

MOCK TEST PAPER – 2

FINAL COURSE: GROUP – II

PAPER – 5: STRATEGIC COST MANAGEMENT AND PERFORMANCE EVALUATION

SUGGESTED ANSWERS/ HINTS

1. British business author **John Brett Elkington** in year **1994** coined the term **TBL**. Every business needs to be **sustainable, rather than only profitable**. A business is said to be sustainable, when management makes sustainable business decisions. To consider sustainability of business decision there are three bottom lines i.e. **People, Planet and Profit** (also known as dimensions of TBL), instead of single bottom line (i.e. Profit).

Here-in VHDCL, shows *strong commitment for CSR* through the certification (regarding quality, environment and safety) they obtained and also through the awards they won (in the domain of CSR and Training).

**Dimensions (sets) of TBL**

- (i) **People**, the **social equity** bottom line relates to corporate governance, motivation, incentives, health and safety, human capital development, human rights and ethical behaviour.

The project has major concerns about the **displacement of town inhabitants**, followed by reduction in flow of Karaka River from the normal 1,000 cu ft/s (28 m<sup>3</sup>/s) to a mere 220 cu ft/s (6.3 m<sup>3</sup>/s). Former concern is more significant than the later concern, because later was of short duration; it is obvious when the reservoir is filled to its maximum capacity, the flow of the river will again become normal. Regarding the displacement, it is mentioned in the case itself that according to the 2003 status report of the public work department, the Dam replaced 15,550 families. Further, this estimate excludes a large number of people who lost their lands but have not been officially recognised as project affected. Even those officially recognised, allotted with land of poor quality or with multiple ownership claims. This concern substantiates in absence of a full-proof master plan.

It is not the case that local resident were/are in complete distress, they were/are compensated with **alternative and better facilities** and **remedies** as well that too at **project cost**, which includes the:

- Development of hill station to attraction for tourism – The New Chapala Town (NCT) is developed with semi-ultra-modern facility at height of 1,555-1,855 m above MSL as pre-planned hill station which will attract the tourist. By creation

of lake due to the impoundment of the reservoir of Vidyut Dam, scope of water sports is there. Hotels, Guides and Tour and travels will cause *employment opportunities* for locals.

- Better road network leads to *ease of living* and *improved communication channels* which also help in establishing suitable industries according to environmental aspects.
- Shifting of district head quarter to NCT results in reduction of distance of travel by town residents to reach to district head quarter for any task by about 65 kms, hence *life of locals will be further eased*.
- *Improved health facilities* - NCT equipped with better health facilities. It got 80 bed modern hospital against a 25-bed hospital situated in old Chapala town. Apart from this also got 5 primary health centres with additional 75 bed in total.
- *Improved Education facilities* in term of hostel facility of 900 students and increase in number of inter-colleges.

Not only the local resident (directly affected), ***other too got benefit from project***, such as 250 cusecs (~162 million gallons per day) of water supply to neighbouring state, which will meet drinking water need of around 4 million people, apart from 167 cusecs (~108 million gallons per day) of water supply to concerned home state, which will meet the drinking water need of around 3 million people. Power is also distributed to 10 northern states (including concerned home state) of said country.

VHDCL showed social commitment through Shiksha, Svasth, Nipun, Unnaati, and Yogy as part of their CSR initiative.

- (ii) **Planet**, the **environmental** bottom line measures the impact on resources, such as air, water, ground and emissions to determine the **environmental impact** and **ecological footprints**.

The project has spurred concerns about the **environmental consequences** of locating such a large dam in the fragile ecosystem of the foothills of great mountain range, which will result in **weak ecosystem** and concerns over a **catastrophe to occur** (due to earthquake - the potential dam-break). Regarding the later concern, it is also mentioned in the case that the Vidyut dam is in a major geologic fault zone. This region was the site of a 6.7 magnitude earthquake in September 1992, with an epicentre 55 km from the dam. In response to which the Dam proponents claim that the complex is designed to withstand an earthquake of 8.4 magnitude, but some seismologists say that earthquakes with a magnitude of 8.5 or more could

occur in this region. Were such a catastrophe to occur, the potentially resulting dam-break would submerge numerous towns downstream, whose populations total near half a million.

The major environmental **benefit** is generation of 1,000 MW (3,532 MU of Annual Energy) of **environment friendly** peaking power.

In order to leave improved environment footprint and to trade-off the environmental loss caused during construction, VHDCL through **initiative** 'VHDC Srishti' working on:

- *Rainwater Harvesting* – It has installed the necessary infrastructure in the affected areas to harvest almost 9 lakh litres of rainwater during monsoon.
- *Green Energy Generation & Technology Promotions* through installing LED based Solar Street Lights and LED based Solar High Mast Lights.
- *Environment Protection & Promotion* through plantation of 2,70,202 samplings so far, of different fruit, fodder, and medicinal plants.

