

## **Foundations of Accounting & Finance**

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**Lecture – 33**

### **Decision Making using Cost Accounting Information - Examples - Part II**

#### **Introduction**

In our previous session, we started working on the Abacus case, focusing on the concept of breakeven and exploring options to improve the organization's financial viability. Upon reviewing the case, it became evident that the organization was experiencing losses, prompting us to assess various strategies for its turnaround. We examined four to five potential options to determine which would be most feasible to alleviate the current financial challenges.

Our analysis began with an in-depth look at Case One, wherein we calculated the fixed and variable costs to ascertain profitability. By dissecting these costs, we aimed to understand the impact of production volume on the organization's financial health. This approach was driven by the recognition that fixed costs remain constant regardless of production levels, while variable costs fluctuate with the number of units produced.

Additionally, we sought to determine the contribution of each manufactured unit toward covering fixed costs and generating profit. With these insights, we explored Option A and Option B:

#### ***Option A***

Option A involved implementing a 15% price reduction to operate at full capacity. Our analysis aimed to determine the profitability of this approach.

On the other hand, Option B entailed a 25% price increase along with a ₹150,000 boost in the advertising budget. We evaluated whether this strategy would lead to profitability.

Upon scrutinizing Option A, we observed that despite achieving full capacity utilization, the 15% price reduction resulted in a significant increase in losses. This occurred because the contribution per unit plummeted from ₹1.51 to ₹0.79, rendering it insufficient to cover costs.

#### ***Option B***

In Option B, the strategy involves a 25% price increase coupled with a ₹150,000 augmentation in the advertising budget and a 20% boost in sales commission. This decision is anticipated to

enhance sales volume by 50%, resulting in a projected volume of 135,000 units compared to the previous 90,000.

With the price elevated to ₹6.25 from the initial ₹5, and the sales commission escalated to 10%, the contribution per unit is now higher at ₹2.34. Despite the increased advertising expenditure and fixed costs, the overall profitability improves significantly.

Upon thorough analysis, Option 2B demonstrates a profit of over ₹24,825, surpassing the results of Option 2A and the current operational state. Consequently, Option 2B emerges as the more favourable alternative among the considered options. Let us move to the case 3 of the case.

### **Case – 3 - Abacus**

*The president of Abacus India Ltd does not want to tinker with the price. How much may advertising be increased to bring production and sales up to 130,000 units and will earn a target profit of 5 per cent of sales?*

To calculate the leeway for increasing advertising expenditure, we start by assessing the current situation. The selling price per unit remains at ₹5, resulting in total sales of ₹650,000. With no changes in variable costs per unit, the total variable cost remains constant.

The total contribution, calculated by multiplying the contribution per unit by the number of units sold, is ₹196,300. The target profit is set at 5% of sales, amounting to ₹32,500. Deducting fixed costs leaves a surplus of ₹23,400 after covering both fixed costs and the desired profit.

Therefore, the maximum increase in the advertising budget can be ₹23,400. This option presents an opportunity for increased profitability, provided that the additional advertising expenditure can effectively increase sales to the desired 130,000 units. It is crucial to assess whether the potential increase in sales justifies the additional advertising investment of ₹23,400. This decision warrants consultation with the sales and marketing teams to determine the feasibility and effectiveness of the proposed advertising strategy.

	<b>Question No. 3</b>	
<b>Particulars</b>		
units sold		1,30,000
Sales	5.00	6,50,000
<b>Variable expenses</b>		
direct materials	2.00	
direct labor	1.00	
variable factory overhead	0.20	
variable sales commission* @ 4%	0.20	
shipping cost	0.04	
variable admin overhead	0.05	
TOTAL VARIABLE Cost	3.49	
<b>Contribution per unit</b>	<b>1.51</b>	<b>1,96,300</b>
<b>Fixed costs</b>		
<b>factory overhead</b>		
advertising and salaries		
for 2B increased adv cost		
admin fixed		
TOTAL FIXED COST		<b>1,40,400</b>
<b>Profit or loss</b>		
target profit		<b>32,500</b>
surplus after covering fc and desired profit		<b>23,400</b>
<b>advertising budget for option 3 can be increased by 23400</b>		

#### **Case – 4 -Abacus**

*A Government department is willing to buy 60,000 units of product “if the price is right”. Assume that the present market of 90,000 units at Rs 5 each will not be disturbed. Abacus India Ltd. will not have to pay any sales commission on this order. The Government Department will pick up the units directly from Abacus India Ltd. premises (ex-works).*

*However, Abacus India Ltd. must refund Rs. 24,000 of the total sales price of this order to subsidize a safety promotion campaign to be launched by the Government Department. In addition, special packaging, (showing the Government’s name instead of Abacus India Ltd.) will increase manufacturing costs of these 60,000 units by 10 paise per unit. At what unit price must the Government Department be quoted for Abacus India Ltd to breakeven on total operations in 2021.*

A Government department is interested in purchasing 60,000 units of Abacus India Ltd.'s product, provided the price is acceptable. This order will not affect the existing market of 90,000 units, each priced at Rs. 5. However, certain conditions apply:

1. Abacus India Ltd. must refund Rs. 24,000 from the total sales price to subsidize a safety promotion campaign initiated by the Government Department.
2. Special packaging with the government's name will increase manufacturing costs by 10 paise per unit.
3. There will be no sales commission, and shipping costs are not applicable as the Government Department will collect the units directly from Abacus India Ltd.'s premises (ex-works).

