CMA JUNE-2020 EXAMINATION
OPERATIONAL LEVEL
P1. PERFORMANCE OPERATIONS

Model Solution

Solution of the Q. No. 2(a)

Value Analysis is a systematic interdisciplinary examination of the factors which affect the cost of a product in order to determine the means of achieving the specified purpose in the most economical manner while meeting the required level of quality and reliability.

Functional Cost Analysis is a method that can be applied to examine the component costs of a product or service in relation to the value as perceived by the customer. Functional Cost Analysis can be applied to new products and breaks the product down into its component parts. For example a garden table may have the function to fold completely flat and therefore require much less storage space. The outcome of the analysis is to improve the value of the product while maintaining costs and or reduce the costs of the product without reducing value.

Value Analysis may therefore be viewed as a cost reduction and problem solving technique that analyses an existing product in order to identify and reduce or eliminate any costs which do not contribute to value or performance.

In contrast, Functional Cost Analysis focuses on the value to the customer of each function of the product and consequently allocates resources to those functions from which the customer gains the most value.

It is clear from the scenario that SBC needs to be able to reduce its selling prices in order to compete in the market. This selling price reduction can only be sustained by a reduction in SBC's unit costs; however such a reduction must not be achieved by compromising on quality.

Both value analysis and functional cost analysis have potential to help SBC but value analysis is likely to be a more useful technique because garden tables and chairs are products that are sold more on the basis of their use value rather than their esteem value.

(b)

Variable cost = Tk.50 per employee per month
Fixed costs = Tk.10,000 per month

	Activity No employees	*Cost* Tk.
High	1,300	75,000
Low	1,175	68,750
	125	6,250

Variable cost per employee = Tk.6,250/125 = Tk.50

For 1,175 employees, total cost = Tk.68,750

Total cost = variable cost + fixed cost

Tk.68,750 = (1,175 × Tk.50) + fixed cost

∴ Fixed cost = Tk.68,750 – Tk.58,750 = Tk.10,000

(c)

(i) Planning variance	**Tk.**
Revised standard cost (780 × 4.5kg × Tk.6.50)	22,815
Original standard cost (780 × 4.5kg × Tk.6.00)	21,060
	1,755 (A)

Operational price variance	Tk.
Actual cost of actual kg used	14,175
Revised standard cost of actual kg (2,250 × Tk.6.50)	14,625
	450 (F)

Operational usage variance

780 units should have used (× 4.5 kg)	3,510 kg
but did use	2,250 kg
Operational usage variance in kg	1,260 kg (F)
× revised standard price per kg	× Tk.6.50
Operational usage variance in	Tk. Tk.8,190 (F)

(ii) Three possible courses of a favorable operational usage variance are as follows.

(i) The material was of a higher quality than in the standard therefore wastage was lower than standard.

(ii) The original standard usage per unit was set too low.

(iii) The direct labour were more highly skilled than standard and therefore they used the material more efficiently than standard.

(d)

(i) The carrying costs are the average inventory times the cost of carrying an individual unit, so:
Carrying costs = (450/2) (Tk. 37) = Tk. 8,325

(ii) The order costs are the number of orders times the cost of an order, so:
Restocking costs = 52(Tk. 125) = Tk. 6,500

(iii) The economic order quantity is:
EOQ = [(2T × F)/CC]1/2 EOQ = [2(52) (450) (Tk. 125)/Tk. 37]1/2 EOQ = 397.63

The number of orders per year will be the total units sold per year divided by the EOQ, so:
Number of orders per year = 52(450)/397.63
Number of orders per year = 58.85

The firm's policy is not optimal, since the carrying costs and the order costs are not equal. The company should decrease the order size and increase the number of orders.

(e)

Mizan

As a risk neutral investor Mizan will base his decision on the expected value of each investment. These are calculated as follows:
Investment A = (Tk. 6,000x0.1) + (Tk. 5,000x0.4) + (Tk. 4,000x0.5) = Tk. 4,600
Investment B = (Tk. 14,000x0.1) + (Tk. 3,000x0.4) + (Tk. 500x0.5) = Tk. 2,850
Investment C = (Tk. 3,000x0.1) + Tk. 5,000x0.4) + (Tk. 8,000 x 0.5) = Tk. 6,300
Mizan will therefore choose to invest in Investment C as it has the highest overall expected value.

