B.Com Sem 2

Costing

Service/Operating Costing

(Transport)

Meaning of Service Costing:
Service costing is that form of operation costing which applies where standardized services are provided either by an undertaking or by a service cost centre within an undertaking. This method may be used where service is not completely standardized, but where it is convenient to regard it as such, and to calculate average cost per period in relation to the standardised unit of measurement.

Thus it is the cost of producing and maintaining a service. It is a method of costing applied to undertakings which provide service rather than production of commodities.

Service costing applies to
(i) Transport services: Tramways, Railways, Bus Transport.

(ii) Supply services Gas supply, Electricity supply, Water supply.

(iii) Welfare supplies: Hospitals, Canteens, Libraries.

Transport Costing:
Transport industries include Air, Water, Road, and Railways. Motor transport includes private cars, carriers for owners, buses, taxis, carriers, lorries etc.

The objectives of motor transport costing may be summarised as follows:
1. To provide information whereby the efficiency with which the vehicles are rented may be judged.

2. To provide an accurate basis for quotation and fixing of rates.

3. To ensure that all journeys have been carried out in proper time, fuel consumed is not excessive and that types are properly maintained.

4. To provide cost comparison between own transport and alternative e.g. hiring

5. To compare the cost of maintaining one group of vehicles with another group.

6. To determine what should be charged against departments using the service.

7. To decide at what price the use of vehicle can be charged.

8. To ensure that cost of maintenance and repairs is not excessive.

Classification of Costs:
Costs are classified into the following three heads:

1. Standing or Fixed Charges:
These charges are incurred in spite of the kilometres run.e.g. salary of operating manager and supervisors etc., insurance, motor vehicle tax, license fee, garage rent, general supervision and interest on capital.

2. Maintenance Charges:
Semi-variable expenses are included in this group e.g. tyres and tubes, repairs and paintings, overhauls etc.

3. Operating and Running Charges:
These charges vary more or less in direct proportion to kilometres and include, petrol, oil, grease etc., wages of driver, conductor, attendant etc. if payment is related to time or distance of trips, commission of taking, if any, and depreciation.

In short, all the variable charges of running vehicle are included in this group. Normally the life of a vehicle is given in terms of mileage to be run. Accordingly depreciation is to be allocated on the basis of kilometres run and hence should be treated as an item of variable charge.

Illustration 1.

Union Transport Company supplies the following details in respect of a truck of 5-tonne capacity:

Cost of truck	Rs. 90,000
Estimated life	10 years
Diesel, oil, grease	Rs. 15 per trip each way
Repairs and maintenance	Rs. 500 per month
Driver's wage	Rs. 500 per month
Cleaner's wage	Rs. 250 per month
Insurance	Rs. 4,800 per year
Tax	Rs. 2,400 per year
General supervision charges	Rs. 4,800 per year

The truck carries goods to and from city covering a distance of 50 miles each way.

While going to the city freight is available to the extent of full capacity.

Assuming that the truck runs on an average 25 days a month, work out:
(i) Operating cost per tonne-mile, and

(ii) Rate per ton per trip that the company should charge if profit of 50% on freightage is to be earned.

Solution

(i) **Operating Cost Statement**

	Rs.	Per month Rs.	Per tonne-mile Rs.
1. **Fixed Costs :**			
Driver's wage	500		
Cleaner's wage	250		
Insurance	400		
Taxes	200		
General supervision	400	1,750	0.233
2. **Running Costs :**			
Diesel oil, etc.	750		
Repairs & maintenance	500		
Depreciation	750	2,000	0.267
		3,750	
		7,500	0.500

(ii) **Calculation of Freight Rate**

Cost per ton-mile	Re. 0.50
Profit per ton-mile	Re. 0.50
Freight rate per ton-mile.	Re. 1.00

Freight rate per trip both ways = 300 × Re. 1.00 = Rs. 300

Tonne-miles are computed as under :

$(50 \times 5) + (50 \times 1) \times 25 = 7{,}500$ tonne-mile.

Illustration 2.

A transport company has been given a 40 kilometre long route to run 5 buses. The cost of each bus is Rs. 6,50,000. The buses will make 3 round trips per day carrying on an average 80 per cent passengers of their seating capacity. The seating capacity of each bus is 40 passengers. The buses will run on an average 25 days in a month.

The other information for the year 2011-12 are given below:

Garage rent	₹ 4,000 per month
Annual repairs and maintenance	₹ 22,500 each bus
Salaries of 5 drivers	₹ 3,000 each per month
Wages of 5 conductors	₹ 1,200 each per month
Manager's salary	₹ 7,500 per month
Road tax, permit fee, etc.	₹ 5,000 for a quarter
Office expenses	₹ 2,000 per month
Cost of diesel per litre	₹ 33
Kilometre run per litre for each bus	6 kilometres
Annual depreciation	15% of cost
Annual Insurance	3% of cost

You are required to calculate the bus fare to be charged from each passenger per kilometre, if the company wants to earn profits of $33\frac{1}{3}$ per cent on taking (total receipts from passengers).