To calculate the unit price at which the Government Department must be quoted for Abacus India Ltd. to break even on total operations, we need to consider the variable costs associated with manufacturing the 60,000 units.

The total variable cost for manufacturing each unit of the government order amounts to Rs. 3.25. Additionally, special packaging costs Rs. 0.10 per unit, and Rs. 24,000 must be refunded from the total sales price, distributed across the 60,000 units, resulting in an additional cost of Rs. 0.40 per unit.

Considering that there are no fixed costs associated with this order, as they are covered by the existing 90,000 units, the objective is to ensure no loss or profit on this government order. Therefore, the existing loss of Rs. 4,500 must be shared by the 60,000 units to break even.

To achieve breakeven, the desired sale price for the government order is calculated to be Rs. 3.83 per unit. Selling the 60,000 units at this price ensures that Abacus India Ltd. incurs neither a loss nor a profit on this order, effectively breaking even.

		Question No. 4
<b>Particulars</b>		
units sold		60,000
Sales		
<b>Variable expenses</b>		
direct materials	2.00	
direct labor	1.00	
variable factory overhead	0.20	
variable sales commission* @ 4%		
shipping cost		
additional cost of special pack option 4	0.10	
variable admin overhead	0.05	
TOTAL VARIABLE Cost	3.35	
<b>Contribution per unit</b>		
<b>Fixed costs</b>		
<b>factory overhead</b>		
advertising and salaries		
for 2B increased adv cost		
for option 3		
admin fixed		
TOTAL FIXED COST		
<b>Profit or loss</b>		
<b>subsidy that has to be returned to the govt of 24000</b>	<b>0.40</b>	
<b>overall I have to breakeven</b>	<b>0.075</b>	
<b>cost that I am going charge for the special order</b>	<b>3.83</b>	

### Case 5 - Abacus

*The president's daughter, who is a recent graduate from a prestigious design institute, thinks that a fancy new package will aid in getting more sales. Present packaging costs per unit are all variable and consist of 5 paise direct materials and 4 paise direct labour, new packaging costs will be 30 paise and 13 paise respectively. Assuming no other changes in cost behaviour, how many units must be sold to earn a net profit of Rs 20,000?*

Given these changes and assuming no other alterations in cost behavior, we need to determine the number of units that must be sold to achieve a net profit of Rs. 20,000.

Here is how we calculate it:

**1. Variable Costs Calculation:**

- Previous packaging costs: 5 paise (direct materials) + 4 paise (direct labor) = 9 paise.
- New packaging costs: 30 paise (direct materials) + 13 paise (direct labor) = 43 paise.
- Total variable costs: Rs. 3.83 per unit.

**2. Contribution Margin per Unit:**

- Contribution per unit = Selling price - Total variable cost = Rs. 5 - Rs. 3.83 = Rs. 1.17.

**3. Desired Profit:**

- Desired profit = Rs. 20,000.

**4. Fixed Costs:**

- Fixed costs remain unchanged at Rs. 140,000.

**5. Number of Units to be Sold:**

- Number of units = (Fixed costs + Desired profit) / Contribution per unit = (Rs. 140,000 + Rs. 20,000) / Rs. 1.17  $\approx$  137,094 units.

Thus, approximately 137,094 units need to be sold to earn a net profit of Rs. 20,000.

<b>Abacus India Ltd</b>		
		<b>Question No. 5</b>
<b>Particulars</b>		
units sold		
Sales	5.00	
<b>Variable expenses</b>		
direct materials	2.25	
direct labor	1.09	
variable factory overhead	0.20	
variable sales commission* @ 4%	0.20	
shipping cost	0.04	
variable admin overhead	0.05	
<b>TOTAL VARIABLE Cost</b>	<b>3.83</b>	
<b>Contribution per unit</b>	<b>1.17</b>	
<b>Fixed costs</b>		
<b>factory overhead</b>		
advertising and salaries		
for 2B increased adv cost		
admin fixed		
<b>TOTAL FIXED COST</b>		<b>1,40,400</b>
<b>Profit or loss</b>		
<b>Desired profit as per option 5</b>		<b>20000</b>
number of units I have to sell to earn desired profit		137094
<b>Verify</b>		
total contribution for the units that you have arrived		160401.15
less fixed cost		1,40,400
profit = desired profit		20,001

### **Case 6 - Abacus**

*If the selling price increases by 10% and the commission also increases to 10% and the desired profit is Rs. 30,000 how many units must Abacus sell?*

If the selling price increases by 10% and the commission also increases to 10%, with a desired profit of Rs. 30,000, we need to determine how many units Abacus must sell.

