Chap 1. INTRODUCTION TO STRATEGIC COST MANAGEMENT

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, cloths, 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 that rely Paper Tubes include 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:

1. 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.
2. Presently, five major manufacturers of Paper Tubes have a total market share of 75%, 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.
3. 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.
4. 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?

Solution

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 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.

TEST YOUR KNOWLEDG

Competitive Advantage

1. 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 Just in Time based on the production schedule. 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

1. IDENTIFY the strategy that Wireless is using for Mobile A and Mobile Z.
2. DISCUSS the risks involved in each of these strategies.
3. ADVISE Wireless to sustain its current strategy for Mobile A?

SOLUTIONS

(i) Wireless is following the “low cost strategy” for Mobile A and “differentiation strategy” for Mobile Z. Mobile A is 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 other 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.

1. 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 its costs low 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 will 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, the sales 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. It only when these risks are contained, that 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.

2. "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 learning and experience 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 improve 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 of negotiating for discounts on purchases. It could also negotiate for favorable 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 sustain its low-cost advantage.

Chap 2. MODERN BUSINESS ENVIRONMENT

Illustration

Livewell Limited 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 rejecte d 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

(i) Analysis of the proposal to make changes to the inspection process:

The company wants to reduce the cost of poor quality on account of rejected items from the process. The current rejection rate is 5% that is proposed to be improved to 3% of units input.

The expected benefit to the company can be worked out as follows:

The units of input each day = 5,000. At the current rate of 5%, 250 units of input are rejected each day. It is proposed to reduce rejection rate to 3%, that is 150 units of input rejected each day. Therefore, improvements to the inspection process would reduce the number of units rejected by 100 units each day. The resultant cost of poor quality would reduce by `20,000 each day (100 units of input × `200 cost of one rejected unit).

The cost of implementing these additional controls to the inspection process would be `15,000 each day.

The net benefit to the company on implementing the proposal would be `5,000 each day. Therefore, the company should implement the proposal.

(ii) Analysis of maximum rejection rate beyond which the proposal ceases to be beneficial The cost of improving controls to the inspection process is `15,000 each day. The number of units of input processed each day is 5,000. The cost of rejection is `200 per unit.

It makes sense to implement the improvements to controls only if the benefit is greater than the cost involved. To find out the point where the benefits equal the cost, solve the following equation

Let the number of reduction in rejections each day due to improved controls be R. At `200 per unit, benefits from reduction in rejection would be `200 × R.

At what point, would this be equal to the cost of control of `15,000 per day?

Solving `200 × R = `15,000; R = 75 units. That is if the improvements to inspection process control reduces the number of rejections by 75 units each day, the benefit to the company would be `15,000 each day.

That is if the rejection rate improves by 1.5% (75 units / 5,000 units) then the benefits accruing to the company will equal the cost incurred.

In other words, when the rejection rate is 3.5% (current rate 5% - improvement of 1.5% to the rate) or below, the proposal will be beneficial. In this range, the savings to the cost of po or quality will be more than the cost involved. For example, as explained above, when the improved rejection rate is 3%, the net benefit to the company is `5,000 each day.

Beyond 3.5% rejection rate, the proposal will result in savings to the cost of poor quality that is less than the cost involved of `15,000 each day.

Case Scenario

JK Ltd. produces and sells a single product. Presently the company is having its quality control system in a small way at an annual external failure and internal failure costs of `4,40,000 and `8,50,000 respectively. As the company is not able to ensure supply of good quality products upto the expectations of its customers and wants to manage competition to retain market share considers an alternative quality control system. It is expected that the implementation of the system annually will lead to a prevention cost of `5,60,000 and an appraisal cost of `70,000. The external and internal failure costs will reduce by `1,00,000 and `4,10,000 respectively in the new system. All other activities and costs will remain unchanged.

Required

(i) EXAMINE the new quality control proposal and recommend the acceptance or otherwise of the proposal both from financial and non-financial perspectives.

(ii) What is your ADVICE to the company, if the company wants to achieve zero defect through a continuous quality improvement programme?

(iii) SUGGEST a suitable quality control level at a minimum cost.

(i) Implementation of new system will reduce costs of the non - conformance (internal and external failure) by `5,10,000 (-40%). However, this will also increase costs of conformance by `6,30,000. There is inverse relationship between the costs of the conformance and the costs of non-conformance. JK Ltd. should try to avoid costs of non- conformance because both internal and external failure affect customer's satisfaction and organisations profitability. The company should focus on preventing the error such that it ensures that product is of good quality when it reaches the customer at the very first instance. This enhances the customer experience and therefore eliminating the scope for external failures like sales returns and warranty claims. Better quality can yield further sales. Therefore, an increase in

spending on quality measures is justified since it not only yields significant improvements to quality but also brings in more sales orders.

Accordingly, from the financial perspective point of view the new proposal for quality control should not be accepted as it will lead to an additional cost of `1,20,000 (`6,30,000 - `5,10,000). However, from non-financial perspective point of view as stated above the company should accept the new proposal.

(ii) It is possible to increase quality while at the same time reducing both conformance and non-conformance costs if a programme of aiming for zero defect/ and or continuous improvement is followed. Zero defect advocates continuous improvement. To implement this elimination of all forms of waste, including reworks, yield losses, unproductive time, over-design, inventory, idle facilities, safety accidents, etc. is necessary.

(iii) To achieve 0% defects, costs of conformance must be high. As a greater proportion of defects are accepted, however, these costs can be reduced. At a level of 0% defects, cost of non-conformance should be nil but these will increase as the accepted level of defects rises. There should therefore be an acceptable level of defects at which the total costs of quality are at a minimum.

Illustration

H. Ltd. manufactures three products. The material cost, selling price and bottleneck resource details per unit are as follows:

Particulars	P	P	P
Selling Price (`)	6	7	9
Material and Other Variable Cost (`)	2	3	4
Bottleneck Resource Time (Minutes)	1	1	2

Budgeted factory costs for the period are `2,21,600. The bottleneck resources time available is 75,120 minutes per period.

Required

(i) Company adopted throughput accounting and products are ranked according to 'product return per minute'. Select the highest rank product.

(ii) CALCULATE throughput accounting ratio and COMMENT on it.

Solution

(i) Calculation of Rank According to 'Product Return per minute'

Particulars	X	Y	Z
Selling Price	6	7	9
Variable Cost	2	3	4
Throughput Contribution	4	4	5
Minutes *per unit*	1	1	2
Contribution *per minute*	2	3	2
Ranking	I	I	II

(ii) Ranking Based on 'TA Ratio'

Contribution per minute	2	3	2
Factory Cost per minute (2,21,600 / 75,120)	2	2	2
TA Ratio (Cont. per minute / Cost per minute)	0	1	0
Ranking Based on TA Ratio	I	I	II

Comment

Product Y yields more contribution compared to average factory contribution per minute, whereas X and Z yield less.

Illustration

Cineworld is a movie theater 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 the 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 i s the average duration of any course. For a nominal one-time subscription fee, Cineworld plans to offer students discounts 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	Years 3
Spend on movie tickets per year	2,000	1,500
Spend on food and beverage per	4,000	3,000
Spend on souvenirs and	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.
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

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.

Sr. No.	Particulars	Revenue (per year)	PVIFA	PV of Revenue	Probability of Usage	Net Revenue
1	Net cost of attracting students (onetime expense)					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 (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 (steps 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 38% 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

Present value of total revenue generated over the four-year period by a customer is `12,393 while the corresponding expense is `5,000. Therefore, the customer lifetime value per subscriber is `7,393. Cineworld has to multiply this with the

expected number of subscribers each year, to find out if this would be a profitable proposition.

TEST YOUR KNOWLEDGE

Cost of Quality/ Total Quality Management

1. CIMZ is a new banking company which is about to open its first branch in INDIA. CIMZ believes that in order to win customers from the market, it needs to offer potential customers a new banking experience. Other banking companies are focusing on interest rates and bank charges, whereas CIMZ believes that quality and timely availability of service is an important factor to attract customers.

Required

EXPLAIN how Total Quality Management would enable CIMZ to gain competitive advantage in the banking sector.

Solution

Total Quality Management is a management philosophy. It concerns itself with managing the processes and people to make sure that the customer is satisfied at each and every stage. This means making the needs of the customer the priority, expanding the relationship beyond traditional services and incorporating the customer's needs in the company's business plan and corporate strategy. In TQM, the concept of "quality" is perceived exclusively from the frame of reference of the customer. These customers can be internal, such as, those working in another department and there can be external customers who are the end recipients of the product or services. The organisation should attempt for continuous improvement in the quality that it delivers with the ultimate aim of achieving zero defects in this quality.

TQM should be view as an investment rather than as a cost that should be minimised. There are many ways in which investment can be made in TQM.:

- fine-tuning the product mix,
- fine-tuning of the processes of ensuring quality,
- introducing employee development programmes with the nature of an academic course,
- empowering the employees professionally and personally,
- improving the top management commitment to quality,
- monitoring of the performances and proper rewarding based on achievements,
- ensuring the customer satisfaction etc.

CIMZ could provide its employees with training in the technical aspects of banking practice as well as in customer care. Customers would thus get a better service not only technically but also from a customer care perspective. This should lead to smaller customer complaints and greater customer satisfaction. It could also motivate customers to recommend others to use this bank.

2. 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 check the quality control 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, equi pment, salaries of inspectors etc.) would be `4 crores per annum. ANALYZE the net benefit to the company if it implements this proposal? Please note that scenarios in questions (ii) and 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

(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, 5,000 units supplied are defective and would need to be replaced, in other words, they need to be manufactured again. In other words, inspection after production, 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 / revenue 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 = `75,00,000 + `5,00,00,000 = `5,75,00,000 per annum. This would be the benefit 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 crores 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 trade-off.

3. EKS Ltd. manufactures a single product, which requires three components. The company purchases one of the components from three suppliers. DE Ltd., PE Ltd. and ZE Ltd. The following information are available:

	DE Ltd.	PE Ltd.	ZE Ltd.
Price quoted by supplier (per hundred units)	`240	`234	`260
% of Defective of total receipts	3%	5%	2%

If the defectives are not detected they are utilized in production causing a damage of `200 per 100 units of the component. Total requirements are 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 as 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.

(ii) Which of the three suppliers should be asked to supply?

Solution

(i) A: Statement Showing Computation of Effective Cost before Inspection

Particulars	DE Ltd.	PE Ltd.	ZE Ltd.
Units Supplies (No.s)	12,000	12,000	12,000
Defectives Expected (No.s)	360	600	240

Costs:			
Purchase of Components	28,800	28,080	31,200
Add: Production Damage on Defective Components (@ `200 per 100 components)	720	1,200	480
Total	29,520	29,280	31,680
Good Components (Nos.)	11,640	11,400	11,760
Cost per 100 Good Components	253.61	256.84	269.39

B: Statement Showing Computation of Effective Cost after Inspection

Particulars	DE Ltd.	PE Ltd.	ZE Ltd.
Units Supplies (No.s)	12,000	12,000	12,000
Defects Not Expected (No.s)	36	60	24
Defectives Expected (No.s)	324	540	216
Components Paid For	11,676	11,460	11,784
Costs:			
Purchase of Components	28,022.40	26,816.40	30,638.40
Add: Inspection Cost	3,120.00	3,120.00	3,120.00
Add: Production Damage on Defective Components (@ `200 per 100 components)	72.00	120.00	48.00
Total	31,214.40	30,056.40	33,806.40
Good Components (Nos.)	11,640	11,400	11,760
Cost per 100 Good Components	268.16	263.65	287.47

Advice Whether Inspection at the Point of Receipt is Justified

On comparing the cost under situation, A and B shown above, we find that it will not be economical to install a system of inspection.

Further we also need to consider that presently many organizations are undergoing Just in Time (JIT) implementation. JIT aims to find a way of working and managing to eliminate wastes in a process. Achievement of this is ensured through eliminating the need to perform incoming inspection. Inspection does not reduce the number of defects, it does not help in improving quality. In general inspection, does not add value to the product. It simply serves as a means of identifying defects the supplier has failed to recognize subsequent to the manufacturing of the product.

As a matter of fact, organizations implementing JIT are seeking eventually to eliminate the need for performing incoming inspection activities through a combination of reducing the supplier base, selection through qualification and vendor development. Vendor development and its proper management seeks to assist the supplier who maintains an interest in striving to provide 100% defect-free materials and parts.

So, to decision whether inspection at the point of receipt is justified or not will also depend on Qualitative factors as well.

(i) On comparing the buying cost of components under different situations, as analysed and advised above, if company decides not to install a system of

inspection, supplier DE would be cheaper otherwise supplier PE would be cheaper and company may choose supplier accordingly.
This question can also be solved by assuming receipt of good components as requirement i.e. 12,000 units.

4. A company produces and sells a single product. The cost data per unit for the year 2019 is predicted as below:

	Rs. per unit
Direct Material	35
Direct Labour	25
Variable	15
Selling Price	90

The company has forecast that demand for the product during the year 2019 will be 28,000 units. However, to satisfy this level of demand, production quantity will be increased?
There are no opening stock and closing stock of the product.
The stock level of material remains unchanged throughout the period.
The following additional information regarding costs and revenue are given:

— 12.5% of the items delivered to customers will be rejected due to specification failure and will require free replacement. The cost of delivering the replacement item is `5 per unit.
— 20% of the items produced will be discovered faulty at the inspection stage before they are delivered to customers.
— 10% of the direct material will be scrapped due to damage while in storage. Due to above, total quality costs for the year is expected to be `10,75,556.

The company is now considering the following proposal:

1. To introduce training programmes for the workers which, the management of the company believes, will reduce the level of faulty production to 10%. This training programme will cost Rs.4,50,000 per annum.
2. To avail the services of quality control consultant at an annual charges of `50,000 which would reduce the percentage of faulty items delivered to customers to 9.5%.

Required

(i) PREPARE a statement of expected quality costs the company would incur if it accepts the proposal. Costs are to be calculated using the four recognised quality costs heads.

(ii) Would you RECOMMEND the proposal? Give financial and non-financial reasons.

Solution

(i) Statement of 'Expected Quality Costs'

Particulars	Current Situation (`)	Proposed Situation (`)
Prevention Costs	---	4,50,000
Appraisal Costs	---	50,000
External Failure Costs	3,20,000	2,35,120
Internal Failure Costs	7,55,556	3,91,538
Total Quality Costs	10,75,556	11,26,658

Workings

External Failure Cost

Particulars	Current Situation	Proposed Situation
Customer's Demand …(A)	28,000 units	28,000 units
Number of units Dispatched to Customers …(B) $\left(\frac{28,000\text{ units}}{87.5\%}\right)$; $\left(\frac{28,000\text{ units}}{90.5\%}\right)$	32,000 units	30,939 units
Number of units Replaced …(B) – (A)	4,000 units	2,939 units
External Failure Cost {4,000 units × `(35+25+15+5)}; {2,939 units × `(35+25+15+5)}	`3,20,000	`2,35,120

Internal Failure Cost

Particulars	Current Situation	Proposed Situation
Number of units Dispatched to Customers …(A)	32,000 units	30,939 units
Number of units Produced & Rejected …(B) $\left(\frac{32,000\text{ units}}{80\%}\right)$; $\left(\frac{30,939\text{ units}}{90\%}\right)$	40,000 units	34,377 units
Number of units Discovered Faulty … (B) – (A)	8,000 units	3,438 units
Cost of Faulty Production …(D) {8,000 units × `(35+25+15)}; {3,438 units × `(35+25+15)}	`6,00,000	`2,57,850

Material Scrapped $\left(\frac{40{,}000 \text{ units}}{90\%} \times 10\%\right)$. $\left(\frac{34{,}377 \text{ units}}{90\%} \times 10\%\right)$	4,444.44 units	3,819.67 units
Cost of Material Scrapped …(E) {4,444.44 units × `35}; {3,819.67 units × `35}	`1,55,556	`1,33,688
Internal Failure Cost …(D)+(E)	`7,55,556	`3,91,538

(ii) Recommendation

On purely financial grounds the company should not accept the proposal because there is an increase of `51,102 in quality costs. However there may be other factors to consider as the company may enhance its reputation as a company that cares about quality products and this may increase the company's market share.

On balance the company should accept the proposal to improve its long-term performance.

Theory of Constraints

5. Z Plus Security (ZPS) manufactures surveillance camera equipment that are sold to various office establishments. The firm also installs the equipment at the client's place to ensure that it works properly. Each camera is sold for `2,500. Direct material cost of `1,000 for each camera is the only variable cost. All other costs are fixed. Below is the information for manufacturing and installation of this equipment:

Particulars	Manufacture	Installation
Annual Capacity (camera units)	750	500
Actual Yearly Production and Installation (camera units)	500	500

Required

The questions below are separate scenarios and are not related to each other.

(i) IDENTIFY the bottleneck in the operation cycle that ZPS should focus on improving. Give reasoning for your answer.

(ii) An improvement in the installation technique could increase the number of installations to 550 camera units. This would involve total additional expenditure of `40,000. ADVISE ZPS whether they should implement this technique?

(iii) Engineers have identified ways to improve manufacturing technique that would increase production by 150 camera units. This would involve a cost `100 per camera unit due to necessary changes to made in direct materials. ADVISE ZPS whether they should implement this new technique.

Solution

(i) Identification of Bottleneck: Installation of cameras is the bottleneck in the operation cycle. The annual capacity for manufacturing and installation are given to be 750 camera units and 500 camera units respectively. Actual capacity utilization is 500 camera units, which is the maximum capacity for the installation process. Although, ZPS can additionally manufacture 250 camera units, it is constrained by the maximum units that can be installed. Therefore, the number of units manufactured is limited to 500

camera units, subordinating to the bottleneck installation operation. Therefore, ZPS should focus on improving the installation process.

(ii) Improving Capacity of Installation Technique: Every camera sold increases the through put contribution by `1,500 per camera unit (sale price `2,500 per camera unit less direct material cost `1,000 per camera unit). By improving the current installation technique an additional 50 camera units can be sold and installed. This would involve total additional expenditure of `40,000. Hence, the incremental benefit would be:

Particulars	Amount (`)
Increase in throughput contribution (additional 50 camera units `1,500 per camera unit)	75,000
Less: Increase in total expenditure	40,000
Incremental benefit	35,000

Since the annual incremental benefit is `35,000 per annum, ZPS should implement this improvement to installation technique, the current bottleneck operation.

(ii) **Improving Manufacturing Capacity**: Every camera sold increases the throughput contribution by `1,500 per camera unit (sale price `2,500 per camera unit less direct material cost `1,000 per camera unit). By improving the current manufacturing technique an additional 150 camera units can produced. This would involve a cost `100 per camera unit due to necessary changes to made in direct materials. Therefore, number of units manufactured can increase to 650 camera units. However, production of 150 camera units will not translate into additional sales, because each sale also requires installation by ZPS. In a year only 500 camera installations can be made, leading to an inventory pile up of 150 camera units. This is detrimental to ZPS, since it does not earn any contribution by holding inventory. Therefore, ZPS should not go ahead with the proposal to improve the manufacturing technique.

Chap 3. LEAN SYSTEM AND INNOVATION

TEST YOUR KNOWLEDGE

Just in Time

1. 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 pro duction 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 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 of phone 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.

Solution

(i) Implementing Just in time procurement system will benefit the company by `11,27,000 per year as explained below:

Therefore,

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 (note1)	---	10,00,000
Stockout Cost (note 2)	---	40,20,000
Total Relevant Cost	16,20,00,000	160,020,000

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.

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

Contribution per unit = Sale price - Variable production cost - Variable selling, distribution cost per unit; 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 Costs
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. Therefore, 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 whence 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 is 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 (`1,040 - `800 per unit) 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 or costs the supplier should incur should there be any delay or non-conformance 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.

2. Hindustan Ltd. supplies the following information relating to a vital equipment used in its production activity for April, 2019:

Total time worked during the month	210 hrs.
Total production during the month	2,800 units
No. of units accepted out of total production	2,520 units
Standard time for actual production of the month	180 hrs.
Time lost during the month	28 hrs.

Required
(i) STATE an appropriate approach to measure the total productive maintenance performance of an equipment.

(ii) Quantify the total productive maintenance performance of the above-mentioned equipment by using the approach stated in (i) above.
(iii) COMMENT on the effectiveness of maintenance of the equipment.

Solution

(i) The most important approach to the measurement of TPM performance is known as Overall Equipment Effectiveness (OEE) measure. The calculation of OEE measure requires the identification of "six big losses"

1. Equipment Failure/ Breakdown
2. Set-up/ Adjustments
3. Idling and Minor Stoppages
4. Reduced Speed
5. Reduced Yield and
6. Quality Defects and Rework

The first two losses refer to time losses and are used to calculate the availability of equipment. The third and fourth losses are speed losses that determine performance efficiency of equipment. The last two losses are regarded as quality losses.

Performance × Availability × Quality = OEE %

OEE may be applied to any individual assets or to a process. It is unlikely that any manufacturing process can run at 100% OEE.

(ii) **Availability Ratio per shift** = $\frac{210\ hrs}{210\ hrs+28\ hrs.}$ **x 100%**
= 88.24 %

Performance Ratio = $\{\frac{180\ hrs.}{210\ hrs}\}$ x 100%
= 85.71%

Quality Ratio = $\{\frac{2{,}520\ units}{2{,}800\ units}\}$ x 100%

Thus, OEE = 0.8824 × 0.8571 × 0.90
= 68.06%

(iii) Comment

World Class OEE is 85% or greater, Hindustan Ltd.'s OEE is somewhere around 68%. It just means that company got some opportunities for improvement. Hindustan Ltd. may improve OEE by collecting information related to all downtime and losses on equipment, analyzing such information through graphs and charts, making improvement decisions thereon like autonomous maintenance, preventive maintenance, reduction in set up time etc. and implementing the same.

Business Process Re-engineering (BPR)

3. History

ANA is one of Country 'I''s top footwear companies and other equipment. Since its foundation in 1988, ANA has been one of the all-inclusive footwear brand that is committed to nurturing the youth across the world through sports to contribute to society. Over more than three decades, the company inherits its values and provides own products while capturing the changes in the social environment. It's state-of-the-art production facilities are located strategically across the Country 'I' and produces all kinds of footwear. ANA is best known for its high ethical standards

towards its workers, suppliers and the environment and voluntarily publish CSR report every year.

Organizational Structure and Footwear Market

ANA is organized into conventional functional departments such as procurement on order basis, sales, and finance, most of which have their non-reliable excel sheet-based systems for planning and reporting. Consequently, it often fails to generate accurate, timely and consistent information to monitor its own performance, thus, company faces failures in achieving the performance and delivery targets set by its retail customers.

In Country 'I', footwear market is competitive and seasonal. Retailers, who are ANA's customers, for footwear, they have two main demands, they want –

(i) footwear at lower prices to pass it on to consumers.

(ii) suppliers to meet performance and delivery targets relating to lead times and quality.

In order to comply with the retailer's demands, ANA's competitors have discontinued all their own manufacturing facilities and outsourced all production to suppliers, who have much larger production lines and lower costs. To reduce the shipment cost over long distances, competitors have invested in advanced procurement software to consolidate orders so that each 40-foot shipping container gets fully loaded. Purchase invoice processing is also automated via the integration of information systems into the supplier 's software.

Proposal of Outsourcing

In order to mitigate costs, it has been proposed to outsource the manufacture of footwear, to a Chinese Supplier 3,750 km away. A comparison of the average cost of manufacturing and the cost of outsourcing footwear is given below–

Particulars	Manufacturing	Outsourcing
Average manufacturing cost *per pair*	BND 625	---
Purchase cost *per pair*	---	CNY 28

Notes-

1. Country 'I''s home currency is the BND.
2. Exchange Rate 1CNY = 18 BND.
3. In addition to the purchase cost from the supplier, ANA will be subject to pay for shipping costs at the rate of BND 40,000 for each large, standard sized shipping container, regardless of the number of units in it. Each container contains 5,000 pairs when fully loaded.
4. Custom tariffs are expected to change soon, footwear imports into ANI's home country might be subject to 10% basic custom duty (plus 10% social welfare surcharge on duty) on the assessable value of imports excluding shipping costs.

Therefore, to implement the proposal, restructuring of functional departments into multi- disciplinary teams are needed to serve major buyer accounts. Each team is required to perform all activities, related to the buyer account management from order taking (sales order) to procurement to arranging shipping and after sales services. Team members dealing with buyers will work in ANA's corporate office, while those like QC etc. managing quality and supplier audits, will work at the manufacturing site of Chinese Supplier. Teams will be given greater independence to selling prices to reflect market conditions or setting a price based on the value of

the product in the perception of the customer. Many support staff will work as helper roles, or be offered new jobs opportunities overseas after the restructuring.

Expert Advise

Prof. WD, Performance Management Consultant has advised ANA that the proposal has features of re-engineered processes and can be defined as business process re-engineering (BPR). Prof. advised, for evaluating the proposal, ANA should consider software development for full front-end order entry, purchasing, and inventory management solution which may be required along with ethical aspect of the proposed changes.

Required

(i) ADVISE on information system which would be required for the reengineering.

(ii) ASSESS the likely impact of reengineering on the ANA's high ethical standards and accordingly on business performance.

(iii) EVALUATE how the BPR proposal can improve ANA's performance in relation to retail customers.

Solution

(i) Advise on Information System

Combining several jobs into one, permitting workers to make more decision themselves, defining different versions of processes for simple cases vs complex ones, minimizing situations when one person check someone else's work, and reorganizing jobs to give individuals more understanding and more responsibility are characteristics of re- engineered processes.

In ANA, outlays can be saved by rearranging staff into multidisciplinary teams, for example, reducing number of excess staff at different stages – cutting, preparation, finish etc. These savings can be utilized in additional costs such as investment in new information systems. Hammer and Champy stress the use of information technology as a catalyst for major changes. BPR organizes work around customer processes rather than functional hierarchies.

Presently, ANA's departments have their own excel sheet-based systems for planning and reporting which is unreliable and inconsistent. They are inadequate to provide the accurate, timely and consistent data which ANA needs to meet its own performance and delivery targets. There must a shared database that should be accessible by all parts of the functional teams. This should have real time updation, so that employees in different time zones can use updated data. The database should include financial data and non- financial data, like cost information, data related to lead times and quality. Information systems must be featured with all required reports like performance report, budget report etc.

In addition, ANA is required to invest in special system as advised by Prof. WD for full front-end order entry, purchasing, and inventory management solution to minimize shipping costs by ensuring that the shipping containers get fully loaded and to integrate with supplier's information systems to automate purchase invoicing.

Overall, ANA must analyze that whether the benefits due to information technology are worthy.

(ii) Assessment of Likely Impact of Re-engineering on Ethical Standards

Workers

ANA is famous for its high ethical standards towards workers and staff. Because of adopting BPR proposal, manufacturing staff are likely to be unemployed. Competitors, have already shutdown their factories, these workers may not be able to find analogous jobs.

Employees who continue in work may become disappointed if they think the application of BPR to all products. This may reduce productivity, increase staff turnover or difficulties in recruiting new staff. In addition, they may also be demotivated if they are appointed in unfamiliar roles, or may not be willing to learn new skills.

Some of staff members may be motivated by the opportunity to perform new types of work, learn new skills or work outside India. This maybe enhance their individual performance.

Suppliers

Any association with non-ethical practices, for example, if the Chinese supplier is indulged in using non-acceptable working practices, could seriously spoil ANA's reputation for high ethical standards. This could undermine financial performance because customers may not buy its products, or possible investors might refuse from providing capital. Staff members located at the manufacturing site is responsible for supplier audits, which may assist to mitigate this risk.

Environment

ANA should consider the environmental impact of importing goods from long distances. The environmental related credentials of the Chinese Supplier are not known. Since, ANA voluntarily publishes a corporate sustainability report, any distortion in its performance on environmental issues might undermine the financial performance.

(iii) Evaluation of BPR Proposal in relation to Retailer's Demand

Lower Prices

In order to sell footwear at lower prices, there is proposal to reduce costs by outsourcing production to supplier. The current average production cost of manufacturing is BND 625.00 per unit. The cost of purchase from an external supplier is BND 512, which is BND 504 (CNY18 × BND28) purchase cost, plus BND 8 (BND 40,000/ 5,000) shipping cost. This 18.08% (113/ 625) saving is a substantial improvement in financial performance, but not a dramatic one. It may be noted that BPR is a methodology that should be applied only when radical or dramatic change is required. Further, exchange rate movements may also slash the cost saving significantly. In the near future, expected changes to international trade tariffs will increase the unit cost to CNY30.83 (CNY28.00 × 110.10%) i.e. 554.94 in BND and reduce the cost saving to just 11.21% (70.06/ 625).

Meeting Performance Targets

Lead times

Current lead times for customer orders are not ascertainable. Since the proposed Chinese Supplier is 3,750 km away, consignment will take several weeks to be

imported by sea. This may increase lead times substantially, although may be set off by faster production times in supplier's plant. As ANA's sales are seasonal, retailers may order in advance, decreasing the long lead times. In order to decrease shipping costs, shipping containers must be full, meaning that deliveries must be in larger quantities.

Quality

ANA is already known for manufacturing high quality footwears. The quality of the new supplier's footwear needs to be checked. Any distortion in the quality of footwear will deteriorate its reputation and decrease long-term business performance since only few customers would order. Quality standards checking is more difficult while using outside suppliers, especially at long distance, than manufacturing in ANA's own factory. In BPR, work is done where it makes most sense to do so. In this aspect, having employees responsible for quality checking and supplier audits (working at the manufacturing site, abroad) will assist ANA in sustaining the best supplier relationship management.

Chap 4. COST MANAGEMENT TECHNIQUES

Case Scenario

Queenstown Wood Co. (QWC) began 20 years ago, as a small family-run business supplying custom-made school furniture. Now QWC has grown into a thriving hub of experts specializing in either custom-made, locally sourced or quality imported commercial grade furniture. The newly appointed CFO is concerned about the trends in dropping sales volumes, increasing costs, and hence falling profits over the last three years. He observed that the reason of these trends is increased cut-throat competition that has emerged over the last three years. For many years, QWC has been known for high quality but now this quality is being matched by the competitors. QWC's share of the market is declining due to equivalent products being sold by competitors at lower prices. It is considered that, to offer such low prices, the furniture's production costs of the competitors must be lower than QWC's.

Required

ADVISE how QWC can improve its sales volumes, costs and profits using Value Analysis and Functional Analysis.

Solution

Value Analysis is viewed as a reduction in cost and problem solving technique. Such technique analyses an existing product to identify and cutback or eliminate any cost which do not give any contribution to performance or value. It is a planned, scientific approach to c ost reduction which reviews the material composition of a product and production design so that modifications and improvements can be made which do not reduce the value of the product to the customer or to the user. (i.e. quality for purpose should not be compromised.)

Functional analysis is applied to the design of new products and breaks the product down into functional parts. For example, a new chair may have the moveable feature. The value that the customer places on each feature is considered and added to give a target cost. Thus, functional analysis aims to increase profits by reducing costs through elimination of unnecessary features and/or by adding cost-effective new features that are so attractive to customers that the product becomes more lucrative.

The result of the above analysis is to improve the value of the furniture while maintaining costs and/or cutback the costs of the furniture without compromising with value. It is clear from the scenario that QWC needs to cut back its selling prices to compete in the market. This selling price reduction can only be possible by a reduction in QWC's unit costs; however, such reduction must not be accomplished by compromising with quality. Both value analysis and functional cost analysis may be used for QWC; however, value analysis is likely to be a more useful technique because office tables and chairs are such items which are demanded more on the basis of their use value rather than their esteem value.

Illustration

Y-Connections, China based firm, has just developed ultra-thintablet S-5 with few features like the ability to open two apps at the same time. This tablet cost ` 5,00,000 to develop; it has undergone extensive research and is ready for production. Currently, the firm is deciding on plant capacity, which could cost either ` 35,00,000 or ` 52,00,000. The additional outlay would allow the plant to increase capacity from 500 units to 750 units. The relevant data for the life cycle of the tablet at different capacity level are as under:

Expected Sales	*500 units*	*750 units*
Sale Price	*` 79,600 per*	*` 69,600 per unit*
Variable Selling	*10% of Selling*	*10% of Selling*
Salvage Value -	*` 6,25,000*	*` 9,00,000*
Profit Volume Ratio	*40%*	

Required

ADVISE Y-Connections, regarding the 'Optimal Plant Capacity' to install. The tablet's life cycle is two years.

