

**CA Final SPOM Set B – Strategic Cost & Performance Management**  
**ICAI Module Questions Compilation**

**Chapter 7 - STRATEGIC PROFIT MANAGEMENT**

**Illustration 1**

Y Limited is a manufacturer of Cardboard boxes. An analysis of its operating income between 2023 and 2024 shows the following:

	Income Statement (amount in 2023)	Revenue & Cost Effect of Growth Component in 2024	Revenue & Cost Effect of Price Recovery Component in 2024	Cost Effect of Productivity Component in 2024	Income Statement (amount in 2024)
Revenue (₹)	40,00,000	2,00,000(F)	4,20,000(F)	-	46,20,000
Cost (₹)	29,20,000	60,000 (A)	2,56,000(A)	58,000(F)	31,78,000
Operating Income (₹)	10,80,000	1,40,000(F)	1,64,000(F)	58,000(F)	14,42,000

Y Limited sold 4,00,000 boxes and 4,20,000 boxes in 2023 and 2024, respectively. During 2024, the market for cardboard boxes grew 3% in terms of the number of units, and all other changes are due to the company's differentiation strategy and productivity.

**Required**

Compute how much of the change in operating income from 2023 to 2024 is due to the industry market size factor, productivity, and product differentiation and also reconcile the profit of both years due to these factors.

**Solution**

**Reconciliation of Operating Income**

Particulars	Amount (₹)
Operating Income in 2023	10,80,000
Add: Change Due to Industry Market Size Factor (W.N.-1)	84,000
Changes Due to Productivity (W.N.-2)	58,000
Changes Due to Product Differentiation (W.N.-3)	2,20,000
Operating Income in 2024	14,42,000

**Workings**

Total Increase in Sale of Cardboard Boxes 20,000 Boxes (4,20,000 Boxes – 4,00,000 Boxes). Out of this increase in Sales of 20,000 Boxes, 12,000 Boxes (3% of 4,00,000) are due to growth in market size, and the remaining 8,000 Boxes (20,000 Boxes – 12,000 Boxes) are due to an increase in market share.

**W.N.1 Effect of the Industry Market Size Factor on operating income:**

$$= \text{Revenue and Cost Effect of Growth Component in 2024} \times \frac{\text{Increase in Sales Unit Due to Market Growth}}{\text{Total Growth in Sales Unit (from 2023 to 2024)}}$$

$$= ₹1,40,000 \times \frac{12,000 \text{ Boxes}}{20,000 \text{ Boxes}}$$

$$= ₹84,000 \text{ (F)}$$

**W.N.2 Effect of Productivity on operating income:**

$$= \text{Cost Effect of Productivity Component in 2024}$$

$$= ₹ 58,000 \text{ (F)}$$

**W.N.3 Effect of Product Differentiation on operating income:**

Particulars	Amount (₹)
Increase in the Selling Price (Revenue Effect of the Price Recovery Component)	4,20,000 (F)
Increase in Prices of Inputs (Cost Effect of the Price Recovery Component)	2,56,000 (A)
Growth in Market Share Due to Product Differentiation* $₹1,40,000 \times \frac{8,000 \text{ Boxes}}{20,000 \text{ Boxes}}$	56,000 (F)
<b>Total</b>	<b>2,20,000 (F)</b>

$$*\text{Revenue and Cost Effect of Growth Component in 2024} \times \frac{\text{Increase in Sales Unit Due to Product Differentiation}}{\text{Total Growth in Sales Unit (from 2023 to 2024)}}$$

**Illustration 2**

Jigyasa India Ltd. (JIL) has 30 retail stores of uniform sizes 'Fruity & Sweety Retail's' across the country. Mainly three products namely 'Butter Jelly', 'Fruits & Nuts' and 'Icy Cool' are sold through these retail stores. JIL maintains stocks for all retail stores in a centralised warehouse. Goods are released from the warehouse to the retail stores as per requisition raised by the stores. Goods are transported to the stores through two types of vans, i.e., normal and refrigerated. These vans are to be hired by the JIL.

**Costs per month of JIL are as follows:**

	₹	Total (₹)
Warehouse Costs:		
Labour & Staff Costs	27,000	
Refrigeration Costs	1,52,000	
Material Handling Costs	28,000	2,07,000
Head Office Cost:		
Salary & Wages to Head Office Staff	50,000	
Office Administration Costs	1,27,000	1,77,000
Retail Stores Costs:		
Labour Related Costs	33,000	
Refrigeration Costs	1,09,000	
Other Costs	47,000	1,89,000

Average transportation cost of JIL per trip to any retail store is as follows:

Normal Van	₹ 3,200
Refrigerated Van	₹ 4,900

The Chief Financial Manager asked his Finance managers to calculate profitability based on three products sold through Fruity & Sweety retail stores rather than using the traditional method of calculating profitability.

The following information regarding retail stores are gathered:

	Butter Jelly	Fruits & Nuts	Icy cool
No. of Cartons per cubic metre (m <sup>3</sup> )	42	28	40
No. of Items per cartons (units)	300	144	72
Time in the Warehouse (in months)	1	1.5	0.5
Time in Retail Stores (in months)	1	2	1
Selling Price per unit (₹)	84	42	26
Purchase Price per unit (₹)	76	34	22

Butter Jelly and Icy-Cool are required to be kept under refrigerated conditions.

Additional information:

Total Volume of All Goods Sold per month	40,000 m <sup>3</sup>
Total Volume of Refrigerated Goods Sold per month	25,000 m <sup>3</sup>
Carrying Volume of each van	64 m <sup>3</sup>

### Required

Calculate the Profit per unit using the Direct Product Profitability (DPP) method

### Solution

#### Direct Product Profitability (DPP) Statement (Amount in ₹)

	Butter Jelly	Fruits & Nuts	Icy cool
Selling Price per unit	84.00	42.00	26.00
Less: Purchase Price per unit	76.00	34.00	22.00
Gross Profit ... (A)	8.00	8.00	4.00
Direct Product Costs:			
Warehouse Costs per m <sup>3</sup> [W.N.-1]	7.46	2.07	3.73
Retail Stores Costs per m <sup>3</sup> [W.N.-2]	6.36	4.00	6.36
Transportation Costs [W.N.-3]	76.56	50.00	76.56
Total DPP costs per m <sup>3</sup>	90.38	56.07	86.65
Items per m <sup>3</sup> [W.N.-4]	12,600	4,032	2,880
Cost per item ... (B)	0.007	0.014	0.030
Direct Product Profit ... (A) – (B)	7.993	7.986	3.97

### Working Notes

#### 1. Warehouse Related Costs

	General Costs (₹)	Cost Related with Refrigerated Goods (₹)
Labour & Staff Costs	27,000	---
Refrigeration Costs	---	1,52,000
Material Handling Costs	28,000	---
Total	55,000	1,52,000
Volume of Goods Sold	40,000 m <sup>3</sup>	25,000 m <sup>3</sup>
Cost per m <sup>3</sup> per month	1.38	6.08

Products	Time in Warehouse	Cost per m <sup>3</sup> per month (₹)	Total Cost (₹)
Butter Jelly	1 Month	7.46 (1.38 + 6.08)	7.46
Fruits & Nuts	1.5 Months	1.38	2.07
Icy-cool	0.5 Months	7.46 (1.38 + 6.08)	3.73

## 2. Retail Stores Related Costs

	General Costs (₹)	Cost Related with Refrigerated Goods (₹)
Labour Related Costs	33,000	---
Refrigeration Costs	---	1,09,000
Other Costs	47,000	---
Total	80,000	1,09,000
Volume of Goods Sold	40,000 m <sup>3</sup>	25,000 m <sup>3</sup>
Cost per m <sup>3</sup> per month	2.00	4.36

Products	Time in Retail Stores	Cost per m <sup>3</sup> per month	Total Cost
Butter Jelly	1 Month	₹6.36 (₹2.00 + ₹4.36)	₹6.36
Fruits & Nuts	2 Months	₹2.00	₹4.00
Icy-Cool	1 Month	₹6.36 (₹2.00 + ₹4.36)	₹6.36

## 3. Transportation Costs

	Normal Van Costs	Refrigerated Van Costs
Cost per trip	₹3,200	₹4,900
Volume of Van	64 m <sup>3</sup>	64 m <sup>3</sup>
Cost per m <sup>3</sup> per trip	₹50.00	₹76.56

**4. No. of Items per m<sup>3</sup>**

Products	No. of Cartons/ m <sup>3</sup>	No. of Items per Cartons (units)	No. of Items per m <sup>3</sup>
Butter Jelly	42	300	12,600 (42 × 300)
Fruits & Nuts	28	144	4,032 (28 × 144)
Icy - Cool	40	72	2,880 (40 × 72)

**Illustration 3**

A and B are two customers of XYZ Electronics Ltd., a manufacturer of audio players. The selling price per unit is ₹ 5,400. Its cost of production per unit is ₹ 4,420.

