide range of innovative supply chain services including Express Distribution, 3PL and Consulting. PHL offers innovative logistics solutions to its customers, enabling them to focus on their core competencies. The firm adds maximum value to businesses at every level, right from providing world-class warehousing support to ensuring time definite deliveries of goods in any country. The following information is available:

(1) Each warehouse of PHL is solely responsible for all customers within a specified area. It collects couriers from customers residing within ambit of its own area for delivery both within the specific area covered by the warehouse and elsewhere in India.

(2) After collections of couriers, a warehouse forward them for delivery outside its own area to the warehouses from which the deliveries are to be made to the customers.

(3) Therefore, each warehouse must integrate its deliveries to customers to include:

(i) couriers that it has collected within its own area; and

(ii) couriers that are transferred to it from other warehouses for delivery to customers in its area.

(4) Each warehouse's revenue is based on the invoice value of all couriers collected from customers in its area, irrespective of the location of the ultimate distribution warehouse.

(5) Each warehouse costs consist its own operating costs plus some allocated proportion including centralised administration services (i.e. salary, legal & professional fees etc.) and distribution centre costs.

(6) The management team and all employees of each warehouse are paid incentives which remains payable quarterly. The bonus is based on the achievement of a series of target values by each warehouse.

(7) Internal benchmarking is used at PHL as to provide sets of absolute standards that all warehouses are expected to achieve.

(8) The Annexure exhibit the target values and the actual values achieved for each of a sample group of four warehouses situated in City SG, City HK, City NY, and City NZ.

The target values consist of:

(i) Warehouse revenue and profitability;

(ii) Courier delivery services and customer care; and

(iii) Credit period control and administrative efficiency.

Incentives are based on a points system. It is also used as a stimulus for each warehouse improving the operational effectiveness. One point is awarded in case where the target value for each item in the Annexure is either achieved / exceeded, and a zero point where the target is not achieved.

Annexure

Revenue and Profitability

Particulars	Revenue		Profit	
	Target	Actual	Target	Actual
	₹million	₹million	₹million	₹million
Company Overall	300	360	45	48
Warehouses :				
City SG	24.00	22.50	3.60	3.45
City HK	21.00	27.00	3.15	3.60
City NY	18.00	21.00	2.70	3.30
City NZ	27.00	33.00	4.05	4.20

In order to calculate points of each warehouse, actual profit as a % of actual revenue must exceed the target profit as a % of target revenue.

Courier Delivery Services and Customer Care

Particulars	Target %	Actual			
		SG %	HK %	NY %	NZ %
Measure (% of total):					
Late collection of couriers	3.00	2.85	3.15	2.70	3.60
Misdirected couriers	6.00	6.30	5.85	4.95	7.65
Delayed response to complaints	1.50	1.05	1.35	1.20	1.80
Delays due to vehicle breakdown	1.50	1.65	2.10	0.45	3.00
Measure (% of revenue):					
Lost items	1.50	0.90	1.35	1.20	2.85
Damaged items	3.00	2.25	3.60	2.25	2.70

Credit Control and Administration Efficiency

Particulars	Target %	Actual			
		SG %	HK %	NY %	NZ %
Average debtor weeks	5.50	5.80	4.90	5.10	6.20
Debtors more than 60 days (% of total)	5.00	?	?	?	?
Invoice queries (% of total)	5.00	1.50	1.40	0.80	2.70
Credit notes as a % of revenue	0.50	?	?	?	?

Other Information

Particulars	SG '000	HK '000	NY '000	NZ '000
Debtor Aging Analysis (extract)				
Less than 30 days	1,950.00	2,250.00	1,770.00	3,000.00
31 – 60 days	481.50	199.50	229.50	828.00
Value of Credit Notes raised during the period ('000)	67.50	54.00	42.00	198.00

Note : PHL operates all year round.

Required

Prepare a report for the directors of PHL.

(i) ANALYSE the comparative performance of the four warehouses.

(ii) ASSESS PHL from perspective of financial performance, service quality, resource utilisation, flexibility, innovation, and competitiveness; and

(iii) EVALUATE the performance measurement system at PHL.

Solution 5 : Report

To: The Directors of PHL

From: Management Accountant

Subject: Warehouse Performance

(i) Please refer points table given below :

NY has achieved the best performance with (12) points. SG and HK have given a reasonable level of performance with (8) points each. NZ is under performed earning only (4) out of the twelve points.

NY is the only warehouse which has achieved both increased revenue and increased profit over targets.

In the courier delivery services and customer care, NY has achieved all (6) of the target standards, SG (4); HK (3). The data of NZ indicates, the need for investigation due to achievement of only (1) out of six targets.

In respect of the credit control and administrative efficiency, HK and NY have achieved all (4) standards and SG has achieved (3) of the four standards. Once again, NZ is the 'bad performer' and achieved only (2) of the four standards.

(ii) The terms mentioned in the question might be seen as representative of the dimensions of performance. The analysis of dimensions may be translated into results and determinants.

Results are the outcome of decisions and actions taken by management in the past. Measurement of the results may be done by focusing on financial performance and competitiveness. *Financial performance* may be measured in terms of revenue and profit as shown in the points table. The points system shows which warehouses have achieved or exceeded the target. Besides, liquidity is another criterion for the measurement of financial performance. The total points in table showed that HK and NY warehouses appear to be the best performer in aspects of credit control. *Competitiveness* may be assessed in terms of sales growth or in terms of market share or increase in customers etc.

The determinants are the factors which may be seen to contribute to the achievement of the results. In other words, Determinants refer to the forward looking dimensions of Fitzgerald and Moon model, for example - what areas of future performance are most important for PHL to achieve positive financial and competitive results? Quality, resource utilization, flexibility and innovation are the determinants of future success and they are also the contributors to the achievement of competitiveness and financial performance.

In PHL a main *quality* issue seems to be courier delivery services and customer care. Points table shows that the NZ warehouse has a major problem in this area and achieved only (1) point out of the six available.

Resource utilisation for PHL is critical to its financial success and may be measured by effective and efficient use of drivers, vehicles, and financial resources. To some extent, such measurement can be seen in the data relating to courier delivery services and customer care. For example, the reason of late collection of couriers from customers may be a shortage of vehicles and/or drivers. Such shortages might be due to sickness, staff shortage, problems of vehicle availability, vehicle maintenance etc.

Flexibility may be an issue like varied range of service as to meet different segment of customer is unavailable. Possibly, a short-term sub-contracting of vehicles or collections or deliveries may help in overcoming late collection problems.

The points table i.e. 'target vs actual' may be considered as an example of *innovation* by PHL. This gives a comprehensive set of measures providing an incentive for improvement at all warehouses. The points table may demonstrate the extent of achievement or non-achievement of PHL strategies for success. For instance – the firm may have a customer care commitment policy which identifies factors that should be achieved on a continual basis. For example, timely collection of couriers, misdirected couriers re-delivered at no extra charge, prompt responses to customer claims and compensation for customers.

(iii) The performance measurement system used by PHL is simple to use. However, it may be looked upon measuring the right things since the specific measures used in points table encompass a range of dimensions designed to focus the organization on factors essential for PHL's success and not restricted to traditional financial measures.

At PHL, internal benchmarking has been used to provide sets of absolute standards that all warehouses are expected to achieve. This will help to ensure a continuous focus upon the adoption of 'best practice' at all warehouses. Benchmarks on delivery performance give

importance to quality of service whereas benchmarks on profitability i.e. target profits focus solely upon profitability.

Incentive schemes have been used at PHL, linking the achievement of firm targets with rewards. It might happen that the profit incentive would act as a booster to each warehouse management team. However, what is required for the prosperity of PHL is a focus of management on the determinants of success rather than the results of success.

Workings

Warehouse – Points Table

Particulars	**SG**	**HK**	**NY**	**NZ**
Revenue and Profit				
Revenue	0	1	1	1
Profit (see note 'a' below)	1	0	1	0
Total Points earned …(A)	1	1	2	1
Ranking	II	II	I	II
Courier Delivery Services and Customer Care				
Late collection of couriers	1	0	1	0
Misdirected couriers	0	1	1	0
Delayed response to complaints	1	1	1	0
Delays due to vehicle breakdown	0	0	1	0
Lost items	1	1	1	0
Damaged items	1	0	1	1
Total Points earned …(B)	4	3	6	1
Ranking	II	III	I	IV
Credit Control and Administrative Efficiency				
Average Debtor weeks	0	1	1	0
Debtors more than 60 days (see note 'b' below)	1	1	1	1
Invoice queries (% of total)	1	1	1	1
Credit notes (% of revenue) (see note 'c' below)	1	1	1	0
Total Points earned …(C)	3	4	4	2
Ranking	II	I	I	III
Total Points …(A)+(B)+(C)	8	8	12	4

(a) Profit Points Calculation

Target Results e.g. SG = 3.60/24.00 = 15%

Actual Results e.g. SG = 3.45/22.50 = 15.3% (1 point)

Target Results e.g. HK = 3.15/21.00 = 15%

Actual Results e.g. HK = 3.60/ 27.00 = 13.33% (0 point) and so on ...

(b) Debtors more than 60 days (% of total)

Particulars	SG	HK	NY	NZ
(a) Actual Revenue ('000)	22,500	27,000	21,000	33,000
(b) Average Debtor weeks	5.80	4.90	5.10	6.20
(c) Total Debtors [a x b / 52]	2,510	2,544	2,060	3,935
(d) Less than 30 days [given]	1,950	2,250	1,770	3,000
(e) 31 – 60 Days [given]	481.5	199.5	229.5	828
(f) More than 60 days [c - d - e]	78.50	94.50	60.50	107.00
(g) More than 60 days (% of total) [f/cx100]	3.13	3.71	2.94	2.72

(c) Value of credit notes raised as a % of revenue

SG = ₹ 67.50 / ₹ 22,500 x 100 = 0.30% [Below 0.5%, hence 1 point]

HK = ₹ 54.00 / ₹ 27,000 x 100 = 0.20% [Below 0.5%, hence 1 point]

NY = ₹ 42.00 / ₹ 21,000 x 100 = 0.20% [Below 0.5%, hence 1 point]

NZ = ₹ 198 / ₹ 33,000 x 100 = 0.60% [Above 0.5%, hence 0 point]

Question 6 :

This question was based on EVA and it also appeared in the new module released by ICAI. Hence, it will be discussed later on, when we take up the questions from new module.

Question 7 : [Practical Question]

Cost of Quality

Cool Air Private Ltd. manufactures electronic components for cars. Car manufacturers are the primary customers of these products. Raw material components are bought, assembled and the electronic car components are sold to the customers.

The market demand for these components is 500,000 units per annum. Cool Air has a market share of 100,000 units per annum (20% market share) for its products. Below are some of the details relating to the product:

Selling price	₹ 2,500 per unit
Raw material cost	₹ 900 per unit
Assembly & machine cost	₹ 500 per unit
Delivery cost	₹ 100 per unit
Contribution	₹ 1,000 per unit

The customers due to defects in the product return 5,000 units each year. They are replaced free of charge by Cool Air. The replaced components cannot be repaired and do not have any scrap value. If these defective components had not been supplied, that is had the sale returns due to defective units been nil, customers' perception about the quality of the product would improve. This could yield 10% increase in market share for Cool Air, that is demand for its products could increase to 150,000 units per annum.

Required

(i) ANALYZE, the cost of poor quality per annum due to supply of defective items to the customers.

(ii) The company management is considering a proposal to implement an inspection process immediately before delivery of products to the customers. This would ensure nil sales returns. The cost of having such a facility would be ₹ 2 crores per annum, this would include materials and equipment for quality check, overheads and utilities, salaries to quality control inspectors etc. ANALYZE the net benefit, if any, to the company if it implements this proposal.

(iii) Quality control investigations reveal that defective production is entirely on account of inferior quality raw material components procured from a large base of 30 suppliers. Currently there is no inspection at the procurement stage to check the quality of these materials. The management has a proposal to have inspectors to check the quality at the procurement stage itself. Any defective raw material component will be replaced free of cost by the supplier. This will ensure that no product produced by Cool Air is defective. The cost of inspection for quality control (materials, equipment, salaries of inspectors etc.) would be ₹ 4 crore per annum. ANALYZE the net benefit to the company if it implements this proposal? Please note that scenarios in questions (ii) and (iii) are independent and not related to each other.