Note: Ignore the time value of money.

Solution

Advice

Based on the above 'Expected Profit' statement which is purely based on financial considerations firm may go for high price – low volume i.e. 500 units level. However, non- financial considerations are also given due importance as they account for actions that may not contribute directly to profits in the short run but may contribute significantly to profits in long run. Here, it is important to note that life cycle of product is two years and there is no significant difference between the profits at both levels. In this scenario firm may opt the plant having high capacity not only to increase its market share but also to establish a long term brand image.

Workings

Statement Showing "Variable Manufacturing Cost per unit"

Particulars	**` / unit**
Sales	79,600
Less: Contribution (40%)	31,840
Variable Cost	47,760
Less: Variable Selling Costs (`79,600 × 0.1)	7,960
Variable Manufacturing Cost	39,800

Statement Showing "Expected Profit"

Particulars	('000) ` / unit	
	500 units	750 units
Sales	39,800 (`79,600 × 500)	52,200 (`69,600 × 750)
Less: Variable Mfg. Cost	19,900 (`39,800 × 500)	29,850 (`39,800 × 750)
Less: Variable Selling Cost	3,980 (`39,800 × 0.1)	5,220 (`52,200 × 0.1)
Add: Salvage Value	625	900
Less: Cost of Plant	3,500	5,200
Net Profit	13,045	12,830

Illustration

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:

Defect	*N*
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 colours-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

Statement Showing "Pareto Analysis of Defects"

Defect Type	No. of Items	% of Total Items	Cumulative Total
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 colours-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/ Strain on lenses	5	1.67%	100.00%
	300	100.00%	

The company should focus on eliminating scratches on the surface, rough edges of lenses and grinding of lenses related defects which constitute 80% portion, according to Pareto Theory.

TEST YOUR KNOWLEDGE

Target Costing

1. Storewell Industries Ltd. manufactures standard heavy duty steel storage racks for industrial use. Each storage rack is sold for `750 each. The company produces 10,000 racks per annum. Relevant cost data per annum are as follows:

Cost Component	Budget	Actual	Actual Cost p.a. (`)
Direct Material	5,00,000 sq. ft.	5,20,000 sq. ft.	20,00,000
Direct Labour	90,000 hrs.	1,00,000 hrs.	10,00,000
Machine Setup	15,000 hrs.	15,000 hrs.	1,50,000
Mechanical Assembly	200,000 hrs.	200,000 hrs.	30,00,000

The actual and budgeted operating levels are the same. Actual and standard rates of material procurement and hourly labor rate are also the same. Any variance in cost is solely on account of difference in the material usage and hours required to complete production. Aggressive pricing from competitors has driven down sales. A comparable rack is available in the market for `675 each. Vishal, the marketing manager has determined that in order to maintain the company's existing market share of 10,000 racks, Storewell Industries must reduce the price of each rack to `675.

Required

(i) CALCULATE the current cost and profit per unit. IDENTIFY the non-value added activities in the production process.

(ii) CALCULATE the new target cost per unit for a sales price of `675 if the profit per unit is maintained.

(iii) RECOMMEND what strategy Storewell Industries should adopt to attain target cost calculated in (ii) above.

Solution

(i) The current cost and profit per unit are calculated as below:

Cost Component	Units	Actual Cost p.a. for 10,000 racks (`)	Actual Cost per rack (`)
Revenue	10,000 racks	75,00,000	750
Direct Material	5,20,000 sq. ft.	20,00,000	200
Direct Labour	1,00,000 hrs.	10,00,000	100
Machine Setup	15,000 hrs.	1,50,000	15
Mechanical Assembly	200,000 hrs.	30,00,000	300
Total Cost		61,50,000	615
Profit		13,50,000	135

Therefore, the current cost is `615 p.u. while the profit is `135 p.u. Machine setup is the time required to get the machines and the assembly line ready for production. In this case, 15,000 hours spent on setting up does not add value to the storage racks directly. Hence, it is a non-value add activity.

(i) New sale price per rack is `675 per unit. The profit per unit needs to be maintained at `135 per unit. Hence, the new target cost per unit = new selling price per unit – required profit per unit = `675 - `135 = `540 per unit.

(ii) As explained above, current cost per unit is `615 while the target cost per unit is `540. Hence, the cost has to be reduced at least by `75 per unit. Analysis of the cost data shows the variances between the budget and actual material usage and labor hours. It is given that the material procurement rate and labor hour rate is the same for budgets and actuals. Hence, the increment in cost of direct materials and labor is due to inefficient use of material and labor hours to complete the same level of production of 10,000 storage racks.

Corrective actions to address these inefficiencies could result in the following savings:

(a) Inefficiencies resulted in use of extra 20,000 sq. ft. of material.

Material cost per sq. ft. = Actual cost / Actual material usage = `20,00,000 / 5,20,000 sq. ft. = `3.85 per sq. ft.

Therefore, inefficiencies resulted in extra cost = 20,000 sq. ft. × `3.85 per sq. ft. = `77,000.

If corrective action is taken, for 10,000 racks this translates to a saving of `7.70 per unit.

(b) Inefficiencies resulted in extra 10,000 hrs. to be spent in production.

Labor cost per hr. = Actual cost / Actual labor hrs. = `10,00,000 / 10,000 hrs. = `10 per hr.

Therefore, inefficiencies resulted in extra cost = 10,000 hrs. × `10 per hour = `100,000.

If corrective action is taken, for 10,000 racks this translates to a saving of `10 per unit.

(c) Machine setup cost is a non-value added cost. Value analysis can be done to determine if the setup time of 15,000 hrs. can be reduced. However, since these activities have been carried out for a reason, car e should be taken to ensure that this change should not adversely impact the production activity later down the stream.

(d) Mechanical assembly cost is almost half of the total cost. These are costs incurred during the production process on the assembly line. Value analysis can be done to determine if the production process can be made more efficient. For example, the process can be streamlined, such that steps can be combined that can be handled by fewer people (process centering). Similarly, value analysis / value engineering can focus on the product design.

Some questions to raise may be:

- Can the product be designed better to make the production more efficient?
- Can the design be minimized to include fewer parts and thus make it easier and efficient to manufacture?
- Can be substitute parts to make it more efficient? Or
- Is there simply a better way of producing the same product?

While target costing is a dynamic and corrective approach, care must the taken the product quality, characteristics and utility are maintained.

2. NEC 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	Rs.
Selling Price *per unit*	50
Less: Direct Material Cost *per unit*	9
Direct Labour Cost *per unit*	9
Variable Overhead *per unit* (3 hrs. @ `2)	6
Contribution *per unit*	26
Budgeted Sales Quantity	25,000 units
Budgeted Contribution (25,000 × `26)	6,50,000
Less: 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.

To 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.

(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.

(iii) STATE the most suitable situation for the adoption of Target Costing.

Solution

(i) Target Production Time per unit

(`3 + `3 + `2) × hrs. × 30,000 units = `5,10,000 Hrs. = 2.125

Time to be reduced per unit = 3 hrs. – 2.125 hrs.

= 0. 875 hrs.

Workings

Statement Showing Target Cost (Direct Labour and Variable Overhead)

Particulars	Amount (`)
Target Sales (`55 × 30,000 units)	16,50,000
Less: Target Profit	3,00,000
Less: Direct Material Cost (`9 × 30,000 units)	2,70,000
Less: Budgeted Fixed Costs	5,00,000
Less: Proposed Advertising	40,000
Less: Proposed Annual Group Bonus	30,000
Target Cost (Variable Overhead and Direct Labour) for 30,000 units	5,10,000

(i) Problem

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 that there often are considerable repetitions where reduction targets could come into play as a framework for improving design. Working under pressure to finish new design assignments in a short time may take development resources away from efforts to optimise or re-engineer production processes. If approaching product design as an activity to be optimised independently there is a risk that target costing may not succeed to satisfactorily addressing overall performance, so 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 and control overall production activities.

(iii) Target costing is most useful in situations where the majority of product costs are locked in during the product design phase. This is the case for most manufactured products, but few services. In the services area, such as consulting, the bulk of all activities can be reconfigured for cost reduction during the "production" 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 commonly concerned with streamlining the activities conducted by the employees providing the service, which can continue to be enhanced at any time, not just when the initial services process is being laid out.

3. JFE, 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) × 4] and got it printed as a list as given below:

(1) Over capacity in the industry.
(2) The company can continue to offer the product to our loyal customers at a reduced price.
(3) Few competitors produce basic version of our product.
(4) Product features may be improved or enhanced to differentiate our product from that of the competitors.
(5) Attracting customers by raising awareness about our product through promotion activities.
(6) High volume of business and increase in competition.
(7) Use the present product as replacement product for launching another new product successfully in the market.
(8) Value-based pricing strategies may be considered.
(9) Profits start declining and at times become negative.
(10) Maintain control over product quality to assure customer satisfaction.

(11) Strengthening or expanding channel and supply chain relationships.
(12) 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

(iii) 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).

Products (1)	Phases (Stages) (2)	Characteristics (3)	Strategies (4)
P_4	Introduction		
P_3	Growth		
P_2	Maturity		
P_1	Decline		

(ii) List down the importance (any four) of Product Life Cycle Costing.
(iii) State the benefits (any four) of Product Life-Cycle Costing.

Solution

(i) Statement Showing Product Life Cycle Characteristics and Strategies

Products (1)	Phases (Stages) (2)	Characteristics (3)	Strategies (4)
P_4	Introduction	(3)	(5), (11)
P_3	Growth	(6)	(10), (8)
P_2	Maturity	(1)	(4), (12)
P_1	Decline	(9)	(2), (7)

(ii) Importance of Product Life Cycle (PLC) Costing

▪ As a Planning tool, it characterizes the marketing challenges in each stage and poses 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.

(ii) Benefits of Product Life Cycle Costing

The benefits of product life cycle costing are summarized as follows:
▪ 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 maximize return on a product.

▪ 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 parts of the whole where cost effectiveness might be improved.
▪ It is an approach used to provide a long-term picture of product line profitability, feedback on the effectiveness of life cycle planning and cost data to clarify the economic impact of alternatives chosen in the design, engineering phase etc.

Environmental Management Accounting

4. 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 in the impact that each product has on the environment, the management would like to revise the cost allocation to products based taking into account the incinerator cost 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).

(ii) ANALYZE difference in product profitability as per both the methods.

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

Solution

(i) Product Wise Profitability as per Original Allocation Methodology

(Figures in ` per kilogram of fertilizer produced)

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

Table 1 Allocation of Direct Materials and Labour as per Cost Centre and Product

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

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

1. Overhead expenses of ` 150 per kilogram of fertilizer produced be first bifurcated into incinerator costs and other overhead costs.

2. Incinerator costs of ` 90 per kilogram of fertilizer needs to be allocated first to the cost centres. This is done based on the waste generated at each cost centre. The individual cost allocated to each cost centre is again allocated to products based on the waste generated at each cost centre by each product. Refer part a of table 2 for detailed calculations.

3. As mentioned in the problem, other overhead costs are allocated to each product at each cost centre level equally. Refer part b of table 2 for detailed calculations.
4. The above allocations to each product at a cost centre level is then summed up to get the product wise overhead cost allocation. Refer part c of table 2 for detailed calculations.

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

(Figures in Rs. per kilogram of fertilizer produced)

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

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

(Figures in ` per kilogram of fertilizer produced)

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

Part A: Allocation of Incinerator Cost from Cost Centre to each product *(based on waste produced at each cost centre by each product)*				
Product	**CC1**	**CC2**	**CC3**	**Total**
Grade A	12	18	6	36
Grade B	12	12	30	54
Total Incinerator Cost	24	30	36	90
Part B: Allocation of Other Overhead Cost from Cost Centre to each product				
Product	**CC1**	**CC2**	**CC3**	**Total**
Grade A	10	10	10	30
Grade B	10	10	10	30
Total Other Overhead Cost	20	20	20	60

Part C: Total Overhead Cost (Cost Centre and Product Wise i.e. part a + b)				
Product	**CC1**	**CC2**	**CC3**	**Total**
Grade A	22	28	16	66
Grade B	22	22	40	84
Total Overhead Cost	44	50	56	150

Summarizing Product Profitability as per both methods:

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

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

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

(iii) The company can draw a number of conclusions from this analysis of overhead costs as per environmental management accounting. This analysis has helped the company reach the conclusion that Grade B fertilizer produces more waste. The company could adopt either of the following approaches:

(a) To maintain the same level of profitability, the company can increase the price of Grade B by another `9 per kilogram. This is a 2.25% increase in the sale price of Grade B fertilizer. Depending on the market for this grade of fertilizer, the company has to decide whether to increase the price of the product. While a price increase may be possible if the company has a strong market hold, it might be difficult if competition in the market is high. or

(b) The other approach, a more sustainable approach that is the aim of environmental management accounting, would be to reduce the waste produced in the manufacturing process. This analysis, has quantified the waste generated in the process. Better manufacturing techniques, could save the company incinerator costs, that would yield better profits for the company.

Chap 6. DECISION MAKING

Illustration

DBA, manufactures and sells 25,000 table fans annually. One of the components required for fans is purchased from an outside supplier 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:

	` per unit
Direct materials	80
Direct labour	75
Factory overhead	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.

Required

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.

(ii) RECOMMEND the most profitable alternative.

Solution

(i) DBA purchases 25,000 units of components to manufacture 25,000 fans annually. The external purchase price per component is `190 per unit. It has the option of manufacturing these components in house. The cost structure of manufacturing these components would be as below:

Cost Structure	Cost per
Direct Materials	80
Direct Labor	75
Variable Factory Overhead (70% of	28
Total	183

Analysis

If DBA decides to manufacture the components in-house, the following would be the financial impact:

(a) Production Capacity will increase from 25,000 fans to 30,000 fans.

(b) Variable Cost of Production of fan would be `1,710 [(2,500 - 600) -190] per unit.
(c) Fixed Factory Overhead of `12 per component would be incurred irrespective of whether component is produced or not. Therefore, this cost is not considered.
(d) Increase in advertising expense would be `100,000 per month or `12,00,000 annually.
(e) Overall selling price would reduce from the current rate of `2,500 per fan to `2,375 (95% of `2,500) per fan.
(f) Current contribution considering a procurement price of `190 per component unit, is `600 per fan. As calculated above, if produced in house, the variable cost would be `183 per component unit. This would result in an increase in contribution by `7 per fan (procurement price of `190 per component unit less variable cost of `183 per component unit). In addition, there is an impact of `125 on account of reduction in selling price. Therefore, the contribution if component produced in house would be `482 per fan (`600+`7-`125).
To summarize the above figures:

Particulars	Procurement 25,000 Components		Produce 30,000 Components	
	Per Fan `	Total `	Per Fan `	Total `
Selling price per fan	2,500	6,25,00,000	2,375	7,12,50,000
Contribution per fan	600	1,50,00,000	482	1,44,60,000

Therefore, incremental loss by switching to in house production (on a total basis) would be `17,40,000 (incremental loss `5,40,000 – additional advertising expenses `12,00,000). On a per unit basis, it would result in a loss of `58 per fan.

(ii) Recommendation

As explained above, if production increases from 25,000 fans to 30,000 fans, it would not be profitable to make these components in house. Overall profit decreased by `17,40,000. However, DBA may prefer to make component, even though it could be financially beneficial to buy from outside supplier. Sometimes qualitative factors become very import ant and can override some financial benefit. This can be coupled with uncertainty about the supplier 's ability or intention to maintain the price, quality, delivery dates of the components etc.
Alternatively, DBA may continue with the sale of 25,000 units without any price reduction and advertising expenses. The component required for the 25,000 fans may be produced internally at a cost of `183 per unit. In this situation, the contribution shall be increased by `1,75,000 (`7 ×25,000 units).
Thus, DBA may choice the alternative after due and careful consideration of the facts illustrated above.

Example

A process industry unit manufactures three joint products: 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:

Upto point of separation	
Marginal cost	30
Fixed Cost	20
After point of separation	
Marginal cost	15
Fixed cost	5
	70

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

Cost incurred on Product 'C' upto point of separation is irrelevant for decision making as Product 'C' is a Joint Product. Joint Products are the result of same raw material & same process Operations.

Cost incurred after point of separation will be considered for decision making as specifically incurred for Product 'C'.

After further processing Product 'C' will contribute `17 per unit toward 'Joint Production Cost'. Calculation is as follows

Particulars	Amount (`)
Selling Price *per unit*	37.00
Less: Cost after separation:	
Marginal Cost *per unit*	15.00
Fixed Cost *per unit*	5.00
Contribution toward 'Joint Production Cost'	17.00

Hence, further processing of Product 'C' is recommended.

If Product 'C' is not a joint product with same cost structure. In this case there will be negative contribution on production of Product 'C'. The calculation is as follows→

Particulars	Amount (`)
Selling Price *per unit*	37.00
Less: Marginal Cost (`30 + `15)	45.00
Contribution	(8.00)

Hence, production of Product 'C' will not be recommended.

Illustration

Rabi Ltd. is considering the discontinuance of Division C. The following information is given:

Particulars	Divisions A & B	Division C	Total
Sales (Maximum achievable) (`)	41,40,000	5,17,500	46,57,500
Less: Variable cost (`)	20,70,000	2,76,000	23,46,000

Contribution (`)	20,70,000	2,41,500	23,11,500
Less: Specific avoidable fixed cost (`)	14,49,000	4,14,000	18,63,000
Divisional Income (`)	6,21,000	(1,72,500)	4,48,500

The rates of variable costs are 90% of the normal rates due to the current volume of operation. There is adequate market demand.

For any lower volume of operation, the rates would go back to the normal rates. Facilities released by discontinuing Division C cannot be used for any other purpose.

Required

COMMENT on the decision to discontinue Division C using relevant cost approach.

Solution

As given in the problem Rabi Ltd. is considering to discontinue the Division C perhaps by seeing the Division C's income as it is a loss of `1,72,500. Discontinuance of Division C might be saving `4,14,000 on specific fixed costs to the company but due to this decision company will not only be losing `2,41,500 contribution from the Division C but also an additional burden of variable cost of `2,30,000 to Divisions A & B and Rabi Ltd. as a whole.

Let assess the decision of the Rabi Ltd. with the help of the Relevant Cost approach.

Particulars	Amount (`)
Savings Due to Discontinuance	
Specific Fixed Cost	4,14,000
Total ...(A)	4,14,000
Loss/ Increase in Cost Due to Discontinuance	
Loss of Contribution	2,41,500
Increase in Variable Cost $\left(\frac{`20,70,000}{90} \times 10\right)$	2,30,000
Total ...(B)	4,71,500
Excess of Loss Over Savings ...(B) – (A)	57,500

In a nutshell considering the above analysis we can conclude that the decision of discontinuing Division C will not be beneficial for the Rabi Ltd and it should review its decision on the basis of relevant cost approach to reach at right decision.

Illustration

BNZ Ltd. is engaged in the manufacture of plastic bottles of a standard size and produced by a joint process of machines. The factory has 5 machines and capable of producing 40 bottles per hour. The variable cost per bottle is `0.32 and the selling price is `0.80 each. The company has received an offer from another company for manufacture of 40,000 units of a plastic moulded toy. The price per toy is `30 and the variable, cost is `24 each. In case of the company takes up the job, it has to meet the expenses of making a special mould required for the manufacture of the toy. The cost of the mould is `1,00,000. The company's time study analysis shows that the machines can produce only 16 toys per hour. The company has a total capacity of 10,000 hours during the period in which the toy is required to be manufactured. The

fixed costs excluding the cost of construction of the mould during the period will be `10 Lakh.
The company has an order for the supply of 3,00,000 bottles during the period.

Required

(i) Do you ADVISE the company to take up the order for manufacturing plastic moulded toys during the time when it has an order in its book for the supply of 3,00,000 bottles.

(ii) If the order for the supply of bottles increases to 4,00,000 bottles, will you ADVISE the company to accept the order for the supply of plastic moulded toys? State the reasons.

(iii) An associate company of BNZ Ltd. has idle capacity and is willing to take up the whole or part of the manufacturing of the plastic moulded toys on sub-contracting basis. The subcontract price inclusive of the cost of construction of mould is `28 per toy. DETERMINE the minimum expected excess machine hour capacity needed to justify producing any portion of the toy order by the company itself rather than subcontracting.

Solution
Workings

Statement Showing "Contribution / Machine Hour"

	'Bottle'	'Toy'
Demand (units)	3,00,000	40,000
Sales (`/u)	0.80	30.00
Less: Variable Cost (`/u)	0.32	24.00
Less: Specific Fixed Cost (`/u)	---	2.50
Contribution (`/u)	0.48	3.50
Machine Hours Required per unit	0.025	0.0625
Contribution / Machine Hour	19.20	56.00

Advice on Supply of 3,00,000/ 4,00,000 Bottles

(i) BNZ Ltd. can accept plastic moulded toy's order as sufficient number of hrs. i.e. 2,500 hrs. (10,000 hrs.- 3,00,000 bottles × 0.025 hrs.) are available and would be able to generate additional benefit of `3.50 per unit on 40,000 units of toys i.e. `1,40,000.

(ii) If the order for the supply of bottles increases to 4,00,000 bottles, then 2,500 more hrs. will be required to produce the additional bottles. BNZ Ltd. has to decide whether to utilize 2,500 hrs. for existing bottle order or for toy Order.

Machine time is limiting factor. Therefore, contribution per machine hour from both the activities (i.e. bottles and toys) should be calculated to decide whether the order should be accepted. Contribution per hour is more in case of toys (refer workings). Therefore, BNZ Ltd. should utilize the remaining 2,500 hours

for manufacturing toys rather than to fulfil the order for supply of additional bottles.

Prioritizing production based on contribution per machine hour would maximize profits. However, existing order fulfilment is necessary for building long term and sustainable customer relationship. Developing and maintaining long term and intimate relationships with the profitable customers provides valuable benefits to the company as the relationships between company and customers grow, a customer who is satisfied with the company's products and services, tends to commit the relationship, and buy more over time. Cost of keeping the existing customers is less expensive than the cost of acquiring new customers.

Hence, BNZ Ltd. should be taken into consideration long term supplier relation before accepting the toy order based on financial consideration as contribution per hour is more in case of toys. Further, company may also explore outsourcing opportunities for production of toys.

(iii) Minimum number of toys needed to be manufactured to justify the increase in fixed cost of `1,00,000 to make the mould is 25,000 toys {1,00,000/ (`28 - `24}. Thus, as long as company has excess capacity available to manufacture more than 25,000 toys it is cheaper to produce than to buy from subcontractor.

Minimum Expected Excess Capacity hours to justify = $\frac{25{,}000\ toys}{16\ toys}$ = 1,562.5 or 1,563 hrs.

TEST YOUR KNOWLEDGE

Decision Making

1. 'S' manages the school canteen (approximately 1,600 students) at Noida. The current cash payment system requires three clerks (paid `90 per hour), employed for about 4 hours a day. The canteen operates approximately 240 days a year.

   'S' is considering a Wireless Cash Management System (WCMS), where a student could just swipe an ID Card for payment. This system would cost `1,25,000 to setup and `36,000 per year to operate. 'S' believes that he could manage with one clerk if he were to implement the system.

   Required

   ADVISE 'S' on the choice of a plan, assuming working life of WCMS as 5 years. (Ignore the time vale of money)

Solution

For each day, 'S' spends `360 per clerk (`90 per hr. × 4 hrs.). Therefore, 'S' spends `1,080 per day to employ three clerks. Annually, this outlay amounts to `2,59,200 (`1,080 per day × 240 days).

Over five years, the outlay would be `12,96,000. If the WCMS is implemented, the initial cost is `1,25,000. If we add the annual cost of `36,000, the total cost over five years amounts to`3,05,000. Since one clerk will be needed as well, 'S' has to incur `4,32,000 over five years to pay clerk (`4,32,000 = `90 × 4 hrs. × 1 clerk × 240 days × 5 years). Therefore, the total cost of this option is `7,37,000.

Accordingly, there is cost saving of `5,59,000 from WCMS implementation.

Relevant Non-Financial Considerations

The WCMS may be a lot more efficient, but more rigid. For instance, what if, a student forgets to bring his/ her card or transaction failure due to connectivity issue, and may not have enough cash to pay. Automated systems may be less able to handle these situations. Having clerks may add an aspect of flexibility and a human aspect that is hard to quantify.

Conclusion

Obviously, WCMS option is more cost effective for 'S' because there is a cost saving of `5,59,000. But, non- financial factors should also be taken into consideration.

2. Aayla runs the Planetarium Station in New Delhi, India. The strength of the station lies in its live interactions and programs for visitors, students and amateur astronomers. The station is always active with programs for school and college students and for amateur astronomers. One of the station's key attractions is a big screen IMAX theatre. IMAX is a 70 mm motion picture film format which shows images of far greater size and resolution than traditional film systems. The IMAX cinema projection standards were developed in Canada in the late 1960s. Unlike traditional projectors, the film is run horizontally so that the image width is greater than the width of the film.

The average IMAX show at the station attracts 120 visitors (50 children and 70 adults) at a ticket price of `160 for children and `200 for adults. Aayla estimates that the running costs per IMAX show are `10,000. In addition, fixed costs of `7,500 are allocated to each show based on annual estimate of the number of IMAX shows.

The Hobart School has approached Aayla about scheduling an extra show for its class VIII students. One hundred students and five teachers are expected to join the special show on the 'Planets & Solar System', a feature that is currently showing. The school has asked Aayla for a price quote. The special show will take place at 08:30 AM when the IMAX is not usually open.

Required

RECOMMEND the minimum amount that Aayla should charge.

Solution

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

Aayla should consider the following factors:

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

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

▪ What is the impact on future revenue?

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

▪ Are there costs linked with the special showing that are not included in the `10,000 variable cost number?
For example, will the station have to pay an overtime premium.
Aayla should also consider the educational mission of the Planetarium Station. Such shows directly contribute to this mission, the station, and, hopefully, the betterment of the students. The special shows may be an excellent way to expose some students to earth science –
these students may have never gone through the Planetarium Station if it were not for the school excursion.
Overall, the "best" price to charge is unclear and requires some judgment as Aayla needs to balance an array of financial and non-financial factors.

3. Color paints is a manufacturer of industrial dyes. It has received an order for 200 kgs of powder dye that needs to be customized to certain specifications. The job would require the following materials:

Material	Total units required	Units already in inventory	Book value of the units in inventory (`per unit)	Realizable value (`per unit)	Replacement cost (`per unit)
A	2,000	0	NA	NA	8
B	3,000	1,200	7	8	10
C	2,000	1,400	12	9	14
D	500	500	9	12	15

I) Material B is used regularly in production of all types of dyes that Color plaints produces. Therefore, any stock used towards this job order would need to be replaced to meet other production demands.

II) Inventory of material C and D are from stock that was purchased in excess previously. Material C has no other use other than for this special order. Material D can be used as a substitute for 700 units of material Z which currently costs `11 per unit. The company does not have any inventory of material Z currently.

Required
ANALYSE the relevant costs of material while deciding whether to accept the order or not?

Solution
Material A
The requirement of 2,000 units of Material A has to be purchased in entirety since there are no units in stock. Therefore, the relevant cost will be the replacement cost at `8 per unit, which for 2,000 units is `16,000 (2,000 units × `8 per unit).
Material B
There is a requirement of 3,000 units of Material B, of which 1,200 units are in stock. Material B used regularly in the production of all types of dyes. If the 1,200 units in stock are used, they need to be replenished (replaced) in order to meet production demands of other dyes. In addition, for the special order, additional 1,800 units of Material B is

required to be procured from the market. Therefore, 3,000 units of Material B has to be procured if the special order is undertaken. The relevant cost will be the replacement cost at `10 per unit, which for 3,000 units is `30,000 (3,000 units × `10 per unit).

Material C

There is a requirement of 2,000 units of Material C, of which 1,4 00 units are in stock. The balance 600 units have to be procured at the replacement (market) price of `14 per unit, which would be `8,400. Material C has no other use, so if the special order is not undertaken the stock of 1,400 units can be sold at `9 per unit. So, the opportunity cost of undertaking this order is `12,600. Therefore, the relevant cost for Material C is procurement cost of 600 units plus the opportunity cost of not disposing the current stock of 1,400 units, which would be `8,400 + `12,600 = `21,000.

Material D

The entire requirement of 500 units of Material D is in stock. If the special order is not accepted, Color paints has two options (i) sell the excess material at `12 per unit or (ii) use it as a substitute for Material Z, which would otherwise need to be procured.

(i) The realizable value of Material D is `6,000 (500 units × `12 per unit).

(ii) Material D can be used as a substitute for 700 units of Material Z. Since there is no stock of Material Z currently, if the special order is accepted, the entire quantity would have to be procured at `11 per unit. This would cost the company `7,700 (700 units × `11 per unit).

Both options (i) and (ii) represent opportunity cost if the special order is accepted. The relevant cost for Material D, if the special order is accepted would be higher of either of these two opportunity costs. The higher opportunity cost of that of procuring Material Z from the market at `7,700. Therefore, the relevant cost for Material D is `7,700.

Therefore, the relevant cost to accepting the special order would be the cumulative of the relevant cost for Materials A, B, C, and D. This works out to `74,700.

4. Diezel, 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 firm has a stock of 10 units of one non-moving toxic chemical. Its book value is `2,400, realizable value is `3,500 and replacement cost is `4,200.

   One of the customers of the firm 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 firm. 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 firm.

(ii) ANALYSE with reasons for the inclusion or exclusion of each of the cost associated with the production of the product.

(iii) ADVICE a pricing policy to be followed by Diezel in perfect competition.

Solution

(i) Diezel has the opportunity to utilize 10 units of non-moving chemical as input to produce 10 units of a product demanded by one of its customers. The minimum unit price to be charged to the customer would be–

Cost Component	Cost per unit of product (`)
Cost of Material (Realizable value = `3,500 / 10 units of chemical)	350
Out of Pocket Expenses	50
Other Material Cost	80
Minimum Unit Price that can be charged	480

Therefore, the minimum unit price that can be charged to the customer, without incurring any loss is `480 per unit of product. As explained below in point (ii), allocated overhead expenses and labor cost are sunk costs that have been ignored while calculating the minimum unit price to be charged.

(ii) Analysis

(a) Cost of Material: Relevant and hence included at realizable value. Diezel has 10 units of non-moving chemical input that has a book value of `2,400, realizable value of `3,500 and replacement cost of `4,200. Realizable value of `3,500 would be the salvage value of the chemical had it been sold by Diezel instead of using it to meet the current order. This represents an opportunity cost for the firm and hence included while pricing the product. Book value would represent the cost at which the inventory has been recorded in the books, a sunk cost that has been ignored. Replacement cost of `4,200 would be the current market price to procure 10 units of the input chemical. This would be relevant only when the inventory has to be replenished after use. This chemical is from the non-moving category, that means that it is not used regularly in production process and hence need not be replenished after use. Therefore, replacement cost is also ignored for pricing.

(b) Labour Cost: Not relevant and hence excluded from pricing. It is given in the problem that this order would be met by permanent employees of the firm. Permanent employee cost is a fixed cost that Diezel would incur irrespective of whether this order is produced or not. No additional labour is being employed to meet this order. Therefore, this cost is a sunk cost, excluded from pricing.

(c) Allocated Overhead Expenses: These expenses have been incurred at another Cost Centre, typical example would be office and administration costs. Such costs are fixed in nature that would be incurred irrespective of whether this order is produced or not. Therefore, this cost is a sunk cost, excluded from pricing.

(d) Out of Pocket Expenses: These are expenses that are incurred to meet the production requirement of this order. These are additional variable expenses, that need to be included in pricing.

(e) Other Material Costs: These are expenses that are incurred to meet the production requirement of this order. These are additional variable expenses, that need to be included in pricing.

(iii) Advice on Pricing Policy

Under perfect competition conditions, Diezel can have no pricing policy of its own, here sellers are price takers. It cannot increase its price beyond the current market price. The firm can only decide on the quantity to sell and continue to produce as long as the marginal cost is recovered. When marginal cost exceeds the selling price, the firm starts incurring a loss.