Additional costs are:

Order Processing Cost ..... ₹ 2,000 per order  
 Delivery Costs ..... ₹ 3,500 per delivery

Details of customers A and B for the period are given below:

	Customer A	Customer B
Audio Players purchased (nos.)	350	500
No. of orders	5 (each of 70 units)	10 (each of 50 units)
No. of deliveries	5	0

The company's policy is to give a discount of 5% on the selling price on orders for 50 units or more and to further give an 8% discount on the undiscounted selling price if a customer uses his own transport to collect the order. Assume that production levels are not altered by these orders.

**Required**

- (i) ANALYSE the profitability by comparing profit per unit for each customer.
- (ii) COMMENT on the discount policy on delivery.

**Solution****(i) Customer's Profitability Statement**

Particulars	Customer- A	Customer- B
<b>Sales (units)</b>	<b>350</b>	<b>500</b>
	(₹)	(₹)
Selling Price per unit	5,400	5,400
Less: Discount ( <b>Quantity</b> )	270	270
	(₹5,400 × 5%)	(₹5,400 × 5%)
Less: Discount ( <b>Delivery</b> )	---	432

		(₹5,400 × 8%)
Selling Price (Net of Discounts) per unit	5,130	4,698
<b>Less:</b> Variable Cost per unit	4,420	4,420
Contribution per unit	710	278
Total Contribution	2,48,500 (₹710 × 350 units)	1,39,000 (₹278 × 500 units)
<b>Less:</b> Additional Overheads		
Delivery Cost	17,500 (5 × ₹3,500)	---
Order Processing Cost	10,000 (5 × ₹2,000)	20,000 (10 × ₹2,000)
Profit per customer*	2,21,000	1,19,000
Profit per customer per unit	631.43	238.00

### Analysis

Even though A has a lower sales volume (30% less than B), it is contributing almost double the profit that is being contributed by B, as the overall discount offered to customer A is quite low.

### (ii) Comments on the “Discount Policy on Delivery”

The discount on delivery offered to customer B is ₹432 per unit. If transport for delivery is provided to customer B, then the cost would have been ₹70 per unit (10 deliveries × ₹ 3,500 / 500 units), which is less than by ₹362. It may also be noted that the delivery cost for customer A is only ₹50 per unit (₹17,500 ÷ 350 units). Hence, the company needs to review its discount policy on delivery, but the significance of profitability for customer B should also be kept in mind while doing so.

### Illustration 4

Queenstown Furniture (QF) has been manufacturing high-quality wooden doors within the forests of Queenstown since 1952. Management is having emphasize on creativity, engineering, innovation, and experience to provide customers with the door they desire, whether it is a standard design or a one-of-a-kind custom door. The following information pertains to operations during April:

Processing time	9.0 hrs.*	Waiting time	6.0 hrs.*
Inspection time	1.5 hr.*	Move time	7.5 hrs.*
Units per batch	60 units		

\*Average time per batch

### Required

Compute the following operational measures:

- (i) Average non-value-added time per batch
- (ii) Average value-added time per batch
- (iii) Manufacturing cycle efficiency
- (iv) Manufacturing cycle time

**Solution**

$$\begin{aligned} \text{(i) Average Non-Value-Added Time per batch} &= \text{Inspection Time} + \text{Waiting Time} + \text{Move Time} \\ &= 1.5 \text{ hr.} + 6.0 \text{ hrs.} + 7.5 \text{ hrs.} = 15 \text{ hrs.} \end{aligned}$$

$$\text{(ii) Average Value-Added Time per batch} = \text{Processing Time} = 9 \text{ hrs.}$$

$$\begin{aligned} \text{(iii) Manufacturing Cycle Efficiency} &= \frac{\text{Processing Time}}{\text{Processing Time} + \text{Inspection Time} + \text{Waiting Time} + \text{Move Time}} \\ &= \frac{9.0 \text{ hrs}}{9.0 \text{ hrs.} + 1.5 \text{ hr} + 6.0 \text{ hrs.} + 7.5 \text{ hrs.}} = 37.5\% \end{aligned}$$

$$\text{(iv) Manufacturing Cycle Time} = \frac{\text{Total Production Time}}{\text{Units per Bat}} = \frac{24 \text{ hrs}}{60 \text{ units}} = 0.40 \text{ hrs .per unit}$$

**Illustration 5**

6-Twelve is an Indian – Japanese international chain of convenience stores for food, snacks, hot and cold beverages is formulating its activity-based budget for January 2024. 6-Twelve has only three product types: Soft Drinks, Fresh Drinks, and Ready to Eat Food.

The budgeted data relating to three products are as under:

Activity and Driver	Cost Driver Rates		Jan 2024 Budgeted		
	2023	Jan 2024	Amount of Driver Used		
	Actual Rate (₹)	Budgeted Rate (₹)	Soft Drinks	Fresh Drinks	Ready to Eat Food
Ordering (per purchase order)	5,000	4,500	16	20	16
Delivery (per delivery)	4,000	4,100	13	60	20
Shelf-Stocking (per hour)	1,000	1,050	15	170	93
Customer Support (per item sold)	10	9	4,500	34,600	10,500

6-Twelve has a continuous improvement system to budgeting monthly activity costs for each month of 2024. February's budgeted cost-driver rate is 0.996 times the budgeted January 2024 rate. March's budgeted cost-driver rate is 0.996 times the budgeted February 2024 rate and so on.

**Required**

- (i) Compute total budgeted cost for each activity in January 2024.
- (ii) Discuss advantages might 6-Twelve gain by using an activity-based budgeting approach over, say, an approach that allocates the cost of these activities to products as a percentage of cost of goods sold.
- (iii) Compute total budgeted cost for each activity in March 2024 if March 2024 has the same budgeted amount of cost-driver usage as January 2024.
- (iv) State benefits of 6-Tweleve adopting a kaizen budgeting approach. IDENTIFY limitations?

**Solution**

- (i) Calculation of Total Budgeted Cost for Each Activity

Activity	Cost Hierarchy	Soft Drinks	Fresh Drinks	Ready to Eat Food	Total (₹)
Ordering (₹4,500 × 16; 20; 16)	Batch-Level	72,000	90,000	72,000	2,34,000
Delivery (₹4,100 × 13; 60; 20)	Batch-Level	53,300	2,46,000	82,000	3,81,300
Shelf stocking (₹1,050 × 15; 170; 93)	Output Unit Level	15,750	1,78,500	97,650	2,91,900
Customer support (₹9 × 4,500; 34,600; 10,500)	Output Unit Level	40,500	3,11,400	94,500	4,46,400
<b>Total Budgeted Costs</b>		<b>1,81,550</b>	<b>8,25,900</b>	<b>3,46,150</b>	<b>13,53,600</b>

- (ii) An Activity Based Budgeting approach identifies how different products require different mixes of support activities. The relative percentage of how each product area uses the cost driver at each activity area is:

Activity	Cost Hierarchy	Soft Drinks (%)	Fresh Drinks (%)	Ready to Eat Food (%)	Total (%)
Ordering	Batch-Level	30.77	38.46	30.77	100.0
Delivery	Batch-Level	13.98	64.52	21.50	100.0
Shelf Stocking	Output Unit Level	5.40	61.15	33.45	100.0
Customer Support	Output Unit Level	9.07	69.76	21.17	100.0

By identifying these differences, 6-Tweleve managers are better able to budget for different unit sales levels and different mixes of individual product-line items sold. Using a single cost driver such as 'Cost of Goods Sold' considers similarity in the use of indirect costs (support activities) across product lines which does not occur at 6-Tweleve.

