The Institute of Finance Management
Accounting and Finance Department
Tutorial Questions
Cost- Volume Profit (CVP) Analysis
BACC 3 and BAIT 3
Instructor: Dr Zawadi Ally

QUESTION 1

Lucent Technologies, a manufacturer of routers and switching gear, warned of a larger-than-expected loss for the third quarter.

Lucent management had expected the company to begin breaking even by the end of the current fiscal year, but now estimates to break even sometime in the next fiscal year which begins this September. The company, which has suffered from a collapse in telecommunications spending, has struggled through 12 consecutive quarters of losses. The reason for the current quarter's loss is that revenues are 18 percent less (Shs2.4 million) than they were in the second quarter. According to Frank D'Amelio, Lucent's chief financial officer, the revenue shortfall is due to spending cuts by North American wireless carriers and an unexpected delay in a network contract. Lucent management is struggling to reduce its break-even point which is currently Shs2.4 billion. O ne way to accomplish that goal is through further job cuts. The number of employees at Lucent was 106,000 at one time; now, that number is being slashed to 35,000. The company may be forced to rethink its strategy of being a wide-ranging equipment supplier. Because of consecutive quarterly losses, the announcement of the current quarter's expected loss, and the extension of the break-even target date, Standard and Poor's has threatened to further downgrade the company's credit rating, which is already at junk status at B-minus!

Source: Lucent Still

REQUIRED

(a) What is meant by the term "break-even point"? How is the break-even point computed?
(b) Lucent warned of an 18 percent drop in quarterly revenues. What effect does this expected drop in revenues have on the break-even point?
(c) The lowered revenue forecast raises the risk of further job cuts at Lucent. What effect will job cuts have on the break-even point?
(d) Explain three ways Lucent could lower its break-even point

QUESTION 2

Darling Co manufactures three types of electrical goods for hair: curlers (C), straightening irons (S) and dryers (D.) The budgeted sales prices and volumes for the next year are as follows:

	C	S	D
Selling price	Shs110	Shs160	Shs120
Units	20,000	22,000	26,000

Each product is made using a different mix of the same materials and labour. Product S also uses new revolutionary technology for which the company obtained a ten-year patent two years ago. The budgeted sales volumes for all the products have been calculated by adding 10% to last year's sales.

The standard cost card for each product is shown below.

	C	S	D
	Shs	Shs	Shs
Material 1	12	28	16
Material 2	8	22	26
Skilled labour	16	34	22
Unskilled labour	14	20	28

Both skilled and unskilled labour costs are variable.

The general fixed overheads are expected to be Shs 640,000 for the next year.

REQUIRED:
(a) Calculate the weighted average contribution to sales ratio for Darling Co.
(b) Calculate the total break-even sales revenue for the next year for Darling Co.
(c) Draw a multi-product profit-volume (PV) chart showing clearly the profit/loss lines assuming:
(i) You are able to sell the products in order of the ones with the highest ranking contribution to sales ratios first; and
(ii) You sell the products in a constant mix.
Note: only one graph is required
(d) Briefly comment on your findings in (c).

QUESTION 3

A summary of a manufacturing company's budget profit statement for its next financial year, when it expect to be operating at 75 percent of capacity, is given below

	Shs '000'	Shs '000'
Sales 9,000 units @ Shs 32,000		288,000
Less; Direct materials	54,000	
Direct wages	72,000	
Production overhead-fixed	42,000	
-variable	18,000	
		186,000
Gross profit		102,000
Less; Admin, selling and dist. Costs		
- fixed	36,000	
-variable with sales volume	27,000	

	63,000	
Operating profit		39,000

It has been estimated that

(i) If the selling price per unit was reduced to Shs 28,000, the increased demand would utilise 90 percent of the company's capacity without any additional advertising expenditure.

(ii) To attract sufficient demand to utilise full capacity would require a 15 percent reduction in the current selling price and Shs 5,000,000 special advertising campaign.

REQUIRED

(a) Calculate the breakeven point in units based on the original budget

(b) Calculate the profits and break-even points which would result from each of the two alternatives and suggest which alternative should be implemented.