Since Diezel cannot control the selling price individually in the market, it can adopt the going rate pricing method. Here it can keep its selling price at the average level charged by the industry. This would yield a fair return to the firm. An average selling price would help the firm attract a fair market share in competitive conditions.

5. 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 sev eral flights that appear to be unprofitable.
   Income statement for one such flight from 'New Delhi' to 'Leh' (GP - 022) is given below (per flight):

	Rs.	Rs.
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, Flight Crew	1,70,000	
Salaries, 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 on 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 GP-022 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 GP-022 would have on the airline's profit.

Solution

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

Net Gain/ (Loss) = Revenue earned from flight operations less Variable costs of operation Revenue earned is the ticket revenue earned from flight operations of GP-022, this is entirely variable. Variable costs of flight operations are those expenses that would be incurred only when the flight is operated. These include variable expenses per pas senger, 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 expens es have already been incurred and hence are irrelevant to decision making. Therefore, these fixed, allocated and sunk expenses are ignored while analyzing the decision whether to continue operating flight GP- 022.

Flight GP-022
Statement Showing Net Gain/ (Loss)

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

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.

6. About Aditya Group

Aditya Group was established in 1975, manufactures and sells electronic personal grooming and beauty products. The group has two 100% subsidiaries AUS Ltd. and ANZ Ltd. AUS Ltd. manufactures luxury products that cater to niche customers who prefer specialized personal grooming and beauty care. ANZ Ltd. caters to regular daily beauty and grooming requirements that has a wide reach within the market. Factories of both companies are located within India. The products are sold to wholesalers, who supply these products to the retail market.

Aditya Group purchases its raw material requirements from both domestic and overseas markets. Additionally, certain products manufactured by AUS Ltd. can be enhanced based on the products manufactured by ANZ Ltd. Therefore, as per production requirements, AUS Ltd. sources some product components from ANZ Ltd.

Aditya Group has a centralized decision making set-up. Basic policy decisions for functions such as production planning, sales and client relationship, finance and human resources are handled at the group level. Individual units AUS Ltd. and ANZ Ltd. concentrate on the manufacturing alone.

About You

You are an Assistant Manager in Finance and Accounts department of Aditya Group, headed by Director- Finance Ms. Elsea. You assist and report to Ms. Fiona, Manager of your department. Sometime you also assist Director Finance in analysing financial and non- financial information, drafting reports for board meetings, preparation of presentation and staff trainings.

Solution

(i) Statement Showing Relevant Cost

Type of Cost	Explanation	Amount (`)
Material Dx (40 tonnes × `380)	1	15,200
Components	2	52,000
Direct labour (2,000 hrs. × `11)	3	22,000
Specialist machine	4	10,000
Machine operating cost	5	12,000
Supervision	6	5,000
Development time	7	Nil
General fixed overhead	8	Nil
Total relevant cost		1,16,200

Explanation

1. Material Dx is in regular use by AUS Ltd. and must be replaced. Consequently, its relevant value is its replacement cost. The historical cost is not relevant because it is a past cost and the resale value is not relevant because AUS Ltd. is not going to sell it because the material is in regular use.

2. AUS Ltd. would like to procure 4,000 components either from ANZ Ltd. or external ly from the market. At the current production level, ANZ Ltd. (seller) has available capacity to accommodate part of AUS Ltd's request to the extent of 2,500 components. At this point, ANZ Ltd. would be operating at its maximum capacity.
   To cater to the remaining demand of 1,500 units from AUS Ltd., ANZ Ltd. has to forego external sales of `50,000 to its own customers. Given that the contribution to sales ratio is 40%. Therefore, ANZ Ltd. has to forego contribution of `20,000 (40% of external sales foregone `50,000) in order to cater to AUS Ltd.'s request. Fixed cost at ANZ Ltd. is irrelevant, since it would be incurred irrespective of whether AUS Ltd.'s order to catered to or not.
   Therefore, in spirit of goal congruence, the transfer price that ANZ Ltd. would charge AUS Ltd. would be the variable cost of `8 per unit and `20,000 towards lost contribution as explained above. Therefore, the transfer price
   = (`8 per unit × 4,000 components) + `20,000
   = `32,000 + `20,000
   = `52,000 for 4,000 components
   Therefore, per component, the price charged would be `52,000 / 4,000 = `13 per component. This is lower than the external market price of `15 per unit. Therefore, in the interest of goal congruence the cheaper option is preferred. AUS Ltd. should source its components from ANZ Ltd, for a total procurement cost of `52,000.

3. Skilled labour is in short supply and can only be obtained by reducing the production of product 'G', resulting in a loss of contribution of `24 (given) or `6 per hour of skilled labour. Hence the relevant labour cost will be `6 (contribution lost per hour) + `5 (hourly rate of skilled labour) i.e. `11 per hour.

4. AUS Ltd. has a number of options: (a) If the machine were to be hired it would have a cost of `15,000; (b) if the machine were bought and then sold at the end of the work it would have a net cost of `20,000; or (c) if the machine were bought and then modified to avoid the need to buy the other machine it would have a net cost of `10,000 (`50,000 plus `5,000 modifications less `45,000 cost of another machine). Thus, the most economic approach is buy the machine and then modify it so the relevant cost is `10,000.

5. The machine operating costs are future costs of doing the work and therefore are relevant.

6. The supervisor's salary is irrelevant, but the bonus needs to be included because it is dependent on this work and therefore is relevant.

7. The development time has already been incurred. Therefore, it is a past cost and not relevant.

8. General fixed overhead costs and their absorption are not relevant because they will be incurred whether the work goes ahead or not. Depreciation is also not relevant because it is an accounting entry based on the historical purchase of assets. It is not affected by the work being considered.

(ii) Two main issues arise when pricing work based on relevant costs:

- Profit reporting; and
- Pricing of future work.

With regard to profit reporting, the decision as to whether to proceed with the work will have been based on the use of relevant costs, but the routine reporting of the profit from the work will be based on the company's normal accounting system. Since thi s system will be based on total cost, it is probable that the costs of the work reported will be greater than its relevant cost. Consequently, the amount of profit reported to have been made on this order will be lower than expected and may even be a loss . This may cause difficulties for the manager who accepted the work as an explanation will be required of the reasons why there is such a difference in profit.

With regard to the pricing of future work the difficulty lies in increasing the price for similar items for the same customer in future. Once a price is set, customers tend to expect that any future items will be priced similarly. However, where a special price has been offered based on relevant cost because of the existence of spare capacity the supplier would not be able to continue to price on that basis as it does not recover its long term total costs. There may also be difficulties created by this method of pricing as other customers are being charged on a full cost basis and if they were to discover that a

lower price was offered to a new customer they would feel that their loyalty was being penalised.

(i) Prevention

Operations: Preventative maintenance and checking of the calibration of machinery. This would reduce the number of potentially faulty products being produced and therefore reduce guarantee claims.

Appraisal

Inbound Logistics: Reduce costs of incoming inspections by building close links with suppliers and getting them to adopt TQM. If suppliers can guarantee their quality, the n inbound inspections could be eliminated.

Internal Failure

Operations: Reduce costs of re-works by training employees on a continual basis e.g. quality circles. This would reduce failure costs and also improve quality.

External Failure

Service: Design quality into the product to try to prevent guarantee claims and therefore the cost of servicing/repairing the product.

Business Situation- 1

Yesterday, 5.15 P.M.

You got an email from Ms. Elsea, with Cc to Ms. Fiona. Ms. Elsea, asked you to prepare a cost statement for making a quotation to a new customer. She has also informed you that the customer can also maintain a long- term business relation with us. You have been requested to gather information related to the specification from Sales Manager.

Yesterday, 5.25 P.M.

You have been called by Ms. Fiona, and provided the product specification received from Sales- Manager for which quotation has to be quoted. Ms. Fiona has also requested you to gather relevant information to prepare cost statement. Due to the expected long term business relationship that AUS Ltd. wants to have with the customer, the sales manager wants to quote the lowest possible price. AUS Ltd. currently has some spare capacity that can be utilized to cater to this entire order. Therefore, only the relevant cost to AUS Ltd. has to be considered to arrive at the quote.

After meeting with your reporting officer, you mailed to various conc erned department and requested for data.

The following information has been obtained in relation to the contract:

Today, 10.05 A.M.

You got an e-mail from Production Manager, it has been informed that 40 tonnes of material Dx would be required. This material is in regular use by AUS and has a current purchase price of `380 per tonne. Currently, there are 5 tonnes in inventory which cost `350 per tonne. The resale value of the material in inventory is `240 per tonne.

Further, with regards to components, it has been informed that 4,000 components would be required. These could be bought externally for `15 each or alternatively they could be supplied by ANZ Ltd. The variable cost of the component if it were manufactured by ANZ Ltd. would be `8 per unit. ANZ Ltd. has sufficient capacity to produce 2,500 components without affecting its ability to satisfy its own external customers. However, in order to make the extra 1,500 components required by AUS Ltd., ANZ Ltd. would have to forgo other external sales of `50,000 which have a contribution to sales ratio of 40%. To have uniformity in the quality of the component, it is assumed that AUS Ltd. would procure its entire requirement of 4,000 components either externally or from ANZ Ltd. The transfer pricing policy of Aditya Group for sales between units aims at goal congruence. The unit selling the goods would be allowed to charge any opportunity cost on account of catering to internal demand, while the purchasing unit should ensure that the company is not at a loss.

Today, 10.45 A.M.

You got an e-mail from Personnel Manager, it has been informed that 2,000 high skilled labour hours would be required. The grade of labour required is currently paid `5 per hour.

Highly skilled labour is in short supply and cannot be increased significantly in the short-term. This labour is presently engaged in meeting the, demand for product 'G', which requires 4 hours of highly skilled labour. The contribution from the sale of one unit of product L is `24.

It has also been informed that the contract would require a specialist machine. The machine could be hired for `15,000 or it could be bought for `50,000. At the end of the contract if the machine were bought, it could be sold for `30,000. Alternatively, it could be modified at a cost of `5,000 and then used on other contracts instead of buying another essential machine that would cost `45,000. The operating costs of the machine are payable by AUS whether it hires or buys the machine. These costs would total `12,000 in respect of the new contract.

Supervisor

The contract would be supervised by an existing manager who is paid an annual salary of

`50,000 and has sufficient capacity to carry out this supervision. The manager would receive a bonus of `5,000 for the additional work.

Development Time

15 hours of development time at a cost of `30,000 have already been worked in determining the resource requirements of the contract.
Fixed Overhead Absorption Rate

AUS uses an absorption rate of `20 per direct labour hour to recover its general fixed overhead costs. This includes `5 per hour for depreciation.

Today, 11.15 A.M: Ms. Fiona called you in her place as asked you the following:

Required

(i) CALCULATE the relevant cost of the contract to AUS. You must present your answer in a schedule that clearly shows the relevant cost value for each of the items identified above. You should also EXPLAIN each relevant cost value you have included in your schedule and why any values you have excluded are not relevant. Ignore taxation and the time value of money.

(ii) DISCUSS two problems that can arise as a result of setting prices using relevant costing.

Business Situation- 2

Today, 5.26 P.M: A memo from Managing Director of the group has been circulated to all officers of the group which stated "My objective for the forthcoming year is to reduce our quality costs in each of the primary activities in our value chain". The company is keen to build a reputation for quality and gives a five-year guarantee with all of its products.

Today, 5.37 P.M: Ms. Fiona, called you in her place and asked the following:

Required

(iii) EXPLAIN, by giving examples, how each of the four types of quality cost could be reduced. You should also IDENTIFY in which primary activity each one of your examples would occur in Aditya Group's value chain.

Chap 7. PRICING DECISION

TEST YOUR KNOWLEDGE

Pricing and Product Life Cycle

1. Swift Tech Ltd. (STL) is a leading IT security solutions and ISO 9001 certified company. The solutions are well integrated systems that simplify IT security management across the length and depth of devices and on multiple platforms. STL has recently developed an Antivirus Software and company expects to have life cycle of less than one year. It was decided that it would be appropriate to adopt a market skimming pricing policy for the launch of the product. This Software is currently in the Introduction stage of its life cycle and is generating significant unit profits.

   Required

   (i) EXPLAIN, with reasons, the changes, if any, to the unit selling price that could occur when the Software moves from the Introduction stage to Growth stage of its life cycle.

   (ii) Also, IDENTIFY necessary strategies at this stage.

Solution

Following acceptance by early innovators, conventional consumers start following their lead. New competitors are likely to now enter the market attracted by the opportunities for large scale production and profit. STL may wish to discourage competitors from entering the market by lowering the price and thereby lowering the unit profitability. The price needs to be lowered so that the product becomes attractive to different market segments thus increasing demand to achieve the growth in sales volume.

Strategies at this stage may include the following

(i) Improving quality and adding new features such as Data Theft Protection, Parental Control, Web Protection, Improved Scan Engine, Anti Spyware, Anti Malware etc.

(ii) Sourcing new market segments/ distribution channels.

(iii) Changing marketing strategy to increase demand.

Lowering price to attract price-sensitive buyers.

Profit Maximization Model

2. 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 type 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:

	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

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

For Bogies: 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: Quotation price of `17,10,000 no tender will be awarded, but the demand for Wagons will be increased 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

Assumed Quotation Price 'P', Quantity 'Q'

The Marginal Cost of a 'Wagon' is `13,60,000 (`2,20,000 × 4 Bogies + `4,80,000)

Demand Function for a 'Wagon'

$$P = `17,10,000 – (`50,000 / 2) \times Q$$

$$\text{Revenue (R)} = Q \times [17,10,000 – 25,000 \times Q]$$

= 17,10,000 Q – 25,000 Q^2

Marginal Revenue (MR) = 17,10,000 – 50,000 Q

Marginal Cost (MC) = 13,60,000

Profit is Maximum where Marginal Revenue (MR) equals to Marginal Cost (MC)

17,10,000 – 50,000 Q = 13,60,000

Q = 7.00 units

By putting the value of 'Q' in *Demand Function*, value of 'P' is obtained.

P = 17,10,000 – (50,000/ 2) × Q

= 17,10,000 – 25,000 × 7.00

= `15,35,000

At `15,35,000 unit Quotation Price of a Wagon, the Baithway Company Ltd.'s Profit will be Maximum.

(ii) At 'BD' the Divisional Manager would ensure that Divisional Marginal Revenue should be ***equal to*** Division's Marginal Cost so that Profit can be Maximum.

MR of a Bogies = MC of Manufacturing a Bogies

3,20,000 – 2(10,000/ 30) × Q = 2,20,000

Q = 150 units

Selling Price of a Bogie i.e 'P' is

P = 3,20,000 – (10,000/ 30) × 150

= `2,70,000

'BD' will earn Maximum Profit when it will Quote `2,70,000 to the Outside Market. Since, Outside Market Quotation is *Transfer Price* as well, so Transfer Price to WD will be `2,70,000 and it forms part of WD's Marginal Cost. At 'WD', Division Manager would ensure that Divisional Marginal Revenue should be ***equal to*** Division's Marginal Cost so that Profit can be Maximum.

MR of a Wagon = MC of Manufacturing a Wagon

17,10,000 – 50,000 × Q = (2,70,000 × 4 Bogies) + `4,80,000

Q = 3.00 units

Quotation Price of a Wagon 'P' should be:

P = `17,10,000 – 25,000 × 3.00

= `16,35,000

The unit Quotation Price of Wagon that emerges as a result of Market Based Transfer Pricing is `16,35,000.

(iii) Whenever a new product is launched into the market, management can adopt either Skimming or Penetration strategy.

The idea behind Skimming Strategy is to intentionally keep a price high to recover the high R&D and marketing expenses associated with developing a new product. For Price Skimming to work, the product must be perceived as having unique advantage over its competing products, very difficult to copy or protected by patents.

Division 'BD' may follow Skimming Strategy by taking advantage of the distinctive features of Bogie "E". High prices in the early stages of a Bogies' life cycle are expected to generate high initial cash flows, this will help the division to recover the high development costs it would incur. Further, this new Bogie "E" is protected from competition through entry barrier. Such barrier is patent.

With Penetration Strategy, a low price is initially charged for the product rather than high prices. The idea behind this is that the price will make the product accessible to many buyers and therefore the high sales will compensate for the lower prices being charged. This penetration pricing is adopted for rapid market acceptance , maximum sales and discouraging competition from the market, however this strategy is not for all companies since it requires a cost structure and scale economics that remain unaffected by narrow profits margin.

The circumstances which may favor a penetration pricing policy are:

– Highly elastic demand for the product, i.e. the lower the price, the higher the demand. This situation is not mentioned in this case for Bogies "E".
– If significant economies of scale could be achieved so that higher sales volumes would result in reductions in costs. However, in this case, it cannot be ascertained.
– Where entry barriers are low, however in this case, new competitors cannot enter the market as Bogies "E" is protected by patent.
– If company desires to shorten the initial period of the product's life-cycle to enter the growth and maturity stages quickly, however, there is no evidence the division 'BD' wish to do this.

Overall, Due to the uniqueness, heavy R&D cost, and barrier to entry for competitor, a market skimming pricing strategy is appeared to be the more appropriate pricing strategy for Bogie "E".

Pricing Methods

3. The budgeted cost data of a product manufactured by Ayudhya Ltd. is furnished as below:

Budgeted units to be produced	2,00,000
Variable cost (`)	32 per unit
Fixed cost (`)	16 lacs

It is proposed to adopt cost plus pricing approach with a mark-up of 25% on full budgeted cost basis.

However, research by the marketing department indicates that demand of the product in the market is price sensitive. The likely market responses are as follows:

Selling Price (` per unit)	44	48	50	56	60
Annual Demand (units)	1,68,000	1,52,000	1,40,000	1,28,000	1,08,000

Required

ANALYSE the above situation and DETERMINE the best course of action.

Solution

Analysis of Cost plus Pricing Approach

The company has a plan to produce 2,00,000 units and it proposed to adopt Cost plus Pricing approach with a markup of 25% on full budgeted cost. To achieve this pricing policy, the company has to sell its product at the price calculated below:

Qty.	2,00,000 units
Variable Cost (2,00,000 units × ` 32)	64,00,000
Add: Fixed Cost	16,00,000
Total Budgeted Cost	80,00,000
Add: Profit (25% of ` 80,00,000)	20,00,000
Revenue (need to earn)	1,00,00,000
Selling Price *per unit* $\left(\frac{` 1,00,00,000}{2,00,000 \text{ units}}\right)$	50 p.u.

However, at selling price `50 per unit, the company can sell 1,40,000 units only, which is 60,000 units less than the budgeted production units.

After analyzing the price-demand pattern in the market (which is price sensitive), to sell all the budgeted units market price needs to be further lowered, which might be lower than the total cost of production.

Statement Showing "Profit at Different Demand & Price Levels"

	I	II	III	IV	Budgeted
Qty. (units)	1,68,000	1,52,000	1,40,000	1,28,000	1,08,000
	`	`	`	`	`
Sales	73,92,000	72,96,000	70,00,000	71,68,000	64,80,000
Less: Variable Cost	53,76,000	48,64,000	44,80,000	40,96,000	34,56,000
Total Contribution	20,16,000	24,32,000	25,20,000	30,72,000	30,24,000
Less: Fixed Cost	16,00,000	16,00,000	16,00,000	16,00,000	16,00,000
Profit (`)	4,16,000	8,32,000	9,20,000	**14,72,000**	14,24,000
Profit (% on total cost)	5.96	12.87	15.13	**25.84%**	28.16%

Determination of the Best Course of Action

(i) Taking the above calculation and analysis into account, the company should produce and sell 1,28,000 units at `56. At this price company will not only be able to achieve its desired mark up of 25% on the total cost but can earn maximum contribution as compared to other even higher selling price.

(ii) If the company wants to uphold its proposed pricing approach with the budgeted quantity, it should try to reduce its variable cost per unit for example by asking its supplier to provide a quantity discount on the materials purchased.

Chap 8. PERFORMANCE MEASUREMENT AND EVALUATION

Example

The following data pertain to two divisions. W1 and W2, of a large Shipping Company.

	W_1 (`)	W_2 (`)
Profit	1,20,00,000	31,20,000
Investment	9,60,00,000	1,56,00,000

Cost of Capital at 10%

This example shows that RI is subject to a size effect but ROI is not. The larger size for the W1 Division (which is more than 6 times that of the W 2 Division) overcomes its lower profitability, as measured by ROI. Thus, RI is not a good way to compare divisions that differ greatly on size.

Workings

	W_1 (`)	W_2 (`)	Remark
ROI	12.50% (`1,20,00,000 / `9,60,00,000)	20.00% (`31,20,000 / `1,56,00,000)	W_2 division has the higher ROI.
RI	`24,00,000 (`1,20,00,000 – 0.1 × `9,60,00,000)	`15,60,000 (`31,20,000 – 0.1 × `1,56,00,000)	W_1 division has the higher RI.

Economic Value Added (EVA)

In practice, many organizations use profit-based measures as the primary measure of their financial performance. Two problems relating to profit in this area are:

▪ Profit ignores the cost of equity capital. Companies only generate wealth when they generate a return in excess of the return required by providers of capital – both equity and debt. In financial statements, the calculation of profit does take into account the cost of debt finance, but ignores the cost of equity finance.

▪ Profits calculated in accordance with accounting standards do not truly reflect the wealth that has been created, and are subject to manipulation by accountants.

EVA is a performance measurement system that aims to overcome these two weaknesses.

Economic Value Added is a measure of economic profit. Economic Value Added is calculated as the difference between the Net Operating Profit After Tax (NOPAT) and the Opportunity Cost of Invested Capital. This opportunity cost is determined by multiplying the Weighted Average Cost of Debt and Equity Capital (WACC) and the amount of Capital Employed.

EVA = NOPAT – WACC × Capital

Where- NOPAT means net operating profit after tax. This profit figure shows profits before taking out the cost of interest.

Two approaches to adjusting for interest are taken.

▪ Start with operating profit, then deduct the adjusted tax charge. The tax charge should be adjusted because it includes the tax benefit of interest. Since interest is a tax - deductible item, having interest in the income statement means that the tax charge is lower. Since we are taking the cost of interest out of the income statement, it is also necessary to remove the tax benefit of it from the tax charge. To do this, multiply the interest by the tax rate, and add this to the tax charge, or

▪ Start with profit after tax, and add back the net cost of interest. This is the interest charge multiplied by (1 – rate of corporate tax).

Example

The following information is available for the division X of Xu ltd:

Net operating profit before interest and taxes	7,500
Depreciation expenses	2,500
Change in net working capital	1,250
Capital expenditure	1,000
Invested capital	12,500
WACC	8%
Tax Rate	30%

EVA can be calculated as NOPAT minus the capital charge on invested capital. In this case, NOPAT is equal to net operating profit before interest and taxes `7,500 minus taxes `2,250 (`7,500 × 30%), which is equal to `5,250. EVA is then equal to `4,250 (`5,250 – `12,500 × 8%).

Illustration

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

EVA = NOPAT – WACC × Capital
Employed Capital Employed
= `981.46 L + `1313.62 L + `144.44 L
= `2,439.52 L

WACC = $(\frac{981.46+1,313.62}{2,439.52})$ x 12.42% + $(\frac{144.44}{2,439.52})$ x 6.53%
= 11.68% + 0.39%
= 12.07%

NOPAT = [PBIT- Interest - Tax] + Interest (net of tax)

	` in lakhs
PBIT	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 × (1 - 0.30)]	9.44
NOPAT	1,541.99

EVA = NOPAT – WACC × Capital Employed
= `1,541.99 L– 12.07% × `2,439.52 L
= `1,247.54 L

TEST YOUR KNOWLEDGE

Return on Investment (ROI)

1. 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, Hearth 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 `720,000 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 2019 are given below:

	Division 'Y' ('000)	Division
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 2018-19, 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 2019. Justify the figures used in your calculation.

(ii) COMPUTE bonus of each manager for the year ended 31 March 201 9.

(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 2019.

Solution

(i) ROI

Division 'Y'

Controllable Profit = `5,290K

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

ROI = 28.5%

Division 'D'

Controllable profit = `3,940K

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

ROI = 11.7% In computation of ROI of both division, controllable profit has been taken into consideration. The reason behind this is that the Head Office costs are not controllable and responsibility accounting considers that managers should only be held responsible for costs over which they have control. The assets figures being used also depend on the same principal. Figures of current assets and the current liabilities have been taken into consideration as they are such items over which managers have complete control.

(i) Bonus

Bonus to be paid for each percentage point = `7,20,000 × 3% = `21,600

Maximum Bonus = `7,20,000 × 20% = `1,44,000

Division 'Y'

ROI = 28.5% (16 whole percentage points above minimum ROI)

16 × `21,600 = `3,45,600

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

Division 'D'

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

Therefore Bonus = NIL

(iii) Discussion

FAI will not receive any bonus since he has not earned any point above minimum percentage. This is due to the large asset base on which the ROI figure has been computed. Total assets of Division 'D' are almost double the total assets of Division 'Y'. The major reason behind this is that Division 'D' invested `13.6 million in new equipment during the year. If this investment were not made, net assets would have been only `20.08 million and the ROI for Division 'D' would have been 19.62% resulting in payment of a bonus `1,44,000 (7 × `21, 600 = `1,51,200; subject to maximum of

`1,44,000) rather than the nothing. FAI is being penalized for making decisions which are in the best interests of his division. It is very surprising that he decided to invest where he knew that he would receive lesser bonus subsequently. He acted in the best interests of the BYD altogether. On the other hand, HAI has taken benefit from the fact that he has not invested anything even though it was needed for computer system updation. This is an example of sub-optimal decision making.

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

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

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

Briefly, the use of ROI is resulting in sub-optimal decision making and a lack of goal congruence i.e. what is good for the managers is not good for the company and vice versa. Fortunately, Division 'D''s manager still seems to be acting for the benefit of the BYD but the other manager is not. The fact that one manager is receiving a much bigger bonus than the other is not justifiable here and may result in conflict in long run. This i s disappointing for the company especially in the situation when the divisions need to work in unison.

Economic Value Added (EVA)

2. 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. It is also listed on the KRX 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 ar 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

Particular	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

The performance of X Greetings has gone down since earnings per share is down by 15.03% (W2) from last year. This indicates the company being not in the favor of investors. However, the share price seems up with a decline of only 7.79% relative to fall in retailing sector of 17.97% and the stock market down by 22.49% (W3). 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 m (W1). EVA of FY 2018-19 has fallen from 2017-18 but still it is 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.

Working Note-1

EVA calculations for the periods given are:

Particulars	2018-19 KRW in million	2017-18 KRW in million
Profit after interest and tax	55.55	65.38
Add Back: Interest (net of tax at 30%)	10.92	5.60
Net operating profit after tax (NOPAT)	66.47	70.98
Opening Capital employed	273.58	198.40

Assumptions

- There are no non-cash expenses to adjust the profit.
- Economic depreciation and Accounting depreciation are equal.
- No lease exists for capitalisation.

Cost of Capital = 0.60 × 14.20% + 0.40 × 5.60%

WACC 2018-19 = 10.76%

0.60 × 11.50% + 0.40 × 4.20%

= 8.58%

EVA = NOPAT – Capital Employed × WACC

EVA 2018-19 = 66.47 m – 273.58 m × 10.76%

= KRW 37.03 m

EVA 2017-18 = 70.98 m – 198.40 m × 8.58%

= KRW 53.96 m

Working Note-2

Particulars	2018-19	2017-18	Change
EPS	KRW 17.36	KRW 20.43	-15.03%

Working Note-3

Particulars	2018-19	2017-18	Change
KOSPI (capitalization-weighted index of *all common shares*)	1,985	2,561	-22.49%
Retailing sector index	1,155	1,408	-17.97%
X share price	KRW 22.50	KRW 24.40	-7.79%

3. Water Utilities Services (WUS) is a parastatal company 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 environmentally 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 performa nce 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:

Particular	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 (`18crore) 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
(ii) Advise on how to improve profitability.

Solution

(i) Computation of NOPAT

Particulars	` in Crore
Operating Profit	162.00
Add:	
Non-Cash Items	14.00
Accounting Depreciation	118.00
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	124.20

Computation of Capital Employed

Particulars	` in Crore
Capital Employed as on 31.03.2018	1,495.00
Add:	
Provision for Doubtful Debt as on 31.03.2018	5.00
Other Non-Cash Items (incurred in 2017-18)	12.00
Adjusted Opening Capital Employed	1,512.00

WACC = 0.45 × 14% + 0.55 × 6% × (1 – 30%)) = 8.61%

EVA = NOPAT – (WACC × Capital Employed) = – 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 = $(\frac{Operating\ Profit}{Capital\ Employed})$ x 100.00%

= $(\frac{95}{1,422})$ x 100%

= 6.68%

The ROCE is within the acceptable ROCE of 7.00%.

(iii) Operating Margins

Water Distribution Operation = 17.12%

Water Bottle Operation = 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. 7.00% of `1,422 crore of capital employed. Thus, WUS should go to expand its WBO as this is producing higher operating profit margins.

4. 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 intricated 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 thr ough acquisitions.

Assuming yourself as a performance management expert of BC, the CEO has asked you to aid her in her improvement programme. Firstly, she wants your views on the use of EVA as the key performance metric at BC. You are given the current EVA computation (Annexure1) 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 Lacs (L)	Notes
Operating Profit	1,102.80	
Add:		
Non-Cash Expenses	30.20	
Marketing Expenditure Capitalised	46.20	7
Less:		
Tax	269.60	9
Lost Tax Relief on Interest	48.96	
Net Operating Profit After Tax (NOPAT)	860.64	

Capital Employed

Particulars	Year ended 31st March 2019	
	` in Lacs (L)	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 × 15%) + (1/2 × 7•8%)
= 11.40%
EVA = NOPAT – (WACC × Capital Employed)
= `860.64 L – `4,848.20 L × 11.40%
= `860.64 L – `552.69 L
= `307.95 L

Assumptions and Notes

1. Debt/Equity 1:1
2. Cost of Equity is 15.00%
3. Cost of Debt (pre-tax) is 7.80%
4. Tax Rate is 30.00%
5. Interest charged in the period was `163.20 L.
6. In current fiscal year, BC spend `80.00 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 of 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 per the accounts was `269.60 L.
10. Capital employed during the Period (from the statement of financial position):

Opening	4,564.00 L
Closing	4,802.00 L

Solution
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 bette r 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 perceptive 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 improve operating profits 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.
- Addition back of Marketing Expenditure is also correct as spending contributes to future value-creation. For the same reason, the prior year 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.
- The tax expenses in the EVA calculation should be the tax paid with adjustment for lost 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.
- 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.

NOPAT

Particulars	Year ended 31st
	` in Lacs
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	260.00
Lost Tax Relief on Interest	48.96
Net Operating Profit After Tax (NOPAT)	970.24

Capital Employed

Particulars	` in Lacs
From the Statement of Financial Position (Starting)	4,564.00
Marketing Expenditure Capitalized	46.20
Adjusted Capital Employed	4,610.20

W = (1/2 × 15%) + (1/2 × 7·8% × 70%)

= 10.23%

EVA	=	NOPAT – (WACC × Capital Employed)
	=	`970.24 L – `4,610.20 L × 10.23%
	=	`498.62 L

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

For calculating NOPAT, following most common adjustments to accounting profit as remarked by the Stern Stewart has been considered.

▪ For Advertising, Research and Development Items expensed, Staff Training

- Impact on Profit: Increase CY's profit, deduct economic depreciation on PY's EVA adjustment.

- Impact on Capital Employed: Increase capital employed at the end of the year, increase capital employed in respect of similar add backs of PY's investments not treated as such in financial statements (net of economic depreciation).

▪ For Depreciation

- Impact on Profit: Add accounting depreciation and subtract economic depreciation.
- Impact on Capital Employed: Alter value of non-current assets (and capital employed) to reflect economic depreciation not accounting depreciation.

▪ For Non- Cash Expenses

- Impact on Profit: Add back to profit.
- Impact on Capital Employed: Add to retained profits at the end of the year.

▪ For tax charge, this will be based on 'cash taxes' rather than the accruals based methods used in financial reporting.

Further, the revised calculation of EVA is largely based on the following assumptions:

▪ There is an implicit assumption that accounting depreciation (included in operating profit) is equivalent to economic depreciation (which should be used for EVA calculations). This assumption is doubtful, although there is no information for more accurate calculation.