(iv) Between inspection at the end of the process and inspection at the raw material procurement stage, ADVISE a better proposal to implement (a) in terms of profitability and (b) in terms of long term business strategy?

Solution 7 :

(i) Customer demand for Cool Air's products is 100,000 units per annum. However, 5,000 defective units supplied are to be replaced free of charge by the company.

Therefore, the total number of items supplied to customers per annum = 100,000 + 5,000 units = 105,000 units. The cost of replacement would include raw material cost, assembly & machining cost and delivery cost of 5,000 units = 5,000 units × (900+500+100) per unit = 5,000 units × ₹1,500 per unit = ₹ 75,00,000 per annum.

Further, had the sale returns not happened, market share would have increased by 50,000 units. Contribution is ₹1,000 per unit, for 50,000 units contribution would be ₹ 5,00,00,000. Therefore, the cost of poor quality per annum = cost of replacement + contribution from lost sales = ₹ 75,00,000 + ₹ 5,00,00,000 = ₹ 5,75,00,000 per annum.

(ii) Inspection at the end of the process would detect defects before delivery to the customers. This would ensure that the sale returns would be nil. Given in the problem that 5,000 units are defective and would need to be replaced. In other words, inspection after production but before delivery to customers would not prevent production of defective units. However, compared to the current scenario, since these defective units have not yet been delivered to the customer, the cost for additional delivery of replaced products would be saved. This savings in the extra delivery cost = 5,000 units × ₹ 100 per unit = ₹ 5,00,000 per annum. Further, had the sale returns not happened, market share would have increased by 50,000 units. Contribution is ₹ 1,000 per unit, for 50,000 units it would be ₹ 5,00,00,000 per annum. Therefore, the total benefit from the inspection process before delivery to customers = savings on delivery costs + contribution from incremental sales = ₹ 5,00,000 + ₹ 5,00,00,000 = ₹ 5,05,00,000 per annum. The cost to the company to maintain good quality of its products through inspection = ₹ 2,00,00,000 per annum. Therefore, the net benefit to the company would be ₹ 3,05,00,000.

(iii) Inspection of raw material at the procurement stage could entirely eliminate defective production. The benefit would be two fold, the current replacement cost for 5,000 units will no longer be incurred. Secondly, due to better customer perception, market share would increase, resulting in an increased contribution to the company. In other words, the cost of poor quality will be nil.

As explained in solution (i), the cost of poor quality per annum = cost of replacement + contribution from lost sales = ₹ 5,75,00,000 per annum. This would be saved by implementing the proposal.

Cool Air has to incur an inspection cost to ensure this highest standard of quality (0% defects) which would cost ₹ 4,00,00,000 per annum. Therefore, the net benefit to the company would be ₹ 1,75,00,000 per annum.

(iv) (a) The proposal to implement inspection immediately before delivering goods to the customers results in a net benefit of ₹ 3,05,00,000 per annum. Alternately, the proposal to implement inspection at the raw material procurement stage results in a net benefit of ₹ 1,75,00,000 per annum. Therefore, from a profitability point of view, inspection immediately before delivery of goods to the customer would the preferred option.

(b) The drawback of inspection at the end of the production process is that (1) it cannot prevent production of defective goods and (2) information regarding the root cause of defective production, in this case, supply of defective raw materials will not get tracked. Therefore, inspection at the end of production does not contribute to resolving the root cause of defective production. On the other hand, inspection at the procurement stage can eliminate production of defective goods. This will ensure a much higher quality of production, better utilization of resources and production capacity. Therefore, from a long term strategy point of view, inspection at the raw material procurement stage will be very beneficial. Currently the cost of ensuring this highest quality of production (0% defects) is ₹ 4 crore per annum. The cost of ensuring 100% quality is quite high, such that the net benefit to the company is lesser than the other proposal. However, due to its long term benefit, Cool Air may consider some minimum essential quality control checks at the procurement stage. Although selective quality check might not ensure complete elimination of defective production, it can contribute towards reducing it. At the same time cost of selective quality check would not be so high as to override its benefits. To determine the extent of quality control inspection, Cool Air should determine its tolerance limit for defective production and do an analysis of the quality / cost tradeoff.

Alternatively, Cool Air may also think of changing its suppliers. It can identify the suppliers who can supply defect free items. Such suppliers may charge a slightly higher price, but it is worth paying it in the long run. Cool Air may carry out an evaluation process of suppliers by ensuring that the suppliers are TQM compliant.

Question 8 : [Practical Question]

Customers Lifetime Value (CLV)

Cineworld is a movie theater and is located in a town with many colleges and universities around it. The town has a substantial student population, most of whom are avid movie goers. Business for Cineworld has been slow in the recent years due to the advent of streaming websites, that show the latest and popular movies online. However, the management of Cineworld continue to feel students would still enjoy watching movies on big-screen, along with the facilities and ambience that only a movie theater can offer. Accordingly, they have framed a plan to attract students by offering discounts on movie tickets.

The average time a student spends at the college or university is 4 years, which is the average duration of any course. For a nominal one-time subscription fee, Cineworld plans to offer students a discount on movie tickets for a period of 4 years. By attracting more footfalls, Cineworld targets to cross sell it food & beverages and souvenirs. This would help it sustain a reasonable revenue each year.

Cineworld would attract attention to the plan by initially offering free tickets, food and beverage and gift vouchers. This one time initial expense, net of the one-time subscription fee collected, would cost ₹ 5,000 per student. On subscription to the plan, the viewership and purchases of each student is expected to be as follows:

Particulars	**Years 1 and 2**	**Years 3 and 4**
Spend on movie tickets per year	2,000	1,500
Spend on food and beverage per year	4,000	3,000
Spend on souvenirs and accessories per year	2,250	750

Assumptions

1. Only 50% of the subscribers are expected to visit the theatres in years 3 and 4.
2. Across all years, only 75% of the subscribers who visit the theatre are expected to buy food and beverage.
3. Only 25% of the subscribers who visit are expected to buy souvenirs in years 1 and 2, and 10% of them in years 3 and 4.

Given that : PVIFA of ₹1 for 4 years at 10% = 3.169 and PVIFA of ₹1 for 2 years at 10% = 1.735

Required

CALCULATE the customer lifetime value per subscriber for the above plan.

Solution 8 :

Customer lifetime value per subscriber can be found by calculating the present value of the revenue that is generated over the period of 4 years. This netted out with the cost incurred to attract subscribers, would give the customer lifetime value per subscriber.

S.N.	Particulars	Revenue (per year)	PVIFA	PV of Revenue	Probability of Usage	Net Revenue
1.	Net cost of attracting a student (one time exp)					(5,000)
2.	Net revenue from movie tickets					
	Years 1 - 2	2,000	1.735	3,470	100%	3,470
	Years 3-4 (refer note 1)	1,500	1.434	2,151	50%	1,076
3.	Sale of food and beverages					
	Years 1 - 2	4,000	1.735	6,940	75%	5,205
	Years 3-4 (refer note 2)	3,000	1.434	4,302	37.5%	1,613
4.	Sale of souvenirs and accessories					
	Years 1 - 2	2,250	1.735	3,904	25%	976
	Years 3-4 (refer note 3)	750	1.434	1,076	5%	54
5.	Total revenue (Steps 2+3+4)					12,394
6.	Net revenue from subscription plan (Step 5 - 1)					7,394

Note 1:

PVIFA (10%, 4 years) = 3.169 and PVIFA (10%, 2 years) is 1.735. Therefore, PVIF for years 3 and 4 = PVIFA (10%, 4 years) - PVIFA (10%, 2 years) = 3.169 - 1.735 = 1.434.

Note 2:

Only 50% of the subscribers are expected to attend in years 3 and 4. Out of those only 75% are expected to buy food and beverage. Therefore, only 37.5% of the subscribers (75% of 50% subscribers who visit) are expected to buy souvenirs in years 3 and 4.

Note 3:

Only 50% of the subscribers are expected to attend in years 3 and 4. Out of those only 10% are expected to buy souvenirs. Therefore, only 5% of the subscribers (10% of 50% subscribers who visit) are expected to buy souvenirs in years 3 and 4

Conclusion : Net present value of a customer (lifetime value) per subscriber is ₹ 7,394. Cineworld has to multiply this with the expected total number of subscribers, to find out if this would be a profitable proposition or not.

Question 9 : [Practical Question]

Planning and Operational Variances

Ski Slope had planned, when it originally designed its budget, to buy its artificial ice for ₹10 / per kg. However, due to subsequent innovations in technology, producers slashed their prices to ₹9.70 per kg. and this figure is now considered to be a general market price for the purpose of performance assessment for the budget period. The actual price paid was ₹9.50, as the Ski Slope procurement department negotiated strongly for a better price. The other information relating to that period were as follows:

Original Standards (ex-ante)	Revised Standards (ex-post)	Actual (5,500 units)
5,500 units × 5 Kgs. × ₹10 = ₹ 2,75,000	5,500 units × 4.75 Kgs. × ₹9.70 = ₹ 2,53,412.50	27,225 Kgs. × ₹ 9.50 = ₹ 2,58,637.50

Required

(i) CALCULATE the variances for 'Ice' by

(a) Traditional Variance Analysis; and

(b) An approach which distinguishes between Planning and Operational Variances.

(ii) INTERPRET the result.

Solution 9 :

(i) (a) Traditional Variances :

Usage Variance = Std. Price x (Std. Qty. - Actual Qty.)
= 10 x (27,500 - 27,225) = ₹ 2,750 (F)

Price Variance = Actual Qty. x (Std. Price - Actual Price)
= 27,225 x (10 - 9.50) = ₹ 13,612.50 (F)

Total Cost Variance = Usage Variance + Price Variance
= ₹ 2,750 (F) + ₹ 13,612.50 (F) = ₹ 16,362.50 (F)

(b) Operational Variances : (i.e. Controllable variances)

Usage Variance = Revised Std. Price x (Revised Std. Qty. - Actual Qty.)
= 9.70 x (26,125 - 27,225) = ₹ 10,670 (A)

Price Variance = Actual Qty. x (Revised Std. Price - Actual Price)
= 27,225 x (9.70 - 9.50) = ₹ 5,445 (F)

Total Operational Variance = ₹ 10,670 (A) + ₹ 5,445 (F) = ₹ 5,225 (A)

Planning Variances : (i.e. Uncontrollable variances)

Usage Variance = Std. Price x (Std. Qty. - Revised Std. Qty.)
= 10 x (27,500 - 26,125) = ₹ 13,750 (F)

Price Variance = Revised Std. Qty. x (Std. Price - Revised Std. Price)

= 26,125 x (10 - 9.70) = ₹ 7,837.50 (F)

Total Planning Variance = ₹ 13,750 (F) + ₹ 7,837.50 (F) = ₹ 21,587.50 (F)

Total Cost Variance = Total Operational Variance + Total Planning Variance

= ₹ 5,225 (A) + ₹ 21,587.50 (F) = ₹ 16,362.50 (F)

(ii) Interpretation

It is important to note that an innovation in technology is outside the control of Ski Slope and is, by nature, a planning 'error'. Equally, the better negotiation of a price should be recognised as an operational matter. Operational variances are self evidently under the control of operational management, so operational efficiency must be assessed with only these figures in mind. The material procurement department has clearly done well by negotiating a price reduction beyond the market dip. One might question the quality of the ice, as the usage variance is adverse (possibly the ice fails to cover the field and so more is required). Obviously, the favourable price variance is smaller than the adverse usage variance, thus, overall performance is quite poor. A supervisor cannot assess variances in isolation from each other.

Question 10 : [Practical Question]

Note : Exactly the same question appeared in May 2018 RTP also. It was Q.12 in May 2018 RTP with the title as 'SSK Pharmaceuticals Ltd.' It is also covered in our Regular Classroom Notes. Hence, it is excluded here to avoid duplication of work.

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4 Additional Questions from ICAI Website

Additional Questions

During 1st July, 2018 to 30th April, 2019, there were no additional questions uploaded by ICAI on its website.