Zahir

As a risk seeker Zahir will ignore the expected value and probabilities, and he will focus solely on the payouts. He will apply the maximax criteria and consider where the highest payout might arise. The highest possible return is the Tk. 14,000 that arises in a good market state for investment B. Zahir will therefore choose to invest in Investment B.

Jaman

To apply the minimax regret criteria Jaman will have to create a regret table as follows:

State of the economy	Regret		
	A Tk.	B Tk.	C Tk.
Good	0	0	5,000
Fair	1,000	9,000	3,000
Poor	2,000	13,500	0

If Jaman where to invest in Investment A, the maximum regret would be Tk. 2,000, in B it would be Tk. 13,500 and in C it would be Tk. 5,000. Jaman will therefore choose to invest in Investment A as it has the lowest maximum regret of the three investments.

Solution of the Q. No. 3

*Budgeted fixed production costs ÷ Budgeted output (normal level of activity) =Tk.1,600 ÷ 800 units Absorption rate = Tk.2 per unit produced.

During the quarter, the fixed production overhead absorbed was 220 units × Tk.2 = Tk. 440.

*	Actual fixed production overhead	400 (¼ of Tk. 1,600)
	Absorbed fixed production overhead	440
	Over absorption of overhead	40

(a) **Profit for the quarter, absorption costing**

	Tk.	Tk.
Sales (160 × Tk.20)		3,200
Production costs		
Variable (220 × Tk.8)	1,760	
Fixed (absorbed overhead (220 × Tk.2))	440	
Total (220 × Tk.10)	2,200	
Less closing inventories (60 × Tk.10)	600	
Production cost of sales	1,600	
Adjustment for over-absorbed overhead	40	
Total production costs		1,560
Gross profit		1,640
Less: sales and distribution costs		
variable (160 × Tk.4)	640	
fixed (1/4 of Tk.2,400)	600	
		1,240
Net profit		400

(b) **Profit for the quarter, marginal costing**

	Tk	Tk.
Sales		3,200
Variable production costs	1,760	
Less closing inventories (60 × Tk.8)	480	
Variable production cost of sales	1,280	
Variable sales and distribution costs	640	
Total variable costs of sales		1,920
Total contribution		1,280
Less: Fixed production costs incurred	400	
Fixed sales and distribution costs	600	
		1,000
Net profit		280

(c) The difference in profit is due to the different valuations of closing inventory. In absorption costing, the 60 units of closing inventory include absorbed fixed overheads of Tk.120 (60 × Tk.2) , which are therefore costs carried over to the next quarter and not charged against the profit of the current quarter. In marginal costing, all fixed costs incurred in the period are charged against profit.

Absorption costing profit	400
Fixed production costs carried forward in inventory values	120
Marginal costing profit	280

(d)

(i) **Fixed production costs** are incurred in order to make output. It therefore seems fair to charge all output with a **share** of these costs.

(ii) The requirements of the international accounting standard on inventory valuation (IAS 2) state that closing inventory values should include a **share** of **fixed production overhead**. Absorption costing **fulfils that requirement**.

(iii) Absorption costing is **consistent** with the **accruals concept** as a proportion of the costs of production are carried forward to be matched against future sales.

(iv) Absorption costing involves charging fixed overheads to a product. This means it is possible to ascertain whether it is profitable or not. The problem with calculating the contribution of various products made by an enterprise is that it may **not be clear** whether the **contribution** earned by each product is **enough to cover fixed costs**.

(v) Absorption costing is particularly useful in pricing decisions in a job or batch costing environment. It ensures that the profit markup is **sufficient to cover fixed costs**.

(e) **To:** managing director
From: management accountant
Date: 17 July 20X1
Subject: Inadequacy of traditional management accounting

Inadequacy 1

Traditional management accounting grew out of cost accounting and hence its roots are in manufacturing. For much of the twentieth century, manufacturing operated in a business environment in which the supplier was of utmost importance, competition was largely local and the speed of technical and social development, although rapid compared with earlier eras, was far slower than at present. This simple operating environment meant that an organisations' managers were able to anticipate events easily and plan with more certainty using minimal external information than is possible today. Now however, it is the customer who is king and the competitive environment constantly threatens a product's life cycle. To compete effectively organisations must therefore be flexible enough to cope with changes in customer requirements. Such a focus on customers and competition requires a more forward-looking approach, which must be substantially outward looking and focus on external information, as opposed to the backward-looking and inward-looking approach of traditional management accounting.