▪ For Additional Marketing Expenditure, no estimation of economic life (expected period during which an asset remains useful) in building the brand and corresponding economic depreciation has been considered in the above calculation.

▪ No amortisation on the R & D Costs is required to be recognised as the product has not been introduced yet. This is in line with the accounting treatment of such items. There was no Research & Development expenditure in the previous year.

Balanced Scorecard

5. Your Bank Ltd., was established on the 30th September, 1940 under the provisions of Co- operative Societies Act by the eminent professionals to encourage self-help, thrift, cooperation among members. Bank was issued Banking License under Banking Regulation Act, 1949 on October 25, 1986 to carry out the Banking Business within the national capital and since then the Bank has been growing continuously. At present, Bank has large number of membership of individuals from different sections.

The Bank has 12 branches in the NCT of Delhi. Bank offers 'traditional counter service'. Opening hours are designed to coincide with local market days.
Board of Directors were worried from growing popularity of new style banks. These banks offer diverse range of services such as direct access to executive management, a single point of contact to coordinate all banking needs, appointment banking to save time, free online banking services 24/7, free unlimited ATM access etc.
It has now been decided that the bank will focus on "What Customers Want" and will use a balanced scorecard to achieve this goal.
Required
PRODUCE, for each of the three non-financial perspectives of a 'Balanced Scorecard', an
objective and a performance measure that the bank could use with appropriate reason.

Solution
Internal Business Process Perspective
Objective: Cross-sell Products
Measure: Products Purchased per customer
Reason: Cross-selling, or encouragement customers to purchase additional products e.g. insurance, forex etc. is a measure of customer satisfaction. Only if a service is perceived as highly satisfactory the service would be repeated/ additional products or services would be accepted.
Learning and Growth Perspective
Objective: Increase the Number of New Products or Services Sold Measure: Number of Customers Buying the New Products/ New Services
Reason: Long term financial success requires bank to create new products / services (e.g. internet banking, ATM access) that will meet emerging needs of current / future customers such as 24/7 banking.
Customer Perspective
Objective: Increase Customer Loyalty
Measure: Number of Accounts Closed or Closure Request Received
Reason: Customer loyalty describes the extent to which bank maintains durable relations to its customers. The share of existing customers should have a high importance as it indicates about image and reputation. Closure request is not a good sign for bank. Bank should investigate reasons for the same and take appropriate actions to improve services offered to retain customers.

6. Standard Telecom Ltd. is a leading cellular service provider having a global presence. It aims to be the most innovative and trusted telecom company in the world. To achieve this aim, it is constantly working on its overall functioning. It is trying to adopt best managements practices in the world. Following are some information related to the company's performance for a particular period:

Particulars	Current Year	Base Year	Target
Operating Ratio	60%	54%	Reduce it to 50%
Average Revenue per user	`225	`210	Increase it to `250
Unresolved Consumer Complaints	27,500	25,000	Reduce it by 20%
Customer Relationship Centres	280	200	Take the total to 250
Employee Coverage under Training Programme	10%	8%	At least 15%

Required

ANALYSE the performance of the company using Balance Scorecard approach.

Solution

The balanced scorecard is a method which displays organisation's performance into four dimensions namely financial, customer, internal and innovation. The four dimensions acknowledge the interest of shareholders, customers and employees taking into account of both long-term and short-term goals. The detailed analysis of performance of the company using Balance Scorecard approach as follows:

(i) Financial Perspective: Operating ratio and average revenue will be covered in this prospective.

Company is unable to achieve its target of reducing operating ratio to 50% instead it has increased to 60%. Company is required to take appropriate steps to control and manage its operating expenses. Average revenue per user has increased from `210 to `225 but remains short of targeted `250. This is also one of the reasons of swelled operating ratio. Company can boost up its average revenue per user either by increasing the price of its services or by providing more paid value added services.

(ii) Customer Perspective: Service complaints will be covered under this perspective. The company had set a target of reducing unresolved complaints by 20% instead unresolved complaints have risen by 10% [(27,500-25,000)/ (25,000) × 100]. It shows dissatisfaction is increasing among the consumers which would adversely impact the consumer's general perception about the company and company may lose its consumers in long run.

(iii) Internal Business Perspective: Establishing customer relationship centres will be covered under this perspective. Company has established 80 relationship centres in the current period exceeding its target of 50 (250-200) to cater to the needs of existing consumers as well as soliciting new consumers. This shows the seriousness of the company towards the consumer satisfaction and would help them in the long run.

(iv) Learning and Growth Perspective: Employee training programmes are covered under this perspective.

Company had set a target to cover at least 15% employee under its training programmes but covered only 10%. This could hurt capabilities of the employees which are needed for long term growth of the organisation necessary to achieve the objectives set in the previous three perspectives. People or the human resource of the company is one of the three principle sources where organisational learning and growth comes.

7. 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 gr ant. 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 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	-
Number of emergency admissions	400	600	500
Delay in providing medical care to emergency admissions	-	5	-
Number of medical staff shortages (positions 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 crores)	15	13	16
Operating expenses (in crores)	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?
Fitzgerald and Moon Model

Solution

(i) Analysis of Performance with respect to:

Access to Services

Access to services 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. Given the 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 waiting for more than 1 week	1,100	2,880	500
Number of inpatients waiting 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 were no instances where patients requiring admission had to wait more than 2 weeks.

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

(a) 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 doctor. 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 high medical staff turnover.

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.

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

In the case of Healthcare hospital, there were 5 instances when medical car e could not be provided to emergency admission patients immediately. The hospital aims never to have such instances 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 ha ve 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.

(c) 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 outline 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.

(d) Cancelled or delayed operations due to non-clinical reasons:

When operations are cancelled or delayed are cancelled 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 theaters, unavailability of medical 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 theaters are used only to 90% of their availability. Possibly cancellations are not due to unavailability of operation theaters. It could be due to medical staff shortage 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 also 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 is questionable. In this case of Healthcare hospital, the 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 aliment 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:

(a) Bed occupancy rate:

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%

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 in point (a) above, 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 that 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 the 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 theater utilization rate:
Utilization of operating theater 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 theater utilization rate compared to the expected usage. If this continues in the long run, the number of operating theaters 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.
(d) Medical staff shortage:
Medical staff is the most important resource at a hospital. Higher vacancies could imply higher staff turnover. A possible reason could be dis-satisfaction with the employer. Healthcare should understand the reason for have 5 positions that it has not been able to fill in within 30 days. Since this reduces the number of staff available, efficiency of the hospital will suffer. Comparatively, Lifeline makes better use of its medical staff since only one position was vacant for more than a month.
Financial Management
Healthcare hospital has an actual surplus of `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 of `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 Processes 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 trainings 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.

8. 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 f rom 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 institutio n for comparison purposes.

   Information about their operations for the year ended March 31, 2019 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	Actuals	Actuals
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%

(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

(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 2019

	Learning Horizons		Knowledgebase
Particulars	Budget	Actuals	Actuals
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.

Solution

(i) **A n a l y s i s o f t h e " R e s u lt s "** 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) Government 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

(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 37 crore.
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 are is variable. The budgeted cost per student is therefore `8,823. For 7,850 students, the variable cost works out to `6.93 crore. Adding the fixed cost, the total budget for catering for 7,850 students is `9.43 crore.
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

The average revenue and cost per student for Learning Horizons and Knowledgebase are as below:

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 compared to Learning Horizons. Reasons could be on account 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, the take up rate, 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.

A n a l y s i s of t he " D et er m i na n t s " 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

	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 lecturer s 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 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. Aver age 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.

Triple Bottom Line (TBL)

9. Caregiver Ltd. is a multi-specialty hospital in a mid-sized town. A 300+ bedded facility offers treatment across all medical disciplines of Cardiac, Oncology (Medical, Surgical and Radiotherapy), Neurosciences, Urology, Nephrology, Kidney Transplant, Aesthetics and Reconstructive Surgery, and other ancillary services. Most of the community members have their livelihood linked with the hospital. Many of them are directly employed at the hospital as doctors, nursing staff, lab technicians or as other support staff. While, others are indirectly related as suppliers of medical devices or drugs to the hospital, catering or housekeeping contractors etc. for the hospital. Hence, existence of the hospital is vital to the community. Growing awareness about sustainable business prompted

the management to identify areas that can help the hospital operate in a sustainable manner that would be mutually beneficial to the organization as well as the town that depends on it. Therefore, it has identified the initiatives that have been put in place to create a sustainable business. Information captured from various departments are being considered to prepare the Triple Bottom Line (TBL) report that is for the consumption both to internal and external stakeholders.

Required

IDENTIFY, which of the following aspects need to be reported in the TBL report and under which of the three categories. Provide reasons for classifying the aspect under a specific category, if applicable.

(i) Medical staff conduct charity camps every month. Open to all members of the community, who are provided with consultation free of charge.

(ii) Prompt and accurate tax payments based on records maintained without errors or fraud.

(iii) Caregiver, with the help of traffic police, has implemented a "green corridor" for ambulances that carry donor organs for transplantation. Organs harvested from the donor at one hospital can reach another hospital with the recipient patient at the earliest.

(iv) Medical waste is discarded at a landfill in a nearby dumpsite. Some of the waste are not bio-degradable.

(v) During review of the supplier for housekeeping service, it was observed that the service provider resorted to child labor to keep cost of operations lower.

(vi) Training and professional development programs doctors and nurses.

(vii) Lab reports are being made available online within the hospital computer system. This would reduce printing costs and storage space needed to maintain older records.

(viii) Caregiver has a good track record of having no medical negligence litigation cases filed against it.

(ix) The hospital is planning to market medical check-up packages so that facilities in its out- patient department can be utilized better.

(x) The number of inpatient hospital deaths decreased 8%, from 776 in 2017 to 715 in 2018. Assume all aspects are material enough to be reported in the TBL report.

Solution

1. Aspects that need to be reported in the TBL report:

S.N.	Aspect	Category on the TBL Report
(i)	Medical staff conduct charity camps every month. Open to all members of the community, who are provided with consultation free of charge.	**Social bottom line**, as it benefits the local community.
(ii)	Prompt and accurate tax payments based on records maintained without errors or fraud.	**Economic bottom line**, since tax payments impact an organization's bottom line and money flow.

(iii)	Caregiver, with the help of traffic police, has implemented a "green corridor" for ambulances that carry donor organs for transplantation. Organs harvested from the donor at one hospital can reach another hospital with the recipient patient at the earliest.	**Social bottom line,** since green corridor would unable the ambulance to transport harvested organs between the hospitals at the earliest this would be beneficial for patients in need of critical care.
(iv)	Medical waste is discarded at a landfill in a nearby dumpsite. Some of the waste are not bio-degradable.	**Environmental bottom line**, as it affects the ecological surroundings of the town.
(v)	During review of the supplier for housekeeping service, it was observed that the service provider resorted to child labor to keep cost of operations lower.	**Social bottom line**, since employing child labor leads to exploitation of children within the community.
(vi)	Training and professional development programs doctors and nurses.	**Social bottom line**, since it contributes towards employee development.
(vii)	Lab reports are being made available online within the hospital computer system. This would reduce printing costs and storage space needed to maintain older records.	**Environmental bottom line**, since paper, cartridge and storage requirement would be lower. This preserves environmental resources.
(viii)	Caregiver has a good track record of having no medical negligence litigation cases filed against it.	**Social bottom line**, since this is an indicator of the quality of services provided to patients.
(ix)	The hospital is planning to market 'medical check-up packages' so that facilities in its outpatient department can be utilized better.	Not relevant to TBL report. This is a marketing strategy to improve profitability.
(x)	The number of inpatient hospital deaths decreased 8%, from 776 in 2017 to 715 in 2018.	**Social bottom line**, since hospital mortality rate measures the clinical quality.

Benchmarking

10. 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 anywhere in Country 'X'. 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.

Solution
Report
To: The Directors of PHL
From: Management Accountant
Subject: Warehouse Performance
Date: 11th May 2019

(i) 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.

(Refer points table)

(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 point s 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

for the year ended 31 March 2019

	SG	HK	NY	NZ
Revenue and Profit				
Revenue	0	1	1	1
Profit (see note 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
Vehicle breakdown delays	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	1	1	1	1
Invoice queries (% of total)	1	1	1	1
Credit notes (% of revenue)	1	1	1	0
Total Points earned	…(C)	3	4	4
Ranking	II	I	I	III
Total Points		8	8	12

(a) Profit Points Calculation
Actual Results e.g. SG = 3.45/22.50 = 15•3% (1 point); HK = 3.60/ 27.00 = 13•3% (0 point)

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

Particulars	SG	HK	NY	NZ
Revenue ('000)	22,500	27,000	21,000	33,000
Debtor weeks	5.80	4.90	5.10	6.20
∴ Debtors ...(A)	2,510	2,544	2,060	3,935
Less than 30 days ...(B)	(1,950)	(2,250)	(1,770)	(3,000)
31–60 Days ...(C)	(481.50)	(199.50)	(229.50)	(828.00)
More than 60 days ...(A) - (B) - (C)	78.50	94.50	60.50	107.00
Debtors in more than 60 days (% of total)	3.13	3·71	2·94	2·72

(c) Value of credit notes raised as a % of revenue e.g. SG = `67,500/ `2,25,00,000 = 0•30%

Annexure

Revenue and Profitability

Particulars	Revenue		Profit	
	Target	Actual	Target	Actual
	`million	`million	`million	`million
Company Overall	300	360	45	48
Warehouse				
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**	**HK**	**NY**	**NZ**
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	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) ASSESSE PHL from perspective of financial performance, service quality, resource utilisation, flexibility, innovation, and competitiveness; and

(iii) EVALUATE the performance measurement system at PHL.

Performance Measurement in the Not-for-Profit Sector

11. West Coast community operates Homelessness Services (HS) on a not-for-profit basis as a local solution to local housing needs. The primary objective is to meet the accommodation needs of persons within its locality targeting those living in the low/middle income groups and senior citizens. Accommodation is basically furnished; it consists of a small house, with kitchen, bathroom, bedroom/(s), and a sitting room. HS manages 450 such houses across various localities. Exclusive Services (ES) is a profit-seeking organisation which provides rented accommodation to the public. ES manages 200 such houses across localities similar to HS' operations.

Income and Expenditure accounts for the year ended 31st March 2019 were as follows:

	HS (`)	**ES (`)**
Rent Received	1,02,98,600	1,09,98,000
Less:		
Employee Costs	24,00,000	38,00,000
Planned Maintenance and Substantial Repairs	34,19,500	10,41,000
Running Repairs	23,91,600	6,38,000
Miscellaneous Operating Costs	15,27,500	11,75,000
Insurance, Property Taxes, and Interest etc.	13,15,500	18,75,000
Operating (Deficit)/ Surplus	(7,55,500)	24,69,000

Operating Information in respect of the year ended 31st March 2019 was as follows: House and rental information:

Size of House	Number of Houses		Rent per Week (`)	
	HS	ES	HS	ES
1 Bedroom +	40	20	400	750
2 Bedrooms +	80	40	450	800
3 Bedrooms +	250	140	500	1,175
4 Bedrooms +	80	Nil	700	N.A.

HS had certain houses that were unoccupied during part of the year. The rents lost as a consequence of unoccupied properties amounted to `18,17,400. ES did not have any unoccupied houses at any time during the year.

Employees were paid as follows:

Number of Staff		Salary per Staff Member (`) per annum	
HS	ES	HS	ES
1	2	3,00,000	5,00,000
2	2	2,50,000	3,00,000
4	11	2,00,000	2,00,000
8	-	1,00,000	-

Planned maintenance and substantial repairs undertaken:

Nature of Work	Number of Houses		Cost per House (`)	
	HS	ES	HS	ES
Miscellaneous Building Work	10	-	12,500	-
Sanitary Fittings (Kitchen + Bathroom) [all are the same size]	45	5	26,100	52,200
AC Upgrades/ Replacements	8	-	15,000	-
Replacement of Wooden Structure for 3-Bedroomed Houses	50	13	40,000	60,000

Running Repairs Information:

Classification of Repair	Number of Repair Undertaken		Total Cost (`)
	HS	ES	HS
Emergency	480	160	6,72,000
Urgent	990	376	11,28,000
Non-urgent	560	102	5,91,600

Each repair undertaken by ES costs the same irrespective of the classification of repair.

Required

(i) Critically EVALUATE how the management of Homelessness Services could measure the 'Value for Money' of its service provision during the year ended 31 March 2019.

(ii) IDENTIFY, 2 performance measures in relation to Flexibility and Service Quality (dimensions of performance measurement).

(iii) ANALYSE, 3 performance measures relating to 'Cost and Efficiency' that could be utilised by the management of Homelessness Services when comparing its operating performance against that achieved by Exclusive Services.

Solution

(i) For commercial enterprises, generating profits is a very important objective. Likewise, not-for-profit enterprises have certain cultural, social or educational objectives for which they are created. Regardless of the type of organization, it is important to know whether the internal operations meet certain performance benchmarks, that will ensure that the organization achieves its objectives in a better manner. Moreover, even if the organization does not operate for profits, it is important for it to be "cost effective". Resources (including money) should be used optimally to achieve intended outcomes. For example, HS can use this benchmarking tool to look into the following questions:

(a) Does the organization function in an efficient and cost effective manner?

(b) Does the estate management make best use of the buildings to achieve the objectives of the organization?

(c) Does the estate management function manage upkeep of buildings in terms of repairs and improvements in an effective manner?

(d) Are the tenants satisfied with the service provided by the estate management and the suitability of the accommodation for their needs?

"Value for Money (VFM)" is an assessment made based on the criteria of economy, efficiency and effectiveness.

Economy involves minimising resource consumption while meeting specified requirements of quality and quantity. Minimize the cost of resources / required inputs (implies to spend less) while ensuring that the desired quality of service is achieved. For HS, inputs could be purchases made for maintenance and repair work like sanitary fittings, AC, wooden structure for the houses etc., while resources could be the labour employed to carry out these services. HS should aim at purchasing required quality of inputs at the least possible price. Skilled labour needed for this job should be procured at the lowest pay scale possible. Procuring these at lower cost leads to savings for HS. At the same time, HS should ensure that cost cutting / saving does not come at the cost of quality. Lower quality, implies inferior service levels, which ultimately will compromise HS' social commitment to provide quality housing to needy members of its community.

Efficiency involves maximising the ratio between resources (input) and the output of goods, services or other results.

The focus of efficiency is on the process of rendering service. The objective of efficient operations is to maximize output using minimum resources. Improved productivity means that resources procured are used in an optimal way (implies spending well).

In the case of HS, one of the resources is the labour employed for repair and maintenance work. Efficiency (productivity) measured would be the relationship between the employees available and the repair work performed by them. If the pool of employees do more repair work than the benchmark set, productivity is higher. This also closely ties up with economy (cost) of operations. If the given pool of employees (resources), who are paid optimum salary (cost), cater to more repair and maintenance work, economy of operations is achieved due to higher productivity of operations. In case these activities are outsourced, efficiency and economy can be achieved by calling for tenders. Select the tender that provides maximum work for least cost.

In addition, HS may explore options for efficiencies from business process improvements, shared services as well as further efficiencies with in assets management.

Effectiveness involves ensuring that the outcome achieves the desired policy aims and objectives. Have the objectives been achieved, how does the impact of the actual output / service compare with its intended impact? (implies to spend money wisely to achieve desired objectives). In the case of HS, effectiveness could be assessed based on the following questions

(a) Are the housing needs of the targeted community members met?

(b) Are the tenants satisfied with the accommodation?

(c) Given its social cause, are the staff friendly, courteous and hospitable to the customers?

(d) Do the housing accommodations comply with safety standards and other legal requirements?

Each measure is inter linked with the other. For example, HS has replaced sanitary fittings in the kitchen and bathroom in 45 houses for `26,100 each, costing a total of `11,74,500. Compared to ES that has spent `52,200 on each house for sanitary fitting replacement. For the cost of `11,74,500 ES could have replaced fittings in only 22 houses (`11,74,500 / 52,000) as compared to HS' ability to replace fittings in 45 houses.

Therefore, HS' decision has been economical, getting more work done for same cost. At the same time, this does not indicate whether the fittings replaced by HS are of similar or better quality as compared to ES. ES could have used better quality fittings that last longer, enhance customer experience, safety etc. The spending by ES could have been more effective than HS because it helps achieve the desired objective of customer satisfaction, safety and lesser running cost for maintenance. Therefore, to achieve economy, HS may have compromised on effectiveness.

Benchmarking is a good method of measuring performance it enables a comparison of the process, costs etc. with those of a close competitor. Services will be expected to use benchmarking information to learn from best practice, change procedures and processes to achieve enhanced methods of working, and reduce unnecessary expenditure.

However, benchmarking of performance against ES is not ideal. The performance of HS can be better measured by adopting benchmarking against similar charities whose primary objective is the provision of accommodation to the communities in which they operate.

Thus, HS must have permanent membership of the House Benchmarking Organisations, which helps social housing property-owners to compare the costs of service delivery, resources, and key performance indicators across all areas of the business. For example, the management of HS can enquire about a norm in respect of the repair charges, sanitary charges or wood structure replacement charges etc. of similar non-profit seeking organisations.

Further, benchmarking should be conducted annually to analyse all areas of the business and is used to identify high performing, low cost services. Using the annual benchmarking exercise results, the HS can plan to target those areas that are low performing and high cost.

Overall, HS should have strong commitment to value for money, which needs to be reflected in the business plan and in service-delivery plans. By applying these principles HS would be able to achieve the optimum utilisation of resources, which will in turn lead to extra capacity and allow HS to provide better services.

(ii) The Building Block Model proposed by Fitzgerald and Moon, gives six dimensions of performance measurement including service quality and flexibility.

Service Quality

Service quality is the measurement of how well a delivered service conforms to the customer's expectations. As a not for profit organization, HS provides housing services to cater to the needs of lower and middle income groups as well as senior citizens in the local community. Although service is provided at a concessional rate compared to its commercial peer ES, quality of HS' service needs to be judged based on certain parameters that were promised by the organization to its tenants. These could be used as parameters to assess service quality. Some of them could be:

- Behaviour, attitude, proactivity of staff employed by HS.
- Quality of basic amenities provided.
- Availability of on-site service for the residents
- Safety within and around the residential unit

Data for assessment of quality can be collected from feedback of tenants, analysing the number and nature of complaints made by tenants, tenant retention rate/loyalty etc. Feedback form tenants can be taken on specific issues or could be general in nature.

Flexibility

Flexibility is the ability of the organization to adapt to customers' requirements. This can be measured through service delivery time, promptness in responding to customer requests, ability of employees to perform different kinds of work etc. In the case of HS, the following performance measures can be used to assess the flexibility:

- The average waiting time for a tenant for a house to become available. Lower the wait time better the flexibility as it indicates that there are sufficient housing units available for rental accommodation.
- Following change in requirements, ability to meet the tenant's request for another house of a different size. This indicates whether the range of housing units offered is sufficient (flexible) to cater to the tenants' changing demand.
- Waiting time for undertaking repairs of an emergency nature, once notified by a tenant. Lower the waiting time during emergencies indicates the availability of appropriate personnel to carry of the repairs on short notice.

(iii) The management of HS could use the following performance measures

An organization should aim at achieving results with maximum efficiency at the least possible cost. Efficiency measures the relationship between the input resources utilized and the output service achieved. Few of the measures that HS could use to compare performance with ES are:

The Average Employee Cost per week per house

Here, the resource (input) are the employees, which is 15 in case of both HS and ES. The employees at HS cater to 450 houses as compared to 200 houses catered by ES. Therefore, HS is more efficient as compared to ES.

Likewise, cost of resources to HS is the employee cost, for which the pay structure and remuneration policies are different in both the organizations. HS has the ability to hire most of its resource at an annual salary of `100,000, which is the least level in the pay structure. Comparatively, ES also hires cheaper labour but at a slightly higher pay level of `200,000 annual salary. Therefore, the total cost of labour is higher by `14,00,000 (58%) for ES as compared to HS.

To compare the figures on a common factor, the employee cost can be calculated per week per house.

	HS	ES
The Average Employee Cost *per week per house* [`24,00,000^/ (450@ × 52)] and [`38,00,000^/ (200@ × 52)] ^ Employee cost from the income and expenditure table @ Number of houses (given): HS = 450; ES = 200	`102.56	`365.38

The average employee cost per week per house of ES is `365.38 (2.46 times) more than of HS. It can be concluded that HS is both efficient, in terms of being able to cater more houses with same number of employees, as well as cost effective due to the use of cheaper labour.

The Average Day to Day Repair Cost per week per house

Here, the resource (input) is measured in terms of the cost spent on repairs to maintain the rental houses. Running repairs are generally do not add much value to the rental houses. Therefore, lesser the repairs, higher the efficiency. From the income and expenditure table, it can be seen that HS has spent `23,91,600 as running repair cost for 450 houses versus ES that has spent `6,38,000 for 200 houses. To compare them on a common factor, the average repair cost per week per house has been calculated.

	HS	ES
The Average Day-to-Day Repair Cost *per week per house* [`23,91,600^/ (450@ × 52)] and [`6,38,000^/ (200@ × 52)] ^ Running repair cost from the income and expenditure table @ Number of houses (given): HS = 450; ES = 200	`102.21	`61.35

The average day to day repair cost per week per house for ES is `40.86 less than that of HS (-40%). This may be due to the fewer repairs required and the fact that there is no extra cost required for emergency and urgent repairs. The cost of repairs whether emergency, urgent or non-urgent to ES is the same, `1,000 [`6,38,000/ (160 + 376 + 102)] whereas the cost of emergency repairs to HS is `1,400 (`6,72,000/480), urgent `1,139 (`11,28,000/990) and for non-urgent repairs it is `1,056 (`5,91,600/560).

ES's low cost of repairs (which is identical for all types of repairs – emergency, urgent and non-urgent) may have been achieved through entering into a contractual agreement for repairs. HS should also think of entering into such contracts in order to save money.

Percentage of Rent Lost

Occupancy of rental houses indicate whether the capacity (in terms of houses rented) is being optimally utilized. Lesser the vacancy better the efficiency in terms of capacity utilization. This represents opportunity cost of not letting out the property.

	HS	ES
Percentage of Rent Lost (= Rent Lost / Gross Rent) [(`18,17,400/ `1,21,16,000] Gross Rent = Rent Earned + Rent Lost = `1,02,98,600 + `18,17,400 = `1,21,16,000	15%	---

ES did not have any unoccupied properties at any time during the year; it has 100% occupancy. This shows that ES's properties are in high demand. On the other hand, HS has lost rent worth `18,17,400 through un occupied properties; this is about 15% of the gross rent receivable.

The management of HS should identify the reasons why the houses remained unoccupied when the occupancy rate is 100% for an organisation like ES, a peer organisation should be used to benchmark the performance.

Chap 8. DIVISIONAL TRANSFER PRICING

Illustration

ABC miners operates two divisions, one in Japan and other in United Kingdom (U.K.). 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 U.K. Processing Division. COMPUTE the after tax operating income for each division under both the Transfer Pricing Methods stated above in (i).

Solution

(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 Stone)	---	---	£3,000	£3,000
Transfer Price (Raw Emerald)	¥ 15,000	¥ 9,000	---	---
Raw Emerald	---	---	£600 (£300 × 2)	£360 (£180 × 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%/ 30%	¥ 1,500	¥ 300	£570	£642
Profit After Tax per Carat of Raw Emerald	¥ 6,000	¥ 1,200	£1,330	£1,498
Raw Emerald	1,000 Carats	1,000 Carats	500 Carats	500 Carats
Total Profit	¥ 60,00,000	¥ 12,00,000	£6,65,000	£7,49,000
	Or	***Or***		
Total Profit (£)	£1,20,000	£24,000	£6,65,000	£7,49,000

International Transfer Pricing and Currency Management

International firms are exposed to exchange fluctuation risks. These fluctuations create uncertain cash flows in corporate currency and also can misrepresent performance of subsidiaries. With inter-divisional trading between subsidiaries in different countries, when one subsidiary makes a loss on a contrary exchange rate movement, the other will make a profit. The company as a whole should manage its exposures to currency risks. The management of currency risk is the responsibility of either the profit centre managers or a treasury department. A multinational company might be keen to set transfer prices in a currency such that any currency losses arise in the subsidiary in the high-tax country, and currency profits arise in the country with the lower tax rate if it is fairly - certain about exchange rate movement in the future.

Conclusion

From the discussion above, we can conclude that transfer pricing is not just about passing on the charge from one division to another. They are vitally important because financial results are greatly influenced by transfer prices. They impact management decision making, employee performance and morale as well as certain investment decisions. Many times these factors determine the success of businesses.

TEST YOUR KNOWLEDGE

Basic Concepts

1. G is the transferring division and R, the receiving division in a company. R has a demand for 20% of G's production capacity which has to be first met as per the company's policy. STATE with reason, which division, G or R enjoys more advantage in each of the following independent situations, assuming no inventory build -up.

Sl. No.	G Transfers to R at Transfer Price equal to	G's Production level	External Demand	Division having more advantage	Reason
(i)	Full cost: No mark up	60%	40%		
(ii)	Market Price	80%	60%		
(iii)	Marginal Cost	100%	80%		
(iv)	Market Price	100%	90%		

Solution

Sl. No.	Division Having More Advantage	Reason
(i)	**G**	G is utilizing only 40% of production capacity by selling to 'External Market' which implies that G might have not been able to recover its full fixed costs. By transferring 20% of its production capacity to division R at full cost, G will be able to recover fixed costs components.
(ii)	**G**	G will not be losing any external market demand as it is within its production capacity. By transferring 20% of production capacity to division R at market price, G will earn extra contribution towards the fixed costs and profit.
(iii)	**R**	Here G is operating at 100% capacity level and external market demand is 80% only i.e. G is not losing any external market demand. But by transferring 20% of production capacity to R at marginal cost i.e. at variable cost, G may not be able to recover fixed cost part of total cost. On the other hand R will be able to get these units at marginal cost only.
(iv)	**G**	Though G is losing its 10% of external market demand but it would be able to earn the same revenue by transferring the goods to division R at market price. Moreover, G will be able to utilize 100% of its production capacity.

Methods of Transfer Pricing

2. B Ltd. makes three products X, Y and Z in Divisions X, Y and Z respectively. The following information is given:

	X	Y	Z
Direct Material (` / Unit) (excluding material X for Divisions Y and Z)	8	22	40
Direct Labour ` / Unit)	4	6	8

Variable Overhead (` / Unit)	2	2	2
Selling price to outside customers (` / Unit)	25	65	90
Existing capacity (no. of units)	6,000	3,000	3,000
Maximum external Market demand (no of units)	5,000	5,500	5,000
Additional fixed cost that would be incurred to install additional capacity (`)	45,000	9,000	23,100
Maximum additional units that can be produced by additional capacity	6,000	2,000	2,250

Y and Z need material X as their input. Material X is available in the market at `23 per unit. Defectives can be returned to suppliers at their cost. Division X supplies the material free from defects and hence is able to sell at `25 per unit. Each unit of Y and Z require one unit of X as input with slight modification.

If Y purchases from outside at `23 per unit, it has to incur `3 per unit as modification and inspection cost. If Y purchases from Division X, it has to incur, in addition to the transfer price, `2 per unit to modify it.

If Z gets the material from Division X, it can use it after incurring a modification cost, of `1 per unit. If Z buys material X from outside, it has to either inspect and modify it at its own shop floor at `5 per unit or use idle labour from Division X at `3 per unit. Division X will lend its idle labour as per Z's requirement even if Z purchases the material from outside.

The transfer prices are at the discretion of the Divisional Managers and will remain confidential. Assume no restriction on quantities of inter-division transfers or purchases.

Required

DISCUSS with relevant figures the best strategy for each division and for the company as a whole.