Additional Case Studies

During 1st July, 2018 to 30th April, 2019, there were no additional case studies uploaded by ICAI on its website.

Additional Case Scenario

During 1st July, 2018 to 30th April, 2019, there were no additional case scenario uploaded by ICAI on its website.

Mock Test Papers

During 1st July, 2018 to 30th April, 2019, ICAI uploaded Three Mock Test Papers with Solutions on its website. These were code named as Test Series - August, 2018; Test Series - October, 2018 and Test Series - March, 2019.

However, after going through all the questions in the above mock test papers, I noticed that - all the questions were borrowed either from Module or RTP or Exam Papers. There were no new questions in it. Hence, to avoid the duplication of work, I have excluded them here.

My general observation based on past experience is that the Mock Test Papers contain repeat questions and not the new questions.

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5 Extra Questions from ICAI Module I

Note : ICAI had issued new module in the month of January, 2019. Majority questions were taken from Previous RTP, Previous Exam Papers and Website hosting. We have already covered them in Amendment Batch 1 & 2. Hence, only new questions are covered below to avoid repetition.

Question 1 : [Case Scenario]

From Chapter 1 : Introduction to Strategic Cost Management

Topic : Michael Porter's Five Forces Model

Wireless is a manufacturer of mobile phones. The company operates in a market that is dynamic, extremely competitive and consumer centric. The market is broadly fragmented into those customers who are price conscious looking only for basic features and those who are technology savvy wanting to try out the latest offering. Wireless manufactures phones that cater to both these segments.

Mobile A has the very basic features that a customer requires from a phone. It is marketed to attract the price conscious customers. There are many other manufacturers who have similar product offering for this market. Mobile Z offers the latest technology features and an attractive design. Wireless has invested substantial amount in research and development that has resulted in Mobile Z having many unique features. It is marketed to attract customers willing to try out newer products. The research has also yielded results whereby a large section of the design of Mobile A and Z can be standardized to have a similar components and engineering. This would enable Wireless to enter into agreements with its suppliers to provide components on Just in Time basis. With this change, the quality of Mobile A is expected to improve, thereby improving its sales offtake manifold.

Online shopping has given customers complete access to the prices of phones offered by different manufacturers. This channel of shopping contributes to almost 70% of the sales. Huge discounts by its rivals has forced Wireless to reduce the prices of Mobile A as well. This has stretched its profit margins. Various cost reduction measures have been initiated to maintain profitability. Mobile Z on the other hand is currently doing well since it is targeted at a more niche segment of customers. Wireless is able to charge premium price for Mobile Z. The latest news in the industry of personal devices like mobiles, laptops etc. is the use of Artificial Intelligence and Augmented Reality to enhance user experience. The technical staff at Wireless feel that this could be the next new frontier that could really change the way we use our devices, most of which could even go redundant.

Required :

(i) Identify the strategy that Wireless is using for Mobile A and Mobile Z.

(ii) Discuss the risks involved in each of these strategies.

(iii) Advise Wireless to sustain its current strategy for Mobile A?

Solution 1 :

(i) Wireless is following the "low cost strategy" for Mobile A and "differentiation strategy" for Mobile Z. Mobile A being offered at discounted rates to meet the prices of its competitors. This is being done in order to gain market share from its competitors. To maintain its profitability, Wireless has to find means to keep its manufacturing, distributing and others costs low.

Mobile Z is being perceived by customers as a unique product, with features different from its competitors. This is "differentiation strategy". Differentiation can be achieved from superior product quality, innovation and customer responsiveness.

(ii) The risks involved in a "low cost strategy" for Mobile A is that any price reduction by Wireless will be followed by an equivalent price reduction by its competitors. This price war will ultimately eliminate players who are unprofitable. This strategy will put margins under pressure. The company has to find ways to lower its costs on a sustained basis. The "low cost advantage" will be lost once its competitors find a way to lower their costs as well. The other risk would be to that the quality of the product could be impacted negatively due to lowering of costs.

The risks in differentiation strategy is that it will work only when customers are not price sensitive. The mobile market that Wireless operates is a competitive market. As long as certain customers are willing to pay extra for additional features, Mobile Z will have a competitive advantage. If these customers also become price sensitive, they fail to see the value for paying extra for the additional features. Then the sale of Mobile Z will start falling. The other risk in this strategy would be in the ability of competitors to replicate the features of Mobile Z. Therefore, Wireless should protect its intellectual property rights in order to prevent its competitors from replicating the design and features of Mobile Z. If these risks are contained, then Wireless would be able to maintain its premium price for Mobile Z for its unique features.

An external risk factor for Wireless would also be from the developments in the fields of Artificial Intelligence and Augmented Reality. Wireless has to constantly monitor and assess how these technological developments can impact its business. It must be flexible to adapt to changes as they take place, in order not to become redundant in business.

(iii) "Low cost advantage" can be maintained by copying designs rather than creating them, attaining economies of scale by high volume sales, getting discounts on bulk purchases and gaining from learning curve benefits.

Learnings and experience from research for Mobile Z can be leveraged for Mobile A. Standardization of design for Mobile Z and A would improve the quality of the product since the design is based on a product that has premium range of customers. Since these features can improves the sales of Mobile A, costs would benefit from economies of scale due to larger production volumes.

Bulk purchase of components for Mobile A and Z gives Wireless the advantage in negotiating for discounts on purchases. It could also negotiate for favourable delivery terms, like just in time purchasing agreements. This would reduce the inventory holding costs for Wireless.

All this contributes towards lowering the costs of production of Mobile A. This will help Wireless to sustain its low cost advantage.

Question 2 :

From Chapter 2 : Modern Business Environment

Topic : Cost of Quality

Livewell Ltd. is a manufacturing company that produces a wide range of consumer products for home consumption. Among the popular products are its energy efficient and environment friendly LED lamps. The company has a quality control department that monitors the quality of production.

As per the recent cost of poor quality report, the current rejection rate for LED lamps is 5% of units input. 5,000 units of input go through the process each day. Each unit that is rejected results in a ₹ 200 loss to the company. The quality control department has proposed few changes to the inspection process that would enable early detection of defects. This would reduce the overall rejection rate from 5% to 3% of units input. The improved inspection process would cost the company ₹ 15,000 each day.

Required :

(i) Analyse the proposal and suggest if it would be beneficial for the company to implement it.

(ii) After implementation, Analyse the maximum rejection rate beyond which the proposal ceases to be beneficial?

Solution 2 :

(i) Analysis of the new proposal :

Particulars	**₹ / day**
Savings in the loss due to reduction in rejection rate [₹ 200 per unit x (5% - 3%) x 5,000 units]	20,000
Less : Cost of inspection process improvement	15,000
∴ Net benefit to the company	5,000

Conclusion : Considering net benefit of ₹ 5,000 per day to the company, it is advisable to implement the proposal.

(ii) Calculation of maximum rejection rate :

Particulars	**₹**
(a) Cost of implementing proposal	15,000
(b) Savings in loss per unit	200
(c) Reduction in rejection of minimum no. of units to recover the above cost [a / b]	75 units
(d) Reduction in rejection in % of input [75 / 5,000 x 100]	1.5%
(e) Maximum allowable rejection in % of input [5% - 1.5%]	3.5%

Question 3 :

From Chapter 4 : Cost Management Techniques

Topic : Pareto Analysis

The following information is given about the type of defects during a production period and the frequencies of their occurrence in a spectacle manufacturing company :

Particulars	No. of items
End frame not equidistant from the centre	10
Non uniform grinding of lenses	60
Power mismatches	20
Scratches on the surface	110
Spots / Stains on lenses	5
Rough edges of lenses	70
Frame colour shade differences	25

Required :

Prepare a frequency table so that a Pareto Chart can be constructed for the defect type. Also identify key areas of focus.

Solution 3 :

Note : We should arrange the reasons for no. of defective items in the decreasing order and then should calculate their percentage to the total no. of defective items.

Statement showing Pareto Analysis of Defects

Particulars	No. of items	% defects	Cum. % defects
Scratches on the surface	110	36.67%	36.67%
Rough edges of lenses	70	23.33%	60.00%
Non uniform grinding of lenses	60	20.00%	80.00%
Frame colour shade differences	25	8.33%	88.33%
Power mismatches	20	6.67%	95.00%
End frame not equidistant from the centre	10	3.33%	98.33%
Spots / Stains on lenses	5	1.67%	100.00%
Totals	**300**	**100.00%**	

Comment : The company should focus on eliminating scratches on the surface, rough edges of lenses and grinding of lenses related defects on priority basis. These three defects account for 80% of the total defective items produced. By resolving these issues on priority basis, we can reduce the customer complains substantially and thus improve the customer satisfaction ratio, using Pareto Analysis.

Question 4 :

From Chapter 6 : Decision Making

Topic : Process Further or not?

A process industry unit manufactures three joint products viz. A, B and C. C has no realisable value unless it undergoes further processing after the point of separation. The cost details of C are as follows :

Particulars	**₹ per unit**	**₹ per unit**
Up to the point of separation		
Marginal Cost	30	
Fixed Cost	20	50
After the point of separation		
Marginal Cost	15	
Fixed Cost	5	20
∴ Total cost per unit		70

C can be sold at ₹ 37 per unit and no more.

Required :

(i) Should we process C further?

(ii) If C is not a joint product, then will you advice sale of C @ ₹ 37 per unit using CVP analysis.

Solution 4 :

(i) If 'C' is a joint product, then the cost up to separation point is a common cost and hence irrelevant for decision making. The only relevant cost is cost after the point of separation. Which is ₹ 20 per unit. If we sale C @ ₹ 37 per unit, then we will earn an incremental profit of ₹ 17 per unit. It will help us to recover the joint processing cost. Hence, we should process C further.

(ii) If 'C' is not a joint product, then only marginal cost would be irrelevant for decision making. That is 30 + 15 = ₹ 45 per unit. However, if we sale C @ ₹ 37 per unit, then there will be an incremental loss of ₹ 8 per unit. In such case, we should not sale C @ ₹ 37 per unit.

Question 5 :

From Chapter 7 : Pricing Decision

Topic : Profit Maximisation Model

Baithway India Ltd. (BIL) is an ISO 9001:2008, a premier multi-discipline company. BIL manufactures a diverse range of products viz. Pressure Vessels, Wagons, Steel Castings etc. To manufacture Wagons, BIL undertake structural fabrication jobs and manufacturing, retrofitting of EOT crane. It is presently the flagship company of the Baithway Group comprising of renowned companies such as Krishna Agriculture, Chiang Phosphate Etc. The Group was launched with the idea of one virtual company with diversified businesses, and is based on four fundamental principles - Collaboration, Sustainability, Inclusiveness and being Global.

Baithway India Ltd. has two divisions namely, Bogie Division (BD) and Wagon Division (WD) for manufacturing of Wagon. BD manufactures Bogies and WD manufactures various types of Wagons like Freight Wagon, Tank Wagon, Special Wagon etc. To manufacture a wagon, WD needs 4 Bogies. BD is the only manufacturer of the Bogies and supplies both WD and outside customers. Details of BD and WD for the coming financial year 2018-19 are as follows :

Particulars	**BD**	**WD**
Fixed Costs (₹)	9,20,20,000	16,45,36,000
Variable Cost per unit (₹)	2,20,000	*4,80,000
Capacity per month (units)	320	12

* excluding transfer costs

Market research has indicated that the demands in the market for Baithway India Ltd.'s products at different quotations are as follows :

For Bogies : At quotation price of ₹ 3,20,000; no tender will be awarded, but demand will increase by 30 Bogies with every ₹ 10,000 reduction in the unit quotation price below ₹ 3,20,000.

For Wagons : At quotation price of ₹ 17,10,000; no tender will be awarded, but demand will increase by 2 Wagons with every ₹ 50,000 reduction in the unit quotation price below ₹ 17,10,000.

Further, BD is the only manufacturer of Bogies but due to increased demand, competitors are entering the market. The division is reviewing its pricing policy and carrying out some market research. After the market research, the division BD has decided to introduce new type of 'E' Class Bogies in the market and to obtain the patent right for such unique Bogies. High growth in future characterizes this class.