Inadequacy 2

The 'management' that traditional management accounting was primarily intended to serve was production management, hence the traditional emphasis on accounting for labour costs, materials costs and production overheads. Changes in organisations' cost structures and in the nature of costs have affected the relevance of such an emphasis, however, and have led to the use of possibly misleading information, especially with regard to overhead absorption.

Inadequacy 3

The **internal information** used by management accounting tended to be sourced from accounting systems which were directed towards financial reporting, but the classifications of transactions for reporting purposes **are not necessarily relevant for decision making**.

Solution of the Q. No. 4

(a)

Contribution Years 1 – 5

Year 1: 100,000 x Tk.20 = Tk.2,000k
Year 2: 100,000 x 1.2 = 120,000 x Tk.20 = Tk.2,400k x 1.04 = Tk.2,496k
Year 3: 120,000 x 1.2 = 144,000 x Tk.20 = Tk.2,880k x 1.04^2 = Tk.3,115k
Year 4: 144,000 x 1.2 = 172,800 x Tk.20 = Tk.3,456k x 1.04^3 = Tk.3,888k
Year 5: 172,800 x 1.2 = 207,360 x Tk.20 = Tk.4,147k x 1.04^4 = Tk.4,852k

Fixed Costs
Depreciation per annum = (Tk.10m – Tk.1.5m) / 5 = Tk.1.7m

Fixed costs (excluding depreciation) per annum
= Tk.2.5m – Tk.1.7m = Tk.0.8m

Taxation

	Year 1 Tk. 000	Year 2 Tk.000	Year 3 Tk.000	Year 4 Tk.000	Year 5 Tk.000
Contribution	2,000	2496	3115	3888	4852
Fixed Costs	(800)	(832)	(865)	(900)	(936)
Net Cash flows	1200	1664	2250	2988	3916
Tax depreciation	(2500)	(1875)	(1406)	(1055)	(1664)
Taxable profit	(1300)	(211)	844	1933	2252
Taxation @30%	390	63	(253)	(580)	(676)

Net Present Value

	Year 0 Tk.000	Year 1 Tk.000	Year 2 Tk. 000		Year 3 Tk.000		Year 4 Tk.000	Year 5 Tk.000	Year 6 Tk.000
Investment/ Residual value	(10,000)							1500	
Working Capital	(3000)	(120)	(125)		(130)		(135)	3510	
Net Cash Flow			1200	1664		2250		2988	3916
Tax Cash Flow			195		32		(127)	(290)	(338)
Net cash flow after tax	(13000	1275	1766		2024		2437	8209	(338)
Discount factor	1.000	0.893	0.797		0.712		0.636	0.567	0.507
Present Value	(13000)	1139	1408		1441		1550	4705	(171)

Net present value = - Tk.2,928k

The net present value is negative therefore the project should not go ahead.

(b)

The project is concerned with the education of children in computer science and with encouraging them to be involved in computer science at an early age. This is a new market for the company and may have long term benefits if children start to use full scale computers at an earlier age than normally would be expected.

Whilst the project makes a negative net present value the company may be able to improve its brand image if it is seen to be supplying relatively low cost computers to the education market. The company could benefit from being involved in this project as they are being seen to be concerned with the education needs of children.

(c)

(i)

	Year 0 Tk.000	Year 1 Tk.000	Year 2 Tk. 000	Year 3 Tk.000	Year 4 Tk.000	Year 5 Tk.000	Year 6 Tk.000
Net Cash flow After tax	(13000)	1275	1766	2024	2437	8298	(338)
Discount factor @4%	1.000	0.962	0.925	0.889	0.855	0.822	0.790
Present Value	(13000)	1227	1634	1799	2084	6821	(267)

Net present value at 4% discount rate = Tk. 298k

By interpolation:

IRR = 4% + ((Tk.298k / (Tk.298k + Tk.2,928)) x 8) = 4.74%

(ii)

The cost of capital is 12%.
(12 – 4.74) / 12 = 61%
For the project to be accepted the cost of capital would need to reduce by 61%.

= THE END =