

Paper 15 - Business Strategy and Strategic Cost Management

This paper contains 4 questions. All questions are compulsory, subject to instruction provided against each questions. All workings must form part of your answer. Assumptions, if any, must be clearly indicated.

Section A

1. DD is the India's premier public service broadcaster with more than 1,000 transmitters covering 90% of the country's population across an estimated 70 million homes. It has more than 20,000 employees managing its metro and regional channels. Recent years have seen growing competition from many private channels numbering more than 65, and the cable and satellite operators (C & S). The C & S network reaches nearly 30 million homes and is growing at a very fast rate.

DD's business model is based on selling half-hour slots of commercial time to the programme producers and charging them a minimum guarantee. For instance, the present tariff for the first 20 episodes of a programme is ₹30 lakhs plus the cost of production of the programme. In exchange the producers get 780 seconds of commercial time that he can sell to advertisers and can generate revenue. Break-even point for producers, at the present rates, thus is ₹ 75,000 for a 10 second advertising spot. Beyond 20 episodes, the minimum guarantee is ₹65 lakhs for which the producer has to charge ₹1,15,000 for a 10 second spot in order to break-even. It is at this point the advertisers face a problem - the competitive rates for a 10 second spot is ₹50,000. Producers are possessive about buying commercial time on DD. As a result the DD's projected growth of revenue is only 6-10% as against 50-60% for the private sector channels. Software suppliers, advertisers and audiences are deserting DD owing to its unrealistic pricing policy. DD has three options before it. First, it should privatize, second, it should remain purely public service broadcaster and third, a middle path. The challenge seems to be to exploit DD's immense potential and emerge as a formidable player in the mass media.

Required:

- (i) Discuss the best option, in your view, for DD.
- (ii) Analyze the SWOT factors the DD has.
- (iii) Explain the proposed alternatives which you suggested.
- (iv) State the basic objectives for conducting SWOT analysis.

[6+6+4+4]

Answer

- (i) For several years Doordarshan was the only broadcaster of television programmes in India. After the opening of the sector to the private entrepreneur (cable and satellite channels), the market has witnessed major changes. The number of channels has increased and also the quality of programmes, backed by technology, has improved. In terms of quality of programmers, opportunity to advertise, outreach activities, the broadcasting has become a popular business. Broadcasters too have realized the great business potential in the market. But for this, policies need to be rationalized and be opened to the scope of innovativeness not only in term of quality of programmes. This would not come by simply going to more areas or by allowing bureaucratic set up to continue in the organization.

Strategically the DD needs to undergo a policy overhaul. DD, out of three options, namely privatization, public service broadcaster or a middle path, can choose the third one, i.e. a combination of both. The whole privatization is not possible under the diversified political scenario. Nor it would be desirable to hand over the broadcasting emotively in the private hand as it proves to be a great means of communication of many socially oriented public programmers. The government could also think in term of creating a corporation (as it did by creating Prasar Bharti) and provide reasonable autonomy to DD. So far as its advertisement tariff is concerned that can be made fairly competitive. However, at the same time cost of advertising is to be compared with the

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reach enjoyed by the doordarshan. The number of viewers may be far more to justify higher tariffs.

- (ii) The SWOT analyses involve study of strengths, weaknesses, opportunities and threats of an organization. SWOT factors that are evidently available to the Doordarshan are as follows:

S - Strength

More than 1000 transmitters. Covering 90% of population across 70 million homes against only 30 million homes by C & S More than 20,000 employees.

W-Weakness

Rigid pricing strategy. Low credibility with certain sections of society, Quality of program's is not as good as compared to C & S network

O - Opportunities

Infrastructure can be leased out to cable and satellite channel. Digital terrestrial transmission, Regional focused channels, Allotment of time, slots to other broadcasters.

T- Threats

Desertion of advertisers and producers may result in loss of revenues. Due to quality of program the reach of C & S network is continuously expanding. As the C & S network need the trained staffs, some employees of DD may switchover and take new jobs, Best of the market-technology is being used by the private channels.

- (iii) It is suggested that the DD should adopt a middle path. It should have a mix of both the options. It should economize on its operational aspects and ensure more productivity in term of revenue generation and optimization of use of its infrastructure. Wherever, the capacities are underutilized, these may be lease)d out to the private operations. At the same time quality and viewership of programmes should be improved. Bureaucracy may reduce new strategic initiatives or make the organization less transparent. Complete privatization can fetch a good sum and may solve many of the managerial and operational problems. However, complete public monopoly is not advisable because that denies the government to fully exploit the avenue for social and public use. The government will also lose out as it will not be able to take advantage of rising potential of the market.