Solution

Statement Showing "Contribution per unit"

Particulars	Division X			Division Y		Division Z
	Sale to	Internal Transfer to		Purchase from	Transfer from	Transfer from
	Outside	Y	Z	Outside	X	X
Selling Price	25.00	---	---	65.00	65.00	90.00
Transfer Price	---	24.00*	25.00#	---	---	---
Direct Material (Excluding Material 'X')	8.00	8.00	8.00	22.00	22.00	40.00
Direct Labour	4.00	4.00	4.00	6.00	6.00	8.00
Variable Overhead	2.00	2.00	2.00	2.00	2.00	2.00
Purchase Price 'X'	---	---	---	23.00	---	---
Transfer Price 'X'	---	---	---	---	24.00	25.00
Modification Cost	---	---	---	3.00	2.00	1.00
Contribution	11.00	10.00	11.00	9.00	9.00	14.00

(*) Division 'Y' will not pay Division 'X' anything more than `24, because at `24, it will incur additional cost of `2 per unit to modify it, `23 + `3 = `26, the outside cost.
(#) To purchase material X from outside is costly for Division 'Z' as after modification at own shop floor, cost of the same comes to Division 'Z' is ` 28 (`23 + `5).
If Division 'X' goes to utilize its full capacity in that case labour would not be available for modification to Department 'Z'.
Accordingly Division 'Z' may purchase material X at `25 from Division 'X' i.e. market price to outsiders.

Statement Showing "Internal Transfer Decision (units)"

Particulars	X	Y	Z
Existing Capacity …(A)	6,000 units	3,000 units	3,000 units
Maximum Capacity *that can be added* …(B)	6,000 units	2,000 units	2,250 units
Total Maximum *that can be produced* …(C)=(A)+(B)	12,000 units	5,000 units	5,250 units
Maximum External Demand …(D)	5,000 units	5,500 units	5,000 units
Balance …(C) – (D)	7,000 units	---	250 units
Internal Transfer to Other Divisions	5,000 units to Z* 2,000 units to Y	N.A.	N.A.
Internal Transfer from Other Divisions	N.A.	2,000 units transfer from X (material X)	5,000 units transfer from X (material X)

(*) Division 'X' will supply its production to Division 'Z' first (after meeting its external requirement) as contribution from product Z is high.

Statement Showing "Decision Whether to Expand or Not"

(Rs.)

Particulars	X	Y	Z
Additional Fixed Cost on Expansion	45,000	9,000	23,100
Contribution that can be earned by Expansion	64,000 (4,000 units × `11 + 2,000 units × `10)	18,000 (2,000 units × `9)	28,000 (2,000* units × `14)
Net Benefit from Expansion	19,000	9,000	4,900
Decision	Expansion	Expansion	Expansion

(*) As maximum demand of product Z is 5,000 units which Division 'Z' first complete with existing capacity of 3,000 units. Balance 2,000 units from expansion.

Statement Showing "Net Revenue Addition"

(Rs.)

Particulars	X	Y	Z	Total
Contribution – External Sales	55,000 (5,000 units × `11)	45,000 (5,000 units × `9)	70,000 (5,000 units × `14)	1,70,000
Contribution – Internal Transfer	75,000 (2,000 units × `10 + 5,000 units × `11)	---	---	75,000
Additional Fixed Cost	45,000	9,000	23,100	77,100
Net Revenue Addition				1,67,900

Strategy for Company & Divisions

(i) Division 'X' will transfer maximum possible material to Division 'Z' as Division 'Z' is offering maximum transfer price to Division 'X'. At the same time Division 'Z' is fetching maximum contribution for the organisation so it is beneficial for both the Divisions as well as organisation as a whole.

(ii) As shown above all the three Divisions are getting net benefit when they are taking decision to expand and hence, all the three Divisions should expand their activity by incurring additional fixed cost on expansion.

3. Centurion Co. operates a Pulp Division that manufactures Wood Pulp for use in production of various paper goods. The following information are available:

	Rs.
Selling Price	210
Less: Variable Expenses	126
Contribution	84
Less: Fixed Expenses (based on a capacity of 1,00,000 kgs	54
Net Income	30

Centurion Co. has just acquired a small company that manufacturers paper cartons. This company will be treated as a division of Centurion 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. Centurion'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.

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.

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 in next year? EXPLAIN with reasons.

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?

Solution

Situation I

The lowest acceptable transfer price from the perspective of the selling division is given by the following formula:

Transfer price [3] Variable cost per unit + $\frac{Total\ conribution\ margin\ on\ lost\ sales}{Number\ of\ units\ transferred}$

The Pulp Division has no idle capacity, so transfers from the Pulp Division to the Carton Division would cut directly into normal sales of pulp to outsiders. Since the costs are the same whether the pulp is transferred internally or sold to outsiders, the only relevant cost

is the lost revenue of `210 per kg from the pulp that could be sold to outsiders. This is confirmed below:

Transfer Price ³ 126 + $\frac{210-126\ x\ 10,000}{10,000}$ Rs. 210

Therefore, the Pulp Division will refuse to transfer at a price less than `210 per kg.
The Carton Division can buy pulp from an outside supplier for `210 per kg, less a 10% quantity discount of `21, or `189 per kg. Therefore, the Division would be unwilling to pay more than `189 per kg.
Transfer Price ≤ Cost of Buying from Outside Supplier = `189
The requirements of the two divisions are incompatible. The Carton Division won't pay more than `189 and the Pulp Division will not accept less than `210. Thus, there can be no mutually **agreeable transfer price and no transfer will take place.**

Situation II

The Pulp Division has idle capacity, so transfers from the Pulp Division to the Carton Division do not cut into normal sales of pulp to outsiders. In this case, the minimum price as far as the Carton Division is concerned is the variable cost per kg of `126. This is confirmed in the following calculation:

Transfer price ³ `126 + $\frac{0}{10,000}$ = 126

The Carton Division can buy pulp from an outside supplier for `189 per kg and would be unwilling to pay more than that for pulp in an internal transfer. If the managers understand their own businesses and are cooperative, they should agree to a transfer and should settle on a transfer price within the range:
`126£ Transfer price£ `189

Situation III

Yes, `177 is a bona fide outside price. Even though `177 is less than the Pulp Division's `180 "full cost" per unit, it is within the range and therefore will provide some contribution to the Pulp Division.
If the Pulp Division does not meet the `177 price, it will lose `5,10,000 in potential profits.

Price *per kg*	`177
Less: Variable Costs	`126
Contribution margin *per kg*	`51

10,000 kgs × `51 per kg = `5,10,000 potential increased profits.
This `5,10,000 in potential profits applies to the Pulp Division and to the company as a whole.

Behavioural Consequences

4. GL Ltd. is a multiproduct manufacturing concern functioning with four divisions. The Electrical Division of the company is producing many electrical products including electrical switches. This division functioning at its maximum capacity sells its switches in the open market at `25 each. The variable cost per switch to the division is `16.
   The Household Division, another division of GL Ltd., functioning at 70% capacity asked the Electrical Division to supply 5,000 switches per month at the rate of

`18 each to fit in night lamps produced by it. The total cost per night lamp is being estimated as detailed below;

	Rs.
Components purchased from outside suppliers	50.00
Switch if purchased internally	18.00
Other variable costs	40.00
Fixed overheads	21.00
Total cost per night lamp	129.00

The Household Division is marketing night lamps at a price of `130 each, with a very small margin, as it is doing business in a very competitive environment. Any increase in price made by the division will push out the division from the market. Therefore, the division cannot pay anything more to switches if they the Electrical Division. Further, the manager of the division informed that it is very much essential to keep on the market share for night lamps by the Household Division to retain the experienced workers of the division. The company is using return on investments (ROI) as a scale to measure the divisional performances and also marginal costing approach for decision making.

Required

(i) Would you RECOMMEND the supply of switches to Household Division by Electrical Division at a price of `18 each? Substantiate your recommendation with suitable reasons.

(ii) ANALYZE whether it would be beneficial to the company as a whole the supply of switches to Household Division at a unit price of `18 by Electrical Division.

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

(iv) SUGGEST the steps to be taken by the chief executive of the company to change the attitude of divisional heads if they are against the inter-divisional transfers.

Solution

(i) Electrical Division is operating at full capacity and selling its switches in the open market at `25 each. Therefore, it can transfer its production internally by giving up equal number of units saleable in the open market. In this situation, transfer price should be based on variable cost plus opportunity cost {`16 + (`25 - `16)} = `25/-.

As the price quoted by Household Division `18 is less than the transfer price based on opportunity cost, the Electrical Division should not accept internal transfer. Fur ther, the company is measuring divisional performances based on ROI. Therefore, transferring for a price which is less than the minimum price would affect the return on investments and divisional performance severely.

(ii) In the total cost per night lamp, the Fixed Overheads being a fixed cost is not relevant for decision making. Similarly, the variable cost of switch (`16 p.u.) included in the cost of night lamp is also irrelevant as it is common for both

internal and external transfers. The only relevant cost is the loss of revenue when units are transferred internally.

Accordingly, the benefit from internal transfer would be {`130 - (`50 + `40) - `25) =`15/- on each unit sale on night lamp. Therefore, it is beneficial to the company as a whole to the extent of `15 per unit of night lamp sold.

Hence, internal transfer is profitable to the company as a whole. Further, Household Division is operating at 70% capacity and has experienced workers which may be utilized for other divisions requirements if any and based on contribution earned fixed cost could be minimized due to large scale of production.

(iii) Internal transfer pricing develops a competitive setting for managers of each division, it is possible that they may operate in the best interest of their individual performance. This can lead to sub-optimal utilization of resources. In such cases, transfer pricing policy may be established to promote goal congruence. The market price of `25 per switch leaves Electrical Division in an identical position to sale outside. Thus, `25 is top of the price range. Division Household will not pay to Electrical Division anything above (`130 - `50 - `40) = `40/-. The net benefit from each unit of night lamp sold internally is `15. Thus, any transfer price within the range of `25 to `40 per unit will benefit bothdivisions. Divisional Managers should accept the inter divisional transfers in principle when the transfer price is within the above range.

(iv) Transfer at marginal cost are unsuitable for performance evaluation since they do not provide an incentive for the supplying division to transfer goods and services internally. This is because they do not contain a profit margin for the supplying division. Chief Executive's intervention may be necessary to instruct the supplying division to meet the receiving division's demand at the marginal cost of the transfers. Thus, divisional autonomy will be undermined. Transferring at cost plus a mark-up creates the opposite conflict. Here the transfer price meets the performance evaluation requirement but will not induce managers to make optimal decisions.

To resolve the above conflicts the following transfer pricing methods have been suggested:

Dual Rate Transfer Pricing System

The supplying division records transfer price by including a normal profit margin thereby showing reasonable revenue. The purchasing division records transfer price at marginal cost thereby recording purchases at minimum cost. 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.

Two Part Transfer Pricing System

This pricing system is again aimed at resolving problems related to distortions caused by the full cost based transfer price. 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 rela ted to the goods transferred, lump-sum charge enables the recovery of some portion of the fixed cost of the supplying division. Therefore, while the supplying division can show better profitability, the purchasing division can purchase the goods at lower r ate compared to the market price.

5. 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 estimate 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.

Solution

(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 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 pe rceived 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 improves substantially. Consequently, the manager of Division 'B' would 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 = `150,000 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 at an overall level = `150,000 per month.
Please note that the internal transfer price affects profitability of individual div ision but does not affect the company's overall profitability.

(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 transf er pricing model. At the same time, neither 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.

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

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

Therefore, the minimum transfer price (which would be set by Division 'A', the supplier) = marginal cost per lens + opportunity cost per lens = `110 + `30 per lens = `140 per lens.
In other words, the minimum transfer price would be the external sale price of each lens.
The maximum transfer price (which would be determined by Division 'B', the procurer) = lower of net marginal revenue and the external buy-in price.
Net marginal revenue would be the revenue per one additional sale. Net marginal revenue per camera = marginal revenue – marginal cost (i.e. variable cost excluding the cost of the lens) to Division 'B' = `410 - `(150+30) = `410 - `180 = `230 per camera. This is the maximum price that Division 'B' can pay for the lens, without incurring any loss. As mentioned before, fixed cost is ignored for this analysis.
The current external procurement price is `170 per lens.
Therefore, the maximum price that Division 'B' would be willing to pay = lower of net marginal revenue (`230 per camera) or external procurement cost (`170 per lens). Therefore, Division 'B' would pay a maximum price, equivalent to the current external price of `170 per lens. It will not pay Division 'A', price more than the external market price for a lens.

Therefore, the acceptable range for transfer price would range from a minimum of `140 per lens and 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. 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 getting the goods at a lower cost than market price.

(b) Maximum transfer price (determined by Division 'B') = Lower of net marginal revenue and the external buy-in price. As explained in part (iii) above, this would be lower of net marginal revenue of `210 per camera or external buy-in price of `170 per lens, Therefore, the maximum transfer price would be `170, the external market price beyond which Division 'B' will be unwilling a higher price to Division 'A'.
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.

Business Model

6. Rest Easy Company is a rapidly growing start-up in the technology sector. It develops customized ERP packages for clients across various business sectors. The business comprises primarily of two departments (1) consultant and (2) customer support. Consultant department has highly qualified professionals from management, accounting, and technology background, who approach clients as a team and work out solutions that meet their needs.
   Customer support personnel are in charge of IT implementation and provide support th rough telephone, e-mail or on-site. Currently, the strength of the consultant's department is 200 while that of customer support is 150.
   Yash, the founder and CEO of the company, is very passionate about this business model. To deliver high-quality product solutions, he believes that his staff should be well-trained and up- to-date with developments in their professional fields. Therefore, Rest Easy provides periodic training to its staff in-house. All employees are expected to undergo 2 weeks of training annually. A training department has been set up with qualified trainers in various fields, who provide periodic training sessions to both Consultant and Customer Service departments. The training department has 5 trainers. Training sessions are aimed at prov iding skills that the executives need to provide better service to their clients. This in -house focus of high-quality delivery, is the key factor that Yash believes would set apart Rest Easy from its competitors.
   In addition to delivering training sessions, trainers are responsible for developing training material for routine, on-going as well as specialized training sessions. They attend conferences, train the trainer sessions and subscribe to journals to keep themselves up-to- date with various developments that consultants and customer support executives need to be aware of.
   At the beginning of each year, heads of consultant and customer service departments advise the training department on the expected number of training sessions that their staff would undertake. In special situations, where developments need to be communicated rapidly, extra sessions can also be conducted. Training department budgets are prepared based on these needs.

Transfer Pricing - Training Cost Allocation

Cost incurred by the training department is allocated to the consultant and customer service department based on the training sessions availed by both departments. A standard quote (transfer price) based on budgets is provided at the beginning of the year. At the end of the year, actual cost is allocated based on actual training sessions of each department.
Each of the user departments use the transfer price to prepare their individual budgets, that further gets built into their pricing models used for billing clients.

One of the metric for manager appraisal is also the financial performance of their individual departments. Hence, managers of both consultant and customer service departments are very cost conscious.

Figures for budget and actual costs for 2018 of the training department are as follows:

Figures in `

Cost Particulars	Budget	Actual
Salaries	25,00,000	30,00,000
Depreciation on Office Equipment	2,00,000	5,00,000
Software Licenses for Training Packages	80,000	1,05,000
Conference Travel for Train the Trainer Sessions	10,000	15,000
Telephone	20,000	25,000
Training Supplies	50,000	60,000
Trainee Lunch	100,000	120,000
Total Expenses	29,60,000	38,25,000

Consultant and Customer service departments are charged based on the number of training sessions actually availed. Details of training sessions for each department are:

Department	B	A
Consultant	100	100
Customer Service	100	80
Total	200	180

Problem of Goal Congruence

In accordance with the above explanation, the training department quoted a rate of `14,800 per session based on the budgeted cost and budgeted training sessions. (Budgeted cost `29,60,000 for 200 training sessions). Actual cost per session is `21,250 (Actual cost `38,25,000 for 180 training sessions). Cost overrun of `6,450 per session, a jump of 44% from the original quote.

Consequently, a meeting was called that was attended by the managers of consultant, customer service and training departments, along with the CEO Yash.

The user departments were unhappy with the higher charge. Manager of the consultant department raised the following concerns:

(a) The market rate for similar trainings provided by external vendors was only `12,000 per session. He has accepted a higher transfer price of `14,800 per session only because the in-house training program was more customized towards Rest Easy's end-user- clients. However, if the department is actually going to be charged ` 21,250 per session, he would rather source the training to the outside vendor.

(b) Further, he pointed out that while his department had adhered to its commitment of 100 training sessions, the customer service department has availed of 20 lesser sessions than its commitment. Reviewing the cost structure of the training department, most of the expenses are fixed in nature. Therefore, when the transfer price is based on the actual cost and actual training sessions, the per session cost has increased because the customer service department did not undergo the entire

100 sessions. He questions, why he should bear a higher allocation of cost due to variance in actual and budgeted usage of training resources of the customer service department?

Manager of the customer service department explained that the variance of 20 training session is on account of the executives handling high-priority work pressure that did not allow them enough time to complete some of the training sessions. At the same time, she contended that she should not be charged for those 20 sessions for which no training was availed.

Manager of the training department explained that the `500,000 cost overrun on salary due to new hire of a trainer. The trainer's experience is very valuable to the company and hence to get her on board, the company had to offer a higher pay scale. Depreciation on office equipment was higher by `300,000 due to higher replacement cost of ageing equipment. A specialized software license resulted in an excess spend of `25,000. The manager argued that the rest of the expenses were normal increases which were not controllable.

Yash, the CEO, was understandably not happy with the cost over-run. Higher internal transfer price to the end user departments would affect employee morale. However, even though a cheaper option was available from an outside vendor, he could still foresee the value of investing in in-house training programs. Intangible benefits from these customized sessions, would definitely help the company's growth.

To conclude, he was not willing to shut down the training department. At the same time, he had to resolve the dispute resulting from internal transfer pricing in an amicable way. Like profits, teamwork is critical to success.

Required

(i) IDENTIFY the threats to goal congruence due to internal transfer pricing.

(ii) During the meeting, an alternate transfer pricing methodology based on two-part pricing system was formulated. Costs would be segregated into fixed and variable categories. A transfer price for each category would be arrived based on budgeted costs and budgeted usage. The standard rate for fixed cost will be applied to the budgeted training sessions and charged to the user departments. The standard rate for variable cost will be applied to the actual training sessions and charged to the user departments. Fixed cost would be defined as those that are not directly impacted by the number of training sessions. CALCULATE the transfer price to be charged to each department under this method.

(iii) EVALUATE how the two-part pricing price method of transfer pricing address the threats to goal congruence as identified in question 1?

Solution

(i) Threats to goals congruence due to internal transfer pricing are:

(a) User groups, consulting and customer service department are concerned that training department is not controlling its costs. Since the entire actual costs gets allocated to the users, training department may not be managing its costs efficiently. Since the financials of user departments are affected, it may lead to conflict between the departments.

(b) Yash, the CEO is a firm believer of in-house training and its benefits. However, there are outside vendors that provide similar service at substantially reduced costs. Performance assessment of managers of consulting and customer service are based on their department's financial metrics. Higher internal transfer price for training would affect

employee morale since they have no control over these allocated costs. However, their performance is being evaluated based on uncontrollable factors. This could lead to discontent among the managers. Alternatively, Yash may want to re-consider his strategy of in-house training. When suitable, training can be sourced to cheaper options available in the market, without compromising on quality.

(c) Most costs of the training department are fixed in nature, as they need to be incurred irrespective of the number of training sessions. These costs are being allocated to the users based on actual training sessions. The budgeted target price is used by the user departments, to determine their billing model to Rest Easy's end user clients. Hence it is important that the budget transfer price is not very different from the actual transfer price charged at the end of the year.

In the given problem, internal transfer price has been based on a budget of 200 sessions. Here the customer service department does not adhere to its commitment of 100 training sessions, training sessions actually availed are only 80. Since costs are mostly fixed in nature, the actual cost per training session increases. This is then charged out to the consultant and customer service departments. Consequently, despite meeting its commitment, the consultant department bears a higher cost allocation due to variance in the usage of training resources. This can lead to friction between the user departments.

(i) By segregating the costs into fixed and variable components, Rest Easy is working out two-part pricing system for transfer price.

Two-Part Pricing System = Lump-Sum Charge + Marginal Cost

To segregate the costs into fixed and variable categories, the criteria is whether the costs change per additional training session. Accordingly, the classification of costs will be as below:

Cost Particulars	Budget (`)	Classification
Salaries	25,00,000	Fixed
Depreciation on Office Equipment	2,00,000	Fixed
Software Licenses for Training Packages	80,000	Fixed
Conference Travel for Train the Trainer Sessions	10,000	Fixed
Telephone	20,000	Fixed
Training Supplies	50,000	Variable
Trainee Lunch	100,000	Variable
Total Expenses	29,60,000	

The lump-sum charge would be based on the fixed cost budget. Marginal cost would be based on the variable cost budget.

Total budget fixed expenses = `28,10,000 and total budget variable expenses = `150,000. Number of training sessions is 200, that is 100 each for consultant and customer service departments. Hence the fixed cost allocation rate would be `14,050 per session and variable cost allocation rate is `750 per session.

Transfer price to the consulting department = lump-sum charge + marginal cost

= (Standard Fixed Cost per session × Budgeted Training Sessions) + (Standard Variable Cost per Session × Actual Training Sessions)
= (`14,050×100) + (`750×100)
= `14,05,000 + 75,000
= `14,80,000.
Transfer price to the customer service department = lump-sum charge + marginal cost
= (Standard Fixed Cost per session × Budgeted Training Sessions) + (Standard Variable Cost per session × Actual Training Sessions)
= (`14,050 × 100) + (`750 × 80)
= `14,05,000 + `60,000
= `14,65,000.
Total transfer price allocation is `29,45,000 versus actual expenses of `38,25,000. Unallocated expenses are `880,000.
(iii) Evaluate how the two-part transfer pricing model would address the goal congruence issues listed in question 1?
(a) Since transfer prices are based on budgets, the training department would become more cost-conscious. As explained above, as per this transfer pricing method, unallocated expenses of `880,000 would have to be borne by the training department. As given in the problem, this variance is mainly on account of extra cost for the newly hired trainer and the higher depreciation expense. The department will be more cautious while taking future decisions. However, Yash the CEO must ensure that the quality of training is not compromised and remains in line with the company's strategic policy.
(b) Internal transfer price of `14,800 per session is still higher than the outside rate of `12,000 per session. Further decisions would be based on the company's strategic objective. At the same time, if the number of training sessions are expected to increase beyond the budget, this transfer pricing method charges the user department only a marginal cost of `750 per session. This is definitely lower that the external rate.
(c) Under this method, fixed expenses that form majority of the cost are allocated based on budgeted cost and budgeted usage. Variable expense are allocated based on actual training sessions. Hence, any variance in the utilization of training resources, does not impact the other user department.
Therefore, most of the goal congruence issues can be addressed through this methodology.

International Transfer Pricing

7. Standard Corporation Inc. (SCI) is a US based multinational company engaged in manufacturing and marketing of Printers and Scanners. It has subsidiaries spreading across the world which either manufactures or sales Printers and Scanners using the brand name of SCI.
   The Indian subsidiary of the SCI buys an important component for the Printers and Scanners from the Chinese subsidiary of the same MNC group. The Indian subsidiary buys 1,50,000 units of components per annum from the Chinese subsidiary at CNY (¥) 30 per unit and pays a total custom duty of 29.5% of value of the components purchased.

A Japanese MNC which manufactures the same component which is used in the Printer and Scanners of SCI, has a manufacturing unit in India and is ready to supply the same component to the Indian subsidiary of SCI at `320 per unit.

The SCI is examining the proposal of the Japanese manufacturer and asked its Chines subsidiary to presents its views on this issue. The Chinese subsidiary of the SCI has informed that it will be able to sell 1,20,000 units of the components to the local Chinese manufactures at the same price i.e. ¥ 30 per unit but it will incur inland taxes @ 10% on sales value. Variable cost per unit of manufacturing the component is ¥ 20 per unit. The Fixed Costs of the subsidiaries will remain unchanged.

The Corporation tax rates and currency exchange rates are as follows:

Corporation Tax Rates		Currency Exchange Rates	
China	25%	1 US Dollar ($)	= ` 61.50
India	34%	1 US Dollar ($)	= ¥ 6.25
USA	40%	1 CNY (¥)	= ` 9.80

Required

(i) PREPARE a financial appraisal for the impact of the proposal by the Japanese manufacturer to supply components for Printers and Scanners to Indian subsidiary of SCI. [Present your solution in Indian Currency and its equivalent.]

(ii) IDENTIFY other issues that would be considered by the SCI in relation to this proposal.

(Note: While doing this problem use the only information provided in the problem itself and ignore the actual taxation rules or treaties prevails in the above mentioned countries)

Solution

(i) Impact of the Proposal by the Japanese Manufacturer to Supply Components for Printers and Scanners to the Indian Subsidiary of the SCI.

On Indian Subsidiary of SCI

Particulars	Amount (`)
Cost of Purchase from the Chinese Manufacturer :	
Invoiced Amount {(1,50,000 units × ¥ 30) × `9.80}	4,41,00,000
Add: Total Custom Duty (` 4,41,00,000 × 29.5%)	1,30,09,500
Total Cost of Purchase from the Chinese Manufacturer …(A)	5,71,09,500
Cost of Purchase from Japanese Manufacturer in India:	
Invoice Amount (1,50,000 units × `320)	4,80,00,000
Total Cost of Purchase from Japanese Manufacturer in India …(B)	4,80,00,000
Savings on Purchase Cost Before Corporate Taxes …(A) – (B)	91,09,500
Less: Corporate Tax @34%	30,97,230
Savings after Corporate Taxes	60,12,270

On Chinese Subsidiary of SCI

Particulars	Amount (`)

Loss of Contribution [{(1,50,000 – 1,20,000 units) × ¥ (30 – 20)} × `9.80]	29,40,000
Add: Inland taxes on Local Sale - Chinese Manufacturer [{(1,20,000 units × ¥ *30) × 10%}* × `*9.80]*	35,28,000
Total Loss Before Corporate Taxes	64,68,000
Less: Tax Savings on the Losses (`64,68,000 × 25%)	16,17,000
Net Loss after Corporate taxes	48,51,000

On SCI Group

Particulars	Amount (`)
Saving from Indian Subsidiary	60,12,270
Loss from Chinese Subsidiary	48,51,000
Net Benefit to SCI Group	11,61,270

From the above analysis, it can be seen that the proposal from the Japanese manufacturer in India is beneficial for the SCI as it give a net benefit of `11,61,270.

(ii) The SCI need to consider various other issues before reaching at a final decision of accepting the proposal of the Japanese manufacturer in India. The few suggestive issues that should be considered are as follows:

- The longevity of the proposal of the Japanese manufacturer: Whether Japanese manufacturer will supply the components in the future also. For this purpose, a long term agreement between the Indian Subsidiary of SCI and Japanese manufacturer in India needs to be entered.
- Certainty of the fiscal policy in India: The Japanese manufacturer will not be able to supply the component at the present price if the fiscal policy of India will change in the future.
- Repatriation of Profit earned in India: Though the Indian subsidiary is making profit but it depends on the Government policy on the repatriation of profit from India to USA.
- Operating Conditions in China: The SCI has to make sure that the Chinese subsidiary is operating profitably and able to use the spare capacity in the future as well.
- The fiscal policy in China: If the Government of China liberalize its fiscal policies in China in future then the manufacturing cost will be cheaper than the today's cost.

Apart from above suggestive points the foreign relations and other tax treaties and accords should also be kept in consideration.

Chap 10. STRATEGIC ANALYSIS OF OPERATING INCOME

TEST YOUR KNOWLEDGE

Profitability Analysis

1. ABC Airlines has two divisions organised as profit centres, the Passenger Division and the Cargo Division. The following divisional informations were given for the year ended 31 st March 2019:

Particulars	Cargo Division	Passenger Division	Total
Number of personnel trained	200	800	1,000
Number of flights	350	250	600
Number of reservations requested	Nil	7,000	7,000
Revenue	`42,00,000	`42,00,000	`84,00,000
Operating Expenses (excluding service department charges)	`36,00,000	`28,50,000	`64,50,000
Service Department Charges			
Training	`3,20,000	`3,20,000	`6,40,000
Flight Scheduling	`1,50,000	`1,50,000	`3,00,000

The service department charge rate for the service department costs was based on revenue. Since the revenue of both the divisions were the same, the service department charges to each division were also the same.

Required

(i) COMMENT on whether the income from operations for the two divisions accurately measures performance.

(ii) PREPARE the divisional income statement using the activity bases provided above in revising the service department charges.

Solution

(i) The reported income from operations does not accurately measure performance because the service department charges are based on revenue. Revenue is not associated with the profit centre manager's use of the service department services. For example, the Reservations Department serves only the Passenger Division and number of reservation requested by Cargo Division is NIL. Thus, by charging this cost based on revenue, these costs are incorrectly charged to the Cargo Division. Further, the Passenger Division

requires additional personnel. Since these personnel must be trained, the training costs assigned to the Passenger Division should be greater than the Cargo Division.

(ii) **ABC Airlines**

Divisional Income Statement

For the Year Ended March 31, 2019

Particulars	Cargo Division (`)	Passenger Division (`)	Total (`)
Revenue	42,00,000	42,00,000	84,00,000
Less: Operating Expenses (excluding service department charges)	36,00,000	28,50,000	64,50,000
Gross Margin	6,00,000	13,50,000	19,50,000
Less: Service Department Charges			
Training	1,28,000 (200 × `6,40,000)	5,12,000 (800 × `6,40,000)	6,40,000
Flight Scheduling	1,75,000 (350 × `3,00,000)	1,25,000 (250 × `3,00,000)	3,00,000
Reservation	NIL	2,10,000 (7,000/7,000 × `2,10,000)	2,10,000
Operating Income	**2,97,000**	**5,03,000**	**8,00,000**

Direct Product Profitability (DPP)

2. XYZ Ornamental Company has been a name to count on for quality and service. It has been designing wide range of ornamental products for more than two decades using the highest - quality standard. Such quality is achieved through years of experience and the integ rity 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 a large gnome 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) Products Data

	The Star	Dwarfs	Other Products
Production/ Sales (units)	10,000	20,000	80,000
Total Direct Material Costs	`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 `120,00,000 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 products 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:

	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 Ratio *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

(i) Analysis

The product costs per unit along with the respective contribution per 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% 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, 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 - 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 at activity level 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 increase 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 organizations and not just their own activities .

Therefore, some companies like XYZ may adopt ABM to improve their operations and obtain useful activity information.

Workings

(a) Direct Material Cost per unit

	The Star	Dwarfs
Total Costs (`)	22,50,000	750,000
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% × `120,00,000 = `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
Other	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.

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% × `120,00,000 = `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.
Therefore, Overhead Cost per product unit will be as follows:

The Star	7	`14.24	99.68
Dwarfs	6	`14.24	85.44

(d) **Product Information** (by 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)

Customer Profitability Analysis (CPA)

3. 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	Customer			
	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 unit

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.

Solution

(i) Customer's Profitability Statement

Particulars	**Customer- A**	**Customer- B**	**Customer- C**	**Customer- D**
Sales (cases)	**7,580**	**38,350**	**78,520**	**15,560**
	(`)	(`)	(`)	(`)
List Price *per case*	250	250	250	250
Less: Discount	5 (`250 × 2%)	14 (`250 × 5.6%)	22 (`250 × 8.8%)	18 (`250 × 7.2%)
Actual Selling Price (Net of Discounts) *per case*	245	236	228	232
Less: Variable Cost *per unit*	218	218	218	218
Contribution *per unit*	27	18	10	14
Total Contribution	2,04,660 (`27 × 7,580 units)	6,90,300 (`18 × 38,350 units)	7,85,200 (`10 × 78,520 units)	2,17,840 (`14 × 15,560 units)
Less: Additional Overheads				
Visit Cost	4,500 (6 × `750)	9,000 (12 × `750)	12,000 (16 × `750)	7,500 (10 × `750)
Order Processing Cost	9,600 (12 × `800)	14,400 (18 × `800)	28,000 (35 × `800)	19,200 (24 × `800)
Delivery Cost	2,940 (280 × `10.50)	3,675 (350 × `10.50)	4,725 (450 × `10.50)	4,200 (400 × `10.50)
Product Handling Cost	18,950 (7,580	95,875 (38,350	1,96,300 (78,520	38,900 (15,560

	× `2.50)	× `2.50)	× `2.50)	× `2.50)
Profit *per customer*	1,68,670 (11.81% of total)	5,67,350 (39.72% of total)	5,44,175 (38.10% of total)	1,48,040 (10.37% of total)
Profit *per customer per case*	**22.25**	14.79	6.93	9.51

(i) 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 cumulative customer 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 contribution 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, the 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 other 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.