Required :

(i) Calculate the unit quotation price of the Wagon that will maximise Baithway India Ltd.'s profit for the financial year 2018-19.

(ii) Calculate the unit quotation price of the Wagon that is likely to emerge if the divisional managers of BD and WD both set quotation prices calculated to maximise divisional profit from sales to outside customers and the transfer price is set at market selling (quotation) price. [Note : If P = a - bQ then MR = a - 2bQ]

(iii) Recommend appropriate pricing strategy while introducing the E class bogies.

Solution 5 :

(i) Calculation of Price per unit of the Wagon to maximise BIL's Profit :

The Basic Price equation, which is used to determine the Price where Profit is Maximum, is written as:

P = a – bQ

Where, P = Price where the profit is maximum
b = Slope of the Demand Curve, Calculated as
b = Change in Price / Change in Quantity
Q = Quantity Demanded
a = Price at Which Demand is Zero

Profit is maximum when -

Marginal Revenue (MR) = Marginal Cost (MC)

Marginal Cost = Variable cost per unit of Wagon
= Variable cost of 4 Bogies + Incremental cost of WD
= (2,20,000 x 4) + 4,80,000 = ₹ 13,60,000

Marginal Revenue (MR) = a – 2bQ
= 17,10,000 - [2 x (50,000 / 2) x Q]
= 17,10,000 - 50,000Q

MR = MC, hence -

17,10,000 - 50,000Q = ₹ 13,60,000

17,10,000 - 13,60,000 = 50,000Q

Hence, Q = 7 units

Substituting Q = 7 in the equation of price we get -

P = a – bQ

P = 17,10,000 - [(50,000 / 2) x 7]
= 17,10,000 - 1,75,000 = ₹ 15,35,000

Conclusion : BIL should sell 7 Wagons @ ₹ 15,35,000 each.

(ii) Calculation of Price per unit of the Wagon considering divisional transfer :

First we need to calculate the internal transfer price of a Bogie at the same selling price at which it sells to outside customers, to earn maximum total profit.

Marginal Cost of Bogie = ₹ 2,20,000 (given)

Marginal Revenue (MR) = a – 2bQ
= 3,20,000 - [2 x (10,000 / 30) x Q]
= 3,20,000 - (2,000/3 x Q)

MR = MC, hence -

3,20,000 - (2,000/3 x Q) = 2,20,000

3,20,000 - 2,20,000 = (2,000 / 3 x Q)

1,00,000 x 3 / 2,000 = Q

Hence, Q = 150 units

Substituting Q = 150 in the equation of price we get -

P = a – bQ

P = 3,20,000 - [(10,000 / 30) x 150]
= 3,20,000 - 50,000 = ₹ 2,70,000 per Bogie

Conclusion : Division BD should sell 150 Bogies @ ₹ 2,70,000 each.

Using the above quotation of Bogie in the equation of Wagon we get -

Marginal Cost = Variable cost per unit of Wagon
= Variable cost of 4 Bogies + Incremental cost of WD
= (2,70,000 x 4) + 4,80,000 = ₹ 15,60,000

Marginal Revenue (MR) = a – 2bQ
= 17,10,000 - [2 x (50,000 / 2) x Q]
= 17,10,000 - 50,000Q

MR = MC, hence -

17,10,000 - 50,000Q = ₹ 15,60,000

17,10,000 - 15,60,000 = 50,000Q

Hence, Q = 3 units

Substituting Q = 3 in the equation of price we get -

P = a – bQ

P = 17,10,000 - [(50,000 / 2) x 3]

= 17,10,000 - 75,000 = ₹ 16,35,000 per Wagon

Conclusion : WD should sell 3 Wagons @ ₹ 16,35,000 each, if it gets the internal transfer of Bogies @ ₹ 2,70,000.

(iii) Appropriate pricing strategy while introducing the E class bogies :

Whenever a new product is launched into the market, management can adopt either Skimming Pricing or Penetration Pricing Policy.

The idea behind Skimming Pricing Strategy is to intentionally keep a higher price in the beginning to recover high cost of R&D and marketing expenses associated with a new product.

Penetration Pricing Strategy works when we are entering into an already competitive market and our product doesn't have any special features to offer. This policy works well if the demand in the market is elastic. Under this policy, a very low price is charged initially to drive away the competitors and then the prices are increased gradually.

BD has decided to introduce new type of 'E' Class Bogies in the market and to obtain the patent right for such unique Bogies. BD is the only manufacturer of Bogies at present and hence the demand in inelastic. Hence, BD can use Skimming Pricing Strategy while launching E class bogies.

As this product is expected to witness high growth in future and competition is expected in the future, BD can gradually reduce the price of E class bogies to take care of such competition and to encash high growth potential. Thus Skimming Pricing will work well in this situation.

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6 Extra Questions from ICAI Module II

Note : ICAI had issued new module in the month of January, 2019. Majority questions were taken from Previous RTP, Previous Exam Papers and Website hosting. We have already covered them in Amendment Batch 1 & 2. Hence, only new questions are covered below to avoid repetition.

Question 1 : [Case Scenario]

From Chapter 8 : Performance Measurement & Evaluation

Topic : EVA

XYZ Ltd. Provides you with the following financial information as at 31st March 2018.

(₹ in lakhs)

Share Capital	981.46
Reserves and Surplus	1,313.62
Long Term Debt	144.44
Trade Payables	20.38

Additional information provided is as follows:

(i) Profit before interest and tax is ₹ 2,202.84 lakhs.
(ii) Interest paid is ₹ 13.48 lakhs.
(iii) Tax rate is 30%
(iv) Cost of equity = 12.42% and cost of debt = 6.53%

Required :

CALCULATE Economic Value Added of XYZ Ltd.

Solution 1 :

1. Calculation of NOPAT : (₹ in lakhs)

PBIT (given)	2,202.84
Less : Interest	(13.48)
PBT	2,189.36
Less: Tax @ 30%	(656.81)
PAT	1,532.55
Add: Interest (net of tax) [13.48 x (1 – 0.30)]	9.44
NOPAT	1,541.99

*Shortcut for NOPAT = PBIT - (Tax Rate x PBIT)
= 2,202.84 - 30% = 1,541.99 lakhs (approx)

2. Calculation of WACC :

Capital Employed = ₹ 981.46 L + ₹ 1313.62 L + ₹ 144.44 L

= ₹ 2,439.52 L

WACC = (Cost of Equity x Prop. of Equity) + (Cost of Debt x Prop. of Debt)

= $\frac{(981.46 + 1,313.62)}{2,439.52}$ x 12.42% + $\frac{(144.44)}{2,439.52}$ x 6.53%

= 11.58% + 0.39%

= 12.07%

3. Calculation of EVA :

EVA = NOPT – (WACC x Capital Employed)

= ₹ 1,541.99 L - (12.07% x ₹ 2,439.52 L)

= ₹ 1,247.54 L

*Shortcut for EVA = PAT - Cost of using Equity Funds

= 1,532.55 L - (12.42% x 2,295.08)

= 1,247.50 lakhs (approx)

Question 2 :

From Chapter 8 : Performance Measurement & Evaluation
Topic : Economic Value Added (EVA)

X Greetings is a Korean Company based in Seoul, committed to supplying the highest quality stationery, greeting cards, gifts, and children's products, which are sourced from all over the world. Company also distributes Sunday Paper – Korean made eco-friendly stationery designed and manufactured in Seoul. X's home currency is the KRW (i.e. Korean Won). It is also listed on the KRX (i.e. Korean Stock Exchange) for last 20 years and its current share price is KRW 23.25.

You are a Management Accountant of the X Greetings and directors have asked you to study X on value-based management which is a different approach to the performance management. The directors have heard about this method considering it a way of focusing on shareholder's interests and in the present economic scenario, they think it to be useful for the growth of X.

Conventionally earnings per share (EPS) and share price were being used to assess performance. The proposed changes are important and the directors require you to have the implications of the new analysis and also want to convince the major investors for the future benefits.

Financial data for X Greetings

Particulars	**2018-19**	**2017-18**
	KRW in million	KRW in million
Profit after interest and tax	55.55	65.38
Interest	15.60	8.00
Opening capital employed	273.58	198.40
Closing capital employed	329.13	273.58
	Debt to Equity	Debt to Equity
Capital structure	40 : 60	40 : 60

Costs of capital :	%	%
Equity	14.20	11.50
Debt (pre-tax rate)	8.00	6.00
Tax rate	30	30
Stock market information :		
Average number of shares in issue	3.2 million	3.2 million
Stock market all-share index	1,985	2,561
Retailing sector index	1,155	1,408
X Greetings (share price)	KRW 22.50	KRW 24.40

Required :

ASSESS the performance of X Greetings using Economic Value Added and ANALYSE the result relative to those of earnings per share (EPS) and share price. Assumptions, if any, should be clearly stated.

Solution 2 :

1. Calculation of EPS and EVA :

Particulars	**2018-19**	**2017-18**
	KRW in million	KRW in million
(a) Calculation of NOPAT :		
Profit after interest and tax	55.55	65.38
Add : Interest net of tax (Int. - 30%)	10.92	5.60
Net Operating Profit after Tax (NOPAT)	66.47	70.98
(b) Calculation of WACC :		
Cost of Equity	14.20%	11.50%
Cost of Debt [Rate x (1 - T)]	5.60%	4.20%
Debt : Equity Ratio	40 : 60	40 : 60
WACC	10.76%	8.58%
(c) Opening capital employed	273.58	198.40
WACC x Op. C.E.	29.44	17.02
EVA [NOPAT - (WACC x CE)]	37.03	53.96
(d) Profit after interest and tax	55.55	65.38
Average number of shares in issue	3.2 million	3.2 million
EPS [PAT / No. of shares]	17.36	20.43

2. Comments on the performance of X Greetings :

The performance of X Greetings has gone down since earnings per share is down by 15.03% as compared to last year. This indicates that the company is not doing better financially. However, the share price are down only by 7.79% as compared to the fall in Retailing sector index by 17.97% and the overall stock market down by 22.49%. The sector comparison is more material for the performance of X as stock market all-share index (KOSPI) is composed of data from financial, manufacturing and other industries whereas retailing sector comparison is specific . This implies that the market views X as one of the better prospects within the retailing sector that will encourage the shareholders to continue to hold their shares in the company.

In addition, X Greetings has generated positive EVA for 2018-19 KRW 37.03. EVA of 2018-19 has fallen from 2017-18 but still it remained positive and so the company continues to create value for its shareholders even in the bearish market. It is therefore a good investment option even in a falling market.

Important Note for Calculation of EVA :

ICAI has borrowed the concept of NOPAT and EVA from a foreign author **Stern Stewart**. I came across with this concept in the new Study Material (3 volumes) printed by ICAI in January, 2019 and released in February, 2019 for students. There was **no mention** of **Stern Stewart** model in the previous edition of ICAI module.

On careful study, I could gather some information and the way of calculation of EVA for students. Please remember that the logical reasoning behind such calculations is not mentioned anywhere in the printed study material. I am providing below, a step by step calculation of NOPAT and EVA, so that you can solve such question if it appears in the exam.