(iv) The basic objectives of conducting SWOT analysis are:

- To identify the shortcomings in the company's present skills and resources.
- To exploit the strengths of the company to achieve its objectives.
- To focus on profit-making opportunities in the business environment and for identifying threats.
- To highlight areas within the company, which are strong and which might be exploited more fully and weaknesses, where some defensive planning might be required to prevent the company from downfall.

2. Answer any two questions

[2×15 =30 marks]

- (a) (i) "Choice of strategy is influenced by some factors"- State the factors that influence the choice of strategy.**

(ii) Discuss about the Organizational Development and its characteristics.

(iii) Distinction between Strategic Management and Strategic Planning [5+5+5]

Answer:

- (i) Choice of strategy is a decision making process of a choice from among alternative strategies. It is the process of comparing the impact of the possible strategies on the firm and it implies tradeoff between courses of action. These decisions involve focusing on a few alternatives, considering the selection factors, evaluating the alternatives and making the actual choice.

Choice of strategy is influenced by following factors:-

- External Constraints:-** Choice of strategy is governed by the extent and degree of the firm's dependence on owners, customers, suppliers, and the govt.

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- **Intra-Organizational Forces:-** Decisions are influenced by the power play among different interest groups and by the degree of uncertainty.
- **Values and preferences and managerial attitudes towards risk:** - Evaluation of strategy is determined by personal values (truth, knowledge etc.) and attitude towards risk. Risk lover prefers high risky projects with high return. Risk averse prefers safer options.
- **Impact of past strategy:-** The choice of strategy may be influenced by the earlier strategy because it is starting point in the formulation of new strategy and decision maker is involved in past strategy.
- **Time constraint:-** Choice of strategy is influenced by the time dimension i.e., whether it will be short term or long term, whether it has immediate action or not.

(ii) **Organizational Development:-** Organizational development (OD) is a complex educational strategy designed to increase organizational effectiveness and wealth through planned involvement by a consultant using theory and techniques of applied behavioural science.

Characteristics of OD

- It is educational strategy, which attempts to bring about a planned change.
- It is concerned with improving organizational climate and culture.
- It related to real organizational problems instead of hypothetical classroom cases.
- It uses sensitivity training methods and emphasizes the importance of experimentally based training.
- Its change agents are almost external consultants outside of the organization.
- External change agents and internal organization executives establish a collaborative relationship involving mutual trust and influence, and jointly determined goals.
- It provides feedback data and information to the participants.
- It is a long-term approach concerned with people for increasing organizational effectiveness.
- It is research based as most of its interventions are based on research findings.

(iii) The basic difference between Strategic management and Strategic planning are as follows:

Strategic Management	Strategic Planning
It is focused on producing strategic results; new markets, new products, new technologies.	It is focused on making optimal strategic decisions.
It is management by results.	It is management by plans.
It is an organizational action process.	It is an analytical process.
It is broadens focus to include psychological, sociological and political variables.	It is focused on business, economic and technological variables.
It is about choosing things to do and also about the people who will do them.	It is about choosing things to do.

(b) (i) Enumerate the advantages of Strategic Planning.

(ii) Discuss the benefits of Strategic Alliance.

(iii) Describe about the Internal and Competitive Benchmarking

[5+5+5]

Answer:

(i) Strategic Planning

Strategic planning refers to the formulation of a unified, comprehensive and integrated plan to get the strategic advantages by challenging the environment. It is concerned with

appraising the environment in relation to the firm, identifying the strategies for the future with the best possible knowledge of their probable outcome and effect to obtain sanction for one of the alternatives, which is to be ultimately interpreted and communicated in operational terms. Thus strategic planning provides the framework within which future activities of firm are expected to be carried out.

Strategic planning has following advantages or usefulness:-

- According to different research studies, strategic planning contributes positively to the performance of enterprise and predicts better outcomes and isolates key factors of the firm.
- It is concerned with the allocation of resources to product market opportunities and concerned to realize the company's profit potential through selected strategies.
- It measures the strengths and weaknesses of the firm.
- It selects the optimum strategy from the alternatives considering the interest of the firm, personal values of top management and social responsibility of the firm.
- With fast changing product market condition, technology economic condition the strategic planning is the only means by which future opportunities and problems can be anticipated by company executives.
- It enables executives to provide necessary direction for the firm, to take full advantage of new opportunities and to minimize the risk.