As regards product handling cost, each customer is currently charged `2.5 per case sold. The company, if feasible, apply Activity Based Costing technique to find out if this can be allocated based on the cost driver for each customer. Let us say, packing cost before shipment is part of product handling cost. If customer B requires special packing to ship the goods, then customer B needs to be allocated a higher packaging cost as compared to the others. This cost can be recouped from customer B through a higher selling price.

4. Bookmark LLP is a publishing firm that started operations very recently. The firm has published "Advanced Learner's Dictionary" this first year, that have been sold to 3 distributors PER, MGH and WLY. The firm's financials reflect profits in its first year of operations. The management is pleased with the results. However, they are interested in finding out how profitable each customer is. This would help them formulate their sales strategy.

Particulars	PER	MGH	WLY
Sales units p.a.	1,000	950	1,250
Sale price (gross)	250	250	250
Payment terms	3/10 net 30	net 30	3/10 net 30
Sales returns	0.5%	0%	10%
Delivery terms	FOB destination	FOB destination	FOB shipping point

In order to get market share, PER and WLY have been extended credit terms to avail discount if payment is made within 10 days. Customer MGH does not have much bargaining power and hence has been allowed only 30 days' credit period without any benefit of availing discount for early payment. Both PER and WLY have made payments within 10 days to avail of the discount extended.

On the cost front, variable cost of goods sold attributable to the net sales to customers PER, MGH and WLY are `1,50,000, `1,42,500, and `1,87,500 respectively. Key metrics of customer assignable marketing, administrative and distribution costs are as below:

Activity	Activity Driver	No. of Units of Activity Driver			Cost Driver Rate (`)
		PER	MGH	WLY	
Order taking and processing	# of orders	4	2	15	300
Expedited / rush orders	# of orders	1	-	5	250
Delivery costs	# distance in km.	100	50	-	80
Sale return processing	# of returns	1	-	8	150
Billing cost	# of invoices	4	2	15	50
Customer visit	# of visits	1	-	5	800
Inventory carrying cost *	# 1 per unit	1,000	950	1,250	10

Fixed cost that are not assignable to any customer is `1,00,000 p.a.

Required

(i) PREPARE the customer wise profitability statement as also the overall profitability statement of Bookmark LLP.

(ii) RECOMMEND a strategy for Bookmark LLP regarding its customers.

Solution

(i) Customer Wise Profitability Statement and Overall Profitability Statement

SN.	Particulars	PER	MGH	WLY	Total `
A	Sales (net proceeds) –Table 1	241,288	237,500	272,812	751,600
B	Variable Cost of Goods Sold	1,50,000	1,42,500	1,87,500	4,80,000
C	*Assignable- Marketing and Administration Cost* - Table 2				
	• Order Taking and Processing	1,200	600	4,500	6,300
	• Sale Return Processing	150	-	1,200	1,350
	• Billing Cost	200	100	750	1,050
	• Customer Visit	800	-	4,000	4,800
	Total Assignable Marketing and Administration Cost	2,350	700	10,450	13,500
D	*Assignable- Distribution Cost* - Table 2				

	• Expedited / Rush Orders	250	-	1,250	1,500
	• Delivery Costs	8,000	4,000	-	12,000
	• Inventory Carrying Cost	10,000	9,500	12,500	32,000
	Total Assignable Distribution Cost	18,250	13,500	13,750	45,500
E	*Non- Assignable Fixed Cost*	-	-	-	100,000
F	Total Costs (B+C+D+E)	170,600	156,700	211,700	639,000
G	Net Profit (Step A - F)	70,688	80,800	61,112	112,600
H	Profit % of Sales (G / A)	29%	34%	22%	15%

Workings

Table 1: Customer Sales Analysis - Revenue Analysis

All figures in `

Particulars	PER	MGH	WLY	Total `
Sales {Sale Units × Sale Price (gross)}	2,50,000	2,37,500	3,12,500	8,00,000
Less: Sale Return (Step 1 × Return%)	1,250	-	31,250	32,500
Net Sales	2,48,750	2,37,500	2,81,250	7,67,500
Less: Cash Discount	7,462	-	8,438	15,900
Net Proceeds	2,41,288	2,37,500	2,72,812	7,51,600
Final Collections vs Original Sale	97%	100%	87%	94%

Table 2: Assignable Marketing, Administrative and Distribution Cost s

All figures in `

Particulars	PER	MGH	WLY	Total
Order Taking and Processing (# of orders × cost per order)	1,200	600	4,500	6,300
Expedited / Rush Orders (# of orders × cost per order)	250	-	1,250	1,500
Delivery Costs (Distance in km. × cost per km)	8,000	4,000	-	12,000
Sale Return Processing (# of returns × cost per return)	150	-	1,200	1,350
Billing Cost (# of invoices × cost per invoice)	200	100	750	1,050

Customer Visit (#of customer visits × cost per visit)	800	-	4,000	4,800
Inventory Carrying Cost (# of units × inventory carrying cost p.u.)	10,000	9,500	12,500	32,000

(ii) Customer strategy: It can be seen that Bookmark LLP has an overall profit of `112,600 or 15% of sales. While the performance is good, the firm's management has to analyze customer wise profitability.

(a) WLY is the largest customer in terms of units sold. However, Table 1 above shows that sale returns at 10%, which is unusually large compared to other customers.

Bookmark LLP has to investigate why the returns are of such large quantity. Possibly, there could be communication gap between the firm and WLY. Possible non-conformity in goods delivered has resulted in returns. Only 87% of the original sale value is being collected. The root cause of the problem has to be identified and rectified. This will also reduce the sale return processing costs.

(b) WLY has placed many rush orders, which requires Bookmark LLP to ship these orders immediately, using costlier means of transportation. Currently, there is no charge for shipping rush orders. In order to deter WLY from repeatedly placing rush orders, Bookmark LLP can charge the customer for shipping such orders beyond a threshold number of orders. Say rush orders beyond 2 orders will be charged to the customer.

(c) WLY has placed 15 orders for 1,250 units. Comparatively, PER and MGH placed 4 and 2 orders for approximately 1,000 units each. WLY can be requested to place fewer orders with larger quantity per order, in order to optimize ordering cost.

(d) Being the largest customer, WLY has 5 sale visits from Bookmark LLP, which is more than the other 2 customers. Priced at `800 per visit, this very costly. At the same time, WLY is yielding the least profit. Therefore, Bookmark LLP should reassess if resources can be reallocated to the other two more profitable customers. That may encourage more sales from higher yielding customers.

(e) Since WLY seems to need more hand-holding in terms of more sales visits as well as higher rush orders, Bookmark LLP may assess if it wants to discontinue or reduce business. Alternatively, it may reassign these resources towards existing or newer customers to get better profitability. However, if WLY can be migrated to a higher profitability, Bookmark LLP need not lose out its market share.

(f) Customer MGH is the most profitable yielding 34% return over sales, although in terms of 'Advanced Learner's Dictionary' ordered, it is the smallest of the three. Bookmark LLP can assess if it can extend some discount, in order to encourage more sales. Currently, Customer MGH does not get any discount.

(g) Bookmark LLP can assign more sales visits to Customer PER and MGH to encourage them purchase more as well as provide high quality customer service.

5. Golden East Ltd., is a hob manufacturing company doing business through wholesalers and retailers. The company is following Activity Based Costing system. Average cost per hob is `600 and the listed price is `1,000. But hobs are sold at a discount of 25% on listed price on orders for above 200 units and at a discount of 20% on orders for 200 units or less. The company wants to analyze 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 hobs purchased per order	500	300	40	30
No. of visits to customer's 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 hob from each customer.

(ii) RECOMMEND steps to be taken to improve profitability from less profitable customers.

(iii) LIST down the service organizations for which customer profitability analysis is useful.

(iv) EXPLAIN the specific benefits of customer profitability analysis.

Solution

(i) Statement Showing Profit per Customer per unit

Sr. No.	Particulars	A (`)	B (`)	X (`)	Y (`)	Total (`)
1	Net Sale Proceeds (Refer Table 1)	187,50,000	146,25,000	73,60,000	64,80,000	472,15,000
2	Cost of Sales (Refer Table 1)	150,00,000	117,00,000	55,20,000	48,60,000	370,80,000
	Assignable Marketing and Administration Cost (Refer Table 2)					
3a	Order Processing Cost	65,000	84,500	2,99,000	3,51,000	7,99,500
3b	Customer Visit Cost	74,000	1,11,000	1,85,000	1,62,800	5,32,800
3	Total Assignable Marketing and Administration Cost (Step 3a + 3b)	1,39,000	1,95,500	4,84,000	5,13,800	13,32,300
	Distribution Cost (Refer Table 2)					
4a	Ordinary Delivery Cost	90,000	1,00,000	3,50,000	4,00,000	9,40,000
4b	Speed Delivery Cost	30,000	90,000	3,00,000	3,90,000	8,10,000
4	Total Assignable Distribution Cost (Step 4a + 4b)	1,20,000	1,90,000	6,50,000	7,90,000	17,50,000
5	Total Cost (Step 2+3+4)	152,59,000	120,85,500	66,54,000	61,63,800	401,62,300
6	Net Profit (Step 1 - Step 5)	34,91,000	25,39,500	7,06,000	3,16,200	70,52,700
7	Profit per Hob per Customer (Step 6 / Step 3 of table 1)	139.64	130.23	76.74	39.04	114.12

Table 1: Customer Sales Analysis - Net Sale Proceeds and Cost of Sales

Sr. No.	Particulars	A	B	X	Y	Total
1	No. of Purchase Orders	50	65	230	270	615
2	No. of Hobs Purchased *per order*	500	300	40	30	870
3	Total Hobs Sold in the year (Step 1 × 2)	25,000	19,500	9,200	8,100	61,800
4	Listed Price *per unit* (`)	1,000	1,000	1,000	1,000	
5	Discount as per Policy (refer note 1)	25%	25%	20%	20%	
6	Net Sale Price *per unit* (Step 4 × (1-discount rate per Step 5) (`)	750	750	800	800	
7	Net Sale Proceeds (Step 3 × Step 6) (`)	187,50,000	146,25,000	73,60,000	64,80,000	472,15,000
8	Cost of Sales (Cost per Hob `600 × Step 3) (`)	150,00,000	117,00,000	55,20,000	48,60,000	370,80,000

Note 1

Golden East Ltd. has a policy of providing discount of 25% on listed price on orders above 200 units and 20% on orders less than 200 units. Each order of customers A and B is for more than 200 units while each order of X & Y is for less than 200 units. Therefore, A and B get a discount of 25% and X and Y get a discount of 20% on the listed price per order.

Table 2: Activity Based Costing Technique
(to allocate assignable marketing, administrative and distribution cost)

Particulars	Cost per Driver unit (`)	A (`)	B (`)	X (`)	Y (`)	Total (`)
Order processing cost (# of orders per customer × cost per order)	1,300	65,000	84,500	2,99,000	3,51,000	7,99,500
Customer visit cost (# of visits × cost per visit)	7,400	74,000	1,11,000	1,85,000	1,62,800	5,32,800
Ordinary delivery cost (# of ordinary deliveries × cost per delivery)	2,000	90,000	1,00,000	3,50,000	4,00,000	9,40,000
Speed delivery cost (# of speed deliveries × cost per delivery)	6,000	30,000	90,000	3,00,000	3,90,000	8,10,000

Evaluation of the Customer Profitability

From the above calculations, it can be concluded that the average profit per hob sold is `114.12. Sales to all the concerned customers are profitable. However, it can be observed that, sales to customers A and B, who are wholesale buyers, yie ld above average profit per hob `139.64 and `130.23 respectively. While sales to customers X and Y, who are retail buyers, yield below average profit per hob `76.74 and `39.04 respectively. Therefore, it can be concluded that sales to wholesale buyers are more profitable than sales to retail buyers. In terms of units of hob sold, sales to A and B account for nearly 72% of the sales (Customer A 25,000 units, Customer B 19,500 units from total sales of 61,800 units). Therefore, Golden East Ltd. seems to have a profitable business. However, analysis to improve the profitability from sales to retail customers like customers X and Y, would enable Golden East to improve its overall bottom-line.

(ii) Recommendation

Steps to improve customer profitability of retail customers X and Y. Referring to Table 1, a major portion of the assignable marketing, administration and distribution cost can be traced to customers X and Y. Breaking this down into various cost heads:

(a) Order Processing Costs: A total 615 purchase orders relating to sale of 61,800 hobs have been raised by the four customers. Customer X has raised 37% of the orders to buy 9,200 (15%) hobs, Customer Y has raised 44% of the orders to buy (13%) of the hobs, while the balance 19% to buy 72% of the hobs have been raised by Customers A and B. Therefore, the retail customers X and Y are raising proportionally far more purchase orders as compared to wholesale customers. To process these orders, Golden East has to incur order processing charges on a higher scale. While the nature of sale to retail customers may entail sales in much smaller lots as compared to wholesale customers, Golden East Ltd. may require retail customers to place a

threshold of minimum order quantity to be ordered in each purchase order. Fewer orders with larger quantity will reduce resources that would be needed for order processing, which will contribute towards lowering the processing cost for Golden East Ltd.

(b) Customer Visit Costs: These are marketing costs incurred by the company towards to provide support by understanding customer's needs and sorting operational issues. A total 72 visits relating to the four customers show that majority of visits have been made to customers X (25 visits) and Y (22 visits). However, sales to these customers account only for 28% of the hobs sold (Customer X 9,200 units Customer Y 8,100 of a total of 61,800 units sold). These retail customers are in need of a lot of hand-holding from the company. Golden East Ltd. needs to understand the reasons for so many visits to these two customers. Despite having so many visits, the sales are not as much as the wholesale customers. Therefore, Golden East has to analyze why so many visits are required to be made? This may indicate any improvements that can be made to business operations that can provide the required level of customer support, without so many customer visits. If this can be understood and implemented, resources required for customer visits would reduce, thereby reducing these costs.

(c) Ordinary Deliveries: Out of a total of 470 deliveries to the four customers, Customer X has 175 deliveries and Customer Y has 200 deliveries. Again, as explained above in point (a), retail customer orders lesser quantity as compared to wholesale customers. Therefore, the number of deliveries will be more. However, if Golden East Ltd. requires customers to order a minimum quantity each time, this can reduce the number of deliveries. This would reduce the resources required for making deliveries, thereby reducing the costs as well.

(d) Speed Deliveries: These are rush orders placed by customers to meet their urgent and immediate requirements. Since demand is required to be met in a short time span, Golden East may have to employ faster means of delivery. In the given problem, the cost of speed delivery is thrice the cost of an ordinary delivery. Out of a total of 135 deliveries, Customer X has 50 and Customer Y has 65 speed deliveries. At the same time, they account for only 28% of hob sales. Golden East Ltd. can require these customers to place of minimum order amount as part of their regular orders. This could reduce the need for speed deliveries. It could also make speed deliveries chargeable, if the number of such orders exceed a certain threshold say 10 orders in a year. This will enable Golden East Ltd. to recover some portion of the costs that it incurs to make these deliveries.

(iii) List of service organizations using customer profitability analysis:

(a) Financial institutions like Banks and Insurance Companies.
(b) Hospitality services like Hotels, Travel Agents, and Tour Operators.
(c) Professional services like Audit and Accounting Firms, Law Firms, Consultancy Firms like IT Consultancy, Management Consultancy.
(d) Hospitals and Healthcare providers.
(e) Logistics and Freight Companies that transport goods to various destinations.

(iv) Benefits of Customer Profitability Analysis:

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

Chap 11. BUDGETARY CONTROL

TEST YOUR KNOWLEDGE

Feedforward Control and Feedback Control

1. EW Partners, a leading strategy and management consulting firm is preparing its budgets for the year to 31 March 2020. One of partner 'W' is concerned about liquidity, he argued, that a firm with adequate liquidity has less risk of being unable to meet their liabilities than an illiquid one. Where a firm has adequate liquidity, there is also the possibility of enriched profitability through reduced interest outlay or increased interest income, together with greater financial flexibility to negotiate enhanced terms with suppliers and financiers or participate in new business opportunities. Accordingly, he desires to reduce the firm's CC to zero by 30 September 2019 and to have a positive cash balance of `145,000 by the end of the year.

Required

COMPARE and CONTRAST, feedforward control and feedback control in context of the above information.

Solution

In feed-forward control instead of actual results being compared against desired results, forecasts are made of what results are expected to be at some future time . If these expectations differ from what is desired, control actions are taken that will minimize these gaps.

In the scenario, EW Partners has following 2 expectations–

- the first of these is to reduce the CC to zero by 30 Sep 201 9 and
- the second is to have a positive cash balance of `145,000 by 31 March 2020.

Therefore, to achieve above expectations, a cash budget will be prepared based on various functional budgets showing cash inflows and outflows for each month so that the firm can identify its anticipated monthly cash balance. This can then be compared with the firm's expectations to see if their cash balance objectives are being achieved. However, if the objectives are not met by these budgets, these budgets may need to be revised by changing the levels of activities. It is the process of feedforward control.

Feedback control involves monitoring results achieved against desired results and taking whatever corrective action is necessary if a deviation exists.

Thus, in the case of EW Partners, a comparison of the actual monthly cash balance can be made against the budgeted cash balance for that month. As with any budget and actual comparison there may be an adverse or favorable variance. If this is substantial, then further analysis may be needed to determine its reason. It may be that costs above budgets, cash receipts lower than expected or receivables took less time to pay than expected, or payables were paid later than expected. This comparison process is feedback control.

Conclusion

Feedforward control attempts to take corrective action before an event, whereas feedback control takes corrective action after the event.

Participative Budget

2. SPM, a leading school of management in the heart of India's financial centre of Mumbai, preparing its budget for 2019. In previous years, the director of the school has prepared the budget without the participation of senior staff and presented it to the school board for approval.
   Last year the SPM board blasted the director over the lack of participation of his senior staff in the budget process for 2018 and requested that for the 2019 budget the senior staff were to be involved.

Required

LIST the potential advantages and disadvantages to the SPM of involving the senior staff in the budget preparation process.

Solution

There are potential advantages and disadvantages of the involvement of staff in the preparation of the budget.

Potential advantages include:

▪ Senior staff may agree to accept the targets because they would take ownership of it as their budget.

▪ Senior staff may have a better understanding of what results can be achieved and at what costs. For example, they may have a better knowledge of individual courses and how they may be delivered more efficiently and cost effectively.

▪ Senior staff cannot blame unrealistic goals as an excuse for not achieving budget expectations.

▪ Senior staff would feel that they are being appreciated for the value that their experience brings to the running of the management school.

▪ Senior staff may get the opportunity to discuss organisational issues, in which an exchange of information and ideas can help to solve problems and agree future actions.

Potential disadvantages include:

▪ Senior staff may be excellent academically but could lack the practical knowledge required to formulate their budget.

▪ Senior staff may limit the benefits of participation due to personality traits of participants.

▪ Senior staff may consume a great deal of time arguing with each other (and with the school director).

Senior staff may decide among themselves to artificially inflate the proposed budget so that it is easier for them to attain the cost targets they have set.

Behavioural Aspects of Budgetary Control

3. History of the Company

Great Bus Tours Co. Ltd. (GBTCL) is an open top double-decker bus sightseeing company, particularly identified with its special red and cream-colored buses. It commenced operating in small town of Meghalaya in June 2014 with four buses and as of 2018 operated over 44 buses in north east region of India. GBTCL operates five routes with stops at tourist destinations. The company runs hop-on, hop-off bus tours of various hills, with one 24-hour ticket valid for unlimited journeys on the route.

Budget Process/ Incentive Plan

As a part of management performance control and incentive scheme it has been following participative budgeting approach. In GBTCL, budgeting is a joint process in which functional divisions develop their plans in conformity with corporate goals for the next financial year. Based on these plans, divisions prepare functional budgets and send to the appropriate management for review and approval. The budgets after the incorporation of the feedback and suggestions received from the said management, are finalised for the implementation. Then, finalised budgets are used as yardstick for performance measurement. Comparing the actual performance with the yardstick, bonus and other performance related incentives are considered. The higher management believe that this performance control and incentive scheme is very helpful to measure the performance and fixing responsibilities for the responsibility centres.

Budgeted Income Statement (`'000)

Revenue	1,13,800
Less:	
Variable Costs-	
Direct Material (Fuel, Lubricants and Sundries)	13,600
Direct Labour	40,500
Variable Overheads	7,700
Fixed Costs-	
Operating Overheads (Buses, Garage, Salaries)	18,100
Marketing and Administration	10,700
Profit/ (Loss) before taxes	23,200

Tabel-1

Current Year's Income Statement (`'000)

Revenue	93,500
Less:	
Variable Costs:	
Direct Material (Fuel, Lubricants, and Sundries)	19,600
Direct Labour	37,700
Variable Overheads	6,200
Fixed Costs:	
Operating Overheads (Buses, Garage, Salaries)	20,150
Marketing and Administration	10,100

Profit/ (Loss) before taxes	(250)

Tabel-2

Other Information

Surprisingly above given current year's actual results were not up to the mark. Actual results were clearly showing adverse performance in comparison with budgeted figures.

Managers of GBTCL were upset because they did not receive the bonus. Ms. Maggie, Tour Manager of Route No. 3, said –

"We lost 2 month's revenue and fuel prices are almost doubled. We did our best but these circumstances were beyond our control and we should not penalize at all."

In support of her statement, Ms. Meggie provided following additional information –

(a) Rain is common in Northern Region. But, the past year set a record in numbers. In July, the expected average was 1,577 mm and received was 1,810 mm, In August the expected average rain was 990 mm and actual received was 1,535 mm. Heavy rain in these two months disrupted normal life of the region.

(b) The fuel prices have risen almost continuously since last year due to surge in global crude prices.

(c) Additional operational expenses `22,00,000 also incurred to remove the milky appearance and give the stainless a nice new look effected by heavy rain.

She claimed that –

"Revised budget with consideration of the above factors would give different results and lead to different conclusions"

Required

ANALYSE the tour manager's view.

Solution

Analysis of Issue

It appears that GBTCL has been badly hit by the weather – high rain in July and August have led to a slump in business. Revenue have seen a fall of 18% over the budgeted figure. Direct Material (most of the fuel) is 21% of the Sales (compared to 12% of budgeted level) because of hike in fuel price. Variable Overheads are almost same. However, interestingly, there is a saving of `1,50,000 in Operating Overheads as compared to the budgeted figure after catering additional Operational Expenses of `22,00,000 (for removal of milky appearance etc.). Furthermore, there is reduction in Marketing & Administration Cost. The ratio of Salary to Sales rose to 40% in 2018 from 36% (as budgeted). This appears to be atypical. Instead, there should be a cut in this ratio due to slump in business.

Award of bonus in case of losses is not justified and managers should be held accountable for their operations. However, they should not be held accountable for the events beyond their control. A manager cannot control movements in fuel price, yet he/ she is supposed to have the most information and he/ she is expected to correctly

forecast movements in the prices of fuel. Managers shouldn't be penalized for the uncontrollable events.

Accordingly, in GBTCL, there should be revision in the budget to account uncontrollable events. Refer Table-3.

Revised Budgeted Income Statement (``000)

Revenue*	94,833
Less:	
Variable Costs-	
Direct Material** (Fuel, Lubricants, and Sundries)	19,879
Direct Labour	33,750
Variable Overheads	6,417
Fixed Costs-	
Operating Overheads (Buses, Garage, Salaries)	20,300
Marketing and Administration	10,700
Profit/ (Loss) before taxes	3,787

Tabel-3

*10 months revenue; ** at actual price levels

The Revised Profit Margin has come down to 4% as against the Target Profit Margin of 20%. This clearly indicates that the performance was benchmarked against the higher target. If original budget figure is used to measure the performance, it will punish employees for the reason which are beyond their control.

GBTCL is not too far away from Revised Profit Margin. Therefore, at least some bonus may be considered to be awarded to the employees which may create more employee loyalty and may be beneficial for long term.

Further, continuous monitoring of Budget Performance (achievement/ failure) in GBTCL is essential to overcome this situation. This helps to identify where revisions are required in the budget to account changing conditions, errors, modification to company's plan etc.

Monitoring of Budget Performance should be the responsibility of the managers in GBTCL. The essence of the effective monitoring of Budget Performance is that the managers should provide accurate, relevant, actionable information on time to the appropriate management level so that budget can give a realistic target to measure the performance.

It is also important to note that at the time of revising the budget, the primary budget as well as past information should not be ignored as they are the basis for preparing all budgets.

Beyond Budgeting

4. The Board of Directors meeting of Kyoto 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.

Required

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.

Solution

(i) Limitations of Traditional Budgets

- 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 a 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'

- 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 the 'Beyond Budgeting' Model

▪ 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 behavioural 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 organization

(v) Suitability of Beyond Budgeting to the Company

Since Kyoto Motors Ltd. is a car manufacturing company and presently adopting Traditional Costing system. Moreover, Automobile industry goes through rapid changes in its business environment. So, the company can definitely use Beyond Budgeting to improve the control system and beat the competition. Beyond Budgeting lies an agile, holistic approach based on self-organisation. This will also help the managers to work in close coordination with each other with motivation which in turn will beat the competition.

Chap 12. STANDARD COSTING

Illustration

HDR Ltd produces units and incurs labour costs. A change in technology after the preparation of the budget resulted in a 25% increase in standard labour efficiency, such that it is now possible to produce 10 units instead of 8 units using 8 hours of labour- giving a revised standard labour requirement of 0.80 hours per unit. Details of actuals and budgeted for period XII are:

Grade	Original Standards (ex-ante)		Revised Standards (ex-post)		Actual (1,100 units)	
X	1,100 units × 1 hrs. × ` 10	`11,000	1,100 units × 0.80 hrs. × ` 10.00	`8,800	1,200 hrs. × `8.50	`10,200

Required

(i) CALCULATE the variances for 'X' by

(a) Traditional Variance Analysis; and

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

(ii) COMMENT on the results.

Solution

(i) **(a) Traditional Variances**

Efficiency Variance = (1,100 hrs. – 1,200 hrs.) × `10
= `1,000 (A)

Rate Variance = (`10 – `8.50) × 1,200 hrs.
= `1,800 (F)

Total Variance = `1,000 (A) + `1,800 (F) = `800 (F)

(b) Operational Variances

Efficiency Variance = (880 hrs. – 1,200 hrs.) × `10.00
= `3,200 (A)

Rate Variance = (`10.00 – `8.50) × 1,200 hrs.
= `1,800 (F)

Total Variance = `3,200 (A) + `1,800 (F) = `1,400 (A)

Planning Variances

Efficiency Variance = (1,100 hrs. – 880 hrs.) × `10
= `2,200 (F)

Rate Variance = (`10 – `10) × 800 hrs.
= `0

Total Variance = `2,200 (F) + `0 = `2,200 (F)

(ii) Comment

In this case, the separation of the labour cost variance into operational and planning components shows a large problem in the area of labour efficiency than might otherwise have been indicated. The operational variances are based on the revised (ex post) standard and this gives a more meaningful performance benchmark than the original (ex-ante) standard.

TEST YOUR KNOWLWDGE

2. 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

(i) (a) Traditional Variances

Usage Variance = (27,500 Kgs. – 27,225 Kgs.) × `10

= `2,750 (F)

Price Variance = (`10 – `9.50) × 27,225 Kgs.

= `13,612.50 (F)

Total Variance = `2,750 (F) + `13,612.50 (F)

= `16,362.50 (F)

(b) Operational Variances

Usage Variance = (26,125 Kgs. – 27,225 Kgs.) × `9.70

= `10,670 (A)

Price Variance = (`9.70 – `9.50) × 27,225 Kgs.

= `5,445 (F)

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

Planning Variances

Usage Variance	=	(27,500 Kgs. – 26,125 Kgs.) × `10
	=	`13,750 (F)
Price Variance	=	(`10 – `9.70) × 26,125 Kgs.
	=	`7,837.50 (F)
Total Variance	=	`13,750 (F) + `7,837.50 (F)
	=	`21,587.50 (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.

3. 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:

	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

Actual results for the first quarter were as follows:

	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

Comment

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 that, with hindsight, should have been in operation during the quarter. These revised ex post standards are presented in W.N.2.

As 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 are beyond the control of the operational managers. The distinction between variances is necessary to gain a realistic measure of operational efficiency.

W.N.1

KONY India Ltd.

Quarter-1

Operating Statement

Particulars	Favourable RM	Adverse RM	RM
Budgeted Contribution			26,000
Sales Price Variance [(RM 79 - RM 50) × 2,000 units]	58,000	---	
Circuit X Price Variance [(RM 2.50 – RM 4.50) × 21,600 units]		43,200	
Circuit X Usage Variance [(20,000 units - 21,600 units) × RM 2.50]		4,000	
Circuit Designer's Rate Variance [(RM 2 - RM 3) × 11,600 hrs.]		11,600	
Circuit Designer's Efficiency Variance [(12,000 hrs. - 11,600 hrs.) × RM 2.00]	800		NIL
Actual Contribution			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 × RM 50.00	RM 1,00,000	2,000 units × RM 82.50	RM 1,65,000	2,000 units × RM 79.00	RM 1,58,000
Circuit X	20,000 units × RM 2.50	RM 50,000	20,000 units × RM 4.25	RM 85,000	21,600 units × RM 4.50	RM 97,200
Circuit Designer	12,000 hrs. × RM 2.00	RM 24,000	12,000 hrs. × RM 3.125	RM 37,500	11,600 hrs. × RM 3.00	RM 34,800

W.N.3

Statement Showing Operational Variances

Particulars	(`)	(`)
Operational Variances		16,500 (A)
Sales Price [(RM 79.00 - RM 82.50) × 2,000 units]	7,000 (A)	
Circuit X Price [(RM 4.25 - RM 4.50) × 21,600 units]	5,400 (A)	
Circuit X Usage [(20,000 units – 21,600 units) × RM 4.25]	6,800 (A)	
Circuit Designer Rate [(RM 3.125 - RM 3.00) × 11,600 hrs.]	1,450 (F)	
Circuit Designer Efficiency [(12,000 hrs.– 11,600 hrs.) × RM 3.125]	1,250 (F)	

W.N.4

Statement Showing Planning Variances

Particulars	(`)	(`)
Planning Variance		16,500 (F)
Sales Price [(RM 82.50 - RM 50.00) × 2,000 units]	65,000 (F)	
Circuit X Price [(RM 2.50 - RM 4.25) × 20,000 units]	35,000 (A)	
Circuit Designer Rate [(RM 2.00 - RM 3.125) × 12,000 hrs.]	13,500 (A)	

Reconciliation of Profit

4. Trident Toys Ltd. manufactures a single product and the standard cost system is followed.

Standard cost per unit is worked out as follows:

	`
Materials (10 Kgs. @ `4 per Kg)	40
Labour (8 hours @ `8 per hour)	64
Variable overheads (8 hours @ `3 per hour)	24
Fixed overheads (8 hours @ `3 per hour)	24
Standard Profit	56

Overheads are allocated on the basis of direct labour hours. In the month of April 2019, there was no difference between the budgeted and actual selling price and there were no opening or closing stock during the period.

The other details for the month of April 2019 are as under

	Budgeted	Actual
Production and Sales	2,000 Units	1,800 Units
Direct Materials	20,000 Kgs. @ `4 per kg	20,000 Kgs.@ `4 per kg
Direct Labour	16,000 Hrs. @ `8 per Hr.	14,800 Hrs. @ `8 per Hr.
Variable Overheads	`48,000	`44,400
Fixed Overheads	`48,000	`48,000

Required

(i) RECONCILE the budgeted and actual profit with the help of variances according to each of the following method:

(A) The conventional method

(B) The relevant cost method assuming that

(a) Materials are scarce and are restricted to supply of 20,000 Kgs. for the period.

(b) Labour hours are limited and available hours are only 16,000 hours for the period.

(c) There are no scarce inputs.

(ii) COMMENT on efficiency and responsibility of the Sales Manager for not using scarce resources.

Solution

(i) Computation of Variances

Material Usage Variance = Standard Price × (Standard Quantity – Actual Quantity)

= `4.00 × (18,000* Kgs. – 20,000 Kgs.)