(iii) **Profit**, the **economic** bottom line refers to measures maintaining or improving the company's success in terms of adding value to shareholders

It is an inherent feature (rather project specific concern) of hydro power projects that the duration of construction is quite lengthy and huge capital outlay is involved. In case of Vidyut Dam too, Construction began in 1979, but was delayed due to economic impact apart from social and environmental pressure. In 1987, technical and financial assistance was provided by the neighbouring country, but this was interrupted years later with political instability. Project then placed under the direction of the irrigation department of concerned home state of said country. However, in July 1989 the Vidyut Hydro Development Corporation Limited (VHDCL) was formed to manage such 1,900 MW Vidyut Hydro Power Complex; wherein 75% stake held by union government and remaining 25% stake by concerned home state government. The total expenditure for this project was USD 1 billion. Since 2007-08, which was the first year of operation, VHDCL is a profit making company.

The initiative includes the feature of variable speed, the 1,000 MW Vidyut HPP has variable speed features which can optimize the round-trip efficiency under varying water levels in its reservoirs to keep the *cost of operation low*.

The quantifiable economic benefits include:

- The generation of 1,000 MW (3,532 MU of Annual Energy) of environment friendly peaking power. This will no doubt lead to industrial and agricultural growth in the northern region.

- 15% of generated power will be given free to the concerned home state, apart from power as per their share, where the distress is caused due setting up of the project. Hence, the state has economic benefit from the project too.
- Irrigation of 2.71 lakhs hectares of area, beside irrigation stabilization of 6.07 lakhs hectares. Hence, supporting other economic activities as well indirectly.

**To conclude**, the project largely seems **sustainable** as running in *profit* since it was operational, leaving minimal and positive *environmental* footprint, and also payback *society* (especially directly affected local population) with alternate better facilities and compensation (may be with few minor exceptions or irregularity on case-to-case basis).

**Note- Conversion in gallon/ cusec has been given for the understanding only**

2. (i) **ROI**

**Division 'Z'**

Controllable Profit = ₹5,290K

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

ROI = 28.5%

**Division 'E'**

Controllable profit = ₹3,940K

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

ROI = 11.7%

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

(ii) **Bonus**

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

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

**Division 'Z'**

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 'E'**

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

Therefore Bonus = NIL

### **(iii) Discussion**

JAM 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 'E' are almost double the total assets of Division 'Z'. The major reason behind this is that Division 'E' 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 'E' would have been 19.62% resulting in payment of a bonus ₹1,44,000 ( $7 \times ₹21,600 = ₹1,51,200$ ; subject to maximum of ₹1,44,000) rather than the nothing. JAM 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 X Ltd. altogether. On the other hand, SAM 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 'Z's trade payables are over double those of Division 'E'. In part, one would expect this due to higher sales (almost 66% more than Division 'E') and low cash levels at Division 'Z'. Higher trade payable leads to reduction in net assets figures. The fact that X Ltd. is rewarding SAM 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 'Z' and 22.64% for Division 'E'. Therefore it can be seen that Division 'E' is performing better if capital employed is ignored. ROI is simply making the division 'E's performance worse.

JAM 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 X Ltd. 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 'E's manager still seems to be acting for the benefit of the X Ltd. but the other manager is not. The fact that one manager is receiving a much bigger bonus than the other is not justifiable here and may result in conflict in long run. This is disappointing for the company especially in the situation when the divisions need to work in unison.

3. (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
<b>Total Cost</b>		<b>61,50,000</b>	<b>615</b>
<b>Profit</b>		<b>13,50,000</b>	<b>135</b>

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.

- (ii) 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.
- (iii) 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, care 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 be taken the product quality, characteristics and utility are maintained.

4. (a) For each day, 'F' spends ₹360 per clerk (₹90 per hr. × 4 hrs.). Therefore, 'F' 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, 'F' 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 'F' because there is a cost saving of ₹5,59,000. But, non- financial factors should also be taken into consideration.

### **(b) Decision Making – P Ltd.**

- (i) With increasing completion, dynamic market changes, changing needs of customers, *non-financial* and *ethical considerations* have gained relevance in the decision- making process. A company may face the dilemma of meeting customers' needs while protecting employees' rights. While there are no clear-cut parameters to measure the impact of such decisions, they have a long-term impact on the company's operations that ensures profitability and sustainability of an organization.