Calculation of NOPAT as per Stern Stewart Model :

Particulars	Amount (₹)	Amount (₹)
Operating profit as per books of account (EBIT)		xxx
Addback : • Non cash items debited to P&L account • Accounting depreciation charged to P&L account • Provision for doubtful debts • Research & Development expenditure charged to P&L account, but whose benefit is yet to accrue • Marketing expenditure charged to P&L account, but whose benefit is yet to accrue • Training expenditure on staff charged to P&L account, but whose benefit is yet to accrue	xxx xxx xxx xxx xxx	xxx
Less : • Tax Paid in cash (not accrued or deferred tax) • Tax saving on interest on borrowings • Economic depreciation of assets (based on use)	xxx xxx xxx	xxx
NOPAT		xxx

Calculation of Adjusted Capital Employed as per Stern Stewart :

Particulars	Amount (₹)	Amount (₹)
Opening Capital Employed as per books of account		xxx
Addback : (adjustments of **previous** financial year) • Non cash items debited to P&L account • Accounting depreciation charged to P&L account • Provision for doubtful debts • Research & Development expenditure charged to P&L account, but whose benefit is yet to accrue • Marketing expenditure charged to P&L account, but whose benefit is yet to accrue • Training expenditure on staff charged to P&L account, but whose benefit is yet to accrue	xxx xxx xxx xxx xxx	xxx
Less : (adjustments of **previous** financial year) • Economic depreciation of assets (based on use)		xxx
Adjusted Opening Capital Employed		xxx

Student Note : Stern Stewart uses the figure of opening capital employed for calculation of EVA and not the Closing CE or Average CE. He feels that the investments made during the current year will take atleast one year to generate realistic returns for the business. Hence, opening capital employed should be considered for calculation of EVA as follows :

Hence, **EVA = NOPAT - (WACC x Op. Adj. CE)**

Question 3 :

From Chapter 8 : Performance Measurement & Evaluation

Topic : Economic Value Added (EVA)

Beta Control (BC) is a global leader in manufacturing of commercial building control systems with over 250 distributors and many thousands of installations in more than 50 countries. Control systems involve air conditioning systems, facility management, energy and water management, access control and security controls etc. At BC, manufacturing is done at a number of factory sites where some products are easy and largely produced and have a long life while other products are intricate and have a short life due to changing technologies. BC's mission statement is 'to keep you ahead through control systems that improve productivity and save energy'.

A Newly appointed chief executive officer (CEO) is anxious about declining share price of BC in the last two years. She identified that the business has grown through acquisition and senior management have focused on making corporate deals but not on making control systems. She announced that the BC's focus must be on optimization and upgradation of its value generation rather than just getting bigger through acquisitions.

Assuming yourself as a performance management expert of BC, the CEO has asked you to aid her in her improvement programme. Firstly, she want your views on the use of EVA as the key performance metric at BC. You are given the current EVA computation (Annexure 1) but there is some suspicion about whether the assistant who has done this work is sufficiently well trained about this method. So, she requires you to examine his accuracy and the assumptions forming part of the calculation.

Required :
Write a report to the chief executive officer to EVALUATE the accuracy of the EVA calculation and the assumptions.

Annexure 1

NOPAT

Particulars	**Year ended 31st March 2019**	
	₹ In Lakhs	**Notes**
Operating Profit	1,102.80	
Add :		
Non-Cash Expenses	30.20	
Marketing Expenditure Capitalised	46.20	7
Less :		
Tax	269.60	9
Tax Relief on Interest	48.96	
Net Operating Profit After Tax (NOPAT)	860.64	

Capital Employed :

Particulars	Year ended 31st March 2019	
	₹ In Lakhs	Notes
From the Statement of Financial Position	4,802.00	10
Add :		
Marketing Expenditure Capitalized	46.20	7
Adjusted Capital Employed	4,848.20	

WACC = (1/2 x 15%) + (1/2 x 7.8%)
= 11.40%
EVA = NOPAT – (WACC x Capital Employed)
= ₹ 860.64 L – (₹ 4,848.20 L x 11.40%)
= ₹ 860.64 L – ₹ 552.69 L
= ₹ 307.95 Lakhs

Assumptions and Notes :

1. Debt/Equity 1 : 1
2. Cost of Equity is 15%
3. Cost of Debt (pre-tax) is 7.8%
4. Tax Rate is 30%
5. Interest charged in the period was ₹ 163.20 L
6. In current fiscal year, BC spend ₹ 80 L in Training and Development by leveraging the latest digital technologies including virtual classrooms to deliver highly relevant training to staff at the point of need.
7. Marketing Expenditure has been ₹ 46.20 L each year for the last two years to build the long-term brand.
8. The total R&D spending was ₹ 20 L during this year for in-depth study the TCP/IP protocols. The TCP/IP based products have not been launched yet.
9. BC has paid Tax of ₹ 260 L while the tax charged as per accounts was ₹ 269.60 L.
10. Capital employed during the Period (from the statement of financial position) :
    Opening = 4,564.00 lakhs
    Closing = 4,802.00 lakhs

Solution 3 :

Report

To : CEO, Beta Control
From : Performance Management Expert
Date : 31st May 2019
Subject : Evaluation of EVA at Beta Control

EVA provides a link between decisions, performance measures and rewards, which focuses managers on performing better. Incentive schemes based on EVA provide better quality information and motivation in making decision which in turn maximise shareholder's wealth. In other words, EVA links the operating returns to the assets that were used to generate those returns. The learning which flows from EVA analyses can be useful and can allow the manager not only to identify areas of weakness in performance but also to easily find solutions. BC is a multiproduct company having number of factory sites. EVA can help to appraise divisional contributors to, or detractors from, overall profitability. Thus, managers may be educated through EVA and pursue such objectives that improves operating profits by investing more capital.

In addition, this report deals with evaluation of the accuracy and assumptions used in the calculation of BC's EVA. There are many errors in the present calculation of EVA. These have been discussed below and revised calculations are enclosed.

- Non-cash Expenses have been correctly added back to the profit as these are expenses which do not affect the cash flow of a given period.

- Adding back of Marketing Expenditure is also correct as this spending contributes to future value-creation. For the same reason, the prior year's spending is also added in to capital employed.

- Training and Development Expenses should be capitalised. Training and Development Expenses have been treated as an expense in the income statement, they should be added back to profit, and added to capital employed (at the end of the year).

- Research and Development (R & D) Expenses should be treated as marketing expenditure for long period and hence it is required to be added back.

- The tax expenses in the EVA calculation should be the tax paid with adjustment for tax relief on interest and not the adjusted amount of tax charged in the accounts.

- The WACC is incorrect because it should be based on post-tax cost of debt. The cost of debt is wrongly taken as before tax.

- Generally, a company takes, at least, a year's time to earn a return on investment. Thus, the capital employed figure should be based on the beginning numbers.

Revised NOPAT :

Particulars	**Year ended 31st March 2019 ₹ in lakhs**
Operating Profit	1,102.80
Add :	
Non-Cash Expenses	30.20
Marketing Expenditure Capitalised	46.20
Training & Development Expenses	80.00
R & D Expenses	20.00
Less :	
Tax Paid	260.00
Tax Relief on Interest [163.20 x 30%]	48.96
Net Operating Profit After Tax (NOPAT)	970.24

Revised Capital Employed :

Particulars	**₹ in lakhs**
Capital Employed (Opening) as per financial position	3,564.00
Add : Marketing Expenditure Capitalized (of last year)	46.20
Adjusted Capital Employed	4,610.20

Revised WACC	=	(1/2 x 15%) + (1/2 x 7.8% x 70%)
	=	10.23%
Revised EVA	=	NOPAT – (WACC x Capital Employed)
	=	₹ 970.24 – (₹ 4,610.20 x 10.23%)
	=	₹ 498.62 lakhs

Comments :

The recomputed EVA has increased from ₹ 307.95 lakhs to ₹ 498.62 lakhs, which shows a positive position for BC as it adds up the shareholder's wealth.

Question 4 :

From Chapter 8 : Performance Measurement & Evaluation

Topic : Economic Value Added (EVA)

Water Utilities Services (WUS) is a parastatal company (i.e. a company having political authority and serving the public interest) established with an aim for supply and distribution of water in Mumbai as well as supply of water to the various local authorities for distribution to villages and other small cities adjacent to Mumbai. This involved planning, operating, treating, maintaining, and distributing water resources in the country's urban centres and other areas mandated by Maharashtra Government. Its mission is "To provide sustainable water in a cost effective and environmental friendly manner to the economy".

The government ensures that WUS does not take advantage of its monopoly position in the regional area by increasing prices. The government controls majority of services through its water regulatory body which determines an acceptable margin level (ROCE) and ensures that the pricing of WUS within these areas does not break this level. The remaining work i.e. a water bottle operation (WBO) is not regulated by government and WUS charges a market rate for water supply in bottle. The regulator compute return on capital employed (ROCE) of WUS based on its own valuation of the capital assets which are used in operation and the profit from those services.

Acceptable level of ROCE set by the regulator is 7.00%. If WUS breach this level, then the company would be penalized. WUS board is trying to improve the performance for the benefit of the shareholders. In order to communicate the objective of maximizing shareholders' wealth, the directors have decided to consider economic value added (EVA) as the key performance indicator.

Compute EVA of WUS based on the following information for the year ending 31 March 2019:

Particulars	**Water Distribution Operation (WDO)**	**Water Bottle Operation (WBO)**	**Total**
	₹ in Crore	**₹ in Crore**	**₹ in Crore**
Revenue	555.00	186.00	741.00
Less: Operating Cost	460.00	119.00	579.00
Operating Profit	95.00	67.00	162.00
Less: Finance Charges			46.00
Profit Before Tax			116.00

Less: Tax at 30%		34.80
Profit After Tax		81.20
Capital Employed	**2018-19**	**2017-18**
	₹ in Crore	**₹ in Crore**
Audited Accounts	1,616.20	1,495.00
Determined by the Regulator (for WDO Only)	1,558.00	1,422.00

Notes :

1. Operating Costs includes:

Particulars	**2018-19**	**2017-18**
	₹ in Crore	**₹ in Crore**
Depreciation	118	114
Provision for doubtful debts	4	1
Research and Development	24	–
Other non-cash items	14	12

2. Economic depreciation is ₹166 Crore in 2018-19. In FY 2017-18, economic and accounting depreciation were assumed to be the same.
3. Current year tax paid is (₹18 Crore) and deferred tax provisions of ₹1.50 crore has been adjusted. There was no deferred tax balance before 2018-19. The provision for doubtful debts was ₹ 9 crore in the 2018-19 balance sheet.
4. Research and development has been non-capitalized. It belongs to a new project that will be developed over five years and is expected to be of long-term benefit to the company. 2018-19 is the first year of this project.
5. Cost of Capital :

   Equity 14%; Debt (Pre-Tax) 6%
6. Gearing of WUS :

   Equity 45%; Debt 55%

Required :

(i) EVALUATE the financial performance of WUS using EVA.

(ii) ASSESS whether WUS comply with its acceptable ROCE level.

(iii) Advise on how to improve profitability.

Solution 4 :

(i) Computation of NOPAT for the Company WUS :

Particulars	**₹ in Crore**
Operating Profit for 2018-19	162.00
Add :	
Non-Cash Items	14.00
Accounting Depreciation	118.00
Provision for Doubtful Debts	4.00
Research and Development	24.00
Less :	
Economic Depreciation	166.00
Tax Paid	18.00
Tax Saving on Interest (₹ 46 × 30%)	13.80
NOPAT for 2018-19	124.20

Computation of Capital Employed for WUS :

Particulars	**₹ in Crore**
Capital Employed as on 31.03.2018 (Opening)	1,495.00
Add :	
Provision for Doubtful Debt as on 31.03.2018 [9 cr. - 4 cr.]	5.00
Other Non-Cash Items (incurred in 2017-18)	12.00
Adjusted Opening Capital Employed on 31.03.2018	1,512.00

WACC = [0.45 × 14%] + [0.55 × 6% × (1 – 0.3)]

= 6.3% + 2.31% = 8.61%

EVA = NOPAT – (WACC × Op. Capital Employed)

= 124.20 – (1,512 x 8.61%)

= 124.20 - 130.18 = – 5.98 Crores

Evaluation

Presently, WUS is distorting value as it is not able to meet the economic cost of its own capital. This put the company into the question of perpetual succession and lead the company against shareholder's interest. The reason could be a higher cost of equity for WUS. The investing risk should be low since 75% of the services that the company renders are important for the economy and demand is guaranteed in future. Optionally, WUS needs to either increase its NOPAT enough for break even on economic value added or slash its capital employed by selling unutilized or under-utilized assets.

(ii) Regulatory ROCE : (Target 7.00%)

ROCE = (Operating Profit / Capital Employed) x 100

= (95 / 1,422) x 100 = 6.68%

The ROCE is within the acceptable limit of 7.00%.

My Observations & Comments :

1. It should be mentioned that ROCE is to be calculated for WDO only. Because, capital employed is given for WDO only.
2. While calculating ROCE, Operating profit is taken for 2018-19 and Capital Employed is taken for 2017-18. That is opening capital employed is considered, using the logic of Stern Stewart.