= `8,000 (A)

(1,800 Units x $\frac{20,000\ Kgs}{2,000\ units}$)

Labour Efficiency Variance = Standard Rate × (Standard Hours – Actual Hours)

= `8.00 × (14,400* hrs. – 14,800 hrs.)

= `3,200 (A)

(1,800 Units x $\frac{16,000\ Kgs}{2,000\ units}$)

Variable Overhead Efficiency Variance

= Standard Variable Overheads for Production – Budgeted Variable Overheads for Actual hours

= (14,400 hrs. × `3.00) – (`3.00 × 14,800 hrs.)

= `1,200 (A)

Fixed Overhead Volume Variance

= Absorbed Fixed Overheads – Budgeted Fixed Overheads

= (14,400 hrs. × `3.00) – (16,000 hrs. × `3.00)

= `4,800 (A)

Sales Margin Volume Variance

= Standard Margin – Budgeted Margin

= (1,800 units × `56.00) – (2,000 units × `56.00)

= `11,200 (A)

Sales Contribution Volume Variance

= Standard Contribution – Budgeted Contribution

= (1,800 units × `80.00) – (2,000 units × `80.00)

= `16,000 (A)

Statement Showing "Reconciliation Between Budgeted Profit & Actual Profit"

Particulars	Conv. Method (`)	Relevant Cost Method (`)		
		Scarce Material	Scarce Labour	No Scarce Inputs
Budgeted Profit (2,000 units × `56)	1,12,000	1,12,000	1,12,000	1,12,000
Sales Volume Variance	11,200 (A)	NIL*	12,000$ (A)	16,000 (A)
Material Usage Variance	8,000 (A)	24,000 (A)	8,000 (A)	8,000 (A)
Labour Efficiency Variance	3,200 (A)	3,200 (A)	7,200 (A)	3,200 (A)

Variable Overhead Efficiency Variance	1,200 (A)	1,200 (A)	1,200 (A)	1,200 (A)
Fixed Overhead Volume Variance	4,800 (A)	N.A.#	N.A. #	N.A. #
Actual Profit	**83,600**	**83,600**	**83,600**	**83,600**

Notes

Scarce Material

Based on conventional method, direct material usage variance is `8,000 (A) i.e. 2,000 Kg. × `4. In this situation material is scarce, and, therefore, material cost variance based on relevant cost method should also include contribution lost per unit of material. Excess usage of 2,000 Kg. leads to lost contribution of `16,000 i.e. 2,000 Kgs. × `8. Total material usage variance based on relevant cost method, when material is scarce will be: `8,000 (A) + `16,000 (A) = `24,000 (A). Since labour is not scarce, labour variances are identical to conventional method.

Excess usage of 2,000 Kgs. leads to loss of contribution from 200 units i.e. `16,000 (200 units × `80). It is not the function of the sales manager to use material efficiently. Hence, loss of contribution from 200 units should be excluded while computing sales contribution volume variance.

(*)→

Therefore, sales contribution volume variance, when materials are scarce will be NIL i.e. `16,000 (A) - `16,000 (A).

Scarce Labour

Material is no longer scarce, and, therefore, the direct material variances are same as in conventional method. In conventional method, excess labour hours used are: 14,400 hrs. – 14,800 hrs. = 400 hrs. Contribution lost per hour = `10. Therefore, total contribution lost, when labour is scarce will be: 400 hrs. × `10 = `4,000. Therefore, total labour efficiency variance, when labour hours are scarce will be `7,200 (A) i.e. `3,200 (A) + `4,000 (A).

Excess usage of 400 hrs. leads to loss of contribution from 50 units i.e. `4,000 (50 units × `80). It is not the function of the sales manager to use labour hours efficiently. Hence, loss of contribution from 50 units should be excluded while computing sales contribution volume Variance.

($)→

Therefore, sales contribution volume variance, when labour hours are Scarce will be `12,000 (A) i.e. `16,000 (A) - `4,000 (A).

Fixed Overhead Volume Variance

(#) →

The fixed overhead volume variance does not arise in marginal costing system. In absorption costing system, it represents the value of the under or over absorbed fixed overheads due to change in production volume. When marginal costing is in use there is no overhead volume variance, because marginal costing does not absorb fixed overheads.

(ii) Comment on Efficiency and Responsibility of the Sales Manager

In general, Gross Profit (or contribution margin) is the joint responsibility of sales managers as well as of production managers. On one hand the sales manager is responsible for the sales

revenue part, on the other hand the production manager is accountable for the cost-of-goods-sold component. However, it is the top management who needs to ensure that the target profit is achieved by the organization. The sales manager is accountable for prices, volume, and mix of the product, whereas the production manager must control the costs of materials, labour, factory overheads and quantities of production. The purchase manager must purchase materials at budgeted prices. The personnel manager must employ right people at the right place with appropriate wage rates. The internal audit manager must ensure that the budgetary figures for sales and costs are being adhered by all departments which are directly or indirectly involved in contribution of making profit. Thus, sales manager is not responsible for contribution lost due to excess usage or inefficient usage of resources in case of scarce resources. Hence, such contribution lost must be excluded from the sales contribution volume variance.

Interpretation of Variances

5. NZSCO Ltd. uses standard costing system for manufacturing its single product 'ANZ'. Standard Cost Card per unit is as follows:

	(`)
Direct Material (1 kg per unit)	20
Direct Labour (6 hrs @ `8 per hour)	48
Variable Overheads	24

Actual and Budgeted Activity Levels in units for the month of Feb'19 are:

	Budget	Actual
Production	50,000	52,000

Actual Variable Costs for the month of Feb'19 are given as under:

Direct Material	10,65,600
Direct Labour (3,00,000 hrs)	24,42,000
Variable Overheads	12,28,000

Required

INTERPRET Direct Labour Rate and Efficiency Variances.

Solution

Interpretation

Direct Labour Rate Variance

Adverse Labour Rate Variance indicates that the labour rate per hour paid is more than the set standard. The reason may include among other things such as:

(1) While setting standard, the current/ future market conditions like pending labour negotiation/ cases, has not been considered (or predicted) correctly.

(2) The labour may have been told that their wage rate will be raised or bonus will be paid if they work efficiently.

Direct Labour Efficiency Variance

It indicates that the workers have produced actual production quantity in less time than the time allowed. The reason for favourable labour efficiency variance may include among the other things as follows:

(1) While setting standard, workers efficiency could not be estimated properly, this may happen due to non-observance of time and motion study.

(2) The workers may be new in the factory, hence, efficiency could not be predicated properly.

(3) The foreman or personnel manager responsible for labour efficiency, while providing his/ her input at the time of budget/ standard, has adopted conservative approach.

(4) The increase in the labour rate might have encouraged the labours to do work more efficiently.

In this particular case, it may have happened that since labour payment has been increased labour efficiency has also been increased. In a nutshell because of additional labour rate (Adverse), labour efficiency has gone up (Favourable)

Workings

Labour Rate Variance = Standard Cost of Actual Time – Actual Cost

= (SR × AH) – (AR × AH)

Or

= (SR – AR) × AH

= (`8.00 – `8.14*) × 3,00,000 hrs.

= `42,000 (A)

Actual Labour Rate per hour = $\frac{Actual\ Paid}{Actual\ Hours}$

= $\frac{Rs.24,42,000}{3,00,000\ hrs.}$

Labour Efficiency Variance = Standard Cost of Standard Time for Actual Production – Standard Cost of Actual Time

= (SH × SR) – (AH × SR)

Or

= (SH – AH) × SR

= (3,12,000$ hrs. – 3,00,000 hrs.) × `8.00

= `96,000 (F)

($)

Standard Hours = Actual Production × Std. hrs. per unit

= 52,000 units × 6 hrs.

= 3,12,000 hrs.

6. T-tech is a Taiwan based firm, that designs, develops, and sells audio equipment. Founded in 1975 by Mr. Boss, firm sells its products throughout the world. T-tech is best known for its home audio systems and speakers, noise cancelling headphones, professional audio systems and automobile sound systems. Extracts from the budget are shown in the following table:

Home Audio System Division
Jan'2019

System	Sales (units)	Selling Price `	Standard Cost (per System) `
3,000 W PMPO	1,500	18,750	12,500
5,000 W PMPO	500	50,000	26,250

The Managing Director has sent you a copy of an email he received from the Sales Manager 'K'. The content of the email was as follows:

"We have had an outstanding month. There was an adverse Sales Price Variance on the 3,000 W PMPO Systems of `22,50,000 but I compensated for that by raising the price of 5,000 W PMPO Systems. Unit sales of 3,000 W PMPO Systems were as expected but sales of the 5,000 W PMPOs were exceptional and gave a Sales Margin Volume Variance of `23,75,000. I think I deserve a bonus!"

The managing Director has asked for your opinion on these figures. You got the following information:

Actual results for Jan' 2019 were:

System	Sales (units)	Selling Price `
3,000 W PMPO	1,500	`17,250
5,000 W PMPO	600	`53,750

The total market demand for 3,000 W PMPO Systems was as budgeted but as a result of suppliers reducing the price of supporting UHD TV System the total market for 5,000 W PMPO Systems raised by 50% in Jan'2019.

The company had sufficient capacity to meet the revised market demand for 750 units of its 5,000 W PMPO Systems and therefore maintained its market share.

Required

(i) CALCULATE the following Operational Variances based on the revised market details:
- Sales Margin Mix Variance
- Sales Margin Volume Variance

(ii) COMMENT briefly on the measurement of the K's performance.

Solution

(i) Statement Showing Sales Margin Mix Variance

System	Standard Margin per unit (`)	Actual Qty. (units)	Revised Actual Quantity (units)	Difference (`)	Variance (`)
3,000 W PMPO	6,250	1,500	1,400	+100	+6,25,000 (F)
5,000 W PMPO	23,750	600	700	-100	23,75,000 (A)
Total		2,100			17,50,000 (A)

Statement Showing Sales Margin Volume Variance

System	Standard Margin per unit (`)	Actual Qty. (units)	Budgeted Quantity (units)	Difference (`)	Variance (`)
3,000 W PMPO	6,250	1,500	1,500	0	-
5,000 W PMPO	23,750	600	750	-150	35,62,500 (A)
Total		2,100			35,62,500 (A)

(ii) A Planning Variance simply compares a revised standard (that should or would have been used if planners had known in advance what was going to happen) to the original standard. A planning variance is considered as not to be controllable by management.

The market size is not within the control of the sales manager and therefore variances caused by changes in the market size would be regarded as planning variances.

However, variances caused by changes in the selling prices and consequently the selling price variances and market shares would be within the control of the sales manager and treated as operating variances.

The market size variance compares the original and revised market sizes. This is unchanged for 3,000 W PMPO Systems so the only variance that occurs relates to the 5,000 W PMPO Systems and is `59,37,500 (F) [250 systems × `23,750].

It is vital to make this distinction because as can be seen from the scenario the measurement of the 'K''s performance is incomplete if the revised market size is ignored.

The favourable volume variance of `23,75,000 referred to in the 'K''s e-mail is made up of two elements, one of which, the market size, is a planning variance which is outside his control. It is this that has caused the overall volume variance to be favourable, and thus 'K' is not responsible for the overall favourable performance.

Chap 13. CASE STUDY

CS-1: Value Chain Analysis, Balanced Scorecard, KPI

You are the Finance Manager of DP Limited which is in the business of manufacturing wire rods. A division in the company manufactures copper wire rods from a single manufacturing plant in Central India. The division purchases raw material (copper cathodes) from various suppliers across the country. The cathodes are melted and wire rods of various dimensions are produced. Each batch of wire rods produced are tested for quality and strength.

The wire rods are stored in rolls in the warehouse and dispatched in company owned trucks as per the requirement of the customers. The customers are required to pay 50% of invoice value as advance and balance 50% within 30 days of delivery of goods. The company prices its copper wire rods based on the price prevailing on London Metal Exchange after adjus ting it with a factor to cover conversion costs and profits.

The company explores newer markets by advertising in national dailies and participating in various industrial events in India as well as abroad. An annual conference of customers is conducted by the company to improve customer relationships and attract newer customers. The customers have right to return the material if quality specifications are not met. There is a separate team to handle such complaints.

The following email was sent by the Chief Financial Officer of the company to you.

From: Chief Financial Officer To: Finance Manager

Subject – Commodity Price Fluctuation

The board is quite aware of foreign exchange fluctuation related risks. However, they are not much aware of risks related to fluctuation in commodity prices. The prices of copper which are used to manufacture copper wire rods have fallen down by over 20% in the last six months owing to global factors.

The procurement team of Copper Wire Division has been waiting for the right time to buy these metals as they expect the prices to fall down further. However, we are at a verge of stock -out of these metals as no purchase was made in the last one month.

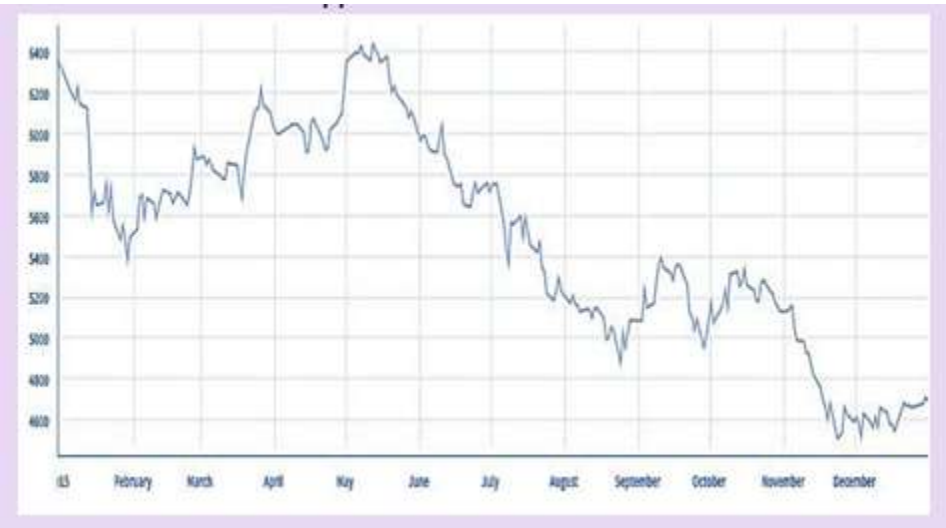
The bonus of procurement team largely depends on the annual savings as compared to the budgeted cost of purchase. I am not happy with the approach of speculation and making profits out of price fluctuation in raw materials. Could you highlight the issues r elated with our performance measurement mechanism and suggest how it could be improved?

Regards,

Chief Financial Officer

Attachment:

Copper Prices Quoted on LME



Required

(i) Explain and identify the various primary activities of copper division.

(ii) Discuss the issues with performance measure in force in the company.

(iii) Advise an alternate performance measure and identify key performance indicators (KPI)

Solution

(i) Value chain is defined as "a chain of value added activities; products pass through the activities in a chain, gaining value at each stage". Value chain focuses on systems, and how business inputs are changed into business outputs purchased by customers. The entire set of activities that a business undertakes to covert inputs to outputs are interlinked to each other.

Porter's value chain classifies activities into primary activity and secondary activity.

Primary Activities

Primary activities are those activities that are directly related with creating and delivering a product to the end customers. The following activities are considered as primary activities:

Inbound Logistics

Inbound logistics involves arranging inbound movement of materials from suppliers to the manufacturing plants. The activities related to inbound logistics in the case of copper division of DP limited would involve transporting copper cathodes from multiple suppliers across the country and storing them in the warehouse. The cathodes stored in warehouse would be issued to the production facilities depending on the requirement of the production plants.

Operations

Operations involve those activities which are concerned with conversion of input into outputs in case of manufacturing companies. The activities under operations would include those related to melting of copper cathode and converting the copper cathodes into wire rods. The quality tests carried out for wire rods would also be included as a part of operations.

Outbound Logistics

These include planning and despatch, distribution management, transportation, warehousing, and order fulfilment. This includes warehousing of finished goods (copper wire rods) and distribution of copper wire rods to its customers. The company uses its own trucks to distribute finished goods to its customers. The scheduling of trucks and dispatch of material would also be a part of outbound logistics.

Marketing & Sales

Marketing and sales are the means whereby consumers and customers are made aware of the product which is ultimately sold to them. The activities include selling products to the end customers covering activities like product management, price management, promotion and marketing management. DP limited uses advertisement in national dailies and holds conferences as a part of its marketing and sales efforts. The company also holds annual customer conference to improve customer relations and attract new customers.

Service

In case of manufacturing industry, service generally refers to the after sales service which are required to maintain the value of product and includes activities like installa tion, repair etc. The service team is also expected to handle customer returns on account of poor quality of copper wire rods.

(ii) What is the issue?

A procurement team is generally a cost centre and the most appropriate way to evaluate performance of cost centre is the comparison between actual cost and budgeted cost (also called variance). A large portion of bonus (performance measurement) is dependen t on the savings in actual purchases.

The company has adopted variance analysis as a measure of performance. If the team is able to reduce the actual cost of purchase as compared to the budgeted cost, a higher bonus is paid. The procurement team has stopped purchase of copper cathodes to save on the purchase budget which ultimately would translate into higher pay-out of bonus.

The commodity prices of copper have fallen by about 20% in the last six months. The speculation of fall in price has resulted in halting of procurement process. It is very difficult to time the market and such speculation could lead to losses to the company. There could be a

stock-out situation if the procurement is not resumed and the situation could hamper the production and overall delivery schedules.

The procurement team appears to have taken a short- term view of price movement. The team is focused on earning higher bonus and hence is waiting to buy at lower prices. There is a larger impact of not being able to deliver product on time which could damage the reputation of the company. This has been ignored by the procurement team. Managers must be encouraged to consider the impact on the company as a whole and not on just the own department.

The company is using just a financial measure to measure performance. This can result in lopsided view of the goals and objectives of the company. Managers tend to look at short term profits and ignore the long- term growth.

Optimum Performance Measurement

A performance measurement is most effective when the goals of the respective departments are aligned with that of the company. This ensures that each employee within the company works towards the overall objective of the company. The company manufactures wire rods and the objective of the copper division is to manufacture copper wire rods as per the requirement of the customers.

The profit flows from the main business of the company. If a department focusses on an objective which is not aligned with the main goal, the company as a whole suffers. A stock- out like situation would hamper the image of a company, if wire rods are not delivered as per schedule to the customers.

Another aspect to be considered is that managers and employees are evaluated only on those parameters which are controlled by them. If for example, the procurement team is able to purchase copper at a discount to market price because of their efforts, it could be considered as saving.

The prices of copper are determined by the prices on commodity exchanges and are not in the control of procurement managers. The performance of managers and employees should not be impacted by global change in prices of commodities as they are not controlled by the concerned employees.

(iii) Alternate Performance Measure

The issue with financial performance measures alone is that managers tend to have a short-term view as can be seen in our case. In order overcome possible short-termism of financial measures Kaplan and Norton developed the Balanced Scorecard which outlined four key areas in which company and divisional performance should be measured to focus on both the short and long term needs of the organisation.

The key idea is that managers are to be appraised on a variety of measures which include non-financial measures so that their focus is both long and short term. The four perspectives used to measure performance measure in a Balanced Scorecard is given below:

Financial Perspective: This measures the financial performance which is linked to the overall objective of maximising shareholder's wealth. We already use financial measures to measure performance. The weightage could be reduced to include other measures. Also, factors beyond the control of managers like commodity prices should be excluded.

Customer Perspective: This includes focussing on customers and meeting their needs. Measures could include quality of material produced, optimum levels of inventory maintained, number of stock-out instances, etc.

Internal Business Perspective: This includes measures to evaluate the performance of business processes with particular emphasis on productivity and efficiency. Measures could include procurement lead time, number of defective purchases etc. The company could use measures like JIT to reduce the procurement lead time.

Training and Growth: This includes focusing on innovating in processes and developing and learning for the future. Trainings could be given to procurement managers to identify best quality of copper cathodes, aspects related to purity etc.

CS-3: PORTER'S VALUE CHAIN MODEL VS. VALUE SHOP MODEL

Westwood Solar Solutions (WSS) has mastered the art of developing Solar Domestic Water Heater that fulfil customer's needs. WSS's designers and product developers focus on solutions to get rid of everyday hassles and transform these into a pleasant experience. WSS also has a wide service network that spans the length and breadth of India to ensure good care of customers and products, by providing a prompt and pleasant service experience. In the past, WSS had a dominant position in the Indian market. However, over the past four years, it has been found that its profits and its share in the market have come down.

WSS has business Model comprising of following steps:

▪ Firstly, WSS's highly qualified and skilled experts visit customer's locations to identify and design the appropriate heater as per customer's requirements. WSS's experts are recognized as the best in the industry, and customers agree that they produce the most effective solutions to their complaints.

▪ At WSS, in the laboratories, the heater design goes through intricate, complex, and dynamic

process. Prototypes are developed on the basis of discussions in previous step. Thereafter, these prototypes are tested. Once a final design is decided, such design is passed to the manu acturing division for production.

▪ Then, WSS manufactures appropriate Solar Water Heater to the desired specification and

installs at the customer's location.

▪ After the heater's installation, WSS renders annual maintenance services for which it is well-known in the industry.

WSS's customers pay a total price for design, manufacture and initial installation of the Solar Water Heater and an annual maintenance charge after that. Total prices are quoted before design work begins.

Although customers appreciate the high quality of the solutions provided by WSS's team, however, they are complaining that the overall prices are too high. Customers have said that although other suppliers do not solve their problems as WSS does, they do charge less. Consequently, WSS has lower down its prices to compete in the market. There is a doubt that the manufacturing and installation stages of the business model are not contributing sufficiently to the firm since costs at both stages are going high.

Partners of WSS have considered that this situation should no longer continue and have recommended that a value chain analysis to be conducted as to identify the way forward for WSS. Although majority of partners are in the agreement with the proposed value chain analysis, however senior partner 'W' has stated that value chain analysis is inappropriate idea. She says that she has heard a number of criticisms of the value chain model.

Assuming yourself as management accountant of WSS, answer the following questions:

Required

(i) DISCUSS the benefits that may accrue to WSS from conducting a value chain analysis.

(ii) DISCUSS the criticisms of Porter's value chain model in the context of WSS

(iii) EXPLAIN other form of Value Chain Analysis that may be more suitable for WSS.

Solution

(i) There are following benefits accruing to WSS through a value chain analysis:

▪ Value chain analysis is a process by which a firm identifies and analysis various activities that add value to the final product. The idea is to identify those activities which do not add value to the final product/service thereafter eliminating such non-value adding activities. The analysis of value chain help a firm in obtaining cost leadership or improve product differentiation. For WSS, value chain can provide with more unambiguous picture of the value of the manufacturing function as perceived by customers.

▪ This model also helps in analyzing other firms within the same industry. As WSS observed that other firms in the industry are considered to be more cost effective in terms of manufacturing, it may plan to use the value chain model to examine the reason for the same.

▪ The value chain will assist WSS to determine ways to get best approach towards developing higher level competitive performance. This model assists firms in finding ways to develop higher level of performance either by cost leadership or product differentiation. Right now, WSS is in a situation wherein it is being defeated on price by some of its competitors, however is recognized as the best solutions provider to customer's problems. Through detailed value chain analysis, WSS may be able to ascertain the reason of falling down in such situation and partners may be able to take decision regarding the future vision of the firm.

▪ Through this analysis, WSS may apply other relevant management techniques as well. Post value chain analysis, WSS will be in a position to decide whether it is worthwhile to continue the technique of benchmark (processes and performance) against its rivals, to develop an information systems strategy, to carry out a business process re- engineering process or to adopt activity-based management.

Further, WSS may decide to outsource manufacturing and keep focus on design and services by following value chain analysis model. This technique may be appropriate for WSS as by outsourcing manufacturing, WSS may be able to focus on its core area for which it is well-known in the industry.

▪ Value Chain analysis will also facilitate the development of performance metrics for BWSS. By developing such metrics WSS may be able to identify which aspects of its business model are not contributing to the overall value and profits of the firm. Although currently WSS has suspicion that manufacturing and installation are the weak parts of its operation, development of transparent and appropriate metrics would enable WSS to recognize where value and profit are being added in the business model.

(ii) Number of criticisms of the value chain developed by Michael Porter have been:

▪ This value chain analysis cannot easily be applied to firms belonging to service industries. This criticism is particularly imperative in the context of WSS which has upward profits from rendering solutions and services rather than that from manufacturing tangibles products. Many people appreciate that the model is more suitable to manufacturing-based industries, rather than service based industries.

▪ Often this model is seen as complicated and perhaps could be a source of frustration for the management of a firm. Although the staff of WSS includes bright and intelligent experts, they may not see the value in-depth analyses of business which is required for a full value chain analysis.

▪ This analysis has a linear approach and ignores the concept of value networks. This criticism is specifically relevant to WSS because its major business resort to the cooperative relationship that the experts have with their customers. If, WSS decides to outsource manufacturing and focus on design and service, this will become even more relevant where relationships are utmost important.

▪ Often value chain analysis is perceived as time consuming and expensive as a whole.

However, if the analysis is to be completed timely, there will be requirement of reliable data such as cost of components in business model. However, in the absence of good cost capturing system, this model could prove to be a costly process. After completion of this process, still there is no guarantee that the process lead to have upward trend in profitability and where it does, it may take some time in realization.

(iii) WSS requires to acknowledge that the nature of its business is turning from manufacturing zone to a solutions provider or professional services firm.

From this point of view, it would be better for WSS to analyze its business using the Professional Services Value Chain/ Value Shop Model. The concept of Value Shop came in to lime light holding the hand of Charles B. Stabell and Oystein D. Fjeldstad in 19 98.This concept aims to serve firms from service sector. It only deals with problems, figure out the main area

requiring service and finally come with the solution. This approach is designed to solve customer's problems rather than creating value by producing output from an input of raw materials.

A Value Shop mobilizes resources (say: people, knowledge or money) to solve specific problems such as delivering a solution to business problem. This shop model is iterative, involving repeatedly performing a generic set of activities until a solution is reached.

Secondary activities in the Professional Service Value Chain have same support activities as those in the porter's value chain, However the primary activities are described differently to recognize the different nature of a service-oriented business. In value shop, primary activities are performed in a circle within a firm to perform generic set of activities iteratively before reaching a conclusion. Since WSS team communicate with customers to find a solution before testing of developed prototypes, so they will find the vale shop, compatible and effective model to use.

CS-4: PORTER'S FIVE FORCES & DIVISIONAL TRANSFER PRICING

In the 'Five Forces Model', one of the crux is that companies or divisions compete with their buyers and suppliers. The same model can be used to evaluate the competitive environment of the divisions of large, complex companies. In such companies, some of the divisions may be buyer and supplier to one another. This leads to management accountants becoming involved in negotiations leading to the agreement of suitable transfer prices between these divisions.

Required

(i) EXPLAIN, how the forces applied in a relationship between supplier and buyer led Michael Porter to reach a conclusion that companies compete with their buyers and suppliers.

(ii) DISCUSS, the issues of negotiating and agreeing transfer prices between divisions within a large, complex organization. Make references to Michael Porter's model, and your arguments in part (i) where appropriate.

Solution

(i) Michael Porter concluded that companies or divisions compete with their buyers and sup - pliers because they exercise bargaining power over one another. The relative competitive advantage is determined by the degree of bargaining power of each of the parties. Porter viewed competition as activity that affects margins where buyers and suppliers struggle to steal margin from each other.

The competitive forces between buyer and supplier affect price and quality. A large order or powerful buyer will exercise force by trying to encourage the supplier to improve quality, either of the product or service being provided, or of the services supporting the product. As another option, a powerful buyer might be willing to accept the standard product, but demands a discount, thus increasing its own margin at the expense of the supplier.

Relative size of the parties also determines the bargaining power, or it also depend on the degree of reliance on one another. A large buyer or supplier, for whom the other party is a small or unimportant portion of business, is more likely to exercise

power to get a "good deal". It is clear that a buyer placing a small order is in a worse position to ask for a discount than one placing a very large order. In the same way, if a buyer represents a major portion of turnover, a supplier will work hard to keep such a buyer happy, thus may increase the service package to support the product by incurring costs.

A buyer or supplier also has greater bargaining power if switching costs in doing business elsewhere is incurred by other party. This cost would, if incurred, reduce margins. This will lead to the party being less likely to break up the relationship with other party.

Some elements of the bargaining power are also determined by the availability of alternative suppliers or buyers. A large supplier will give no concessions to a very small buyer if it is confident that another buyer will be available to replace it. Similarly, a buyer looking for a very special material or service may find that it has no alternative than to accept the terms offered by a single supplier.

Thus, companies and divisions “compete" with their buyers and suppliers. However, this depends on how broad the definition of “competition” is. Michael Porter started from the premise of a very broad definition, consequently could prove his hypothesis.

(ii) In a large and complex company, divisions may have been developed or acquired along a supply chain. This means that, within the company, there are divisions that are buyers and suppliers for each other. The logic behind establishing this structure is that it reduces transaction costs, cuts out supplier margins and secures reliable supply of raw materials or components. In this situation, the company faces the risk of sacrificing any saving in transaction costs if management needed to invest considerable time in transfer pricing negotiation.

In effect, the divisions concerned will be competing with one another like buyer and supplier during the negotiation, in the same way as described in Part (i). The transfer price agreed will affect, to some extent, the profitability of each of the divisions. If bonuses are paid to managers as per divisional performance, the transfer price will determine the level of bonus paid. Thus, managers may have a personal interest in enduring negotiations that will destroy value in the company.

The parent company must determine whether the transfer price is in the best interests of the company. If it is, it should simply be imposed. This finish off competition but may discourage managers, especially when divisional bonuses are paid. In most companies, some level of negotiation is allowed, but this may be not realistic if transfer is necessary. In this case, the bargaining power of the supplier division is vastly increased, thus destroy the balance of the negotiation.

The opposite is the case if the supplier division is not allowed to make external sales, or if there is no external market (for example, for a special component). In this situa tion, the bargaining power clearly lies with the buyer division, as the supplier has no choice but to make the transfer. However, if the special component or supply is not available from elsewhere, the bargaining power may shift to the supplier division as its product is of different nature.

The outcome of any transfer price negotiation must be ended in a transfer at a fair price. In this case, fair means that the price must be comprehended as fair by the division concerned. Any other outcome may lead to loss of motivation in one or both of the divisions. A fair price can be easily determined if there is a free market of the product, component or service being transferred (in other words, it can be both sold and bought outside). If this case does not exist, the range of transfer prices may fall between marginal cost of a unit and full cost plus normal margin.

In corporate terms, the most important transfer pricing issue is that while consolidating the accounts, the transfer price cease to exist. While consolidating the supplier and buyer division accounts, the revenue from the transfer price cancels out the cost of purchase, so the net result is that the transfer disappears. In entire development, most of time and efforts are wasted and simply rise in internal transaction costs. Accordingly, any competition between the divisions is worthless. If the management accountants comprehend this, and the relative bargaining power of the divisions concerned, it is possible to determine negotiations quickly, thus distorting as little value as possible.

CS-5: BUSINESS EXCELLENCE MODEL

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 tool 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

(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 (business) alone. They include also customers, employees (people) and society. What 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 (enablers) 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 fulfil 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 experienc e.

(b) Creating a sustainable future: Society and environment (People and Planet of Triple Bottom-line 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 l abor 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

desi gns 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 and symbiosis 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 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.

CS-9: SIX SIGMA AND COST OF QUALITY

Absolute Singapore Pte Ltd. (ASPL) manufactures electronic components for washing machines in an assembly line. Recent market survey reports indicate erosion of its clientele. Feedback taken from customers suggest that the company's products were not of good quality. ASPL is concerned because its competitors have been able to achieve zero defect performance in terms

of nil sale returns on account of quality and nil subsequent warranty cost. Therefore, the competitors enjoy huge customer loyalty.
To satisfy its customers, the company ASPL wants to improve its product quality. Consequently, it has decided to undertake Six Sigma study of its operations.
Below is the additional information given about ASPL's operations:
Yearly sales of electronic components are 25,000 units at `20,000 each. Of these, 1% sales are returned due to quality issues. These are scrapped and a replacement is made by the company. In addition, each product is under warranty for one year after sale. If a claim is accepted under warranty, service and replacement of parts is done free of cost. Current yearly warranty claims (these are separate from sales returns), which is also representative of the average yearly warranty claims, amount to `30,00,000 per annum.
Quality control check and inspection is carried out directly at the assembly line. There is no quality check done at any other point in the entire work flow. Total time spent on inspection is 2,000 hours in a year which costs the company `10,00,000 per annum. Inspection leads to 10% rejection i.e. 2,525 units. These units require only one cycle of rework, after which they are ready for sale. Rate of rework in the units rejected on inspection at the assembly line is 5 units in 1 hour. Cost of rework is `6,250 per hour.
The variable cost of electronic component is `12,500.