Here is the calculation:

**1. Selling Price Increase:**

- New selling price = Old selling price \* 1.10 = ₹5 \* 1.10 = ₹5.50.

**2. Variable Costs:**

- Direct material cost: ₹2.
- Direct labor cost: ₹1.
- Variable overhead: ₹0.20.
- Commission: 10% of the new selling price = ₹5.50 \* 0.10 = ₹0.55.
- Rest of the costs remains the same.
- Total variable cost per unit = ₹2 + ₹1 + ₹0.20 + ₹0.55 + ₹0.04 + ₹0.05 = ₹3.84.

**3. Contribution Margin per Unit:**

- Contribution per unit = Selling price - Total variable cost = ₹5.50 - ₹3.84 = ₹1.66.

**4. Desired Profit:**

- Desired profit = Rs. 30,000.

**5. Fixed Costs:**

- Fixed costs remain unchanged ( ₹140,400)

**6. Number of Units to be Sold:**

- Number of units = (Fixed costs + Desired profit) / Contribution per unit = (140,400 + 30,000) / Rs. 1.66.

Upon calculation, approximately 102,651 units need to be sold to achieve a desired profit of Rs. 30,000.



Abacus India Ltd		
		Question No. 6
Particulars		
units sold		
Sales		5.50
<b>Variable expenses</b>		
direct materials		2.00
direct labor		1.00
variable factory overhead		0.20
variable sales commission* @ 4%		0.55
shipping cost		0.04
variable admin overhead		0.05
TOTAL VARIABLE Cost		3.84
<b>Contribution per unit</b>		<b>1.66</b>
<b>Fixed costs</b>		
<b>factory overhead</b>		
advertising and salaries		
for 2B increased adv cost		
admin fixed		
TOTAL FIXED COST		1,40,400
<b>Profit or loss</b>		
option 6		
Desired profit		30000
number of units I have to sell to earn desired profit		102651
<b>Verify</b>		
total contribution for units that you have arrived at		170402.32
less fixed cost		1,40,400
profit = desired profit		30,002

### Summary of Abacus

The analysis of the Abacus case presented various decision-making scenarios, particularly focusing on pricing strategies and their impacts on profitability. Through six options, we explored different approaches to address the company's financial situation, considering factors like sales volume, pricing adjustments, advertising budget, and desired profit.

While these six options provide a framework for decision-making, it is essential to recognize that the possibilities are not limited to these scenarios. One can develop numerous alternative strategies tailored to the company's specific needs and goals.

### **Additional problems**

Cost accounting offers a wide range of decisions that can be explored. To delve into these concepts, let us tackle a series of simple problems. There are approximately five or six different problems available. Let us start by examining the first one, which is quite straightforward.

#### **Question one (Drop or not drop the product)**

A study has been conducted to determine if Product A should be dropped. Sales of the product total ₹200,000 per year; variable expenses total ₹140,000 per year. Fixed expenses charged to the product total ₹90,000 per year. The company estimates that ₹40,000 of these fixed expenses will continue even if the product is dropped. These data indicate that if Product A is dropped, the company's overall net operating income would be?

#### **Solution**

In this scenario, we are presented with the decision of whether or not to drop Product A. Let us break it down into two options: dropping the product or continuing its operation. We will also calculate the difference between the two scenarios.

Sales of Product A amount to ₹200,000 per year. If we drop the product, sales would be zero, but if we continue manufacturing, it remains at ₹200,000. The variable expenses for the product are ₹140,000 annually. If dropped, there would be no variable expenses, but if continued, it would remain at ₹140,000.

Now, let us calculate the contribution margin. With no sales, the contribution margin is zero under the drop the product category. However, if we continue manufacturing, the contribution margin would be ₹60,000 (₹200,000 - ₹140,000).

Fixed expenses attributed to the product are ₹90,000 per year. However, the company estimates that ₹40,000 of these fixed expenses will persist even if the product is dropped.

Thus, if we drop the product, our net operating loss would be ₹40,000 due to the ongoing fixed expenses. However, if we continue manufacturing, our net operating loss would be ₹30,000, as the contribution from sales partially offsets the fixed expenses.

In essence, by continuing to manufacture Product A, although we still incur a loss, it is less than if we were to drop the product. This decision hinges on the fact that fixed costs remain regardless of production, and the contribution from sales helps mitigate some of these costs. Therefore, the analysis suggests that continuing to manufacture Product A is the more favourable option.

	<b>Drop the product</b>	<b>Continue manufacturing</b>	<b>Difference</b>
Sales	-	2,00,000	
Variable expenses	-	1,40,000	
CONTRIBUTION	-	60,000	
Fixed expenses	40,000	90,000	
<b>profit / loss</b>	<b>-40,000</b>	<b>-30,000</b>	<b>-10,000</b>

	<b>Drop the product</b>	<b>Continue manufacturing</b>	<b>Difference</b>
Sales	-	2,00,000	
Variable expenses	-	1,40,000	
CONTRIBUTION	-	60,000	
Fixed expenses	40,000	90,000	
<b>profit / loss</b>	<b>-40,000</b>	<b>-30,000</b>	<b>-10,000</b>