In the given scenario, a customer who contributes close to 60% of P Ltd.'s profits has been making turnaround demands that are unreasonable for the company employees to meet. P Ltd. has to decide whether to continue doing business with the customer based on the current terms or protecting the work environment of its employees. In the current scenario, it is in P's long term interests to protect its employees' rights (a non-financial consideration). Keeping this approach in mind, P Ltd. decided to terminate business with the profitable client. While this had a significant impact on revenues in the short term, in the long run P Ltd. was able to get business from new clients. Also, realizing the value of service provided, the dropped client came back with projects on equitable terms. Therefore, even though it did not make financial sense in the short run, decisions based on non-financial metrics played an important role in ensuring P Ltd.'s long term sustainability.

**OR**

- (ii) **Qualitative factors to consider while making the outsourcing and make or buy decisions:**

- (a) Quality of goods produced outside vs. in-house production of the component. Outsourcing or buying a component from the external market, should not impact the overall quality of the product. Therefore, *any component critical for a product would generally not be outsourced unless its supplier gives quality assurance.*



- (b) *Reliability of suppliers* in the outsourcing arrangement. Assurance must be given by the supplier in terms of both quality and timely delivery of components for the given price. Also, there must be a sufficient pool of suppliers from whom the company can buy the product. If one supplier closes shop, there must be alternate suppliers available.
- (c) *Availability of skilled labor and infrastructure* to make the component in-house. If not available, then the component may have to be bought from the external market.
- (d) *Regularity of demand for the product* – If made in-house, seasonal demand for a product may result in the risk of holding high inventories (including that of raw materials) or making high capital investments that will prove unproductive during off-season. Therefore, *outsourcing or buying from external market may be more viable when the demand for the final product is seasonal.*
- (e) *Risk of technological obsolescence for the component* – when the risk is higher company may favor outsourcing.
- (f) *Confidentiality of process or patent of process* – Confidential processes or critical components may not be outsourced.
- (g) The shutting down of company's manufacturing facility might have a negative impact on the morale of remaining employees.
- (c) (i) The situation is governed by the actions of the manager of 'Yu'. Based on a transfer price of ₹180 per component, the total variable cost per unit of Product B will be ₹216

Demand	Selling Price (₹)	Variable Cost (₹)	Contribution (₹)	Total Contribution (₹'000)
1,000 units	480	216	264	264
2,000 units	440	216	224	448
3,000 units	400	216	184	552
4,000 units	360	216	144	576
5,000 units	320	216	104	520
6,000 units	268	216	52	312

'Yu' will produce 4,000 units of Product B and will therefore order 4,000 of Component A from 'Xu'.

Particulars	Xu (₹'000)	Yu (₹'000)	Group (₹'000)
Revenue	720	1,440	1,440
Less: Variable Costs	240	864	384
Less: Fixed Costs	200	300	500
Profit	280	276	556

- (ii) The situation for the group should be judged using the total marginal costs of the divisions. This will give a variable cost per Product B of ₹ 96.

Demand	Selling Price (₹)	Variable Cost (₹)	Contribution (₹)	Total Contribution (₹'000)
1,000 units	480	96	384	384
2,000 units	440	96	344	688
3,000 units	400	96	304	912
4,000 units	360	96	264	1,056
5,000 units	320	96	224	1,120
6,000 units	268	96	172	1,032

The profit maximising output is 5,000 units of Product B. This will earn a total monthly profit for the Shenzhen Group of ₹ 6,20,000 (₹11,20,000 - ₹ 5,00,000).

5. (a) Primary goal of investor –owned firms is shareholder wealth maximisation, which translates to stock price maximisation. Management Consultant's plan is looking good for the ABC as there is a positive impact on the profitability (₹30 lacs) of the company. Also, ABC operates in a competitive environment so for its survival, it has to work on plans like above.

There is second side of coin that cannot also be ignored i.e., **business ethics**. It is easily possible to manage drawing of excess water, but it is not an ethical practice as the company has *responsibilities towards* use of natural resources like water and protecting the environment.

Besides, a whistle-blower complaint to the water authorities can land the company into trouble in terms of penalties, a *financial impact* and also such penalties are disallowed for income tax purposes. It is possible that such a violation may be reported in the media causing *disrepute to the name* of the company. It can also make *investors* in the share market stay away from the company as it has ethical governance issues. The company will face challenges in obtaining other

*government approvals* when it will plan expansion as this violation may have to be reported on the applications seeking approvals.

### **Overall**

May be ABC would be able to earn profit due to this plan in *short run*, but it will tarnish the image of the ABC which would hurt profitability in *long run*. Therefore, before taking any decision on this plan, ABC should analyse both qualitative and quantitative factors.