QUESTION 4

A Company produces and sells two products with the following costs:

	Product XA	Product XB
Variable costs (per Shs of sales)	Shs 0.45	Shs 0.6
Fixed costs (per period)	Shs 1,212,000	Shs 1,212,000

Total sales revenue is currently generated by the two products in the following proportions:

Product XA	70%
Product XB	30%

REQUIRED:

(a) Calculate the break-even sales revenue per period, based on the sales mix assumed above

(b) Prepare a profit volume chart of the above situation for sales revenue up to Shs 4,000,000. Show on the same chart the effect of a change in the sales mix to product XA 50%, product XB 50%. Clearly indicate on the chart the break-even point for each situation.

(c) Of the fixed costs Shs4 55,000 are attributable to product XA. Calculate the sales revenue required on product XA in order to recover the attributable fixed costs and provide a net contribution of Shs700, 000 towards general fixed costs profit

QUESTION 5

Bungo Company Ltd manufactures and sells only one product. The demand in 2018 is expected to be 30,000 units, although the factory has the capacity to produce 48,000 units. A budget was prepared recently and shows the follow

	Shs Per unit	30,000 units

Sales	140	Shs 4,200,000
Material & other variable costs	70	Shs 2,100,000
Fixed costs	60	Shs 1,800,000

The budget showed an operating profit of Shs 300,000. However, as the capital employed is Shs 4,000,000 the return is only 7.5%. The management has generated three different proposals to improve the firm's profitability

Proposal 1: increase the selling price of the product, it is expected that if selling price were reduced to Shs 120 per unit, the sales would increase to 40,000 units

Proposal 2: reduce the variable costs of production. The purchase of new machine will increase the capital employed by Shs 1,000,000. This will increase the depreciation charge by Shs 200,000. The new machine will reduce the variable costs to Shs 60 per unit. The sales will remain unchanged at 30,000 units and the selling price per unit will also remain at Shs 140 per unit

Proposal 3: increase the spending on promotional activities. If an additional amount of Shs 1,200,000 was spent on promoting the product and selling price was increased to Shs 150, it is expected that sales would increase to 45,000 units

(a) What was the breakeven point of the company when the selling price was set at Shs 140 per unit?

(b) Evaluate each of the three proposals and suggest which should be adopted by the management

(c) After it had been decided to implement proposal 3, there has been an enquiry for a special export order of 2,000 units. What is the minimum selling price that could be quoted for the export order to increase the return on the company's capital employed to 16 percent

QUESTION 6

ABC Ltd manufactures pressure cookers the selling price of which is Shs 300 per unit. Currently the capacity utilization is 60% with a sale turnover of Shs 1,800,000. The company proposed to reduce the selling price by 20% but desires to maintain the same profit position by increasing the output. Assuming that the increased output could be made and sold, determine the level at which the company should operate to achieve the desired objective.

The following further data are available

a) Variable cost per unit Shs 60
b) Semi-variable cost (including a variable element of Shs 10 per unit) Shs 180,000
c) Fixed cost Shs 300,000 will remain constant up to 80% level. Beyond this an additional amount of Shs 60,000 will be incurred

QUESTION 7

In the year 2014, Mr. Gacha was engaged as a consultant to ABC Stores and prepared some analysis of its Cost-Volume-Profit relationship. Among his findings was the profit volume ratio was 40% at the company's planned selling price of Shs 500.

The company expects to sells 8,000 units at the price of Shs 500 per unit which will results in an income of Shs 4,000,000, with expected annual fixed costs of Shs 720,000. In his report to the managing Director Mr. Gacha stressed the point that profits would change at the rate of 40 cents per Shs changes.

The Managing Director afterwards called Mr. Gacha to tell him that the results did not come out as he told him. During the year 2015, the Company generated profits of Shs 1,231,250 on the sales volume of Shs 4,646,250.
Despite the fact that variable cost per unit were incurred as expected, the company had higher fixed costs than expected because of massive advertising campaign which costed the Company Shs 40,000 during the year. The Company was coupled with an increase in selling price and Managing Director was very pleased with the results.

