

COSTING OF SERVICE SECTOR

BASIC CONCEPTS AND FORMULA

Basic Concepts

1. Meaning of Costing of Service Sector

This is a method of ascertaining costs of providing or operating a service. This method of costing is applied by those undertakings which provide services rather than production of commodities.

2. Cost Units

(A) To External Customers	Cost Unit
(i) Hotel	Bed nights available, Bed night occupied
(ii) School	Student hours, Full time students
(iii) Hospital	Patient per day, Room per day
(iv) Accounting firm	Charged out client hours
(v) Transport	Passenger km., quintal km.
(B) Internal services	Cost Unit
(i) Staff canteen	Meals provided, No. of staff
(ii) Machine maintenance	Maintenance hours provided to user department
(iii) Computer department	Computer time provided to user department

3. Costing Methods Used In Service Sector

- (i) Job costing method
- (ii) Process costing method
- (iii) Hybrid costing method

4. Job costing method in service sector

The two significant costs which are incurred in service sectors are :

- (i) Direct labour

- (ii) Service overheads

5. Process costing method in service sector :

In this method the cost of service is obtained by assigning costs to masses of units and then computing unit costs on an average basis.

6. Customer costing in service sector

The central theme of this approach is customer satisfaction. For customer costing purpose, the costs are divided into following categories. These are:

- (i) Customer Specific costs
- (ii) Customer-line categories
- (iii) Company costs

Question 1

Discuss with examples, the basic costing methods to assign costs to services.

Answer

- (i) **Job costing method:** The cost of a particular service is obtained by assigning costs to a distinct identifiable service.
e.g. Job Costing method is used in service sectors – like Accounting Firm, Advertisement campaign.
- (ii) **Process Costing method:** Cost of a service is obtained by assigning costs to masses of similar unit and then computing cost / unit on an average basis.
e.g. Retail banking, postal delivery, credit card etc.
- (iii) **Hybrid method:** Combination of both (i) & (ii) above.

Question 2

A city health centre provides health and other related services to the citizens who are covered under insurance plan. The health centre receives a payment from the insurance company each time any patient attends the centre for consultation as under:

<i>Consultations involving</i>	<i>Payment from Insurance company</i>
	<i>Rs.</i>
<i>No treatment</i>	<i>60</i>
<i>Minor treatment</i>	<i>250</i>
<i>Major treatment</i>	<i>500</i>

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In addition, the adult patients will have to make a co-payment which is equivalent to the amount of payment for the respective category of treatment made by the insurance company. However, children and senior citizens are not required to make any such co-payment.

The health centre will remain open for 6 days in a week for 52 weeks in a year. Each physician treated 20 patients per day although the maximum number of patients that could have been treated by a physician on any working day is 24 patients.

The health centre received a fixed income of Rs. 2,25,280 per annum for promotion of health products from the manufacturers.

The annual expenditure of the health centre is estimated as under:

Materials and consumable (100% variable)	Rs. 22,32,000
Staff salaries per annum per employee (fixed):	
Physician	Rs. 4,50,000
Assistants	Rs. 1,50,000
Administrative staff	Rs. 90,000
Establishment and other operating costs (fixed)	Rs. 16,00,000

The non-financial information is as under:

(i) Staff:

Number of physicians employed	6
Assistants	7
Administrative staff	2

(ii) Patient Mix:

Adults	50%
Children	40%
Senior Citizens	10%

(iii) Mix of patient appointments (%)

Consultation requiring no treatment	70%
Minor treatment	20%
Major treatment	10%

Required:

(i) Calculate the Net income of the city health centre for the next year;

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- (ii) Determine the percentage of maximum capacity required to be utilized next year in order to break even.

Answer

1. (1) Total number of patients attended

Number of patients attended per day by a physician:	20
Number of physicians employed	6
Number of days in week	6
Number of weeks in a year	52
Total number of patients attended = $20 \times 6 \times 6 \times 52 = 37,440$.	

- (2) Patient Mix:

Adults (50%)	$37,440 \times 50/100$	=	18,720
Children (40%)	$37,440 \times 40/100$	=	14,976
Senior Citizens (10%)	$37,440 \times 10/100$	=	<u>3,744</u>
			<u>37,440</u>

- (3) Patient Appointments:

No treatment required (70%)	$37,440 \times 70/100$	=	26,208
Minor treatment (20%)	$37,440 \times 20/100$	=	7,488
Major treatment (10%)	$37,440 \times 10/100$	=	<u>3,744</u>
			<u>37,440</u>

- (4) Income from Insurance Companies:

	Number patients	of Rs.	Rs.
	(A)	(B)	(A × B)
No treatment patients	26,208	60	15,72,480
Minor treatment patients	7,488	250	18,72,000
Major treatment patients	3,744	500	<u>18,72,000</u>
Total			<u>53,16,480</u>

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(5) Co-payment from adult patients:

	Number patients	of Payment (Rs.)	Total payment (Rs.)
Total number of adult patients	18,720		
No treatment patients (70%)	13,104	60	7,86,240
Minor treatment (20%)	3,744	250	9,36,000
Major treatment (10%)	1,872	500	<u>9,36,000</u>
Total			<u>26,58,240</u>

(6) Net income:

	Rs.	Rs.
Payment from Insurance companies	53,16,480	
Co-payment from adult patients	<u>26,58,240</u>	
Total	79,74,720	
Other Income (fixed)	<u>2,25,280</u>	
Total Income (A)		82,00,000
Less: Expenditure		
Variable expenses:		
Material and consumables	22,32,000	
Fixed expenses:		
Physician's salary (6 × 4,50,000)	27,00,000	
Assistants salary (7 × 1,50,000)	10,50,000	
Administrative staff's salary (2 × 90,000)	1,80,000	
Establishment and other operating costs	16,00,000	<u>55,30,000</u>
Total Expenditure (B)		<u>77,62,000</u>
Net Income (A – B)		<u>4,38,000</u>

(ii) 1. Contribution Analysis:

	(Rs.)
Total Fees from Insurance Companies and adult patients	79,74,720
Less: Variable costs	22,32,000

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<i>Contribution</i>	57,42,720
<i>Average contribution per patient</i>	$\frac{57,42,720}{37,440} = 153.38$

2. Break-even patients:

	(Rs.)
<i>Fixed costs</i>	55,30,000
<i>Less: Fixed income</i>	2,25,280
<i>Net Fixed costs</i>	53,04,720
<i>Break-even patients</i> = $\frac{\text{Net fixed costs}}{\text{Contribution per patient}}$	$\frac{53,04,720}{153.38} = 34,585$

3. Percentage of maximum capacity required to be utilized in order to break-even

$$\text{Present utilization} = \frac{20 \text{ patients}}{24 \text{ patients}} = 83.33\% = 37,440$$

$$100\% \text{ patient capacity is } \frac{37,440}{0.8333} = 44,930 \text{ patients}$$

Percentage of maximum capacity required to be utilized in order to break-even

$$\begin{aligned} &= \frac{\text{Break - even patients}}{100\% \text{ patient capacity}} \times 100 \\ &= \frac{34,585}{44,930} \times 100 = 76.98\% \text{ say } 77\%. \end{aligned}$$

Assumption: Patient mix and mix of patient appointments will be same in the next year.

Question 3

Give an appropriate cost unit for each of the following service sectors:

- (i) Hotel
- (ii) School
- (iii) Hospital
- (iv) Accounting firm

- (v) *Transport*
- (vi) *Staff Canteen*
- (vii) *Machine maintenance*
- (viii) *Computer Department*

Answer

Service Sector	Cost Unit
Hotel	Bednights available or occupied
School	Student hours or no. of full time students
Hospital	Patient-day / Room-day
Accounting firm	Client hours
Transport	Passenger-Kms, or Quintal km or tonne-km
Staff Canteen	No. of meals provided or no. of staff
Machine maintenance	Maintenance hours to user departments
Computer Department	Computer time to user departments.

Question 4

Explain the main characteristics of Service sector costing.

Answer

Main characteristics of service sector are as below:

- (a) **Activities are labour intensive:** The activities of service sector generally are labour intensive. The direct material cost is either small or non-existent.
- (b) **Cost-unit is usually difficult to define:** The selection of cost units usually, for service sector is difficult to ascertain as compared to the selection of cost unit for manufacturing sector. The following table provides some examples of the cost units for service sector.
 - *Hospital* – Patient per day, Room per day
 - *Accounting firm* – Charged out client hours
 - *Transport* – passenger km., quintal km.
 - *Machine maintenance* – Maintenance hours provided to user department
 - *Computer department* – Computer time provided to user department.

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- (c) **Product costs in service sector:** Costs are classified as product or period costs in manufacturing sector for various reasons.

Question 5

B Ltd. makes industrial power drills, which is made by the use of two components A (electrical and mechanical components and B (plastic housing). The following table shows the cost of plastic housing separately from the cost of the electrical and mechanical components:

	A Electrical and Mechanical Components Rs.	B Plastic Housing Rs.	A & B Industrial Drills Rs.
Sales 1,00,000 units @ Rs.100			1,00,00,000
Variable Costs:			
Direct materials	44,00,000	5,00,000	49,00,000
Direct Labour	4,00,000	3,00,000	7,00,000
Variable factory overhead	1,00,000	2,00,000	3,00,000
Other Variable Costs	1,00,000	-	1,00,000
Sales commission @10% of sales	10,00,000	-	10,00,000
Total variable costs	60,00,000	10,00,000	70,00,000
Contribution	-	-	30,00,000
Total fixed costs	22,20,000	4,80,000	27,00,000
Operating income			3,00,000

Answer the following questions independently:

- (i) During the year, a prospective customer offered Rs.82, 000 for 1,000 drills. The drills would be manufactured in addition to the 1,00,000 units sold. B Ltd. would pay the regular sales commission rate on the 1,000 drills. The Chairman rejected the order because "it was below our costs". Calculate operating income if B Ltd. accepts the offer.
- (ii) A supplier offers to manufacture the yearly supply of 1,00,000 units plastic housing components for Rs.13.50 each. Assume that B Ltd. would avoid Rs.3,50,000 of the costs assigned to plastic housing if it purchases. Calculate operating income if B Ltd. decides to purchase the plastic housing from the supplier.