(ii) Benefits of Strategic Alliance

Nowadays, strategic alliance has become a common strategy to businesses. Two or more enterprises choose to form a partnership and work cooperatively to achieve their mutually beneficial objectives.

In a plain view, strategic alliance just reflects the desire of enterprises to achieve their independent business objectives cooperatively. But, in the true fact of today's globalized and complex market place, there is the need to make such a business arrangement in order to gain competitive advantages among the fierce competitors in the market place.

Enterprises that enter into strategic alliance usually expect to benefit in one or more ways. Some of the potential benefits that enterprises could achieve are such as:

• **Gaining capabilities**

An enterprise may want to produce something or to enquire certain resources that it lacks in the knowledge, technology and expertise. It may need to share those capabilities that the other firms have. Thus, strategic alliance is the opportunity for the enterprise to achieve its objectives in this aspect. Further to that, in later time the enterprise also could then use the newly acquired capabilities by itself and for its own purposes.

• **Easier access to target markets**

Introducing the product into a new market can be complicated and costly. It may expose the enterprise to several obstacles such as entrenched competition, hostile government regulations and additional operating complexity. There are also the risks of opportunity costs and direct financial losses due to improper assessment of the market situations.

Choosing a strategic alliance as the entry mode will overcome some of those problems and help reduce the entry cost. For example, an enterprise can license a product to its alliance to widen the market of that particular product.

• **Sharing the financial risk**

Enterprises can make use of the strategic arrangement to reduce their individual enterprise's financial risk. For example, when two firms jointly invested with equal share on a project, the greatest potential that each of them stand to lose is only half of the total project cost in case the venture failed.

• **Winning the political obstacle**

Bringing a product into another country might confront the enterprise with political factors and strict regulations imposed by the national government. Some countries are politically restrictive while some are highly concerned about the influence of foreign firms

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on their economics that they require foreign enterprises to engage in the joint venture with local firms. In this circumstance, strategic alliance will enable enterprises to penetrate the local markets of the targeted country.

• Achieving synergy and competitive advantage

Synergy and competitive advantage are elements that lead businesses to greater success. An enterprise may not be strong enough to attain these elements by itself, but it might possible by joint efforts with another enterprise. The combination of individual strengths will enable it to compete more effectively and achieve better than if it attempts on its own.

(iii) Internal Benchmarking

It involves looking within the organization to determine other departments, locations and projects which have similar activities and then defining the best practices amongst them. It involves seeking partners from within the same organization. For example, from business units located in different areas. The main advantages of internal benchmarking are that access to sensitive data and information are easier; standardized data is often readily available; and usually less time and resources are needed. There may be fewer barriers to implementation as practices maybe relatively easy to transfer across the same organization. However real innovation may be lacking and best in class performance is more likely to be found through external benchmarking.

Competitive Benchmarking

It involves examining the products, services and processes of competitors and then comparing them with their own. It involves the comparison of competitors' products, process and business results with own. It requires that the company perform a detailed analysis of its competitors' products, services, and processes. Benchmarking partners are drawn from the same sector. However to protect confidentiality it is common for the companies to undertake this type of benchmarking through trade associations or third parties.

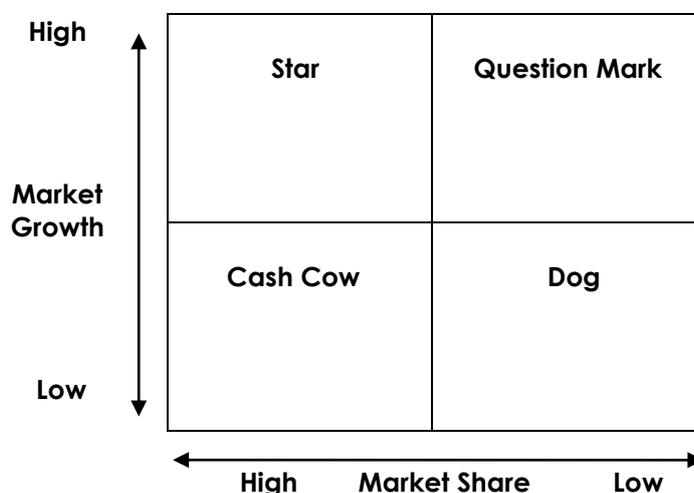
(c) (i) Explain about the BCG Matrix.