However Mr. Gacha is asked to explain why profit did not increase by 40% of the added sales volume of Shs 646,250, but rather somewhat more

REQUIRED

(a) Reconstruct the income statement for the year 2015 based on the actual results
(b) Determine
    (i) The number of units sold
    (ii) The Selling price per unit
(c) Explain to Managing Director Why the results were at variance with the planned results

QUESTION 8

BM Manufacturing Company has prepared a draft budget for sales of 10,000 units for the next year as follows;

	Shs		Shs
Sales price per unit			300
Variable costs per unit			
Direct material	80		
Direct labour (2 hours @ Shs 30)	60		
Variable overheads (2 hours @ Shs 5)		10	150
Contribution per unit			150
Budgeted contribution			1,500,000
Less; Budgeted Fixed Costs			1,400,000
Budgeted profit			100,000

The Board of Directors of the company is dissatisfied with the proposed budget and therefore asks you in your capacity as the Management Accounting of the company, to come up with an alternative budget with a higher profit figure.

After critically studying the market environment in which the industry is operating in, and taking into consideration both the company's past performance and its future performance projections, you came up with some suggestions which will lead to an improved budgeted profit of Shs 250,000. You further ascertain that in order for the company to be able to realize the improved budget profit, it will have incurred an additional Shs 285,000 on advertising and put the sale price up to Shs 320 per unit. In spite of the price increase, it is expected that sales volume would rise to 12,000 units.

In order to achieve the extra production capacity, however the work force must be able to reduce the time taken to make each unit of the product. It is proposed to offer a pay and productivity deal in which the wage rate per hour is increased to Shs 40. The hourly rate for variable overhead will be unaffected.

REQUIRED*;*
Prepare a revised budget of BM Manufacturing Company giving effect to the above suggestions

QUESTION 9
The following data is available concerning Mambo Poa Ltd's single product BM

	Shs (per unit)	Shs (per unit)
Selling price		50
Variable cost		
Direct material	7	
Direct labour	8	
Variable overhead	5	20
Contribution		30
Fixed overhead		15
Profit		**15**

A total of 1,000 units of product BM are produced and sold each month

REQUIRED
(a) Draw the following breakeven charts and mark on each the breakeven point, the margin of safety and the monthly profit.
  (i) Basic breakeven chart
  (ii) Contribution breakeven chart
  (iii)Profit –volume chart
(b) Discuss the usefulness of each chart from a point of view of management decision-making

QUESTION 10
Mr. Jongo has recently developed a new improved music CD and shown below is a summary of a report by a firm of management consultants on the sales potential and production costs of the new CD.
Sales potential: The sales volume is difficult to predict and will vary with the price, but it is reasonable to assume that a selling price of Shs 10,000 per CD, sales would be between 7,500 and

10,000 units per month. Alternatively, if the selling price was reduced to Shs 9,000 per CD, sales would between 12,000 and 18,000 units per month.

Production costs: If production is maintained at or below 10,000 units per month, then variable manufacturing costs would be approximately Shs 8,250 per CD and fixed costs Shs 12,125,000 per month. However, if production is planned to exceed 10,000 units per month, then variable costs would be reduced to Shs 7,750 per CD, but fixed costs would increase to Shs 16,125,000 per month.

Mr. Jongo has been charged Shs 2,000,000 for the report by the management consultants, and, in addition, he has incurred Shs 3,000,000 development costs on the new CD.

If Mr. Jongo decides to produce and sell the new CD, it would be necessary for him to use factory premises, which he owns, but are leased to a colleague for a rental of Shs 400,000 per month. Also, he will have to resign from his current post in a Muungano cultural group where he is earning a salary of Shs 1,000,000 per month.

Required

(a) Identify in the question examples of:

- (i) Opportunity costs
- (ii) Sunk costs.

(b) Analyse the report from the consultants and advice Mr. Jongo on the potential profitability of the alternatives shown in the report.

Note: Any assumptions considered necessary or matters which may require further investigation or comment, should be clearly stated.