COST VOLUME PROFIT ANALYSIS (II)

Calculating the Target Sales (in units and amount) required to achieve target profit

CVP analysis can also be used to calculate the volume of sales that would be required to achieve a target level of profit. To achieve the target profit, the business will have to earn enough contribution to cover all of its fixed cost and then make the required amount of profit.

Break-Even in Rupee = (Total Fixed Cost + Profit) / Contribution Margin Ratio

$$\text{Target Sales in Rupee} = \frac{\text{Total Fixed Cost} + \text{Profit}}{1 - \frac{\text{Variable Cost}}{\text{Selling Price}}}$$

Break-Even in Units = (Total Fixed Cost + Profit) / Contribution Margin per unit

$$Target Sales \text{ in } units = \frac{Total \;\; Fixed \;\; Cost + Profit}{Price \text{ per unit} \;\; - \;\; Variable \;\; Cost \text{ per unit}}$$

Example # 1: ABC Foods just purchased Sports Drink Company located in Abbottabad. You have been hired to run it as Financial Manager. Corporate headquarters wants you to improve the profitability of the company. You decide to use break-even analysis to help reach the "right" decision. You have the following information: The wholesale price per case is Rs. 15; Variable costs: direct labor, materials, and variable factory overhead are Rs. 5.50 per case and Fixed overhead, including your salary, and other costs that will not change with production volume are Rs. 80,000 per month. What should be targeted sales to achieve a target profit of Rs. 30,000 in Rupee and in Units?

Solution

$$\text{Target Sales (in Rupee)} = \frac{\text{Total Fixed Costs} + \text{Target Profit}}{\text{Contribution Margin Ratio}}$$

Estimated future profit

CVP analysis is used to estimate future profits

Example # 2: ZC Limited makes and sells a single product. It budgeted sales for the next year are 40,000 units. The Product sells for Rs. 18

Variable cost of production and sales are:

Direct material	2.40	Direct labor	5.00
Variable production overhead	0.50	Variable selling overhead	1.25

Fixed expenses are estimated for the year as:

Fixed production overhead	80,000	Administration costs	60,000
Fixed selling costs	90,000		

Required: Calculate the expected profit for the year

Solution:

Deciding Selling Price

CVP analysis can be useful in helping management to compare different courses of action and select the option that will earn the biggest profit. For example, management might be considering two or more different selling prices for a product, and want to select the profit maximization price. The profit maximization price is the contribution maximization price.

Example # 3: A company has developed a new product which has a variable cost of Rs. 12. Fixed cost relating to this product is Rs. 48,000 each month. Management is trying to decide what the selling price for the product should be. A market research has suggested that monthly sales demand for the product will depend upon the selling price chosen as follows:

Sales Price	Rs. 16	Rs. 17	Rs. 18
Expected monthly Sales	17,000 Units	14,500 Units	11,500 Units

Required: Identify the selling price at which the expected profit will be maximized

Solution:

Multiple-product break-even analysis

Break-even can be calculated for multiple-product

Example # 4: Star Wood Company produces Chairs and Tables. Fixed costs are Rs. 1,290,000 per year. Sales revenue and variable costs per unit are as follow:

	Chairs	***Tables***
Sales Price	Rs. 20	Rs. 25
Variable Costs	8	10

Requirements:

(a) Suppose the company currently sells 140,000 Chairs per year and 60,000 Tables per year. Assuming the sales mix stays constant how many Chairs and Tables must the company sell to break-even in units?

(b) Suppose the company currently sells 60,000 chairs per year and 140,000 tables per year. Assuming the sales mix stays constant, how many chairs and tables must the company sell to break even per year?

Solution (a):

Units	***Chairs***	***Tables***	***Total***

Break-even in Unit = Fixed Cost / Weighted Average Contribution Margin

Weighted Average Contribution Margin = Total Contribution / Total units

Solution (b):

Units	Chairs	Tables	Tables

Contribution Margin Income Statement

The contribution margin income statement is preferable for internal, management purposes. It separates costs by their behavior: variable costs or fixed costs. It also works very well with CVP analysis.

Example # 5: Let's see what happens when we sell all 60,000 units that were produced. Make a contribution margin income statement:

Production	60,000 units	Assume no opening inventory
Sales	60,000 units	Rs. 12/unit
Costs:		
Direct material	Rs. 180,000	Rs. 3 per unit produced
Direct labor	Rs. 120,000	Rs. 2 per unit produced
Variable overhead	Rs. 60,000	Rs. 1 per unit produced
Fixed overhead	Rs. 150,000	
Variable selling/administrative	Rs. 60,000	Rs. 1 per unit sold
Fixed selling/administrative	Rs. 30,000	

Solution:

Contribution Margin Income Statement

Sales (60,000 x Rs.12)		
Less variable costs		
Direct material (60,000 x Rs. 3)		
Direct labor (60,000 x Rs. 2)		
Variable overhead (60,000 x Rs. 1)		
Variable selling & administrative (60,000 x Rs. 1)		
Contribution margin		
Less fixed costs		
Fixed overhead		
Fixed selling & administrative		
Operating income		**Rs. 120,000**

Further Study and Practice of Inventory Valuation

Video Lecture (Cost Volume Profit Analysis)

https://youtu.be/b14IY2y6so8 (Part 1)

https://youtu.be/FRHxONSgYus (Part 2)

Workbook Solution (Cost Volume Profit Analysis)

https://www.accountancyknowledge.com/cost-volume-profit-analysis/

Practice MCQs (Cost Volume Profit Analysis)

https://www.accountancyknowledge.com/cost-volume-profit-analysis-mcqs/

Practice Problems with Solutions (Cost Volume Profit Analysis)

https://www.accountancyknowledge.com/cost-volume-profit-analysis-problems-and-solutions/