(ii) State the drawbacks of Vertical Integration.

[10+5]

Answer:

The Boston Consulting Group (BCG) have developed a matrix, based on empirical research, which analyses products and businesses by market share and market growth. This growth/share matrix for the classification of products into cash cows, rising stars and questions marks is known as the Boston classification.



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- a. **Stars** are products with a high share of a high growth, market. In the short term, these require capital expenditure, possibly in excess of the cash they generate, in order to maintain their market position, but promise high returns in the future.
- b. In due course, however, stars will become **cash cows**, with a high share of a low-growth market. Cash cows need very little capital expenditure and generate high levels of cash income. The important strategic feature cash cows are that they are generating high cash returns, which can be used to finance the stars.
- c. A **question mark** (sometimes called **problem child**) is a product in a high growth market, but has a low market share. A decision needs to be taken about whether the product justifies considerable expenditure in the hope of increasing its market share, or whether it should be allowed to die quietly as it are squeezed out of the expanding market by rival products. Because, considerable expenditure would be needed to turn a question mark into a star by building up market share, question marks will usually be poor cash generators and show a negative cash flow.
- d. **Dogs** are products with a low share of a low growth market. They may be ex-cash cows that have now fallen on hard times. Dogs should be allowed to die or should be killed off.
Although they will show only a modest net cash flow or even a modest cash inflow, they are cash traps which tie up funds and provide a poor return on investment, and not enough to achieve the organization's target rate of return.
- e. There are also **infants** (i.e. products in an early stage of development) and **warhorse** (i.e. products that have been cash cows in the past, and still are making acceptable sales and profits even now) and **dodos** (low share, negative growth, and negative cash flow).

(ii) Vertical Integration:

Vertical integration represents an expansion or extension of the firm by integrating preceding or successive productive processes. That is, the firm incorporates more processes toward the original source of raw materials (backward integration) or toward the ultimate consumer (forward integration). For example, an automobile manufacturer might supply its own parts or make its own engines to secure sources of supply.

Drawbacks of Vertical Integration

While some of the benefits of vertical integration can be quite attractive to the firm, the drawbacks may negate any potential gains. Vertical integration potentially has the following disadvantages:

- Capacity balancing issues. For example, the firm may need to build excess upstream capacity to ensure that its downstream operations have sufficient supply under all demand conditions.
- Potentially higher costs due to low efficiencies resulting from lack of supplier competition.
- Decreased flexibility due to previous upstream or downstream investments. (Note however, that flexibility to coordinate vertically-related activities may increase.)
- Decreased ability to increase product variety if significant in-house development is required.
- Developing new core competencies may compromise existing competencies.
- Increased bureaucratic costs.

Question.3 (Compulsory)

[20 marks]

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- (a) (i) State Bank of India (SBI) is examining the profitability of its premier Account, a combined saving and checking account. Depositors receive a 7 percent annual interest rate on their average deposit. SBI earns an interest rate spread of 3 percent (the difference between the rate at which it lends money and the rate it pays depositors) by lending money for home loan purpose at 10 percent. Thus, SBI would gain ₹60 on the interest spread if a depositor has an average premier Account balance of ₹2,000, that is $₹2,000 \times 3\% = ₹60$

The premier Account allows depositors unlimited use of services such as deposits, withdrawals, checking accounts, and foreign currency drafts. Depositors with premier Account balances of ₹1,000 or more receive unlimited free use of services. Depositors with minimum balances of less than ₹1,000 pay a ₹20-a-months service fee for their premier Account.

SBI recently conducted an activity-based costing study of its services. It assessed the following costs for six individual services. The use of these services in current year by three customers is as follows:

Particulars	Activity-based Cost per Transaction	Nitin	Arvinder	Sanjay
Deposit/withdrawal with teller	₹2.50	40	50	5
Deposit/withdrawal with automatic teller machine (ATM)	0.80	10	20	16
Deposit/withdrawal on prearranged monthly basis	0.50	0	12	60
Bank checks written	8.00	9	3	2
Foreign currency drafts	12.00	4	1	6
Inquiries about account balance	1.50	10	18	9
Average premier account balance for current year		₹1,100	₹800	₹25,000

Assume Nitin and Sanjay always maintain a balance above ₹1,000, whereas Arvinder has a balance below ₹1,000.