Other benefits cited by managers include:

- (1) Better identification of resource needs.
- (2) Clearer linking of costs with staff responsibilities, and
- (3) Identification of budgetary slack.

**(iii) March 2024 Rates (₹)**

Activity	Cost Hierarchy	January	February	March
Ordering	Batch-Level	4,500.00	4,482	4,464.07
Delivery	Batch-Level	4,100.00	4,083.60	4,067.27
Shelf-stocking	Output Unit Level	1,050.00	1,045.80	1,041.61
Customer support	Output Unit Level	9.00	8.96	8.93

These March 2024 rates can be used to compute the total budgeted cost for each activity area:

Activity	Cost Hierarchy	Soft Drinks	Fresh Drinks	Ready to Eat Food	Total (₹)
Ordering (₹4,464.07 × 16; 20; 16)	Batch-Level	71,425	89,281	71,425	2,32,131
Delivery (₹4,067.27 × 13; 60;20)	Batch-Level	52,875	2,44,036	81,345	3,78,256
Shelf-Stocking (₹1,041.61 × 15; 170; 93)	Output Unit Level	15,624	1,77,073	96,870	2,89,567
Customer support (₹8.93 × 4,500; 34,600; 10,500)	Output Unit Level	40,185	3,08,978	93,765	4,42,928
<b>Total Budgeted Costs</b>		<b>1,80,109</b>	<b>8,19,368</b>	<b>3,43,405</b>	<b>13,42,882</b>

(iv) A kaizen budgeting approach indicates management's commitment to organized cost reduction. Compare the budgeted costs from previous part.

	Ordering	Delivery	Shelf-Stocking	Customer Support
Part (i)	2,34,000	3,81,300	2,91,900	4,46,400
Part (iii)	2,32,131	3,78,256	2,89,567	4,42,928

The kaizen budget number will show unfavorable variances for managers whose activities do not meet the required monthly cost reductions. This likely will put more pressure on managers to creatively seek out cost reductions by working 'better' within 6-Twelve.

One limitation of kaizen budgeting, as illustrated, is that it considers minor incremental improvements each month. It is possible that some cost improvements arise from irregular fluctuations in operating processes, supplier networks, or customer interactions. Companies need to highlight the importance of seeking these improvements as well as the minor incremental improvements.

### Illustration 6

The following information is given about the type of defects during a production period and the frequencies of their occurrence in a spectacle manufacturing company:

Defect	No. of Instances
End Frame not equidistant from the center	10
Non-uniform grinding of lenses	60
Power mismatches	20
Scratches on the surface	110
Spots / Stains on lenses	5
Rough edges of lenses	70
Frame colour-shade differences	25

### Required

Prepare a frequency table to construct Pareto Chart for the defect type. Also, IDENTIFY key areas (vital few) of focus and highlight them in the graph too.

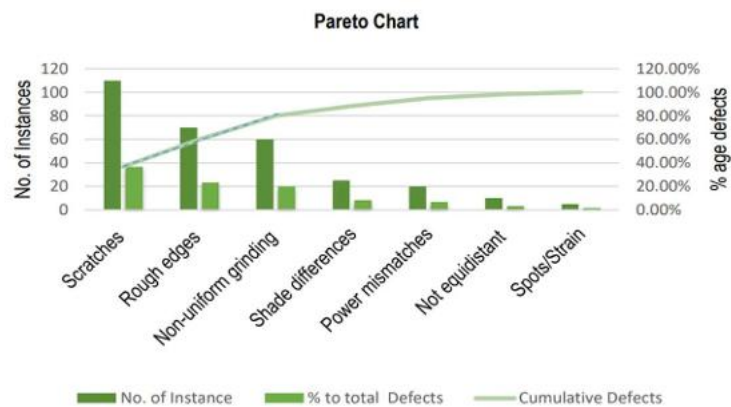
**Solution****Statement Showing “Pareto Analysis of Defects”**

Defect Type	No. of Instances	% to total Defects	Cumulative Defects
Scratches on the surface	110	36.67%	36.67%
Rough edges of lenses	70	23.33%	60.00%
Non-uniform grinding of lenses	60	20.00%	80.00%
Frame colours-shade differences	25	8.33%	88.33%
Power mismatches	20	6.67%	95.00%
End frame not equidistant from the center	10	3.33%	98.33%
Spots/ Strain on lenses	5	1.67%	100.00%
	300	100.00%	

The company should focus on the elimination of scratches on the surface, rough edges of lenses, and non-uniform grinding of lenses (in priority order), because they constitute 80% of instances when defect found in any item.

**Figure – Pareto Chart**

In the below Pareto Chart, till the point where the line (cumulative defects) is dotted, the causes are Vital (but Few) and the remaining causes falling thereafter shall be classified as trivial many. The curve is steep until it is dotted (the first three causes account for 80% of defect instances), then it falters, indicating less importance.

**TEST YOUR KNOWLEDGE****Question 1 - Manufacturing Cycle Efficiency**

“W” specializes in engineering design and manufacture in the automotive and motorsport industry. “W”’s design team has many years’ experience in the design and development of engine components for the market and high performance engines. Though “W” is performing well, but many a times, the customers complained that they had to wait for long after placing the orders. “W” is interested in cutting the amount of time between when a customer places an order and when the order is completed. For the last year, the following data were reported in respect of Division “D”:

Inspection time =	0.5 days per batch
Process time =	2.8 days per batch
Wait time =	16.0 days per batch
Queue time =	4.0 days per batch
Move time =	0.7 days per batch

**Required**

- (i) Calculate Manufacturing Cycle Efficiency (MCE) and INTERPRET the result.
- (ii) State what percentage of the production time is spent in non-value-added activities.
- (iii) Calculate the delivery cycle time.
- (iv) Calculate the new MCE if by using Lean Production all queue time can be eliminated

**Solution****(i) Manufacturing Cycle Efficiency (MCE)**

$$= \frac{\text{Processing Time}}{\text{Processing Time} + \text{Inspection Time} + \text{Waiting Time} + \text{Queue Time} + \text{Move Time}}$$

$$= \frac{2.8 \text{ days}}{0.5 \text{ days} + 2.8 \text{ days} + 4.0 \text{ days} + 0.7 \text{ days} + 16.0 \text{ days}} = 11.67\%$$

**Interpretation**

In AKG, the MCE is 11.67%, which means that 88.33% of the time a unit is in process is spent on the activities that do not add value to the product. Monitoring the MCE helps companies to reduce non-value added activities and thus get products into the hands of customers more quickly and at a lower cost.

**(ii) Percentage of Time Spent on Non- Value Added Activities**

$$= 100\% - 11.67\%$$

$$= 88.33\%$$

**(iii) Delivery Cycle Time**

$$= 0.5 \text{ days} + 2.8 \text{ days} + 4.0 \text{ days} + 0.7 \text{ days} + 16 \text{ days}$$

$$= 24 \text{ days}$$

**(iv) Revised MCE**

$$= \frac{2.8 \text{ days}}{0.5 \text{ days} + 2.8 \text{ days} + 4.0 \text{ days} + 0.7 \text{ days} + 16.0 \text{ days}} = 14\%$$

**Note** - that MCT does not include the waiting time before the "order is received by manufacturing" (i.e. receipt time).

