

Strategic Management Accounting

Tutorial 1

CVP Analysis

Activity 1

- 1) When Janith first opened his photo developing shop “J-Develop”, he offered one service only, i.e. developing prints. He charged an average price of Rs.60. The average variable cost of each print was Rs.36, computed as follows:

	<u>Rs</u>
Cost of processing (materials and labor)	30
Other costs (sales and support).	<u>6</u>
Average variable cost per print.	<u>36</u>

The fixed costs to operate the store for March, a typical month, were Rs 150,000.

In March, “J-Develop” processed 12,000 prints.

Find out the operating profit of “J-Develop” for the month of March.

- 2) Using the information provided in Activity 1 find out BEP both in units and sales value.
- 3) Use the information given in Activity 1 and following as well. If “J-Develop” sells 8000 prints, calculate margin of safety in units and as a percentage of current sales. Explain the meaning of margin of safety percentage calculated in this question.
- 4) Use the information given in Activity 1 and following as well.
Suppose that the owner of “J-Develop” wants to find the number of prints required to generate after-tax operating profits of Rs.180,000. “J-Develop” has a 25 % tax rate.

Determine the sales volume required to earn an after-tax operating profit of Rs. 180,000.

- 5) When “J-Develop” started, it provided only one service, print processing. After a short time, a second service, enlargements of photos, was offered. The prices and costs per product of the two products are as follows:

	Prints (Rs)	Enlargements (Rs)
Selling price	60	100
Variable cost	36	56
Contribution margin	24	44

When these two services were offered, monthly fixed costs totaled to Rs.182,000. Suppose that the owner of “J-Develop” is willing to assume that the prints and enlargements will sell in a 9:1 ratio (assumed product mix is 90% prints and 10% enlargements).

How many prints and enlargements must “J-Develop” sell to break even?

6) A firm is producing three products namely X, Y and Z. It has a fixed cost of Rs.50,000

Product	Sales (Rs.'000)	Variable costs (Rs.'000)
X	150	100
Y	60	20
Z	40	50

Prepare a multi-product chart and show the break-even sales.

7) Sumagi PLC operates a chain of shoe stores. It sells ten different styles of shoes with identical purchase costs and selling prices. The following data is provided.

	Rs.
Selling price	800
Variable cost per unit	550
Salesmen's commission per unit	50
Annual fixed expenses	
Rental	240,000
Salaries	600,000
Other expenses	160,000

Required:

- (i) Calculate** the minimum sales requirement in units to avoid any loss.
- (ii) Determine** the required sales revenue to earn an after tax profit of Rs. 200,000 if the tax rate is 20%
- (iii) Calculate** the new break even sales revenue when the sales commission is discontinued, and sales staff is paid a fixed monthly salary of Rs. 50,000.
- (iv) Identify** the margin of safety (Rupee value) and the profit assuming that the maximum possible sales are 8,000 units per annum.

- 8) A manufacturing firm is producing two products. The following information is provided in respect of these products.

	Product A	Product B
Selling price (Rs.)	80	100
Variable cost (Rs.)	60	60
Machine hour per unit	2	5
Current production and sales in units	4,000	6,000
Maximum demand in units	5,000	9,000

Total fixed cost of the firm is Rs. 200,000 and maximum capacity is 38,000 machine hours.

Required:

Calculate the break-even point in units and value under the current sales mix.

- 9) DP Ltd is producing product X and Y. As the company's management accountant you have prepared the following monthly budget.

	Product X	Product Y
Sales units	5,000	2,000
Sales revenue (Rs.)	100,000	80,000
Variable cost (Rs.)	40,000	60,000
Fixed production overhead (Rs.)	Rs. 32,000/-	
Fixed administration overheads (Rs.)	Rs. 22,000/-	

The fixed overhead can only be avoided if neither product is manufactured.

- (i) Calculate number of units to be sold of each product to reach to the Break-even point
 - a) If Product X alone is sold,
 - b) If Product X and Y are sold in the ratio of 4:1
- (ii) As an alternative to the manual production process assumed in the budget, DP Ltd. has the option of adopting a computer-aided process. The process would cut variable costs of production by 10% and increase fixed costs by Rs.5, 072/- per month. How will this affect the above answer?

10) From the following information calculate the break-even point

Fixed overhead	Rs.210,000
Variable cost	Rs.20 per unit
Selling price	Rs.50 per unit

- a) If the company is earning a profit of Rs.300,000 express the margin of safety available to it.
- b) Assuming that the company is operating in full capacity and income tax rate applicable to it is 35%, find the no of units that the company should sell to earn an after tax target profit of Rs. 300,000.