- (iii) Assuming that B Ltd. could purchase 1,20,000 units (plastic housing components) for Rs.13.50 each and use the vacated plant capacity for the manufacture of deluxe version of drill of 20,000 units (and sell them for Rs.130 each in addition to the sales of the 1,00,000 regular units) at a variable cost of Rs.90 each, exclusive of housings and exclusive of the 10% sales commission. All the fixed costs pertaining to the plastic housing would continue, because these costs are related to the manufacturing facilities primarily used. Calculate operating income of B Ltd. purchases the plastic housings and manufacture the deluxe version of drills.

Answer

- (i) The costs of filling the special order of 1000 drills:

	Rs.
Direct Materials	49,000
Direct Labour	7,000
Variable Factory Overhead	3,000
Other Variable Cost	1,000
Sales commission @ 10% of Rs.82,000	<u>8,200</u>
Total Variable Costs	68,200
Selling Price	<u>82,000</u>
Contribution	<u>13,800</u>

Operating income would have been Rs.3,00,000 + Rs.13,800 = Rs.3,13,800, if B Ltd had accepted the order.

- (ii) Assuming that B Ltd. could have avoided Rs.3,50,000 of the fixed costs by not making the housings and that the other fixed costs would have continued, we can summarize the alternatives as follows:

	Make	Buy
Purchase Cost		Rs.13,50,000
Variable Costs	Rs.10,00,000	
Avoidable fixed Costs	<u>Rs.3,50,000</u>	—
Total relevant Costs	<u>Rs.13,50,000</u>	<u>Rs.13,50,000</u>

If the facilities used for plastic housings became idle, the B Ltd. would be indifferent whether to make or buy. The present operating income would be unaffected.

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- (iii) The effect of purchasing the plastic housings and using the vacated facilities for the manufacture of a deluxe version of its drill is as follows:

Increase in sales 20,000 units @ Rs.130		26,00,000
Increase in Variables cost 20,000 units, @Rs.90	18,00,000	
Plus: Sales commission, 10% of Rs.26,00,000	<u>2,60,000</u>	<u>20,60,000</u>
Contribution on 20,000 units		5,40,000
Housings: 1,20,000 rather than 1,00,000 would be needed Buy 1,20,000 @ Rs.13.50	16,20,000	
Less: Make 1,00,000 @ Rs.10 (only the variable costs are relevant)	<u>10,00,000</u>	
Excess cost of outside purchase		<u>6,20,000</u>
Loss on making deluxe units		<u>Rs.80,000</u>

Conclusion: Operating income would decline to Rs.2, 20,000 (3, 00,000 – 80,000).

EXERCISE

Question 1

A Multinational company runs a Public Medical Health Centre. For this purpose, it has hired a building at a rent of Rs. 10,000 per month with 5% of total taking. Health centre has three types of wards for its patients namely. General ward, Cottage ward and Deluxe ward. State the rent to be charged to each bed-day for different type of ward on the basis of the following informations:

- (i) The number of beds of each type are General ward 100, Cottage ward 50, Deluxe ward 30.
- (ii) The rent of Cottage ward bed is to be fixed at 2.5 times of the General ward bed and that of Deluxe ward bed as twice of the Cottage ward bed.
- (iii) The occupancy of each type of ward is as follows:
General ward 100%, Cottage ward 80% and Deluxe ward 60%. But, in general ward there were occasions when beds are full, extra beds were hired at a charges of Rs. 20 per bed. The total hire charges for the extra beds incurred for the whole year amount to Rs. 12,000.
- (iv) The Health Centre engaged a heart specialist from outside and on an average fees paid to him was Rs. 15,000 per trip. He makes three trips in the whole year.
- (v) The other expenses for the year were as under:

	Rs.
Salary of Supervisors, Nurses, Ward boys	4,25,000
Repairs and maintenance	90,000
Salary of doctors	13,50,000
Food supplied to patients	40,000
Laundry charges for their bed linens	80,500
Medicines supplied	74,000
Cost of oxygen, X-ray etc. other than directly borne for	
Treatment of patients	49,500
General administration charges	63,000

- (vi) Provide profit @ 20% on total taking.
- (vii) The Health Centre imposes 8% service tax on rent received.
- (viii) 360 days may be taken in a year.

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Answer

Rent to be charged

Particulars	Basic	Service tax	Total
General ward	30.65	2.45	33.10
Cottage ward	76.63	6.13	82.76
Deluxe ward	153.25	12.26	165.51