Examples of non-value-added cycle time include the time the product spends waiting for parts or for the next stage in the production process, being inspected or repaired or being moved.

This question has been solved in two different ways

**Wait time: from start of production to completion.**

In the first way, "Waiting Time" has been considered as the time product spends waiting for parts etc. from the start of production to completion i.e. in the production process. In this case "Waiting Time" is a non-value-added activity and part of MCT and will reduce MCE.

**Wait time: from order being placed to start of production.**

In second way, "Waiting Time" has been considered as the time between 'customer places order' and 'order received by manufacturing department', in other words it is the time product spends before the production process starts. MCT does not include the waiting time before the 'order is received by manufacturing department'. Therefore, the same has not been considered for the MCE calculations.

**Alternative**

(i) **Manufacturing Cycle Efficiency (MCE)**

$$= \frac{\text{Value Added Time (Processing Time)}}{\text{Throughput (Manufacturing Cycle) Time}}$$

$$= \frac{2.8 \text{ days}}{0.5 \text{ days} + 2.8 \text{ days} + 4.0 \text{ days} + 0.7 \text{ days}}$$

$$= 35\%$$

**Interpretation**

In AKG, the MCE is 35%, which means that 65% of the time a unit is in process is spent on the activities that do not add value to the product. Monitoring the MCE helps companies to reduce non-value added activities and thus get products into the hands of customers more quickly and at a lower cost.

(ii) **Percentage of Time Spent on Non- Value Added Activities**

$$= 100\% - 35\%$$

$$= 65\%$$

(iii) **Delivery Cycle Time**

$$= 0.5 \text{ days} + 2.8 \text{ days} + 4.0 \text{ days} + 0.7 \text{ days} + 16 \text{ days}$$

$$= 24 \text{ days}$$

(iv) **Revised MCE**

$$= \frac{2.8 \text{ days}}{0.5 \text{ days} + 2.8 \text{ days} + 0 \text{ days} + 0.7 \text{ days}}$$

$$= 70\%$$

**Question 2 - Profitability Analysis**

ABC Airlines has two divisions organised as profit centres, the Passenger Division and the Cargo Division. The following divisional informations were given for the year ended 31<sup>st</sup> March 2024:

Particulars	Cargo Division	Passenger Division	Total
Number of personnel trained	200	800	1,000
Number of flights	350	250	600
Number of reservations requested	Nil	7,000	7,000
Revenue	₹42,00,000	₹42,00,000	₹84,00,000
Operating Expenses (excluding service department charges)	₹36,00,000	₹28,50,000	₹64,50,000
Service Department Charges			
Training	₹3,20,000	₹3,20,000	₹6,40,000
Flight Scheduling	₹1,50,000	₹1,50,000	₹3,00,000
Reservations	₹1,05,000	₹1,05,000	₹2,10,000

The service department charge rate for the service department costs was based on revenue. Since the revenue of both the divisions were the same, the service department charges to each division were also the same.

#### Required

- (i) Comment on whether the income from operations for the two divisions accurately measures performance.
- (ii) Prepare the divisional income statement using the activity bases provided above in revising the service department charges.

#### Solution

- i. The reported income from operations does not accurately measure performance because the service department charges are based on revenue. Revenue is not associated with the profit centre manager's use of the service department services. For example, the Reservations Department serves only the Passenger Division and number of reservations requested by Cargo Division is NIL. Thus, by charging this cost based on revenue, these costs are incorrectly charged to the Cargo Division. Further, the Passenger Division requires additional personnel. Since these personnel must be trained, the training costs assigned to the Passenger Division should be greater than the Cargo Division.

ii.

#### ABC Airlines

Divisional Income Statement  
For the Year Ended March 31, 2024

Particulars	Cargo Division (₹)	Passenger Division (₹)	Total (₹)
Revenue	42,00,000	42,00,000	84,00,000
Less: Operating Expenses (excluding service department charges)	36,00,000	28,50,000	64,50,000
Gross Margin	6,00,000	13,50,000	19,50,000
Less: Service Department Charges			

Training	1,28,000 $\left(\frac{200}{1,000} \times ₹6,40,000\right)$	5,12,000 $\left(\frac{800}{1,000} \times ₹6,40,000\right)$	6,40,000
Flight Scheduling	1,75,000 $\left(\frac{350}{600} \times ₹3,00,000\right)$	1,25,000 $\left(\frac{250}{600} \times ₹3,00,000\right)$	3,00,000
Reservation	NIL	2,10,000 $\left(\frac{7,000}{7,000} \times ₹2,10,000\right)$	2,10,000
<b>Operating Income</b>	<b>2,97,000</b>	<b>5,03,000</b>	<b>8,00,000</b>

### Question 3 - Direct Product Profitability (DPP)

XYZ Ornamental Company has been a name to count on for quality and service. It has been designing wide range of ornamental products for more than two decades using the highest - quality standard. Such quality is achieved through years of experience and the integrity that is maintained by its employees. They are known for their perfection. VGG approached XYZ to make an inquiry of two products. The two products are indoor fountain known as 'The Star' and a large gnome known as 'Dwarfs' for garden. Mr. Bob, the management accountant of XYZ, has estimated the variable costs per unit of 'The Star' and 'Dwarfs' as being ₹622.50 and ₹103.75 respectively. He estimated his calculations based on the following information:

#### 1) Products Data

	The Star	Dwarfs	Other Products
Production/ Sales (units)	10,000	20,000	80,000
Total Direct Material Costs	₹22,50,000	₹7,50,000	₹60,00,000
Total Direct Labour Cost	₹15,00,000	₹5,00,000	₹60,00,000

- Total Variable OH for XYZ are ₹1,20,00,000 out of which 30% belong to the procurement, warehousing and use of direct materials. While all other variable overheads are related to direct labour
- XYZ presently allocates variable overheads into products units using percentage of total direct material cost and total direct labour cost.
- VGG is willing to purchase 'The Star' at ₹740 per unit and 'Dwarfs' at ₹151 per unit.
- XYZ will not accept any work yielding an estimated contribution to sales ratio less than 28%.

The directors of XYZ are considering switching to an activity-based costing system and recently appointed a management consultants' firm to undertake an in-depth review of existing operations. As result of that review, the consultants concluded that estimated relevant cost drivers for material and labour related overhead costs attributable to 'The Star' and 'Dwarfs' are as follows:

	The Star	Dwarfs	Other Products
Direct Material Related Overheads: (The volume of raw materials held to facilitate production of each product is the cost driver.)			
Material Ratio per product unit	5	8	5
Direct Labour related overheads: (The number of labour operations performed is the cost driver.)			
Labour Operations per product unit	7	6	5

**Required**

- (i) Give a financial ANALYSIS of the decision strategy which XYZ may implement about the manufacture of each product using the unit cost information available.
- (ii) Discuss whether activity-based management should be adopted in companies like XYZ.

**Solution****i. Analysis**

The product costs per unit along with the respective contribution per unit may be calculated either by employing an ABC approach or alternatively by using the existing basis for the allocation of variable overhead cost.

The current scenario of product costing suggests that 'Dwarfs' should be produced as per the request of VGG because the contribution to sales ratio is 31.29%. However, the current scenario of product costing also suggests that XYZ should not undertake production of 'The Star' at a selling price of ₹740 per unit since the estimated contribution to sales ratio is 15.88% is lower than the desired contribution to sales ratio of 28%.

Activity based costing approach ensures greater accuracy by using multiple cost drivers and determines areas generating the greatest profit or loss. Table [(d)] shows how much the contribution to sales (%) for each product changes when the overhead allocation method changes to ABC. As shown in Table, contribution to sales ratio on 'The Star' increased to 31.87% from 15.88% while contribution to sales ratio on 'Dwarfs' reduced from 31.87% to - 29.23%.