SOLUTION

OPERATING COST SHEET

for the year 2011-12

(Total Passenger Km = 1,15,20,000)

	Total Cost (₹) Per annum	*Cost per Passenger Km (₹)*
(A) Standing (or Fixed) Charges :		
Garage Rent (₹ 4,000 × 12)	48,000	
Salary of Drivers (₹ 3,000 × 5 × 12)	1,80 000	
Wages of Conductors (₹ 1,200 × 5 × 12)	72,000	
Manager's Salary (₹ 7,500 × 12)	90,000	
Road Tax, Permit Fee, etc. (₹ 5,000 × 4)	20,000	
Office Expenses (₹ 2,000 × 12)	24,000	
Insurance $\left(₹\ 6,50,000 \times \frac{3}{100} \times 5\right)$	97,500	
Total (A)	5,31,500	0.046
(B) Maintenance (or Semi-Variable) Charges :		
Repairs and Maintenance (₹ 22,500 × 5)	1,12,500	0.010
Total (B)	1,12,500	0.010
(C) Running (or Variable) Charges :		
Depreciation $\left(₹\ 6,50,000 \times \frac{15}{100} \times 5\right)$	4,87,500	0.042
Diesel $\left(\frac{3,60,000 \text{ km.}}{6} \times ₹\ 33\right)$	19,80,000	0.172
Total (C)	24,67,500	0.214
Total Cost (A + B + C)	31,11,500	0.270
Add : $33\frac{1}{3}$ per cent Profit on taking or 50% on cost	15,55,750	0.135
Bus fare to be charged from each passenger per km.	46,67,250	0.405

Working note :

(*i*) Total Kilometres to be run during the year 2011-12 = 40 × 2 × 3 × 25 × 12 × 5 = 3,60,000 Kilometres.

(*ii*) Total passenger Kilometres = $3,60,000 \times 40 \times \frac{80}{100}$ = 1,15,20,000 Passenger km.

Illustration 3:

Global Transport Ltd. charges Rs. 90 per ton for its 6 tons truck lorry load city 'A' to city 'B'. The charges for the return journey are Rs. 84 per ton. No concession or reduction in these rates is made for any delivery of goods at intermediate station 'C'. In January, 2012 the truck made 12 outward journeys for city 'B' with full load out of which 2 tons were unloaded twice in the way at city 'C'. The truck carried a load of 8 tons in its return journey for 5 times but once caught by police and Rs. 1,200 was paid as fine. For the remaining trips the truck carried full load out of which all the goods on load were unloaded once at city 'C'.

The distance from city A' to city 'C' and city 'B' are 140 kms and 300 kms respectively. Annual fixed costs and maintenance charges are Rs. 60,000 and Rs. 12,000 respectively. Running charges spent during January, 2012 are Rs. 2,944.

SOLUTION

M/S GLOBAL TRANSPORT LTD.

Operating Cost Statement (for January, 2012)

	₹
Fixed Cost (₹ 60,000 ÷ 12)	5,000
Maintenance Charges (₹ 12,000 ÷ 12)	1,000
Running Charges	2,944
Total Operating Cost	8,944
Cost per absolute ton - km. ₹ $\frac{8,944}{43,600}$ absolute ton kms. (3)	0.205

PROFIT STATEMENT

	₹
Net Revenue Received	
12 trucks × 6 tons × ₹ 90 (from city A to city B)	6,480
5 trucks × 8 tons × ₹ 84 (from city B to city A)	3,360
6 trucks × 6 tons × ₹ 84 (from city B to city A)	3,024
1 truck × 5 tons × ₹ 84 (from city B to city C)	504
	13,368
Less : Fines Paid	1,200
Net Revenue received	12,168
Less : Total Operating Cost	8,944
Profit	3,224

Working Notes :

			Tons-kms.
(1)	Outward Journeys		
	(*i*) From city A to city B : 10 Journeys × 300 kms × 6 tons	=	18,000
	(*ii*) From city A to city C : 2 Journeys × 140 kms × 2 tons	=	560
	(*iii*) From city C to city B : 2 Journeys × 160 kms × 4 tons	=	1,280
			19,840
(2)	Return Journeys		
	(*i*) From city B to city A : 5 Journeys × 300 kms × 8 tons	=	12,000
	(*ii*) 6 Journeys × 300 kms × 6 tons		10,800
	(*ii*) From city B to city C: 1 Journey × 160 kms × 6 tons	=	960
			23,760

(3) Total absolute tons-kms of outward and return journeys :
= 19,840 tons-kms + 23,760 tons-kms = **43,600 tons kms**

Illustration 4:

Delhi Transport Company has been given a route of 20 km. long to run a bus. The bus costs the company a sum of Rs. 50,000. It has been insured at 3% p.a. and the annual tax will amount to Rs. 1,000. Garage rent is Rs. 100 p.m. Actual repairs will be Rs. 1,000 and the bus is likely to last for 5 years.