Required:

- I. Compute the current year profitability of Nitin, Arvinder and Sanjay's premier Accounts at SBI.
- II. What evidence is there of cross-subsidization among the three premier Account? Why might SBI worry about the cross-subsidization if the premier account product offering is profitable as a whole?
- III. What changes would you recommend for SBI's premier account?
[6+5+3]

Answer:

I.

	Nitin	Arvinder	Sanjay	Total
Revenues				
Spread revenue on annual basis (3% x ; ₹1,100, 800, 25,000)	₹33	₹24	₹750	₹807
Monthly fee charges (₹20 x ;0, 12, 0)	0	240	0	240
Total revenues	33	264	750	1,047
Costs				
Deposit/Withdrawal with teller ₹2.50 x 40, 50, 5	100	125	12.5	237.5
Deposit/Withdrawal with ATM ₹0.80 x 10, 20, 16	8	16	12.8	36.8
Deposit/Withdrawal on prearranged basis ₹0.50 x 0, 12, 60	0	6	30.0	36.0
Bank checks written ₹8 x 9, 3, 2	72	24	16.0	112.0

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Foreignn currency drafts ₹12 x 4, 1, 6	48	12	72.0	132.0
Inquiries ₹1.50 x 10, 18, 9	15	27	13.5	55.5
Total costs	243	210	156.8	609.8
Operating income (loss)	(210)	54	593.2	437.2

The assumption that the Nitin and Sanjay accounts exceed ₹1,000 every month and the Arvinder account is less than ₹1,000 each month means the the monthly charges apply only to Arvinder.

- ii. Cross subsidization across individual Premier Account occurs when profits made on some accounts are offset by losses on other accounts. The aggregate profitability on the three customers is ₹437.20. The Sanjay account is highly profitable (₹593.20), while the Nitin account is sizably unprofitable. The Arvinder account shows a small profit but only because of the ₹240 monthly fees. It is unlikely that Arvinder will keep paying these high fees and the SBI would want Arvinder to pay such high fees from a customer relationship standpoint.

The fact also suggests that the customers do not use the bank services uniformly. For example, Nitin and Arvinder have a lot of transactions with the teller or ATM, and also inquire about their account balances more often than Sanjay. This suggests cross-subsidization. SBI should be very concerned about the cross-subsidization. Competition likely would "understand" that high balance low-activity type accounts (such as Sanjay) are highly profitable. Offering free services to these customers is not likely to retain these accounts if other banks offer higher interest rate. Competition likely will reduce the interest rate spread SBI can earn on the high-balance low-activity accounts they are able to retain.

- iii. Possible changes SBI could make are:
- Offer higher interest rates on high-balance accounts to increase SBI's competitiveness in attracting and retaining these accounts.
 - Introduce charges for individual services.

3.(a) (ii) Explain the important terms which is used in Activity Based Costing.

[6]

Answer:

The operation of the ABC system involves the use of the following terms:

- Activity: An activity means an aggregate of closely related tasks having some specific functions which are used for completion of goal. For example, customer order processing is an activity. It includes receiving order from customers, interacting with production department regarding capacity to produce and giving commitment to the customer regarding delivery time. Other activities may be assembling, packaging, advertising etc.
- Resource: Resources are elements that are used for performing the activities or factors helping in the activities. For example, order receive, telephone, computers etc. are resources in customer order processing activity. It may include material, labour, equipment, office supplies etc.
- Cost: Cost is amount paid for resource consumed by the activity. For example, salaries, printing stationery, telephone bill etc. are cost of customer order processing activity. It is also known as activity cost pool.
- Cost object: It refers to an item for which cost measurement is required. E.g. a product, a service, or a customer.
- Cost pool: A cost pool is a term used to indicate grouping of costs incurred on a particular activity which drive them.
- Cost driver: Any element that would cause a change in the cost of activity is cost driver. Actually cost drivers are basis of charging cost of activity to cost object. Cost drivers are used to trace cost to product by using a measure of resources consumed by each activity. For example, frequency of order, number of order etc. may be cost driver of customer order processing activity. Cost driver may be involved two parts:
 - Resource cost driver
 - Activity cost driver

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Question.4 Answer any two questions

[2×15 =30 marks]

(a) (i)

A company produces two products X and Y, the production cost of which are show below:

	X (₹)	Y (₹)
Direct material cost	10	10
Direct labour cost	5	9
Variable overhead	5	9
Fixed overhead	5	9
	25	37

Fixed overhead is absorbed on the basis of direct labour cost.