Thus, XYZ should opt to produce 'The Star' for VGG as contribution to sales ratio is 31.87 which is higher than the desired one.

- ii. The term Activity based management (ABM) is used to describe the cost management application of ABC. The use of ABC as a costing tool to manage costs at activity level is known as Activity Based Cost Management (ABM). ABM is a discipline that focuses on the efficient and effective management of activities as the route to continuously improving the value received by customers and to improve strategic and operational decisions in an organisation. Kaplan and Cooper divide ABM into Operational and Strategic.

Operational ABM covers the actions that increase efficiency, lower cost (i.e. reduce the cost driver rate of activities) and lead to higher revenue through better resources utilization- in short, the action required to do things right. In other words, it is all about 'doing things right', using ABC information to improve efficiency. It also helps in identifying and improving value added activities and removing non-value-added activities as to reduce cost without distorting product value.

Strategic ABM is about 'doing the right things'. It uses ABC information to determine which products is to be manufactured and which activities is to be used. XYZ can also use this for customer profitability analysis, identifying that which customers are the most profitable and focusing on them more.

A risk with ABM is that some activities have an implicit value are not reflected in a financial value added to any product. For example, a good and pleasant working environment can attract and retain the best human resources, but might not be identified as value-added activities in operational ABM.

ABM provides managers an understanding of costs and helps teams to make certain decisions that benefit the whole organizations and not just their own activities. Therefore, some companies like XYZ may adopt ABM to improve their operations and obtain useful activity information.

### Workings

#### (a) Direct Material Cost per unit

	The Star	Dwarfs
Total Costs (₹)	22,50,000	750,000
Production units	10,000	20,000
Cost per unit (₹)	225.00	37.50

#### (b) Direct Labour Cost per unit

	The Star	Dwarfs
Total Costs (₹)	15,00,000	5,00,000
Production units	10,000	20,000
Cost per unit (₹)	150.00	25.00

#### (c) Variable Overheads

##### Material Related

Overhead Cost = 30% × ₹120,00,000 = ₹36,00,000

Total Volume Factor

Particulars	Units	Required per unit	Total Volume
The Star	10,000	5	50,000
Dwarfs	20,000	8	1,60,000
Other	80,000	5	4,00,000
Total Volume Factor			6,10,000

Overhead per unit of volume = ₹36,00,000 / 6,10,000 = ₹5.90.

Therefore, Overhead Cost per product unit will be as follows:

The Star	5	₹5.90	29.50
Dwarfs	8	₹5.90	47.20

##### **Labour Related**

Overhead Cost = 70% × ₹120,00,000 = ₹84,00,000

Total Operations Factor

Particulars	Units	Required per unit	Total Volume
The Star	10,000	7	70,000
Dwarfs	20,000	6	1,20,000
Other	80,000	5	4,00,000
Total Operations Factor			5,90,000

Overhead per operation = ₹84,00,000/ 5,90,000 = ₹14.24.

Therefore, Overhead Cost per product unit will be as follows

<b>The Star</b>	7	₹14.24	99.68
<b>Dwarfs</b>	6	₹14.24	85.44

(d) Product Information (by unit) is as follows:

Particulars	The Star		Dwarfs	
	Current Scenario	ABC Basis	Current Scenario	ABC Basis
Selling Price ...(A)	740.00	740.00	151.00	151.00
Direct Material Cost	225.00	225.00	37.50	37.50
Direct Labour Cost	150.00	150.00	25.00	25.00
Variable Overhead Cost:				
Material Related	90.00	29.50	15.00	47.20
Labour Related	157.50	99.68	26.25	85.44
Total Variable Cost ...(B)	622.50	504.18	103.75	195.14
Contribution...(A) - (B)	117.50	235.82	47.25	(44.14)
Contribution to Sales (%)	15.88	31.87	31.29	(29.23)

**Note** - Total Variable Overheads are 120L. Out of which 30% i.e. 36L relates to material and 70% i.e. 84L relates to Labour. Now allocate variable overheads into product units using % of total direct material cost and total direct labour cost.

VO Material Related 40% of Material Cost - Rs. {36L/ (22.5L + 7.5L + 60L)}

VO Labour Related 105% of Labour Cost - Rs. {84L/ (15L + 5L + 60L)}

*The Star & Dwarf*

VO Material Related - Rs. 90 = 40% of Rs. 225 ; Rs. 15 = 40% of Rs. 37.5

VO Labour Related - Rs. 157.5 = 105% of Rs. 150 ; Rs. 26.25 = 105% of Rs. 25

#### Question 4 - Customer Profitability Analysis (CPA)

Jawahar Stationary Mart (JSM) is located in centre of city "X" and popular for wide range of stationary products at competitive rate. Box files and cobra files are among the major products of JSM. JSM clients majorly, include medium and large corporate offices apart from reasonable base of retail clients. Mr. Ronit who done his masters in operations and marketing, recently join the family business (JSM). Mr. Ronit during first week itself, identify there are regular complaints from corporate clients regarding 'delivery of items, which are different from what is ordered' and 'for not meeting the requirements'. Mr. Ronit understands consumer behavior is very critical in nature, if understood well and used through-out the business operation; then can be key success factors. Hence with intent to establishing the integrated relations with customers at JSM, Mr. Ronit advise marketing team to start recording the date regarding customer in systemic manner and reporting of same.

Following is information regarding five major customers, who are regularly orders printed cobra files (Product code – J-Cobra 10) from JSM.

Particulars	A	B	C	D	E
No. of units sold	6,000	8,000	10,000	7,000	8,000
Margin per unit (₹)	6	7.5	7	8	10
No. of purchase order	10	30	25	20	10
No. of deliveries (normal)	3	4	6	4	5
Kilometers per delivery	100	185	50	250	50

Cost of processing the order is ₹2,000 per order and cost of handling material is ₹0.15 per item, whereas transport cost is ₹3 per kilometer for delivery of goods. 3 rushed deliveries made to 'B', cost for rush delivery is ₹800 per delivery.

### Required

- Analyze customer profitability for JSM.
- Explain three fundamental aspects of CRM to facilitate building relationship with profitable customer/(s).

### Solution

#### (i) Statement of the Customer Profitability at JSM

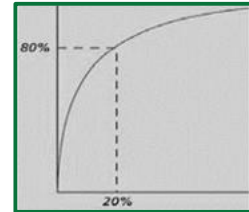
Particulars	A (₹)	B (₹)	C (₹)	D (₹)	E (₹)
Margin ... (A) (no. of units sold × margin per unit)	36,000	60,000	70,000	56,000	80,000
Customer Attributable Costs:					
Cost of Processing Purchase Orders (no. of purchase order × cost of processing the order)	20,000	60,000	50,000	40,000	20,000
Product Handling Cost (no. of units sold × cost of handling per item)	900	1,200	1,500	1,050	1,200
Delivery Cost (no. of deliveries × km per delivery × cost per km)	900	2,220	900	3,000	750
Cost of Rush Deliveries (no. of rush deliveries × cost per rush delivery)	---	2,400	---	---	---
Total ... (B)	21,800	65,820	52,400	44,050	21,950
Profit (or Loss)... (A) – (B)	14,200	–5,820	17,600	11,950	58,050
Profit/ Net Revenue (in % age)	39.44%	–9.7%	25.14%	21.34%	72.56%

## Analysis

From the above, it can be concluded that customer A, C, and D are less profitable than customer E; whereas customer B is causing losses. Customer B provides a positive operating margin but is unprofitable when customer attributable costs are considered. This is because customer B requires more sales orders than the other customers. In addition, the customer has rush delivery costs.

This analysis can make sense, if interpreted, considering the 'Pareto Analysis'. Pareto Analysis named after economist Vilfredo Pareto, who specifies that 80% of consequences come from 20% of the causes i.e. 20% of customer provide 80% of the profit. Means input and output may not be balanced. (Curve of revenue, as shown in figure; represent that initially large amount of revenue comes from small portion of sales/customers only - such small proportion of customers is critical to success of entity).