The driver's salary will be Rs. 150 per month and the conductor's salary will be Rs. 100 per month in addition to 10% of the takings as commission (to be shared by the driver and the conductor equally). Cost of stationery will be Rs. 50 p.m. Manager-cum-accountant's salary is Rs. 350 p.m.

Petrol and oil will be Rs. 25 per 100 km. The bus will make 3 round trips carrying on the average 40 passengers on each trip. Assuming 15% profit on takings, calculate the bus fare to be charged from each passenger. The bus will run on an average 25 days in a month.

SOLUTION

STATEMENT SHOWING THE FARE TO BE CHARGED FROM A PASSENGER FOR ONE KM.

	Per Annum ₹	*Per Month* ₹
(*A*) *Standing Charges* :		
Insurance charge	1,500	
Taxes	1,000	
Driver's Salary	1,800	
Conductor's Salary	1,200	
Cost of Stationery	600	
Manager-cum-accountant's Salary	4,200	
Garage Rent	1,200	
	11,500	958.33
(*B*) *Maintenance Charges* :		
Repairs (₹ 1,000 ÷ 12)		83.34

(C) *Running Charges* :		
Depreciation (₹ 50,000 ÷ 5 years)	₹ 10,000	833.33
Petrol		750.00
Commission*		350.00
Total Cost per month		2,975.00
Profit 15% on takings		525.00
Total takings		3,500.00
Total Effective Passenger kms. per month are 1,20,000 (*i.e.* 3 × 2 × 20 × 25 × 40)		
Fare per Passenger—km. ₹ 3,500 ÷ 1,20,000		3 Paise

*In order to calculate the amount of commission payable to the driver and the conductor, total takings will have to be calculated.

Let total takings = x

$\therefore$ Commission = $\frac{x}{10}$

Profit to be charged = $\frac{3x}{20}$

Total cost per month without including commission = ₹ 2,625

$\therefore \quad x = ₹\ 2{,}625 + \frac{3x}{20} + \frac{x}{10}$

$20x = ₹\ 52{,}500 + 3x + 2x$

$15x = ₹\ 52{,}500$

$x = ₹\ 3{,}500$

$\therefore$ Commission $= \frac{₹\ 3{,}500}{10} = ₹\ 350.$

Illustration 5

The Kangaroo Transport operates a fleet of lorries. The records for lorry L-14 reveal the following information for September, 1990:

Days maintained	30	
Days operated	25	
Days idle	5	
Total hours operated	300	
Total kms covered	2,500	
Total tonnes carried	200	(4 tonne-load per trip, journey empty)

The following information is made available:

Operating costs for the month:

Petrol Rs.400, oil Rs.170, grease Rs.90, wages to driver Rs.550, wages to khalasi Rs.350.

Maintenance costs for the month:

Repairs Rs.170, overhead Rs.60, Tyres Rs.150, Garage charges Rs.100.

Fixed costs for the month based on the estimates for the year : Insurance Rs.50, Licence, Tax etc. Rs. 80,

Interest Rs.40, other overheads Rs.190.

Capital costs:
Cost of acquisition Rs.54,000

Residual value at the end of 5 years life is Rs.36,000. Prepare a Cost Sheet and performance statement showing:

A. (a) Cost per day maintained;

B. (b) Cost per day operated ;

C. (c) Cost per kilometer;

D. (d) Cost per hour;

E. (e) Cost per commercial tonne

F. Cost per commercial tonne

Solution

Cost Sheet for September 1990 (Lorry L–14)

	Rs.	Rs.
A. Operating Costs		
Petrol	400	
Oil	170	
Grease	90	
Wages to Driver	550	
Wages of khalasi	350	1,560
B. Maintenance Costs		
Repairs	170	
Overhand	60	
Tyres	150	
Garage charges	100	480
C. Fixed costs		
Insurance	50	
Licence, Tax etc.	80	
Interest	40	
Other overheads	190	360
D. Depreciation		
$\frac{\text{Rs. } 54,000 - \text{Rs. } 36,000}{5 \text{ years.}} = \text{Rs. } \frac{18,000}{5} = \text{Rs. } 3,600$		
$= \text{Rs. } 3,600 + 12$		300
Total Cost for the month.		2,700

Performance Statement :

(a) Cost per day maintained Rs. $\frac{2,700}{30}$ = Rs. 90

(b) Cost per day operated Rs. $\frac{2,700}{25 \text{ days}}$ = Rs. 108

(c) Cost per kilo-meter Rs. $\frac{2,700}{2,500}$ = Rs. 1.08

(d) Cost per hour Rs. $\frac{2,700}{300 \text{ hours}}$ = Rs. 9.00

(e) Commercial tonne-kms

Outward – 4tonnes × 25 dyas × 50 kms	= 5,000
Return = 0 × 25 × 50	nil
Total	5,000

Cost per commercial tonne-km Rs. $\frac{2,700}{5,000}$ = Re. 0.54