### **(b) 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

$$\begin{aligned}\text{Labour Rate Variance} &= \text{Standard Cost of Actual Time} - \text{Actual Cost} \\ &= (\text{SR} \times \text{AH}) - (\text{AR} \times \text{AH})\end{aligned}$$

$$\begin{aligned}
 & \text{Or} \\
 & = (SR - AR) \times AH \\
 & = (\text{₹}8.00 - \text{₹}8.14^*) \times 1,50,000 \text{ hrs.} \\
 & = \text{₹}21,000 \text{ (A)}
 \end{aligned}$$

(\*)

$$\begin{aligned}
 \text{Actual Labour Rate per hour} & = \frac{\text{Actual Paid}}{\text{Actual Hours}} \\
 & = \frac{\text{₹} 12,21,000}{1,50,000 \text{ hrs.}} \\
 & = \text{₹}8.14
 \end{aligned}$$

$$\begin{aligned}
 \text{Labour Efficiency Variance} & = \text{Standard Cost of Standard Time for Actual Production} - \text{Standard Cost of Actual Time} \\
 & = (SH \times SR) - (AH \times SR)
 \end{aligned}$$

$$\begin{aligned}
 & \text{Or} \\
 & = (SH - AH) \times SR \\
 & = (1,56,000^{\text{s}} \text{ hrs.} - 1,50,000 \text{ hrs.}) \times \text{₹}8.00 \\
 & = \text{₹}48,000 \text{ (F)}
 \end{aligned}$$

(\$)

$$\begin{aligned}
 \text{Standard Hours} & = \text{Actual Production} \times \text{Std. hrs. per unit} \\
 & = 52,000 \text{ units} \times 3 \text{ hrs.} \\
 & = 1,56,000 \text{ hrs.}
 \end{aligned}$$

6. (a) (i) **Calculation of 'Total Labour Hours' over the Life Time of the Product 'Kitchen Care'**

The average time per unit for 250 units is

$$\begin{aligned}
 Y_x & = ax^b \\
 Y_{250} & = 30 \times 250^{-0.3219} \\
 Y_{250} & = 30 \times 0.1691 \\
 Y_{250} & = 5.073 \text{ hours}
 \end{aligned}$$

$$\begin{aligned}
 \text{Total time for 250 units} & = 5.073 \text{ hours} \times 250 \text{ units} \\
 & = 1,268.25 \text{ hours}
 \end{aligned}$$

The average time per unit for 249 units is

$$Y_{249} = 30 \times 249^{-0.3219}$$

$$Y_{249} = 30 \times 0.1693$$

$$Y_{249} = 5.079 \text{ hours}$$

$$\begin{aligned} \text{Total time for 249 units} &= 5.079 \text{ hours} \times 249 \text{ units} \\ &= 1,264.67 \text{ hours} \end{aligned}$$

$$\begin{aligned} \text{Time for 250}^{\text{th}} \text{ unit} &= 1,268.25 \text{ hours} - 1,264.67 \text{ hours} \\ &= 3.58 \text{ hours} \end{aligned}$$

$$\begin{aligned} \text{Total Time for 1,000 units} &= (750 \text{ units} \times 3.58 \text{ hours}) + 1,268.25 \text{ hours} \\ &= 3,953.25 \text{ hours} \end{aligned}$$

(ii) **Profitability of the Product 'Kitchen Care'**

Particulars	Amount(₹)	Amount(₹)
Sales (1,000 units)		50,00,000
Less: Direct Material	18,50,000	
Direct Labour (3,953.25 hours × ₹ 80)	3,16,260	
Variable Overheads (1,000 units × ₹1,000)	10,00,000	31,66,260
Contribution		18,33,740
Less: Packing Machine Cost		5,00,000
Profit		13,33,740

(iii) **Average 'Target Labour Cost' per unit**

Particulars	Amount (₹)
Expected Sales Value	50,00,000
Less: Desired Profit (1,000 units × ₹ 800)	8,00,000
Target Cost	42,00,000
Less: Direct Material (1,000 units × ₹ 1,850)	18,50,000
Variable Cost (1,000 units × ₹ 1,000)	10,00,000
Packing Machine Cost	5,00,000
Target Labour Cost	8,50,000
Average Target Labour Cost per unit (₹ 8,50,000 ÷ 1,000 units)	850

(iv) Target cost is the difference between estimated selling price of a proposed product with specified functionality and quality and the target margin. This is a cost management technique that aims to produce and sell products that will ensure the target margin. It is an integral part of the product design. While designing the product, the company needs to understand what value target customers will assign to different attributes and different aspects of quality. This requires use of techniques like value engineering and value analysis. Intensive marketing research is required to understand customer preferences and the value they assign to each attribute and quality parameter. This insight is required to be developed must before the product is introduced. The company plays within the space between the maximum attributes and quality that the company can offer and the minimum acceptable to target customers. Therefore in absence of intensive marketing research, the target costing technique cannot be used effectively.

(b) 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.