The Six Sigma team as part of its study found that rework on products was mainly due to the following reasons:

(1) Assembly line workers, including new hires, learnt on the job as to how to assemble the input material to produce the final electronic component. This lead to many errors due to lack of proper standardized training. Therefore, on account of these errors, the entire electronic component has to assembled again.

(2) Sub-standard quality of raw material is detected on inspection only at the assembly line. By this time, the defective material is already fitted into the final electronic component. Therefore, entire component has to be reworked upon to replace the defective raw mat erial input.

(3) Machines are outdated and are not entirely suitable for the current production methodology.

Proposed solutions to tackle these issues are as follows:

(1) Provide training to assembly line workers to train them on the production methodology. This training is expected to standardize work flow, thereby reducing errors. Such training programs will be held regularly to update the workers on new methodologies. These programs can also serve as employee feedback sessions about the actual working conditions at the assembly line. This two-way communication can improve and streamline the production process. Brainstorming can help detect or give heads up about

potential problems in the production process. Total training hours in a year are expected to be 5,000 hours, costing `1,000 each hour.

(2) Currently poor quality of raw material input is detected only on inspection at the assembly line. This results in wastage of resources in terms of material, time and capacity. In addition to the existing inspection at the assembly line, a new functional area for quality planning and improvement is proposed to be set up. At the time of procurement, the department will determine the appropriate quality of raw material input, ensure that suppliers supply material as per these requirements as well as suggest alternatives that can help improve produc t quality. By ensuring quality of raw materials at the beginning of the production process, wastage of resources is reduced, if not can be eliminated. Cost of setting up such a facility will be `1,50,00,000. In addition to this facility, inspection will continue at the assembly line.
This ensures complete quality check during the entire production cycle. At the same time, due to the introduction of this new functionality for quality control, the pressure on resources for inspection at the assembly line would reduce.

(3) Current machines should be replaced entirely with new machines. Old machines can be sold for negligible amount as scrap. New machines would cost `3,60,00,000 having a life of three years.

Implementation of the above three solutions can have the following impact:
• Rework of products can be entirely eliminated.
• Sale returns will reduce from 1% to 0% due to better quality of products.
• Yearly warranty claims will reduce from `30,00,000 to nil per annum.
• With the introduction of the new facility, time required for inspection at the assembly line would reduce from 2,000 hours to 1,200 hours. Cost of inspection to do quality check at the assembly line would reduce from `10,00,000 per annum to `600,000 per annum.
• Due to better quality, ASPL can build better reputation with the customers which can further yield additional sales of 5,000 units per year.

Required

You are the management accountant at ASPL. As part of the Six Sigma project implementation team, you are requested to EVALUATE proposals suggested by the Six Sigma team. The team has used the DMAIC technique to assess quality improvements.

Solution

DMAIC technique analyses operational problems by assessing them in the following phases (1) Define; (2) Measure; (3) Analyze; (4) Improve and (6) Control.

(1) Define the problem, project goals and customer requirements : Poor quality leading to erosion of clientele.

Customers feedback indicates that product quality requires improvement. Dis-satisfaction is reflected in the form of sale returns and warranty claims. Competitors have no sale returns on account of poor quality as well as no warranty claims on its products. Hence, in an environment

where 100% quality can be achieved, ASPL is facing quality issues. This is the problem to be addressed. Failure to do so would result in loss of clientele, leading to a possibility of going out of business. The goal of the project is to identify what is the sigma level at which the company is operating and to suggest improvements to the production process it achieve 6σ level of operations.

(2) Measure current performance: Indicators of poor quality to find out what is the sigma level of the current operations?

Current performance focusing on quality can be determined based on the cost incurred in the following phases:

(a) Sale returns: Sale returns are 1% of total sales. Gross sales are 25,000 units per annum at selling price of `20,000 each, therefore having a value of `50,00,00,000. Sales returns @1% amount to `50,00,000 that represent the return of 250 units per annum. The cost of poor quality on account of these sale returns is the variable cost of the product ` 12,500 per unit. This is an avoidable cost amounting to `31,25,000 per annum that is 0.63% of sales (`31,25,000/` 50,00,00,000).

(b) Warranty claims: Warranty is an undertaking given by the company to repair the electronic component free of cost if defect occurs within a specific period of time. Hence, when the customer files a claim that is accepted by the company, it means that there has been an issue with the quality of the product. This is a liability / cost that should ideally be kept minimum, if not nil like ASPL's competitors.

Warranty for the product is for one year from the date of sale. Warranty claims this year is `30,00,000, which is given to be representative of the average yearly warranty cost. Therefore, currently this cost amount to 0.60% of sales (`30,00,000/ `50,00,00,000).

Summarizing sale returns and warranty claims alone represent 1.23% of current sales. Considering the current percentage of deficiency, the company is operating between 3σ and 4σ level. The rest of the industry is able to achieve 6 σ level of operations. At zero defective production, there are no sale returns on account of quality and no warranty claim costs. Therefore, is tremendous scope for improvement in ASPL's operations.

(3) Analyze: What is the cause of poor quality? What is the cost of resources focused on quality?

Six sigma team studied the production process in detail. Replicating the issues detailed in the given problem:

(a) Problem 1: Assembly line workers, including new hires, learnt on the job as to how to assemble the input material to produce the final electronic component. This lead to many errors due to lack of proper standardized training. Therefore, on account of these errors, the entire electronic component has to assembled again.

(b) Problem 2: Sub-standard quality of raw material is detected on inspection only at the assembly line. Inspection leads to 10% rejection of units. By this time, the defective material is already fitted into the final electronic component. Therefore, to entire component has to be reworked upon to replace the defective raw material input.

(c) Problem 3: Machines are outdated and are not entirely suitable for the current production methodology.

The above factors result in rework on products, an internal failure cost, that lead to wastage of material, resources, and capacity.

Two costs incurred to focus on quality are cost of inspection and cost of rework, 2,525 units are reworked upon. Time required to rework 2,525 units per year = 2,525 units / 5 units per hour = 505 hours per year. Cost of rework is given to be `6,250 per hour. Therefore, total cost of rework per year = `31,56,250.

Inspection cost for 2,000 hours at the assembly line is given to be `10,00,000 per annum. Therefore, total cost of resources currently incurred for quality = `41,56,250 per annum.

(4) Improve: Reduce errors and improve quality of the product

While cost of resources currently incurred for quality is only 0.83% of sales (`41,56,250/ `50,00,00,000), a detailed analysis brings forth many qualitative aspects that ASPL needs to be address. If its competitors are able to achieve excellence in quality, so must ASPL, in order to remain in business. Therefore, following are the proposals that can provide solutions to the problems referred to above:

(a) Solution to Problem 1: Periodic training sessions to educate new hires and update workers in the assembly line on the latest techniques in production. Standardized and informed working will lead to lower errors and thereby improving product quality. Cost per year = 5,000 hours yearly training × `1,000 per hour = `50,00,000.

(b) Solution to Problem 2: Delay in detection of poor quality input can be resolved by streamlining the work flow. New function for quality planning and improvement, at the beginning of the process helps in early detection, without wastage of resources. Cost per year for introducing this functionality = `1,50,00,000.

(c) Solution to Problem 3: Replace old machines with newer ones. Machine upgrade will align the resource with the production requirements. This reduce chances of errors i n the production process.

Cost of procurement: `3,60,00,000 has a life of 3 years. Therefore, annual depreciation is `1,20,00,000.

(d) Consequences of implementing these proposals, as given in the problem, can result in the following improvements:

(i) Rework of products can be entirely eliminated.

(ii) Sale returns will reduce from 1% to 0% due to better quality of products.

(iii) Yearly Warranty claims will reduce from `30,00,000 to nil per annum.

(iv) With the introduction of the new facility, time required for inspection at the assembly line would reduce from 2,000 hours to 1,200 hours. Cost of inspection at the assembly line would reduce from `10,00,000 per annum to `6,00,000 per annum.

(v) Due to better quality, ASPL can build better reputation with the customers which can further yield additional sales of 5,000 units per year.

When the company is capable to achieve points (i), (ii) and (iii) milestones, it would have achieved 6 σ operational level. The cost of quality report summarizes the above discussion:

Cost of Quality Report

Cost of Quality Component	Before Improvements		After Improvements	
	Current Cost `	% of Sales	Projected Cost `	% of Sales
Preventive Cost				
Training (5,000 hrs. × `1,000 per hour)	×××	×××	50,00,000	0.83%
Quality Planning and Improvement	×××	×××	1,50,00,000	2.50%
Appraisal Cost				
Inspection Cost	10,00,000	0.20%	6,00,000	0.10%
Internal Failure Cost				
Rework	31,56,250	0.63%	×××	0.00%
External Failure Cost				
Sale Returns	31,25,000	0.63%	×××	0.00%
Warranty Claims	30,00,000	0.60%	×××	0.00%
Total Cost of Quality	1,02,81,250	2.06%	2,06,00,000	3.43%
Yearly Sales	50,00,00,000		60,00,00,000	
Total Cost of Quality / Sales (%)	**2.06%**		**3.43%**	

(e) Cost of quality is 2.06% of sales of which 1.23% alone is external failure cost. This has an impact on the customer experience and can erode customer base. By implementing the six-sigma team's proposal, this external failure cost on account of sale returns and warranty costs, can completely eliminated. Internal failure cost can also be eliminated. The increase in cost of quality proposed to be made would be a preventive cost to avoid failure of quality. The company should focus on preventing the error such that it ensures that product is of good quality when it reaches the customer at the very first instance.

This enhances the customer experience and therefore eliminating the scope for external failures like sales returns and warranty claims. Better quality can yield further sales of 5,000 units per year. Therefore, an increase in spending on quality measures is justified since it not only yields significant improvements to quality but also brings in more sales orders.

Improvement to the financial position of the firm is summarized below:

Particulars	Amount `
Improved Contribution Margin (Ref. note 1)	3,75,00,000
Elimination of Goods Replacement	31,25,000
Elimination of Warranty Claims	30,00,000
Elimination of Rework	31,56,250
Savings in Inspection Cost	4,00,000
Total Benefit ...(A)	4,71,81,250
Additional Costs Incurred	

Training		50,00,000
Quality Planning and Improvement		1,50,00,000
Increase in Fixed Cost (Yearly Depreciation of Upgraded Machines)		1,20,00,000
Total Additional Cost	…(B)	3,20,00,000
Net Benefit	…(A) - (B)	1,51,81,250

Note 1: Incremental Contribution:
Sales have increased by 5,000 units. Selling Price is `20,000 per unit while variable cost is `12,500 per unit. Contribution is `7,500 per unit.

Conclusion: Six Sigma team's proposals are focused on preventing the error from occurring. Consequently, quality improves, sale improves and thereby can yield a net benefit of `1,51,81,250 per year to the company.

(5) Control: Maintain quality at 6σ level and keep the production facilities updated.

(i) Training sessions with workers can serve as two-way communication platform to detect other problems that can be resolved in more timely manner. Inputs received can also be used to improve the production work flow as well.

(ii) New function of quality planning and improvement can help the company be better informed about the latest production methodologies.

(iii) Updated machines are better equipped to handled changes in the production process since they are built with the latest technology. ASPL should do a continuous assessment of the state of its machines and upgrade them when necessary.

CS-13: THE BUILDING BLOCK MODEL

Grab and Go is a fast food joint operating in a very competitive business environment. It is a profitable business with very good prospects for growth. A strategy development meeting is underway to chalk out a plan to improve business growth in a very systematic measurable manner.

The following information is given to you:

Grab and Go has the following mission statement "Derive strength to grow in scale using our passion for the craft of cooking and service that will satisfy our customers, employees and other stakeholders." Grab and Go is a closely held partnership firm with five partners. It started at a scale of operations that catered to the local demand within a locality. Reputation for good quality food and service has help it scale up its operations in the recent years. Most of the key decisions relating to operations like decision about the menu and its method of preparation, product pricing, finance, marketing, administration etc. are centralized. Skilled chefs, managers for various functions and the firm's partners are part of this core team.

A general survey published in a food trade magazine highlighted people's perception about fast food diet. Predominant opinion was that the current food platter available in food joints across the town were not healthy option. People want healthier choices in the menu when they dine out. At the same time, they do not want to compromise on taste or presentation of the food item. The other focal point for improvement was the order taking system. In most food joints, the

current system is manual where the order taking staff note down a customer's order on paper, send it to the kitchen and then delivers the order on intimation from the kitchen, which is also done manually by the kitchen staff. This system has problems like errors in taking down orders, most times delivery staff are unaware of the content in an item or its availability, delays in delivery leading to customers complaining about food served cold etc. This problem takes away the pleasure of dining out and is leaving customers dissatisfied. Another scope for improvement is that customers want more payment options other than cash to settle their bills. With the advent of plastic money and mobile e wallet payments carrying cash around has become cumbersome for most of them.

The partners have decided to use this as an opportunity to develop Grab and Go as the niche food joint addressing the customer's concerns, while managing to remain profitable. Consequently, Grab and Go plans to expand by providing more choices along with its regular menu to health-conscious customers. Also, revamping its ordering, delivery and payment system would improve customer experience. A reasonable return at the overall firm level would be a return on equity (Net Income / Total Partnership Capital) of 25% each year. Capital structure will remain unchanged. The partners are not interested in diluting their share by bringing in new partners or take external funding with ownership stake. They may however utilize bank financing for expansion, but only if required.

Expansion of business will entail opening new branches in other localities as well as forging franchise with other stakeholders. However, Grab and Go is not clear how to measure market share since the fast food industry market is not entirely an or ganized sector. There is no clear information about the overall revenue of the whole sector.

In the past, it was quality of its products that drove growth. The management wishes to maintain high quality standards across branches and franchisee. Therefore, an internal quality control department may be established to look into the same. External certifications from government food inspectors and other recognized agencies would also be required to be met. Quality refers to both product quality and service quality, in this case, service being an inherent part of customer experience.

The staff at Grab and Go are also excited at this opportunity. Expansion of the food joint would present a more dynamic work culture. Chefs would have the opportunity to enhance the ir skill by trying out various ways to cater to the consumer's palate. Ordering and delivery staff would have the opportunity to enhance their people management skills. This learning opportunity would definitely be an impetus for their career growth. With expansion chances of promotion within the organization increase. Financially, better business leads to the expectation of better pay and reward system.

Consequently, the management is intent on developing a performance management system that tracks performance across the organization. Among the different models, the Building Block Model is being considered.

Required

ADVISE the partners how the Building Block Model at Grab and Go could be implemented.

Solution

Performance management using the Building Block Model poses three questions based on which the performance measurement system is developed:

What dimensions of performance should the company measur e?

Dimensions are the goals that the company wants to achieve based on its overall strategy, those goals that define its success.

How to set the standards (benchmarks) for those measures?

What are the rewards needed to motivate employees to achieve these standards?

Dimensions

Dimensions (goals) include financial and non-financial goals. Dimensions are further categorized as into results and determinants. Results are tracked as (a) financial performance and (b) competitive performance. Determinants are tracked as (a) quality, (b) flexibility, (c) innovation, and (d) resource utilization. Determinants influence results.

Results

(a) Financial Performance: Grab and Go is a closely held partnership with 5 partners. Partners are interested in earning profits that have been benchmarked at an overall return on equity of 25% each year. This can be derived from periodic financial statements that get prepared as part of the accounting function. Partners want to retain the current capital structure. This implies that they do not have any plans to go public or have other external funding with ownership stake. They may take loans from banks for funding their expansion.

Consequently, if they want to expand, the firm has to make sufficient profits that will yield ample cash reserves. Therefore, Grab and Go's financial performance dimensions should also include profitability ratios like gross profit ratio, net profit ratio, operating margin, return of capital employed (if bank loans are taken) etc. Cash profit and changes in cash reserves may also be included as dimensions of performance. These measures should be tracked at the firm's overall level as well at the individual branch/franchisee level.

(b) Competitive Performance: Grab and Go was to be a niche joint in a highly competitive segment. However, to measure how it compares with its peers there is a limitation in terms of availability of information due to the unorganized nature of the fast food industry. All the same, one of the measures that can be helpful are the number of branches / franchisees the firm is able to open.

Grab and Go is also likely to have a competitive edge because it is foraying into providing healthier food choices along with its regular menu. Since this is unique among its segment, it will retain a competitive edge until its peers start replicating the same. Therefore, one other measure for competitive performance could be the spread and uniqueness of Grab and Go's menu as compared to its peers. Information for this could be gathered from published / researched sources like trade magazines as well as informal sources like customer feedback / word of mouth.

Determinants

(a) Quality: Quality drove past performance and it will continue to drive performance even after expansion. For product quality, the management should track if internal

quality checks and external certifications are met periodically. Quality control should cover all branches and franchisees. Non-compliance may require immediate attention of the management. For service quality, periodic training programs can be initiated to educate the staff with people management skills. Therefore, Grab and Go should determine parameters that the management would be interested in ensuring that quality standards are met and how non- compliance should be reviewed.

(b) Innovation: Innovation involves experimenting with the appropriate inputs which make them healthy. At the same time, the healthier option should satisfy the taste and presentation preference of customers. This requires innovative efforts from qualified and skilled chefs. This will give the competitive edge to Grab and Go. Innovation has to be constant and not a onetime exercise. Therefore, management may review the number of new variants that have been introduced in the menu, regularity of these introductions and customer feedback of the same.

(c) Flexibility: Growth in scale of operations combined with a competitive business environment implies that Grab and Go should have some flexibility in its operations. This could mean ability to hire staff quickly, cater to seasonal surges in customer's demand etc.

(d) Resource utilization: Better utilization of resources help business function efficiently. Revamping the order, delivery and payment system would improve the way resources (kitchen, ordering and delivery staff) operate. Lesser errors and delays would increase capacity utilization, freeing up time to cater to more customers. Consequently, pressure on resources decreases. Therefore, some indicators to be tracked can be overtime / idle time of kitchen, ordering and delivery staff, turnaround time in these functions, table occupancy rate, breakage, or wastage of material etc. Again here, the management should chart out the appropriate dimensions that will help them track resource utilization.

Standards

Standards are the benchmarks or targets related to the performance metric that is being tracked under each dimension. To be useful, standards should have the following characteristics:

(a) Ownership: It is important to establish who in the organization structure is responsible for achievement which performance metric. Grab and Go has to consider this very carefully. As explained in the problem, many key management functions like decisions about the menu and its preparation are determined by a core team. Similarly, the centralized core team is handling finance and marketing. However, at the branch level, managers of various operational functions can be held accountable for performance of that specific process. For example, the chief at a particular branch can be held accountable for the quality of food prepared in that branch (Dimension: Quality). Similarly, the head of the order taking staff at a particular branch can be held accountable for the overtime that the staff at putting in at that branch (Dimension: Resource utilization).

(b) Achievability: Benchmarks and targets will be useful only if they are achievable. The managers who have ownership for the achievement of performance metric have to be involved in setting benchmarks or targets. They should be clearly defined,

preferably quantifiable. At the same time, they should be in line with the firm's overall s trategy. If the target is set very high staff can get de-motivated. If set too low, will not raise the bar for performance. If not in line with the firm's overall strategy, there will be discord or gap between the firm's performance and what it wants to achieve.

(c) Equity: Benchmarks should be equally challenging for all parts of the business. Grab and Go should customize its performance measure for each function like kitchen staff, order and delivery staff, finance staff, advertising staff etc. For example, while turnaround time to meet a customer's order would be relevant metric to the kitchen, ordering and delivery staff, popularity of the advertisement jingle for Grab and Go would be the relevant metric for the advertisement department. The rigor of the target should be uniform across departments. Otherwise the staff would view the benchmark system as being biased towards select functions within the firm.

Rewards

This relates to the reward structure within the firm that includes compensation package, bonus, rewards, awards, facilities provided to employees etc. Proper reward system is required for achievement of standards while maintaining costs at optimum levels. Grab and Go should have a well-defined HR policy for compensation, bonus, promotion, and reward. A good system should have the following characteristics:

(a) Motivation: Does the reward system drive the people to achieve targets and standards? A low reward system would not induce staff to work towards the goal. Goal clarity and participation in target/benchmark setting can motivate staff to achieve standards.

While some part of compensation may be fixed, other parts can be made variable. For example, bonus of the advertising staff can be aligned to the sales generated, Chefs can be rewarded bonus based on sales as well quality measures etc. Better job prospects in a growing environment would also be a good motivator. Grab and Go's management should track various metric in this regard. Some of them could be percentage of bonus paid to the overall compensation package categorized staff cadre, attrition rate, internal promotions, cross training programs etc.

(b) Clarity: The reward package should be clearly communicated to the staff. It should be understood by the staff concerned. They should be told what kind of performance will be rewarded and how their performance will be measured. Grab and Go may consider having a dedicated HR team for this purpose.

(c) Controllability: Unlike the traditional understanding, rewards need not be based only on the financial element that the staff can control. There may be other non - financial elements for which rewards can be given. Both aspects however need to be controllable by the staff concerned. For example, the chef can come up with a popular menu. If the pricing of the product, managed by the central core team, is such that it results in a loss to Grab and Go, the chef may not get the much-deserved bonus. This is not a good reward system and might lead to attrition.

CS-15: TRADITIONAL ACCOUNTING FRAMEWORK VS. TBL FRAMEWORK

Paper Solutions Ltd. (PSL) is a paper mill producing excellent quality writing and printing paper. It is located in a small town where eucalyptus, acacia and casuarina trees grow in plenty, which are required in the paper production process. It sources its raw material from pulp-wood plantations that grow the above-mentioned trees. These plantations are located in degraded agrarian land surrounding the factory site, which was previously wasteland. Their owners are subsistence farmers, who have been encouraged to grow these trees to source raw material for the paper mill. The mill's local procurement policy has thus provided a source of livelihood for this community. Moreover, almost 40% of the staff working at the mill are from the local community. Most of the mill's labour force lives in residential areas near the factory site. Catering to the mill employees' livelihood needs like food, clothing, education etc. has given the town alternate sources of income and thus has benefited the town. The plant managers at the mill have been working on various projects in order to build a sustainable business. This includes, reducing waste during the manufacturing process, imparting knowledge to local farmers at the pulp-wood plantations to improve the quality of wood through breeding and seed improvement techniques. Operations at the mill have yielded substantial profits over the last 15 years since inception.

You are the chief accounting officer of PSL taking care of all the reporting (internal and external) needs of the company. Recently, you read about the Triple Bottom Line (TBL) reporting that many other companies are following. You feel the need to introduce TBL reporting because:

The vital role played by the mill towards the development of the town. This can be highlight ed in the TBL report. This will enhance the company's goodwill. At the same time, you feel the need for transparency of operations and balancing the need of various stakeholders involved. All this can be addressed by publishing the TBL report periodically.

The mill's operations are driven by the resources available in the environment. What the mill takes should be returned in equal if not in a higher measure. TBL reporting can help identify opportunities of giving back to the environment.

You have an appointment with the Chief Executive Officer to discuss this reporting framework. During a preliminary discussion, the CEO was sceptical of the need for additional reporting. "We are here to do business, profit should be the sole parameter for measuring our success. Shareholders are our only stakeholders. Annual reports would provide sufficient information to others who are interested in our operations."

Required

To convince the CEO, you need bring out the differences traditional accounting framework and the triple bottom line framework. Draft an e-mail on this subject that you need to send to the CEO for discussion at the meeting.

Solution
To: CEO
From: Chief Accounting Officer Date: 22/06/20XX
Subject: Traditional Accounting Framework vs. Triple Bottom Line Framework
Please find below comprehensive study on both frameworks in context of the PSL.
Best Regards,
Chief Accounting Officer

----------Attachment----------

Difference between traditional accounting framework and triple bottom line framework.

(i) Traditional accounting framework has a "single bottom line" that focuses on the profit that our company has made during the financial year. This is calculated by reducing costs, including the cost of capital, from revenues earned during the period, to arrive at the net profit that is available to the shareholders. This reporting framework has its focus on meeting the informational needs of mainly one category of stakeholder within the company, namely its shareholders. It satisfies the information needs of those interested in the financial aspects of business. It does not provide much insight on the social, environmental and economic implications of its operations.

Albeit, some information about its operations is available in various parts of its annual report, like the management discussion and analysis section or the chairman's letter to shareholders. However, this is generally not sufficient to satisfy the information needs of other stakeholders, some of whom can be our company's employees, customers, suppliers, communities living near our factory site or even the government. Transactions that do not directly impact our company are ignored. Recognition of an expense partly depends on utilization of assets. For example, costs incurred to operate machines used in the pulping process would include labor expense, repairs, depreciation, utility etc. These get captured as part of cost of goods manufactured in our financial reports. Therefore, assets and their related expense, that are owned and within the control of the company will be reported in the financial reports.

However, certain assets are neither owned nor controlled by the organization, yet it utilizes these resources in its operations. For example, the waste water from our company is discharged in the river nearby. The waste water contains solids, chemicals and metal compounds that were used during production. This pollutes the river water, which is the primary source of water for our town. This poses both an environmental and health risk to the citizens. Although we have taken sustainability initiatives to reduce this waste, we do not pay to clean up the river water. It is the government that undertakes the onerous task of cleaning up the river water and also bears the clean-up cost. This aspect of our company's operations and the associated cost will not get captured in our financial reports. Hence, the true cost of operations of our company is greater than the costs reported in the financial reports. Moreover, the market price that we charge our customer for our paper product does not factor this cost. Consequently, both our company and our customers who use our product end up under-pricing the cost to the environment and society.

It can be concluded that under traditional financial reporting, sustainability and our company's performance are mutually exclusive. At the same time, information about sustainability is extremely important to other stakeholders like the community living next to the factory site since it affects their lifestyle, the local government that may be incurring substantial expense to nurture back the environment or environmentalists that seek to protect the habitat of other species. It might be critical for our company. Healthy environment and society are key drivers to sustain our operations. "Can we do business in a world fraught with sickness due to pollution?"

On the other hand, triple bottom line reporting framework focuses on a more broader view of the company addressing the interests of various other stakeholders. These stakeholders could our company's employees, creditors, customers, communities near the factory site, government etc. The objective is to force ourselves to identify areas within our operations to create sustainable initiatives that would, in the long run, be beneficial to its current and future stakeholders as well as to our company itself. It focuses on the impact of the decisions and operations of our company on the society, environment, and economy. Known as 3Ps, people, planet and profit, hence the name "triple bottom line". Triple bottom line goes beyond the financial aspects of an organization's performance. This helps stakeholders make more informed assessments of the opportunities and risks that the company faces.

(ii) Traditional accounting framework uses the reporting currency as the unit of measurement. It follows the accounting and reporting principles generally accepted in the country it operates.

Materiality under this framework, is measured in monetary terms, that could impact the decisions of a rational investor. On the other hand, there is no uniform standard or measure for the TBL framework. Measurement of an aspect, therefore its materiality, could either be financial or non-financial. Organizations could follow the metrics suggested in the Global Reporting Initiative (GRI) framework. In India, efforts are underway to align the GRI with the Business Responsibility Report (BRR) mandated by SEBI for some of the public companies. The TBL report focuses on both the positive and negative impact of the organization's performance on the society, environment and economy. TBL reporting may be (i) core reporting, report selective metrics or (ii) comprehensive reporting, a detailed report based on the GRI standards.

In summary, while financial reports provide information about the profitability of our company, TBL enhances the information available to various stakeholders who may hold different perspectives of the company's business operations. TBL will work well to supplement information in the financial statements.

Overall business strategy should be linked to the TBL reporting to work towards a sustainable future. Our company has already been working sustainability initiatives. Waste generation is being tackled by our plant managers. Metrics for this report has to come from various departments. Awareness about sustainability and its impact may open up opportunities that are currently being overlooked. Our company has been a lifeline for this town for the past 15 years. Why not use the TBL to highlight these positive aspects and garner goodwill for our company? TBL reporting need not remain

another administrative task requiring just data gathering. It might vitalize our company to achieve greater heights of success.

CS-16: 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 proces s payments at the end of the month.

In addition to contracting with the vendor to clean machines, 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 sufficie nt 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 assess whether the same level

of service can be procured at lower cost or resources while effectiveness audit assess whether better service 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?

Solution
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 actuals 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 detailed 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 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 detailed maintained i n 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, seawee d 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 any 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

CS-17: COMPETITIVE ADVANTAGE AND CONTROL SYSTEM

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 wanted 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 yield management measure based on capacity utilization was expected to increase 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 traveller, 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 it consolidate its position in the aviation industry. Therefore, a meeting has been called to discuss critical reporting that needs t o 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

(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) yield 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 traveller, 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, may have willing 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) Costs 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) Through 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 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 feedforward 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, have 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 arriva l beyond 15 mins. This 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.

CS-18: BEYOND BUDGETING

Magical Stay is a hotel chain that has properties in popular tourist destinations. Each hotel is 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 bud get 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 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 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, qualit y 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".

Solution

(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 of 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 is on achieving budget target rather than implementing strategies that can create more value to the company.

(ii) Following feedback from operations managers, the management given them targets based on growth instead those based on the budget alone. This is the philosophy of "beyond budgeting". Below are 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, the employees delegated 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 customers who ultimately drive business growth. Therefore, rather than having an inward-looking outlook, focus is 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.

CS-19: 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.

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

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

Solution

(i) HAL's Control System HAL's current control system is 'focused exclusively' on the manufacturing process and its efficiency even though HAL is also a retailer and installer of industrial ACs. It is suitable for HAL's control system to monitor manufacturing efficiency with the help of the three variances: material usage, material price and manufacturing labour efficiency. No reasons have been given for focusing on these three variances and there may be other variances which can provide useful control information that are not currently computed for example, labour rate and material yield. Although HAL uses stan dard costing, it is unclear whether it calculates product costs. A lack of product costs computation may be the reason that it was shocked about its 2017 profit margin. Standard costing could be in criticism for misdirecting management's attention. Thus, in the case of a 'Summer- Cool' AC

where the highest standards of materials are used, it is pertinent that the quality of the finished product is not compromised. Therefore, it might be proper to accept an unfavorable material price variance to maintain the product's standards. Variance analysis should not be done in isolation but a holistic view needs to be taken about HAL's operations and the current control system may not lead to this. HAL is not currently controlling and monitoring aspects which are important for competitive success. HAL's Critical Success Factors have not been identified yet. There is monthly reporting of variances but in addition to this, there should also be follow-up actions for outcome resulting from these reports. However, a month is not inevitably the relevant reporting period for all aspects of HAL's business. If there is a production problem leading to excessive materials wastages, a month is too long time to wait before remedial action are taken. Therefore, real-time or coexistent reporting may be more relevant for manufacturing operations. A major deficiency of HAL's control systems is that they do not extend to retailing and installation activities. The 'Summer' installation teams are incentivized to complete ACs which could be good for their productivity. However, there is a high level of complaints associated with their work. As there is no evident means of monitoring the installation team's work, the reasons of the complaints cannot be identified.

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

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

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

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

The success of both brands is important for the continual success of HAL and this CSF indicate a complete view of performance.

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

(iii) Standard Costing and Reporting System HAL may be required to abandon or modify its standard costing and reporting system. The rationale behind this is that the current control system might lead to an inappropriate emphasis being placed on certain aspects of performance. It is noteworthy that the installations for 'Summer' AC is causing a substantial level of complaints whereas there has never been a complaint made about a 'Summer Cool' AC. It could be that the different remuneration arrangements for the ACs' installation teams have led to this and as the complaint level is an important aspect of the CSF i.e. Customer Satisfaction, HAL may need to modify its remuneration arrangements. It should also reckon whether it would be benefited from a broader range of variance reporting, for example, it may find reporting useful to report on labour rates and material yield. For all CSFs, HAL wil l 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.