11) Chandana PLC manufactures a product which has a selling price of Rs. 14 and variable cost of Rs.6 per unit with an annual fixed cost of Rs. 24,400. Annual sales demand is 8,000 units.

A new production method is currently being considered for introduction. This will increase the fixed costs by 30%, but would reduce the variable cost to Rs. 5 per unit. The superior quality of the finished product would enable sales rise to 8,500 units per annum at a price of Rs. 15 each.

Required:

- a) Calculate the break-even output level with the current production method is introduced.
- b) If the envisaged production method is introduced calculate the new break-even output level.
- c) At what level of sales would the annual profit be the same with both production methods?

12) Asiri Dental Clinic offers three basic dental services. Following are its prices and costs:

	Price per Unit (Rs)	Variable Cost per Unit (Rs)	Units Sold per Year
Cleaning	120	80	9,000
Filling	400	300	900
Capping	1,200	500	100

Variable costs include the labor costs of the dental hygienists and dentists. Fixed costs of Rs.400, 000 per year include building and equipment costs, marketing costs, and the costs of administration. Painless Dental Clinics is subject to a 30 percent tax rate on income. A

cleaning “unit” is a routine teeth cleaning that takes about 45 minutes. A filling “unit” is the work done to fill one or more cavities in one session. A capping “unit” is the work done to put a crown on one tooth. If more than one tooth is crowned in a session, then the clinic counts one unit per tooth (e.g., putting crowns on two teeth counts as two units).

Required:

- a) Given the above information, how much will Painless Dental Clinics, Inc., earn each year after taxes?
- b) Assuming the above sales mix is the same at the break-even point, at what sales revenue does Painless Dental Clinics, Inc., break even?
- c) Assuming the above sales mix, at what sales revenue will the company earn Rs.140,000 per year after taxes?
- d) Painless Dental Clinics, Inc., is considering becoming more specialized in cleanings and fillings. What would be the company’s revenues per year if the number of cleanings increased to 12,000 per year, the number of fillings increased to 1,000 per year, while the number of cappings dropped to zero? With this change in product mix, the company would increase its fixed costs to Rs. 450,000 per year. What would be the effect of this change in product mix on the clinic’s earnings after taxes per year? If the clinic’s managers seek to maximize the clinic’s after-tax earnings, would this change be a good idea?

Sensitivity analysis

Question 1

Hoot Washington is the newly elected leader of the Republican Party. Media Publishers is negotiating to publish Hoot’s Manifesto, a new book that promises to be an instant best-seller. The fixed costs of producing and marketing the book will be \$500,000. The variable costs of producing and marketing will be \$4.00 per copy sold. These costs are before any payments to Hoot. Hoot negotiates an up-front payment of \$3 million, plus a 15% royalty rate on the net sales price of each book. The net sales price is the listed bookstore price of \$30, minus the margin paid to the bookstore to sell the book. The normal bookstore margin of 30% of the listed bookstore price is expected to apply.

1. Prepare a PV graph for Media Publishers.
2. How many copies must Media Publishers sell to (a) break even and (b) earn a target operating income of \$2 million?
3. Examine the sensitivity of the breakeven point to the following changes:
 - Decreasing the normal bookstore margin to 20% of the listed bookstore price of \$30

- Increasing the listed bookstore price to \$40 while keeping the bookstore margin at 30%
- Comment on the results

Question 2

The Brown Shoe Company produces its famous shoe, the Divine Loafer that sells for \$60 per pair. Operating income for 2011 is as follows:

Sales revenue (\$60 per pair)	\$300,000
Variable cost (\$25 per pair)	125,000
Contribution margin	175,000
Fixed cost	100,000
Operating income	\$75,000

Brown Shoe Company would like to increase its profitability over the next year by at least 25%. To do so, the company is considering the following options:

1. Replace a portion of its variable labor with an automated machining process. This would result in a 20% decrease in variable cost per unit, but a 15% increase in fixed costs. Sales would remain the same.
2. Spend \$30,000 on a new advertising campaign, which would increase sales by 20%.
3. Increase both selling price by \$10 per unit and variable costs by \$7 per unit by using a higher quality leather material in the production of its shoes. The higher priced shoe would cause demand to drop by approximately 10%.
4. Add a second manufacturing facility which would double Brown's fixed costs, but would increase sales by 60%.

Evaluate each of the alternatives considered by Brown Shoes. Do any of the options meet or exceed Brown's targeted increase in income of 25%? What should Brown do?