The product passes through two processes, Assembly and Finishing. The associated labour cost is ₹10 per direct labour hour in each. The direct labour associated with the two products for these processes are shown below:

Process	Time taken	
	Product X	Product Y
Assembly	10 minutes	40 minute
Painting	20 minutes	15 minutes

The current market price for X is ₹65 and for Y it is ₹52. At these prices, the market will absorb as many units of X and Y as the company can produce. The capacity of the company to produce X and Y is limited by the available capacity of the two processes. The company operates two shifts of 8 hours each. Painting is a single process line and two hours in each shift will be down time. Assembly can process two units simultaneously, although this will double the requirement of direct labour. Painting can operate for full 16 working hours each day.

What production plan should the company follow in order to maximize profit under (I) Traditional Costing System and (II) Throughput Accounting System?

[3+3]

Answer:

The total maximum processing time per day in 2 shifts:

Assembly	(2x8 hours)x 60 minutes	=960 minutes
Painting	(2x6 hours)x 60 minutes	=720 minutes
Expected output (units) per day	X	Y
Assembly	$(960/10) \times 2 = 192$	$(960/40) \times 2 = 48$ [*2 units at a time]
Painting	$(720/20) = 36$	$(720/15) = 48$

The key factor or the constraint is the time for painting.

I. Under Traditional approach

Contribution of X per minute in painting	$= ₹(65-20) \div 20$	= ₹2.25
Contribution of Y per minute in painting	$= ₹(52-28) \div 15$	= ₹1.60

So, produce maximum possible number of X for $(36 \text{ units} \times ₹45) = ₹1,620$ (contribution)

II. Under throughput approach-

Contribution of X per minute in painting	$= ₹(65-10) \div 20$	= ₹2.27
Contribution of Y per minute in painting	$= (52-10) \div 15$	= ₹2.80

So, produce maximum possible number of Y for $(48 \text{ units} \times ₹42) = ₹2,016$ (contribution)

4(a) (ii)

A company has developed a special purpose Electronic Security Device and once introduced in the market, the same expected to have a life cycle of 3 years from the time of its introduction in the market before the device becomes obsolete due to technological advancement of other competitive products.

You have been asked by the company to prepare a product life cycle budget.

The following information is available:

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	Year I	Year II	Year III
No. of units to be manufactured and sold	50,000	2,00,000	1,50,000
Price per device (₹)	500	400	350
R & D and Design cost (₹)	9,00,000	1,00,000	Nil
Production cost:			
Variable cost per device(₹)	200	150	150
Fixed cost(₹)	70,00,000	70,00,000	70,00,000
Marketing cost:			
Variable cost per device(₹)	100	70	60
Fixed cost(₹)	30,00,000	25,00,000	25,00,000
Distribution cost:			
Variable cost per device(₹)	50	50	50
Fixed cost(₹)	10,00,000	10,00,000	10,00,000

Prepare the budgeted life cycle operating profit.

It has been further indicated that if a discount of 10% is given to customer, the unit to be sold per year will increased by 5%. Would you recommend introduction of such discount? [3+6]

Answer:

Preparation Of Budgeted Life Cycle Operating Profit

(₹ In Lakh)

	Year I	Year II	Year III	Life Cycle
Sales Revenue	250.00	800.00	525.00	1,575.00
R & D, Design cost	9.00	1.00		10.00
Production cost:				
Variable cost	100.00	300.00	225.00	625.00
Fixed cost	70.00	70.00	70.00	210.00
Marketing Cost:				
Variable cost	50.00	140.00	90.00	280.00
Fixed cost	30.00	25.00	25.00	80.00
Distribution cost:				
Variable cost	25.00	100.00	75.00	200.00
Fixed cost	10.00	10.00	10.00	30.00
	294.00	646.00	495.00	1,435.00
Operating profit	(44.00)	154.00	30.00	140.00

Operating results if discount given:

WN: Revised sales revenue	Total Units X SP (₹)	=Total (₹ Lakh)
Year I	50,000+ 5%=52,500 X 450	=236.25
Year II	2,00,000+5%=2,10,000X 360	=756.00
Year III	1,50,000+5%= 1,57,500X 315	=496.12
		1,488.37

Budgeted Life Cycle Profit (With discount of 10% to customers and sales increase by 5%)
(In ₹ Lakh)