(iii) Operating Margins

Water Distribution Operation = 17.12%

Water Bottle Operation = 36.02%

My Observations & Comments :

1. Formula and working for operating margin is not given in the answer.
2. It is calculated as (Operating Profit / Revenue) x 100

   For WDO = (95 / 555) x 100 = 17.12% and

   For WBO = (67 / 186) x 100 = 36.02%.

Advise

Operating margin from WBO is 36.02% compared to 17.12% (WDO). WUS may use the WDO activities as a trusted source of cash profit to reinvest in expansion of the WBO. Expansion through acquisition of appropriate non-regulated businesses using the cash generated by the regulated activities might be a good decision.

Further, WUS may improve profitability by controlling costs within WDO activities through performance measurement. The regulatory body cannot argue that the company is overcharging its customers to increase profit margin. This is possible through strict observance of expenses and using cost savings techniques through efficiency improvements. In order to control cost within WDO, targets should be based on minimal variances and adopting cost cutting methods.

Overall, In WDO, there is only a limited scope for increase in the operating profit since the maximum operating profit allowed is ₹ 99.54 crore i.e. (7% of ₹1,422 crore) of capital employed. Thus, WUS should go to expand its WBO as this is producing higher operating profit margins.

Question 5 :

From Chapter 8 : Performance Measurement & Evaluation

Topic : Benchmarking

Healthcare hospital provides medical care to patients to all strata of the society at nominal cost. Hospital has been operating for the last 15 years. It gets grant from the government that helps it sustain its operations. Each year an annual report is submitted to the officials in the health ministry that is in charge of giving out grants to hospitals. Each year over the last 15 years, grants given to the hospital has been increasing. This increment was found necessary to meet the increase in operational costs due to inflation. While operations have been moderately successful in the recent years, the grants committee is of the opinion that the hospital can manage its funds better.

To benchmark performance, performance of Healthcare hospital is being compared with the performance of another government funded hospital within the same city, Lifeline Hospital. Both hospitals have similar scale of operations and get the same amount of grant. Given below are some of the parameters that are tracked at both hospitals:

Operational Parameters	Healthcare Hospital		Lifeline Hospital
	Budget	Actual	Actual
Total inpatients	1,10,000	96,000	1,00,000
Delay in admission due to unavailability of beds :			
Number of inpatients waiting for more than 1 week	1,100	2,880	500
Number of inpatients waiting for more than 2 weeks	-	960	-
Total outpatients	90,000	95,000	93,000
Delay in appointments due to unavailability of medical staff :			
Number of outpatients waiting for more than 1 week	900	1,900	465
Number of outpatients waiting for more than 2 week	-	475	-
Number of emergency admissions	400	600	500
Delay in providing medical care to emergency admissions	-	5	-
Number of medical staff shortages (position not filled for more than one month)	3	5	1
Cancelled or delayed operations (due to non-clinical reasons)	5	20	6
Number of complaints received related to medical care	500	1,350	600
Number of complaints resolved within 15 days	500	1,080	550
Number of deaths post operation (all inpatients)	4,400	2,880	2,000
Number of medical negligence case that the hospital lost	2	5	-

Number of errors in prescription of drugs	15	45	10
Number of infection outbreaks within the hospital	-	2	-
Bed occupancy rate	90%	85%	94%
Average patient stay (days)	4	6	5
Operating theatre utilization rate	95%	90%	95%
Revenue including government grant (in crore)	15	13	16
Operating expenses (in crore)	12	12	12
ROI	8%	5%	9%
Staff Training sessions (hours)	500	500	600
Research publications	5	3	6

- Both hospitals have 50 wards with 10 beds in each ward.
- Each hospital has 50 doctors from various specialties and 75 nurses.
- Both hospitals were open all days of the year.

Required :

(i) The grants committee wants to ANALYZE performance of both hospitals with respect to:
- Access to services
- Clinical performance
- Efficiency of operations
- Financial management
- Innovations

(ii) While preparing the balanced scorecard, how will you CATEGORIZE the above performance measures?

Solution 5 :

(i) Analysis of Performance with respect to :

Access to Services :

Access to service is an indicator of whether patients are able to get medical care when they need it. Better access to medical service will improve chances of recovery for the patients. From the given information in the problem, this can be assessed using the following parameters:

(a) Delay in admission to inpatients due to unavailability of beds.
(b) Delay in appointments to outpatients due to unavailability of medical staff.
(c) Delay in providing medical care for emergency admission.
(d) Number of medical staff shortages.
(e) Cancelled or delayed operations.

The hospital should aim at reducing the delay and shortages in order to provide patients with better access to medical services.

(a) Delay in admission to inpatients due to unavailability of beds:
As per the hospitals' policy, patients who need admission have to be accommodated within 1 week to get access to services. Any delay beyond this period is tracked by their information system. For delays, due to unavailability of beds, the hospitals are tracking two time lags, delay by more than a week and delay by more than 2 weeks.

Unavailability of beds shows that there are constraints in the capacity of patients to whom the hospital can provide service.

Operational Parameters	Healthcare Hospital		Lifeline Hospital
	Budget	Actual	Actual
Total inpatients	1,10,000	96,000	1,00,000
Delay in admission due to unavailability of beds			
Number of inpatients for more than 1 week	1,100	2,880	500
Number of inpatients for more than 2 weeks	-	960	-
Percentage of inpatients denied access to service			
By more than 1 week	1.00%	3.00%	0.50%
By more than 2 weeks	0.00%	1.00%	0.00%

As can be seen, Healthcare hospital has a target to provide admission within a week to 99% of inpatients, delay beyond a week may happen only in 1% of cases. Delay beyond 2 weeks should not occur. However, actual performance indicates that Healthcare hospital could provide admission within a week only to 96% of inpatients. There has been a time lag of more than a week in providing admission to 3% of the inpatients. This is already 2% more than the target. Further, time lag beyond 2 weeks in providing admission has occurred in 1% of inpatients. Therefore, 4% of the inpatients had to wait for more than a week, in some cases more than 2 weeks, to get admission. In contrast at Lifeline hospital, only 0.5% of inpatient faced time lag of more than a week in getting admission to the hospital. There are no instance where inpatients requiring admission had to wait more than 2 weeks.

This shows that Lifeline hospital provides better access to services as compared to Healthcare hospital.

(b) Delay in getting appointment due to unavailability of medical staff:

Operational Parameters	Healthcare Hospital		Lifeline Hospital
	Budget	Actual	Actual
Total outpatients	90,000	95,000	93,000
Delay in appointment due to unavailability of medical staff :			
Number of outpatients waiting for more than 1 week	900	1,900	465
Number of outpatients waiting for more than 2 weeks	-	475	-
Percentage of inpatients denied access to service			
By more than 1 week	1.00%	2.00%	0.50%
By more than 2 weeks	0.00%	0.50%	0.00%

As per the hospitals' policy, outpatients should be able to get appointment within a week to meet the medical staff. Delay beyond a week is tracked by the hospital's information system as delay beyond a week and delay beyond two weeks. Healthcare hospital targets to provide appointments to meet medical staff within 1 week to 99% of the outpatients. Delays due to unavailability of medical staff can occur only in 1% of the cases. However, actual appointment schedule indicates that 2% of the outpatients had to wait for more than 1 week and 0.5% of the outpatients had to wait for more than 2 weeks to meet the decor. This, indicates that Healthcare hospital has not been able to meet its target. To improve performance the reason for unavailability of medical staff has to be understood. It might indicate that more hiring is needed or higher medical staff turnover ratio.

In comparison, Lifeline hospital has provided better services to outpatients, only 0.5% of the patients had to wait beyond a week to get appointment with the doctor. This shows that Lifeline hospital provides better access to services as compared to Healthcare hospital.

(c) Delay in providing medical care to emergency admission patients:

In the case of Healthcare hospital, there were 5 instances when medical care could not be provided to emergency admission patients immediately. The hospital aims never to have such instance however this target has not been met. In case of emergencies, medical care is required urgently, any delay may impact recovery of the patient. Reasons for the delay in providing medical care to such patients have to be investigated. Lifeline hospital has been able to provide medical care immediately to all its emergency admission patients.

This shows that Lifeline hospital provides better access to services as compared to Healthcare hospital.

(d) Medical staff shortages:

The hospital should have enough doctors and nursing staff at any point in time to be able to provide good quality of medical care to patients. If there are vacancies, the existing staff have to bear extra patient load. This could lead to delays, some of which have been outlined above. This results in patients getting lesser access to medical services when they need it. Healthcare hospital has 5 medical staff vacancies that have been vacant for more than a month, as compared to the target of 3. There are lesser resources available to provide patient care. In comparison, Lifeline hospital has only 1 position that was vacant for more than a month.

This shows that Lifeline hospital provides better access to services as compared to Healthcare hospital.

(e) Cancelled or delayed operations due to non-clinical reasons:

When operations are cancelled or delayed due to non-clinical reasons, it indicates that there are administrative issues that deny patients access to medical care. Possible reasons could be unavailability of operation theatres, unavailability of support staff or unavailability of required instruments or medicines. Compared to an expected 5 such instances, the actual cancellations or delays have been 20 in the case of Healthcare hospital. This is a huge variation that needs to be investigated. Given in the problem that operation theatres are used only to 90% of their availability. Possibly cancellation are not due to unavailability of operation theatres. It could be due to support staff shortages or unavailability of instruments. Reasons have to be investigated to take appropriate action. Comparatively, such instances are fewer in the case of Lifeline hospital.

Clinical Performance

Clinical performance can be evaluated by looking at the quality of actual work performed. The parameters to look at are:

Operational Parameters	Healthcare Hospital		Lifeline Hospital
	Budget	Actual	Actual
Number of complaints received related to medical care	500	1,350	600
Number of complaints resolved within 15 days	500	1,080	550
Number of deaths post operation (all inpatients)	4,400	2,880	2,000
Number of medical negligence case that the hospital lost	2	5	-
Number of errors in prescription of drugs	15	45	10
Number of infection outbreaks within the hospital	-	2	-

(a) Number of complaints received related to medical care:
As can be seen from the table, the number of complaints received by Healthcare hospital is more than twice the expected volume. Only 80% of these have been resolved within the time frame of 15 days. Comparatively, Lifeline hospital gets fewer complaints and the complaint resolution rate within the given framework is much higher at 92%.

(b) Number of deaths post operation:
The actual deaths post operation are much lesser. While this is a good indication of quality, the objective of the hospital should be to keep this as low as possible. Lifeline hospital has a lower mortality than Healthcare. Good quality medical care can contribute towards preventing deaths post operation.

(c) Number of medical negligence case that the hospital has lost:
The fact that the hospital has lost a case of medical negligence shows that the quality of clinical care provided a questionable. In case of Healthcare hospital, the actual number of such cases lost is 5. This is in excess of an expected loss of 2 cases. This indicates that quality of clinical care is found wanting at Healthcare hospital. Lifeline hospital has not lost any case of medical negligence implying that quality of medical care is better than Healthcare.

(d) Errors in prescription of drugs:
Prescription of drugs to cure an ailment should always be accurate. Any errors could be disastrous to the patient's health. Compared to the expectation, Healthcare has three times the number of prescription errors. This shows that medical staff have been negligent in providing their service. Again, Lifeline hospital has a better record comparatively.

(e) Infection outbreak in hospital premises:
Outbreak of infection within hospital premises indicates that proper standards of hygiene are not being maintained at Healthcare hospital.

Efficiency of Operations

Operating efficiency can be assessed using the following parameters:

Operational Parameters	Healthcare Hospital		Lifeline Hospital
	Budget	Actual	Actual
Bed occupancy rate	90%	85%	94%
Average patient stay (days)	4	6	5
Operating theatre utilization rate	95%	90%	95%

(a) Bed occupancy rate:
Bed occupancy is a factor that is dependent on the number of inpatient admissions. While this factor cannot be controlled by Healthcare, it is important to track this ratio to look at capacity utilization. The bed occupancy rate is lower than the expected rate. If this persists over a longer period, the hospital may want to explore the option of scaling down the number of wards and beds. The space freed up can be utilized for some other productive purpose.
However, as explained earlier, 4% of the inpatients at Healthcare hospital are being denied admission due to unavailability of beds. This is a contradiction that needs to be investigated. Possible reasons could be administrative ones like inability to get the room and bed on time once the previous patient vacates. Else there may be mis-communication between the department discharging patients and the department admitting patients. Bed occupancy may not be tracked on real time basis due to which these delays in admission have occurred.
Lifeline hospital has an occupancy of 94% that shows it has just the sufficient number of beds to meet demand.