Although here proportion of 80:20 don't hold truth, but for JSM; major portion of profit (around 60%) coming from customer E only, therefore, customer E is critical to JSM. Special attention can then be given to enhancing the relationships with the customer E to ensure that customer E cannot migrate to other competitors. In addition, greater emphasis can be given to attract new customers that have the same attributes as the most profitable customer E.



Further, there is no point in serving customer B, but instead of refusing to trade with customer B, if possible; it may be better to turn it into profitable customer. Customer B can be made profitable if action is taken to convince the customer B to place a smaller number of larger quantity orders and avoid rush deliveries. If customer B cannot be convinced to change its buying behavior, selling prices should be increased to cover the extra resources consumed.

(ii) Supply chain management is the technique to integrate the supplier, manufacturing, store, and distribution function efficiently; in order to procure, produce and distribute at/in right time, quantity and place respectively. For effective distribution, CRM can be enabling tool. CRM is an integrated approach to manage and coordinate customer interactions to Identifying, acquiring, and retaining customers. CRM enables businesses to understand and retain customers (through better customer experience) apart from attracting new customer, in order to increase profitably and decrease customer management costs. CRM system, comprises following three fundamental aspects to facilitate building relationship with profitable customers –

- **Operative CRM** takes care of individual transactions and is used by operational team. Interactions by customers are kept in the data base and are used later by the service, sales, and marketing team for operational decisions. In JSM, the staff who is responsible to deal with customer must be given access to customer's details including all the information of activities performed earlier. This will enhance the JSMs' staff's efficiency to deal with customer-facing processes in a better way.
- **Analytical CRM** analyses the data created on the operational side of the CRM effort for evaluation and prediction of customer behavior. In JSM, analytical CRM can highlight the patterns in customers' behavior which will help sale team while pitching the product at JSM.
- **Collaborative CRM** ensures that information about customer must flow seamlessly throughout the supply chain, majorly distribution channel; in form of collaborative effort by all associated department of JSM to increase the quality of services provided to customers. Increase in utility

at customer end will result in increased loyalty. Collaborative CRM comprises interactive technology like email, digital media to simplify the communications between customers and staff which would help in building relationships.

### Question 5

ANCA Ltd. has decided to analyse the profitability of its four retail customers. It buys product 'Bio-aqua' at ₹218 per case and sells to them at list price less discount. The data pertaining to four customers are:

Particulars	Customer			
	A	B	C	D
No. of cases sold	7,580	38,350	78,520	15,560
List selling price	₹250	₹250	₹250	₹250
Actual selling price	₹245	₹236	₹228	₹232
No. of sale visits	6	12	16	10
No. of purchase orders	12	18	35	24
No. of delivery kilometres	280	350	450	400

It's four activities and cost drivers are:

Activity	Cost Driver Rate
Sale visits	₹750 per sale visit
Order taking	₹800 per purchase order
Deliveries	₹10.50 per delivery km travelled
Product handling cost	₹2.50 per case sold

### Required

- Compute the customer level operating income.
- Analyze the profitability for each customer.

### Solution

#### (i) Customer's Profitability Statement

Particulars	Customer- A	Customer- B	Customer- C	Customer- D
<b>Sales (cases)</b>	<b>7,580</b>	<b>38,350</b>	<b>78,520</b>	<b>15,560</b>
	(₹)	(₹)	(₹)	(₹)
List Price per case	250	250	250	250
Less: Discount	5 (₹250 × 2%)	14 (₹250 × 5.6%)	22 (₹250 × 8.8%)	18 (₹250 × 7.2%)
Actual Selling Price (Net of Discounts) per case	245	236	228	232
Less: Variable Cost per unit	218	218	218	218
Contribution per unit	27	18	10	14

Total Contribution	2,04,660 (₹27 × 7,580 units)	6,90,300 (₹18 × 38,350 units)	7,85,200 (₹10 × 78,520 units)	2,17,840 (₹14 × 15,560 units)
Less: Additional Overheads				
Visit Cost	4,500 (6 × ₹750)	9,000 (12 × ₹750)	12,000 (16 × ₹750)	7,500 (10 × ₹750)
Order Processing Cost	9,600 (12 × ₹800)	14,400 (18 × ₹800)	28,000 (35 × ₹800)	19,200 (24 × ₹800)
Delivery Cost	2,940 (280 × ₹10.50)	3,675 (350 × ₹10.50)	4,725 (450 × ₹10.50)	4,200 (400 × ₹10.50)
Product Handling Cost	18,950 (7,580 × ₹2.50)	95,875 (38,350 × ₹2.50)	1,96,300 (78,520 × ₹2.50)	38,900 (15,560 × ₹2.50)
Profit per customer	1,68,670 (11.81% of total)	5,67,350 (39.72% of total)	5,44,175 (38.10% of total)	1,48,040 (10.37% of total)
Profit per customer per case	<b>22.25</b>	14.79	6.93	9.51

(ii) Going by volume of cases sold, customer C is the biggest customer accounting for 56% of total sales volume, followed by customer B (27%), customer D (11%) and customer A (6%). However, in terms of profit per customer, Customer B is the most profitable accounting for 39.72% of the cumulative customer profits of ₹14,28,235. Customer C contributes to 38.10% of the same. Comparing customers B and C, customer B is more profitable despite accounting for sales volume that is less than half of customer C (customer C's 56% of sale volume versus customer B's 27%). The primary reason for this is because the discount given to customer C (8.8%) is higher than that given to **customer B (5.6%)**. The difference in terms of sale could be due to the fact that customer C is the biggest customer and hence is able to negotiate for a higher discount. Consequently, for each case sold, customer C gets an additional discount of ₹8 as compared to customer B. This is reflected in the contribution generated per case. Sale of one case to customer C generates ₹10 contribution versus sale of one case to customer B generates ₹18 contribution. This has a huge impact on profitability. In terms of profit generated per case sold, customer C has the lowest contribution at ₹6.93 per case. The company may review whether this difference in terms of sale to each of its customers is justified. If the discount to customer C at 8.8% was initially extended to promote sales, negotiations can be made to reduce this to mutually acceptable rates. However, care must be taken not to lose customer C to competitors.

Customer D is the least profitable accounting for just 10.37% of the total customer profits. In terms of sale volume, the customer ranks third providing 11% volume. However, the customer is not profitable because of the following reasons:

(a) A discount rate of 7.2% is provided to the customer. Each case sold after a discount of ₹18 per case, generates a contribution per case of only ₹14 per case. This is much lower compared to the contribution per case of customer A (₹27 per case) and customer B (₹18 per case). This discount policy may need to be reviewed. One scenario where such a high discount may be justified would be where customer D supplies the products that it manufactures at a discounted rate to a sister concern of the

company. Therefore, at a parent company / overall level, the higher discount rate for a low volume customer D may be justified.

- (b)** For a customer that provides 11% of volume, the number of site visits during the year were 10. Customer C giving 56% of volume had only 16 visits and customer B giving 27% of volume had only 12 visits. This indicates that customer D, although a smaller customer, requires more visits than regular customers. Therefore, site visit costs are higher for this customer. The reason for a higher handholding by the company for this customer has to be analyzed. For example, one possible reason could be that customer D requires the cases customized to its production requirement. This may require more site visits by the company's personnel. To resolve this, due to the extra work involved, the company may wish to charge a higher sale price for the cases customized for customer D. In another other scenario, it may choose to charge the customer a fixed rate for each site visit.
- (c)** For a customer that provides 11% of volume, the number of orders placed in a year are 24. Customer C giving 56% of volume placed 35 orders in a year and customer B giving 27% of volume placed 18 orders in a year. This indicates that customer D, although a small customer, places orders more frequently than other larger customers. Therefore, order processing costs are higher for customer D. The company may revise ordering schedule for this customer or find out the reason for higher proportion of purchase orders, in order to pass on some of the cost to the customer. For example, let us say, customer D has an agreement with the company to provide cases "just in time" resulting in more frequent orders as compared to other customers. Therefore, the company is providing flexibility in procurement to customer D. For this convenience, it may pass on some of the ordering cost to customer D by way of a higher selling price or a lower discount.
- (d)** Again, given the volume, the number of deliveries to customer D (400) is at a higher proportion compared to the larger customers C (450) and B (350). The company may revise delivery schedule for this customer or find out the reason for higher proportion of deliveries, in order to pass on some of the cost to the customer. For example, let us say, customer D has an agreement with the company to provide cases "just in time" resulting in more frequent deliveries as compared to other customers. Therefore, the company is providing flexibility in procurement to customer D. For this convenience, it may pass on some of the delivery cost to customer D by way of a higher selling price or a lower discount.