	Year I	Year II	Year III	Total Life Cycle
Sales Revenue	236.25	756.00	496.12	1,488.37
R & D, Design	9.00	1.00		10.00
Production cost:				
Variable	105.00	315.00	236.25	656.25
Fixed	70.00	70.00	70.00	210.00
Marketing Cost:				
Variable	52.50	147.00	94.50	294.00
Fixed	30.00	25.00	25.00	80.00
Distribution Cost:				

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Variable	26.25	105.00	78.75	210.00
Fixed	10.00	10.00	10.00	30.00
	302.75	673.00	514.50	1,490.25
Operating profit	(66.50)	83.00	(18.38)	(1.88)

The second alternative is not acceptable, as that would result in overall loss during the life cycle.

4(b).(i)

Explain the theory of constraints?

[5]

Answer:

The theory of constraints (TOC) focuses attention on constraints and bottlenecks within the organization which stands in the way for speedy production. The theory was developed by Goldartt and Cox to help managers to improve overall profitability of the concern. The main concept is to maximize the rate of manufacturing outputs. The theory was turned into an accounting system known as Throughput Accounting. TOC views that the peace of production is guided by the bottleneck within the organization; hence the same should be either removed or their influence to hinder production be minimized.

In the new approach to production management called OPT (optimized production technology), TOC advocates a throughput orientation whereby throughput must be given first priority, inventories second and operational expenses last. The TOC adopts a short-run time horizon and treats all operating expenses (including direct labour but excluding direct materials) as fixed, thus implying that variable costing should be used for decision-making, profit measurement and inventory valuation. In substance, TOC appears to be merely a restatement of contribution per limiting factor; and in reality, TOC deals with a LP problem of maximizing throughput contribution subject to constraint of bottleneck resources.

4(b).(ii)

Apollo Company prepares its budgeted output and sales at its maximum capacity of 20,000 units for 2014. However, due to efficiency improvements, Apollo was able to sell 22,000 units for the year. Other data for 2014 follows as:

Budgeted fixed overhead costs	₹5,00,000
Budgeted selling price	100
Budgeted variable cost per unit	40

- I. Calculate the budgeted profit per unit, the operating income based on the budgeted profit per unit, and the flexible-budget operating income.
- II. Compute sales-volume variance and production-volume variance. What do each of these variance measures?

[4+6]

Answer:

I.		
Budgeted selling price		₹100
Budgeted variable cost per unit	₹40	
Budgeted fixed cost per unit (₹5,00,000 ÷ 20,000)	25	
Budgeted cost per unit		65
Budgeted profit per unit		₹35
Operating income based on budgeted profit per unit ₹35 per unit X 22,000 units		₹7,70,000
Flexible-budget operating income is revenue ₹100X 22,000		₹22,00,000
Variable cost ₹40X 22,000		8,80,000
Fixed costs		5,00,000
Operating income		8,20,000
Static-budget operating income is:		
Revenue ₹100X 20,000		20,00,000

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Variable costs ₹40X 20,000		8,00,000
Fixed costs		5,00,000
Operating income		₹7,00,000

- I. The sales volume variance recognizes that when Apollo sells 22,000 units instead of the budgeted 20,000, only the revenue and the variable costs are affected. Fixed cost remains unchanged.

Sales volume variance	[Budgeted selling price-Budgeted variable costs per unit X Difference in quantity of units sold relative to the static budget =(₹100-₹40)X 2,000	=60 X 2,000	=₹1,20,000F
Production-volume variance	Budgeted fixed overhead cost per unit X Difference in quantity of units sold relative to the static budget =₹5,00,000/20,000 ×2,000	=₹25×2,000	=₹50,000F

Compare the sales-volume variance and the production-volume variance. The ₹1,20,000F sales-volume variance explains the difference between the static-budget operating income and the flexible-budget operating income:

Static-budget operating income	₹7,00,000
Sales-volume variance	1,20,000F
Flexible-budget operating income	8,20,000

The ₹50,000F production-volume variance explains the difference between operating income based on the budgeted profit per unit and the flexible-budget operating income:

Operating income based on budgeted profit per unit	₹7,70,000
Production-volume variance	50,000
Flexible-budget operating income	8,20,000

Question.4 (c) (i)

An automobile production line turns out about 100 cars a day, but deviations occur owing to many causes. The production is more accurately described by the probability distribution given below:

Production per day	Probability	Production per day	Probability
95	0.03	101	0.15
96	0.05	102	0.10
97	0.07	103	0.07
98	0.10	104	0.05
99	0.15	105	0.03
100	0.20	Total	1.00

Finished cars are transported across the day, at the end of the each day; by ferry has space for only 101 cars.