(b) Average patient stay (days) in the hospital:
On an average a patient is staying in the hospital for 2 days more than the target of 4 days. While this factor is dependent on the type of ailment, lower the patient stay the higher can be bed occupancy rate. That means more patients can utilize the same resources if patient stay is shorter. This may be needed when there is a constraint on the beds available, which is not the scenario in the current case. However, before taking action to improve bed occupancy rate, a hospital should ensure that quality of medical care given is not compromised.

In the given problem, bed occupancy is only 90% at Healthcare hospital. Therefore, the hospital can afford to have longer patient stay. Lifeline hospital has 1 lesser patient stay day, only marginally different from Healthcare's record. In both cases, since there is no constraint on bed occupancy, higher average patient stay can be managed without any constraint.

(c) Operating theatre utilization rate:
Utilization of operating theatre is subject to the nature of treatment, something that cannot be controlled by a hospital. However, it is necessary to track this parameter since it shows whether the facilities that are currently in place are sufficient and are utilized properly. Again, at 90% Healthcare hospital has a lower operating theatre utilization rate compared to the expected usage. If this continues in the long run, the number of operating theatres can be reduced to make resources available for other uses. Lifeline hospital has a higher utilization rate at 95%, indicating more efficient use of resource.

Financial Management

Healthcare hospital has an actual surplus ₹ 1 crore compared to a budget of ₹ 3 crores (Surplus = Revenue – Operating expense). ROI of 5% is below the target of 8%. The grants committee feels that there is a wastage of funds at the hospital. Therefore, areas of wastage should be identified such that operating expenses can be controlled better. Lifeline hospital has a surplus ₹ 4 crores. Since there are other hospitals like Lifeline that are vying for grant. Healthcare has to make itself competitive in this respect. Therefore, it has to be more efficient, effective and economical in its operations.

Innovations

Research publications indicate that newer discoveries have been made in fields that can further the horizons of knowledge. Therefore, research publications are an important indicator of innovation.

While staff training is not directly related to innovations, they do keep the experts up to date in their subject area of expertise.

(ii) Performance Measures Categorized into the Balance Scorecard

- Customer Perspective would include availability of service measures and clinical performance measures.
- Internal Process Perspective would include measures used to determine efficiency of operations.
- Financial Perspective would include details of the surplus generated and ROI.
- Learning and Growth Perspective would include staff training and research publications.

Combined with other parameters that the grant committee finds important, the balanced scorecard can benchmark the hospital's performance with its own targets and the performance of Lifeline hospital. Decision to extend grants and its quantum can be decided on this basis.

Question 6 :

From Chapter 9 : Divisional Transfer Pricing

Topic : International Transfer Pricing

ABC miners operates two divisions, one in Japan and other in United Kingdom (UK). Mining Division is operated in Japan which is rich in raw emerald.

The other division is United Kingdom Processing Division. It processes the raw emerald into polished stone fit for human wearing.

The cost details of these divisions are as follows:

Division	**Japan Mining Division**	**United Kingdom Processing Division**
	Per carat of raw emerald	**Per carat of polished emerald**
Variable Cost	2,500 Yen	150 Pound
Fixed Cost	5,000 Yen	350 Pound

Several polishing companies in Japan buy raw emerald from other local Mining Companies at 9,000 Yen per carat. Current Foreign Exchange Rate is 50 Yen = 1 Pound. Income Tax rates are 20% and 30% in Japan and the United Kingdom respectively.

It takes 2 carats of Raw Yellow emerald to yield 1 carat of Polished Stone. Polished emerald sell for 3,000 Pounds per carat.

Required :

(i) COMPUTE the transfer price for 1 carat of raw emerald transferred from Mining Division to the Processing Division under two methods –
(a) 200% of Full Costs and
(b) Market Price.

(ii) 1,000 carats of raw emerald are mined by the Japan Mining Division and then processed and sold by the UK Processing Division. COMPUTE the after tax operating income for each division under both the Transfer Pricing Methods stated above in (i) above.

Solution 6 :

(i) Transfer Price : 200% of Full Cost Basis
= 200% of (¥ 2,500 + ¥ 5,000)
= ¥ 15,000 or £ 300 (¥ 15,000/50)

Transfer Price : Market Price Basis
= ¥ 9,000 or £ 180 (¥ 9,000/50)

(ii) Statement Showing Operating Income :

Particulars	**Japan Mining Division**		**UK Processing Division**	
	Transfer Price		**Transfer Price**	
	¥ 15,000	**¥ 9,000**	**£ 300**	**£ 180**
Selling Price (Polished)	---	---	£3,000	£3,000
Transfer price (raw emerald)	¥ 15,000	¥ 9,000	---	---
Cost of raw emerald	---	---	£600 (£300 x 2)	£360 (£180 x 2)
Variable Cost	¥ 2,500	¥ 2,500	£150	£150
Fixed Cost	¥ 5,000	¥ 5,000	£350	£350
Profit before tax	¥ 7,500	¥ 1,500	£1,900	£2,140
Less : Tax 20% or 30%	¥ 1,500	¥ 300	£570	£642
Profit after tax per carat	¥ 6,000	¥ 1,200	£1,330	£1,498
(x) Output Qty. (carats)	1,000	1,000	500	500
Total Profit (home currency)	¥ 60,00,000	¥ 12,00,000	£6,65,000	£7,49,000
Total Profit (in £) [Yen/50]	£1,20,000	£24,000	£6,65,000	£7,49,000

Question 7 :

From Chapter 10 : Strategic Analysis of Operating Income

Topic : Direct Product Profitability (DPP)

XYZ Ornamental Company has been a name to count on for quality and service. It has been designing wide range of ornamental (decorative) products for more than two decades using the highest-quality standard. Such quality is achieved through years of experience and the integrity that is maintained by its employees. They are known for their perfection. VGG approached XYZ to make inquiry of two products. The two products are indoor fountain known as 'The Star' and another one known as 'Dwarfs' for garden. Mr. Bob, the management accountant of XYZ, has estimated the variable costs per unit of 'The Star' and 'Dwarfs' as being ₹ 622.50 and ₹ 103.75 respectively. He estimated his calculations based on the following information:

(1) Product Data :

Particulars	The Star	Dwarfs	Other Products
Production / Sales (units)	10,000	20,000	80,000
Total Direct Material Cost	₹ 22,50,000	₹ 7,50,000	₹ 60,00,000
Total Direct Labour Cost	₹ 15,00,000	₹ 5,00,000	₹ 60,00,000

(2) Total variable overheads for XYZ are ₹ 1,20,00,000 out of which 30% belong to the procurement, warehousing and use of direct materials. While all other variable overheads are related to direct labour.

(3) XYZ presently allocate variable overheads into product units using percentage of total direct material cost and total direct labour cost.

(4) VGG is willing to purchase 'The Star' at ₹ 740 per unit and 'Dwarfs' at ₹ 151 per unit.

(5) XYZ will not accept any work yielding an estimated contribution to sales ratio less than 28%.

The directors of XYZ are considering switching to an activity-based costing system and recently appointed a management consultants firm to undertake an in-depth review of existing operations. As result of that review, the consultants concluded that estimated relevant cost drivers for material and labour related overhead costs attributable to 'The Star' and 'Dwarfs' are as follows :

Particulars	The Star	Dwarfs	Other Products
Direct Material Related Overheads : (The volume of raw materials held to facilitate production of each product is the cost driver.)			
Material Volume per product unit	5	8	5
Direct labour related overheads: (The number of labour operations performed is the cost driver)			
Labour Operations per product unit	7	6	5

Required :

(i) Give a financial ANALYSIS of the decision strategy which XYZ may implement about the manufacture of each product using the unit cost information available.

(ii) DISCUSS whether activity-based management should be adopted in companies like XYZ.

Solution 7 :

Workings :

(a) Direct Material Cost per unit :

	The Star	Dwarfs
Total Costs (₹)	22,50,000	7,50,000
Production units	10,000	20,000
Cost per unit (₹)	225.00	37.50

(b) Direct Labour Cost per unit :

	The Star	Dwarfs
Total Costs (₹)	15,00,000	5,00,000
Production units	10,000	20,000
Cost per unit (₹)	150.00	25.00

(c) Variable Overheads :

Material Related

Overhead Cost = 30% x ₹ 1,20,00,000 = ₹ 36,00,000

Total Volume Factor

Particulars	Units	Required per unit	Total Volume
The Star	10,000	5	50,000
Dwarfs	20,000	8	1,60,000
Others	80,000	5	4,00,000
Total Volume Factor			6,10,000

Overhead per unit of volume = ₹ 36,00,000 / 6,10,000 = ₹ 5.90 (approx)
Therefore, Overhead Cost per product unit will be as follows:

The Star	5	₹ 5.90	29.50
Dwarfs	8	₹ 5.90	47.20

Labour Related

Overhead Cost = 70% x ₹ 1,20,00,000 = ₹ 84,00,000

Total Operations Factor

Particulars	Units	Required per unit	Total Volume
The Star	10,000	7	70,000
Dwarfs	20,000	6	1,20,000
Other	80,000	5	4,00,000
Total Operations Factor			5,90,000

Overhead per operation = ₹ 84,00,000 / 5,90,000 = ₹ 14.24 (approx)

Therefore, Overhead Cost per product unit will be as follows:

The Star	7	₹ 14.24	99.68
Dwarfs	6	₹ 14.24	85.44

Existing Overhead Recovery Rate :

Material Related
Overhead Cost = 30% x ₹ 1,20,00,000 = ₹ 36 lakhs
Total Material Cost = 22.50 + 7.50 + 60 lakhs = ₹ 90 lakhs
Hence, OH as % of Material Cost = 36/90 = 40%
The Star's share of OH per unit = 225 x 40% = ₹ 90
Dwarf's share of OH per unit = 37.50 x 40% = ₹ 15

Labour Related
Overhead Cost = 70% x ₹ 1,20,00,000 = ₹ 84 lakhs
Total Labour Cost = 15 + 5 + 60 lakhs = ₹ 80 lakhs
Hence, OH as % of Labour Cost = 84/80 = 105%
The Star's share of OH per unit = 150 x 105% = ₹ 157.50
Dwarf's share of OH per unit = 25 x 105% = ₹ 26.25

(d) Product Information (per unit) is as follows:

Particulars	The Star		Dwarfs	
	Current Scenario	ABC Basis	Current Scenario	ABC Basis
Selling Price ... (A)	740.00	740.00	151.00	151.00
Direct Material Cost	225.00	225.00	37.50	37.50
Direct Labour Cost	150.00	150.00	25.00	25.00
Variable Overhead Cost :				
Material Related	90.00	29.50	15.00	47.20
Labour Related	157.50	99.68	26.25	85.44
Total Variable Cost ... (B)	622.50	504.18	103.75	195.14
Contribution ... (A) – (B)	117.50	235.82	47.25	(44.14)
Contribution to Sales (%)	15.88	31.87	31.29	(29.23)

(i) Analysis :

The product costs per unit along with the respective contribution per unit may be calculated either by employing an ABC approach or alternatively by using the existing basis for the allocation of variable overhead cost.
The current scenario of product costing suggests that 'Dwarfs' should be produced as per the request of VGG because the contribution to sales ratio is 31.29%. However, the current scenario of product costing also suggests that XYZ should not undertake production of 'The Star' at a selling price of ₹740 per unit since the estimated contribution to sales ratio is 15.88%, which is lower than the desired contribution to sales ratio of 28%.
Activity based costing approach ensures greater accuracy by using multiple cost drivers and determines areas generating the greatest profit or loss. Table [(d)] shows how much the contribution to sales (%) for each product changes when the overhead allocation method changes to ABC. As shown in Table [(d)], contribution to sales ratio on 'The Star' increased to 31.87% from 15.88% while contribution to sales ratio on 'Dwarfs' reduced from 31.87% to negative 29.23%.
Thus, XYZ should opt to produce 'The Star' for VGG as contribution to sales ratio is 31.87% which is higher than the desired one.