Customer A is the smallest customer providing only 6% of total sale volume. However, with a contribution per case at ₹27 per case and a profit per case at ₹22.25 per case, it is the most profitable of all customers. The primary reason for this is the discount of 2% offered is much lower than other customers. Each case sold to customer A yields a contribution of ₹27 as compared to a contribution of ₹10 from customer C, the biggest customer. Possible reason for a lower discount maybe customer A, being a smaller player, may have lesser bargaining power compared to other customers. If the company wishes to have a longer business relationship with customer A, it may wish to provide more favorable discount terms to this party. However, since customers B and C are much larger customers, any benefit passed onto customer A should not impact the company adversely in the long run. For example, to get more orders from customer A, the company gives a 10% discount to the party. Consequently, the profitability of customer A will decrease. Let us say customer A places huge orders due to which there are capacity constraints within the company. Sales to customers B and C, the current larger customers, may be impacted. This could affect the company adversely in terms of lost sales to customers B and C and loss of business relationships with these parties.

Therefore, careful consideration should be given before extending discounts to improve sales from customer A.

As regards product handling cost, each customer is currently charged ₹2.5 per case sold. The company, if feasible, apply Activity Based Costing technique to find out if this can be allocated based on the cost driver for each customer. Let us say, packing cost before shipment is part of product handling cost. If customer B requires special packing to ship the goods, then customer B needs to be allocated a higher packaging cost as compared to the others. This cost can be recouped from customer B through a higher selling price.

### Question 6

Bookmark LLP is a publishing firm that started operations very recently. The firm has published “Advanced Learner’s Dictionary” this first year, that have been sold to 3 distributors PER, MGH and WLY. The firm’s financials reflect profits in its first year of operations. The management is pleased with the results. However, they are interested in finding out how profitable each customer is. This would help them formulate their sales strategy.

Particulars	PER	MGH	WLY
Sales units p.a.	1,000	950	1,250
Sale price (gross)	250	250	250
Payment terms	3/10 net 30	net 30	3/10 net 30
Sales returns	0.5%	0%	10%
Delivery terms	FOB destination	FOB destination	FOB shipping point

In order to get market share, PER and WLY have been extended credit terms to avail discount if payment is made within 10 days. Customer MGH does not have much bargaining power and hence has been allowed only 30 days’ credit period without any benefit of availing discount for early payment. Both PER and WLY have made payments within 10 days to avail of the discount extended.

On the cost front, variable cost of goods sold attributable to the net sales to customers PER, MGH and WLY are ₹1,50,000, ₹1,42,500, and ₹1,87,500 respectively. Key metrics of customer assignable marketing, administrative and distribution costs are as below:

Activity	Activity Driver	No. of Units of Activity Driver			Cost Driver Rate (₹)
		PER	MGH	WLY	
Order taking and processing	# of orders	4	2	15	300
Expedited / rush orders	# of orders	1	-	5	250
Delivery costs	# distance in km.	100	50	-	80
Sale return processing	# of returns	1	-	8	150
Billing cost	# of invoices	4	2	15	50
Customer visit	# of visits	1	-	5	800
Inventory carrying cost *	# 1 per unit	1,000	950	1,250	10

\* Assume no opening and closing stock

Fixed cost that are not assignable to any customer is ₹1,00,000 p.a.

**Required**

- (i) Prepare the customer wise profitability statement as also the overall profitability statement of Bookmark LLP.
- (ii) Recommend A strategy for Bookmark LLP regarding its customers.

**Solution****(i) Customer Wise Profitability Statement and Overall Profitability Statement**

SN.	Particulars	PER	MGH	WLY	Total ₹
<b>A</b>	Sales (net proceeds) –Table 1	2,41,288	2,37,500	2,72,812	7,51,600
<b>B</b>	Variable Cost of Goods Sold	1,50,000	1,42,500	1,87,500	4,80,000
<b>C</b>	Assignable- Marketing and Administration Cost - Table 2				
	• Order Taking and Processing	1,200	600	4,500	6,300
	• Sale Return Processing	150	-	1,200	1,350
	• Billing Cost	200	100	750	1,050
	• Customer Visit	800	-	4,000	4,800
	Total Assignable Marketing and Administration Cost	2,350	700	10,450	13,500
<b>D</b>	Assignable- Distribution Cost - Table 2				
	Expedited / Rush Orders	250	-	1,250	1,500
	Delivery Costs	8,000	4,000	-	12,000
	Inventory Carrying Cost	10,000	9,500	12,500	32,000
	Total Assignable Distribution Cost	18,250	13,500	13,750	45,500
<b>E</b>	Non- Assignable Fixed Cost	-	-	-	1,00,000
<b>F</b>	Total Costs (B+C+D+E)	1,70,600	1,56,700	2,11,700	6,39,000
<b>G</b>	Net Profit (Step A - F)	70,688	80,800	61,112	1,12,600
<b>H</b>	Profit % of Sales (G / A)	29%	34%	22%	15%

**Workings****Table 1: Customer Sales Analysis - Revenue Analysis**

Particulars	PER	MGH	WLY	Total ₹
Sales {Sale Units × Sale Price (gross)}	2,50,000	2,37,500	3,12,500	8,00,000
Less: Sale Return (Step 1 × Return%)	1,250	-	31,250	32,500
Net Sales	2,48,750	2,37,500	2,81,250	7,67,500
Less: Cash Discount	7,462	-	8,438	15,900
Net Proceeds	2,41,288	2,37,500	2,72,812	7,51,600
Final Collections vs Original Sale	97%	100%	87%	94%

**Table 2: Assignable Marketing, Administrative and Distribution Costs**

Particulars	PER	MGH	WLY	Total
Order Taking and Processing (# of orders × cost per order)	1,200	600	4,500	6,300
Expedited / Rush Orders (# of orders × cost per order)	250	-	1,250	1,500
Delivery Costs (Distance in km. × cost per km)	8,000	4,000	-	12,000
Sale Return Processing (# of returns × cost per return)	150	-	1,200	1,350
Billing Cost (# of invoices × cost per invoice)	200	100	750	1,050
Customer Visit (#of customer visits × cost per visit)	800	-	4,000	4,800
Inventory Carrying Cost (# of units × inventory carrying cost p.u.)	10,000	9,500	12,500	32,000