Required:

- I. What will be the average number of cars waiting to be shipped?
- II. What will be the average area of empty space on the boat?

The fifteen random numbers are given: 20, 63, 46, 16, 45, 41, 44, 66, 87, 26, 78, 40, 29, 92, & 21

[3+3]

Answer:

Simulation of data of the Automobile Production Line

Production/day	Probability	Cumulative Probability	Random No. Range
95	0.03	0.03	0-2

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96	0.05	0.08	3-7
97	0.07	0.15	8-14
98	0.10	0.25	15-24
99	0.15	0.40	25-39
100	0.20	0.60	40-59
101	0.15	0.75	60-74
102	0.10	0.85	75-84
103	0.07	0.92	85-91
104	0.05	.97	92-96
105	0.03	1.00	97-99
Total	1.00		

Day	Random No.	Production	No. of cars waited to be shipped	No. of empty space on the boat
1	20	98	-	3
2	63	101	-	-
3	46	100	-	1
4	16	98	-	3
5	45	100	-	1
6	41	100	-	1
7	44	100	-	1
8	66	101	-	-
9	87	103	2	-
10	26	99	-	2
11	78	102	1	-
12	40	100	-	1
13	29	99	-	2
14	92	104	3	-
15	21	98	-	3
Total			6	18

- I. Average No. of cars waiting to be shipped: $6 \div 15 = 0.40$
- II. Average No. of empty space on the boat: $18 \div 15 = 1.2$

4 (c).(ii)

Two similar products A and B, manufactured by a company for a production period have the following data:

Particulars	Product A	Product B
Selling price (₹/unit)	50	70
Variable cost (₹/unit)	30	40
Labour hours per unit	2	6

Total fixed costs that have to be incurred irrespective of the type of product amounts to ₹ 1,80,000. Besides, there are specific fixed costs of ₹ 60,000 to be incurred only if A is produced and ₹ 72,000 to be incurred only if B is produced. Assume no inventory. At present, 7,500 units of A and 7,500 units of B are sold.

Required:

- I. What is the current Break-Even Point (BEP)?
- II. What is the minimum number of units to achieve BEP?
- III. If there are only 10,000 labour hours possible in production period, what would be the optimum product-mix?
[2×3=6]

Answer:

- I. Current BEP (both A and B produced):

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Total Fixed Cost = 60,000 + 72,000 + 1,80,000 = ₹ 3,12,000

Contribution of A = 20, B = 30, Average = 25 (equal no. of units A and B)

BEP = 3,12,000/25 = 12,480 units (i.e., 6,240 units of A and 6,240 units of B)

II. If only A is produced, BEP $(60,000 + 1,80,000)/20 = 12,000$ units

If only B is produced BEP $(72,000 + 1,80,000)/30 = 8,400$ units

Minimum number of units for BEP = 8,400 units of B

III. Contribution per labour hour A: $20/2 = 10$ and for B = $30/6 = 5$

With given 10,000 labour hours calculation of optimum product mix is not possible as with 10,000 labour hours one can produce only $10,000/10 = 1,000$ units of A & $10,000/5 = 2,000$ units of B which are much lower than their respective BEPs.

(A produced 1,000 units and B produced 2,000 units which are below the BEP)

4 (c).(iii)

“Kaizen Costing is an approach that explicitly incorporates continuous improvement during the budget period” Discuss the statement.

[3]

Answer:

‘Kaizen’ is a Japanese term for making improvement to a process through small incremental amounts, rather than through large innovation. Kaizen Costing focuses on the production process and the cost reductions are derived primarily through the efficiency of the production process. As the products are already in the manufacturing stage of their life cycles, the potential cost reductions are smaller- the aim of Kaizen costing being to reduce the cost of components and products by a pre-specified amount.

For example, each plant in a manufacturing unit may be assigned a target cost reduction ratio and this is applied to the previous year's actual costs to determine the target cost reduction. Kaizen Costing relies heavily on employee empowerment. They are assumed to have superior knowledge about how to improve processes because they are closest to the manufacturing processes and customers, and are likely to have greater insights into how costs can be reduced.