(ii) The term Activity based management (ABM) is used to describe the cost management application of ABC. The use of ABC as a costing tool to manage costs is known as Activity Based Cost Management (ABM). ABM is a discipline that focuses on the efficient and effective management of activities as the route to continuously improving the value received by customers and to improve strategic and operational decisions in an organisation. Kaplan and Cooper divide ABM into Operational and Strategic.

Operational ABM covers the actions that increases efficiency, lower cost (i.e. reduce the cost driver rate of activities) and lead to higher revenue through better resources utilisation. In short, the action required to do things right. In other words, it is all about 'doing things right', using ABC information to improve efficiency. It also helps in identifying and improving value added activities and removing non-value added activities as to reduce cost without distorting product value.

Strategic ABM is about 'doing the right things'. It uses ABC information to determine which products is to be manufactured and which activities is to be used. XYZ can also use this for customer profitability analysis, identifying that which customers are the most profitable and focusing on them more.

A risk with ABM is that some activities have an implicit value are not reflected in a financial value added to any product. For example, a good and pleasant working environment can attract and retain the best human resources, but might not be identified as value added activities in operational ABM.

ABM provides managers an understanding of costs and helps teams to make certain decisions that benefit the whole organization and not just their own activities. Therefore, some companies like XYZ may adopt ABM to improve their operations and obtain useful activity information.

Question 8 :

From Chapter 11 : Budgetary Control

Topic : Participative Budget Model

Case Scenario

Established in the year 1997, **Excellent Woodcraft** Private Limited (EWPL) is one of the distinguished manufacturers and suppliers of an unlimited array of Wooden Furniture Items. Product compilation comprises of Modular Furniture, Workstations, and Cafeteria Furniture. Moreover, it is also engaged in presenting Furniture Services that include Interior Fit Out, Office Interiors and Corporate Interior Designing. Since inception, it has strived to offer an excellent blend of optimum quality and price, and successfully established the company as the preferred choice of customers in the past years. This is the reason that its products and services are applauded in the industry for its flawlessness.

At EWPL, a world-class infrastructure is set up with different types of latest technology based machines and equipment, which provide great support in hassle-free production and storage of the offered assortment. Besides the spacious workspace, it has recruited a team of skilled and experienced professionals, who are magnificently trained to understand and meet the diverse client requirements within the committed time period. It aims to attain complete client satisfaction and put in its best efforts to achieve the same by offering outstanding product range & feasible services.

EWPL's Budgeting Process for Sales -

1) Each salesgirl makes a customer-wise listing of sales for the last few years. Based on this information and her knowledge about customer's requirements, she determines an overall sales goal.

2) The sales manager, W Robert, gathers all this information and modifies it a bit. Particularly, W looks at variance in sales growth and modifies low projections to be in line with the average. He, of course, discusses this correction with the concerned salesgirl. The usual approach is to hold up the other forecasts and attribute lack of sales growth to lower talent.
3) W then meets with J Donald, Managing Director. By this time, J already back out of his sales expectations for next year based on his desired profit. J discusses the overall target with the W. The usual result is a 7% to 10% increase in projected sales, which the W allocates among the salesgirls based on their past performance.
4) Of course, J desires that the W discuss and negotiate any alteration with the sales force. He believes that with appropriate logics, not high but attainable targets for his sales team can be met.

Required :

(i) DISCUSS the participative nature of the sales budgeting process at EWPL.

(ii) ADVISE on the best approach from EWPL's perspective that may be adopted.

Solution 8 :

(i) In participative budgeting, subordinate managers create their own budget and these budgets are reviewed by senior management. Such budget communicates a sense of responsibility to subordinate managers and fosters creativity. This is also called bottom up approach (sometime referred as participative approach).
As the subordinate manager creates the budget, it might be possible that the budget's goals become the manager's personal goal, resulting in greater goal congruence. In addition to the behavioral benefits, participative budgeting also has the advantage of involving individuals whose knowledge of local conditions may enhance the entire planning process.
The participative budget described here appears participative in name only. In virtually every instance, the participative input is subject to oversight and discussion by sales manager. Some amount of revision is also common. However, excessive and arbitrary review that substitutes a top-down target for a bottom-up estimate makes a deceit process. Such a setting appears to be the case in EWPL. J's statement indicates a very autocratic style. The revision process also seems to be arbitrary. There is little incentive for the salesgirls to spend much time and effort in projecting the true expected sales because they know that the target would be revised again and J's estimate will prevail. This situation creates an interesting discussion about the costs and benefits of participative budgeting and give rise to game playing and slack.

(ii) In top down approach, budget figures will be imposed on sales personnel by senior management and sales personnel will have a very little participation in the budget process. Such budget will not interest them since it ignores their involvement altogether. While in bottom up approach, each sales person will prepare their own budget. These budgets will be combined and reviewed by seniors with adjustment being made to coordinate the needs and goals of overall company. Proponents of this approach is that salespersons have the best information of customer's requirements, therefore they are in the best position in setting the sales goal of the company. More importantly, salespersons who have role in setting these goals are more motivated to achieve these goals. However, this approach is time-consuming and very costly when compared with top down approach. In order to achieve personal goals, participants may also engage in politics that create budgetary slack and other problems in the budget system.
Since both top down and bottom up approaches are legitimate approaches, so EWPL can use combination of both. Seniors know the strategic direction of the company and the important external factors that affect it, so they might prepare a set of planning guidelines for the salesgirls. These guidelines may include forecast of key economic variables and their potential impact on the EWPL, plans for introducing and advertising a new product and some broad sales targets etc. With these guidelines, salesgirls might prepare their individual budget. These budgets needs to be reviewed to validate the uniformity with the EWPL's

objectives. After review, if changes are to be made, the same should be discussed with salesgirls involved.

Question 9 :

From Chapter 12 : Standard Costing

Topic : Planning Variance and Operational Variance

KONY Ltd. based in Kuala Lumpur, is the Malaysian subsidiary of Japan's NY corporation, headquartered in Tokyo. KONY's principal Malaysian businesses include marketing, sales, and after-sales service of electronic products & software exports products. KONY set up a new factory in Penang to manufacture and sell integrated circuit 'Q50X-N'. The first quarter's budgeted production and sales were 2,000 units. The budgeted sales price and standard costs for 'Q50X-N' were as follows:

Particulars	RM	RM
Standard Sales price per unit		50
Standard Costs per unit		
Circuit X (10 units @ RM 2.5)	25	
Circuit Designers (6 hrs. @ RM 2)	12	(37)
Standard Contribution per unit		13

Note : 'RM' is a Malaysian Currency called as "Malaysian Ringgit".

Actual results for the first quarter were as follows:

Particulars	RM '000	RM '000
Sales (2,000 units)		158
Production Costs (2,000 units)		
Circuit X (21,600 units)	97.20	
Circuit Designers (11,600 hours)	34.80	(132)
Actual Contribution (2,000 units)		26

The management accountant made the following observations on the actual results -
"In total, the performance agreed with budget; however, in every aspect other than volume, there were huge differences. Sales were made at what was supposed to be the highest feasible price, but we now feel that we could have sold for RM 82.50 with no adverse effect on volume. The Circuit X cost that was anticipated at the time the budget was prepared was RM 2.5 per unit. However, the general market price relating to efficient purchases of the Circuit X during the quarter was RM 4.25 per unit. Circuit designers have the responsibility of designing electronic circuits that make up electrical systems. Circuit Designer's costs rose dramatically with increased demand for the specialist skills required to produce the 'Q50X-N', and the general market rate was RM 3.125 per hour – although KONY always paid below the normal market rate whenever possible. In my opinion, it is not necessary to measure the first quarter's performance through variance analysis. Further, our operations are fully efficient as the final contribution is equal to the original budget."

Required :

COMMENT on management accountant's view.

Solution 9 : **KONY India Ltd.**

W.N.1 : Operating Statement for Quarter 1 :

Particulars	Favourable RM	Adverse RM	Net RM
Budgeted Contribution [2,000 units x 13]			26,000
Sales Price Variance [(RM 79 – RM 50) x 2000 units]	58,000	---	
Circuit 'X' Price Variance [(RM 2.50 – RM 4.50) x 21,600 units]		43,200	
Circuit X Usage Variance [(20,000 units – 21,600 units) x RM 2.50]		4,000	
Circuit Designer's Rate Variance [(RM 2 – RM 3) x 11,600 hrs.]		11,600	
Circuit Designer's Efficiency Variance [(12,000 hrs – 11,600 hrs) x RM 2.00]	800		NIL
Actual Contribution [Given]			26,000

W.N.2 : Statement Showing Original Standards, Revised Standards, and Actual Results for Quarter 1 :

	Original Standards (ex-ante)		Revised Standards (ex-post)		Actual	
Sales	2,000 units x RM 50.00	RM 1,00,000	2,000 units x RM 82.50	RM 1,65,000	2,000 units x RM 79.00	RM 1,58,000
Circuit X	20,000 units x RM 2.50	RM 50,000	20,000 units x RM 4.25	RM 85,000	21,600 units x RM 4.50	RM 97,200
Circuit Designer	12,000 hrs. X RM 2.00	RM 24,000	12,000 hrs. X RM 3.125	RM 37,500	11,600 hrs. X RM 3.00	RM 34,800

W.N.3 : Statement Showing Operational (Controllable) Variances :

Particulars	RM	RM
Operational Variances		16,500(A)
Sales Price [(RM 79.00 – RM 82.50) x 2,000 units]	7,000 (A)	
Circuit X Price [(RM 4.25 – RM 4.50) x 21,600 units]	5,400 (A)	
Circuit X Usage [(20,000 units – 21,600 units) x RM 4.25]	6,800 (A)	
Circuit Designer Rate [(RM 3.125 – RM 3.00) x 11,600 hrs]	1,450 (F)	
Circuit Designer Efficiency [(12,000 hrs – 11,600 hrs) x RM 3.125]	1,250 (F)	

W.N.4 : Statement Showing Planning (Uncontrollable) Variances :

Particulars	RM	RM
Sales Price [(RM 82.50 – RM 50.00) x 2,000 units]	65,000 (F)	16,500(F)
Circuit X Price [(RM 2.50 – RM 4.25) x 20,000 units]	35,000 (A)	
Circuit Designer Rate [(RM 2.00 - RM 3.125) x 12,000 hrs]	13,500 (A)	

Student Note :

To solve the above question, you may use circular tally method.

Comments :

In order to assess the realistic performance of the company, we should distinguish between controllable factors and non-controllable factors. Hence, we need to do the variance analysis using ex-ante and ex-post standards in mind.

As the management accountant states, and the analysis (W.N.1) presents, the overall variance for the KONI is NIL. The cumulative adverse variances exactly offset the favourable variances i.e. sales price variance and circuit designer's efficiency variance. However, this traditional analysis does not clearly show the efficiency with which the KONI operated during the quarter, as it is difficult to say whether some of the variances arose from the use of incorrect standards, or whether they were due to efficient or inefficient application of those standards.

In order to determine this, a revised ex-post plan should be required, setting out the standards which should have been in operation during the quarter. These revised ex post standards are presented in W.N.2.

As can be seen from W.N.3, on the cost side, the circuit designer's rate variance has changed from adverse to favourable, and the price variance for component X, while remaining adverse, is significantly reduced in comparison to that calculated under the traditional analysis (W.N.1). On the sales side, sales price variance, which was particularly large and favourable in the traditional analysis (W.N.1), is changed into an adverse variance in the revised approach reflecting the fact that the KONI failed to sell at prices that were actually available in the market.

Further, variances arose from changes in factors external to the business (W.N.4), which might not have been known or acknowledged by standard-setters at the time of planning and are beyond the control of the operational managers. The distinction between variances is necessary to gain a realistic measure of operational efficiency.

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