- (ii) Customer strategy: It can be seen that Bookmark LLP has an overall profit of ₹1,12,600 or 15% of sales. While the performance is good, the firm's management has to analyze customer wise profitability.
- (a) WLY is the largest customer in terms of units sold. However, Table 1 above shows that sale returns at 10%, which is unusually large compared to other customers. Bookmark LLP has to investigate why the returns are of such large quantity. Possibly, there could be communication gap between the firm and WLY. Possible non-conformity in goods delivered has resulted in returns. Only 87% of the original sale value is being collected. The root cause of the problem has to be identified and rectified. This will also reduce the sale return processing costs.
- (b) WLY has placed many rush orders, which requires Bookmark LLP to ship these orders immediately, using costlier means of transportation. Currently, there is no charge for shipping rush orders. In order to deter WLY from repeatedly placing rush orders, Bookmark LLP can charge the customer for shipping such orders beyond a threshold number of orders. Say rush orders beyond 2 orders will be charged to the customer.
- (c) WLY has placed 15 orders for 1,250 units. Comparatively, PER and MGH placed 4 and 2 orders for approximately 1,000 units each. WLY can be requested to place fewer orders with larger quantity per order, in order to optimize ordering cost.
- (d) Being the largest customer, WLY has 5 sale visits from Bookmark LLP, which is more than the other 2 customers. Priced at ₹800 per visit, this very costly. At the same time, WLY is yielding the least profit. Therefore, Bookmark LLP should reassess if resources can be reallocated to the other two more profitable customers. That may encourage more sales from higher yielding customers.
- (e) Since WLY seems to need more hand-holding in terms of more sales visits as well as higher rush orders, Bookmark LLP may assess if it wants to discontinue or reduce business. Alternatively, it may reassign these resources towards existing or newer customers to get better profitability. However, if WLY can be migrated to a higher profitability, Bookmark LLP need not lose out its market share.
- (f) Customer MGH is the most profitable yielding 34% return over sales, although in terms of 'Advanced Learner's Dictionary' ordered, it is the smallest of the three. Bookmark LLP can assess if it can extend

some discount, in order to encourage more sales. Currently, Customer MGH does not get any discount.

- (g) Bookmark LLP can assign more sales visits to Customer PER and MGH to encourage them purchase more as well as provide high quality customer service.

### Question 7 - Pareto Analysis

Generation 2050 Technologies Ltd. develops cutting-edge innovations that are powering the next revolution in mobility and has nine tablet smart phone models currently in the market whose previous year financial data is given below:

Model	Sales (₹'000)	Profit-Volume (PV) Ratio
Tab - A001	5,100	3.53%
Tab - B002	3,000	23.00%
Tab - C003	2,100	14.29%
Tab - D004	1,800	14.17%
Tab - E005	1,050	41.43%
Tab - F006	750	26.00%
Tab - G007	450	26.67%
Tab - H008	225	6.67%
Tab - I009	75	60.00%

#### Required

- (i) Using the financial data, carry out a Pareto Analysis (80/20 rule) of Sales and Contribution.  
(ii) Discuss your findings with appropriate Recommendations

#### Solution

#### "Pareto Analysis" (\*Rounding - off difference adjusted)

Model	Sales (₹'000)	% of Total Sales	Cumulative Total	Model	Cont. (₹'000)	% of Total Cont.	Cumulative Total %
<b>Pareto Analysis Sales</b>				<b>Pareto Analysis Contribution</b>			
A001	5,100	35.05%	35.05%	B002	690	30.87%	30.87%
B002	3,000	20.62%	55.67%	E005	435	19.47%*	50.34%
C003	2,100	14.43%	70.10%	C003	300	13.42%	63.76%
D004	1,800	12.37%	82.47%	D004	255	11.41%	75.17%
E005	1,050	7.22%	89.69%	F006	195	8.73%*	83.90%
F006	750	5.15%	94.84%	A001	180	8.05%	91.95%
G007	450	3.09%	97.93%	G007	120	5.37%	97.32%
H008	225	1.55%	99.48%	I009	45	2.01%	99.33%
I009	75	0.52%	100.00%	H008	15	0.67%	100.00%
	14,550	100.00%			2,235	100.00%	

**“Diagram Showing “Sales and Contribution”**



**Recommendations**

Pareto Analysis is a rule that recommends focus on the most important aspects of the decision making in order to simplify the process of decision making. The very purpose of this analysis is to direct attention and efforts of management to the product or area where best returns can be achieved by taking appropriate actions.

Pareto Analysis is based on the 80/20 rule which implies that 20% of the products account for 80% of the revenue. But this is not the fixed percentage rule; in general business sense, it means that a few of the products, goods or customers may make up most of the value for the firm.

In present case, four models namely A001, B002, C003, D004 account for around 80% (82.47%) of total sales whereas around 80% (83.90%) of the company’s contribution is derived from five models namely B002, E005, C003, D004 and F006.

Models B002 and E005 together account for 50.34% of total contribution but having only 27.84% share in total sales. So, these two models are the key models and should be the top priority of management. Both C003 and D004 are among the models giving 80% of total contribution as well as 80% of total sales so; they can also be clubbed with B002 and E005 as key models. The management of the company should allocate maximum resources to these four models.

Model F006 features among the models giving 80%of total contribution with a relatively lower share in total sales. Management should focus on its promotional activities.

Model A001 accounts for 35.05% of total sales with only 8.05% share in total contribution. Company should review its pricing structure to enhance its contribution.

Models G007, H008 and I009 have a lower share in both total sales as well as contribution. Company can delegate the pricing decision of these models to the lower levels of management, thus freeing themselves to focus on the pricing decisions for key models.

**Question 8**

The information given below pertains to ABC Enterprises, a specialized car garage door installation company. ABC Enterprises use to get multiple service calls from customers with variety of requirements. They may have to Install, Replace, Adjust or Lubricate some part or other to make the door functional. They work with 5 major parts as given in the table, namely Door, Motor, Track, Trimmer and T-Lock.

Sr.No.	Parts	Type of Service				Total
		Install	Replace	Adjust	Lubricate	
1	Door	2	5	1	0	8
2	Motor	3	2	16	9	30
3	Track	5	0	6	6	17
4	Trimmer	14	6	0	0	20
5	T-Lock	5	0	1	0	6
6	Miscellaneous	0	2	1	1	4
	Total	29	15	25	16	85

**Required**

- (i) Using the above data, carry out a Pareto Analysis (80/20 rule) of Total Parts.
- (ii) Using the same data carry out the second level Pareto Analysis on the type of services with respect to Motors only.
- (iii) Give your Recommendations on the basis of your calculations in (i) and (ii) above.

(Do calculations to two decimals only)

**Solution****(i) Statement Showing "Pareto Analysis of Total Parts"**

Parts	No. of Items	% of Total Items	Cumulative Total
Motor	30	35.29	35.29%
Trimmer	20	23.53	58.82%
Track	17	20.00	78.82%
Door	8	9.41	88.23%
T-Lock	6	7.06	95.29%
Miscellaneous	4	4.71	100.00%

**(ii) Statement Showing "Pareto Analysis of Type of Services (Motor)"**

Type of Services	No. of Items	% of Total Items	Cumulative Total
Adjust	16	53.33	53.33%
Lubricate	9	30.00	83.33%
Install	3	10.00	93.33%
Replace	2	6.67	100.00%
	30		

**(iii)** Pareto Analysis is a rule that recommends focus on most important aspects of the decision making in order to simplify the process of decision making. The very purpose of this analysis is to direct attention and efforts of management to the area where best pay-off can be achieved by taking appropriate actions.

Pareto Analysis is based on the 80/20 rule which implies that 20% of the products account for 80% of the revenue. But this is not the fixed percentage rule. In a general business sense, it means that a few of the products, goods or customers may make up most of the value for the firm.

The present case stands in a difference to 80/20 rule. Because the company installs doors, they sometimes have multiple service calls to install each door piece by piece. They may have to install, replace, adjust, or lubricate some part to get the door working properly. They work with five main parts: door, motor, track, trimmer and t-lock. The service calls with reference to motors are heavy and accounted for as much as 35.29% of the number of calls attended. Motor together with trimmer accounted for 58.82 %. So, these two parts are to be considered as key parts and ABC enterprises must be ever ready to cater to all provisional requirements for attending these classes without any inordinate delay. Any delay in service these calls is likely to damage its service rendering reputation within a very short span of time. Further, the second level Pareto Analysis on motors has revealed a particular reference to the service problems related to motors. Adjustments and Lubrication issues cover up 83.33% of the total service problems exclusively connected to Motors. So, ABC Enterprise must direct its best efforts and develop specific expertise to solve these problems in the best interest of the customer.