Tutorial Letter 106/3/2012

MANAGEMENT ACCOUNTING TECHNIQUES AS AID IN DECISION-MAKING

ACN306Y

Semesters 1 and 2

Department of Management Accounting

This tutorial letter contains important information about your module.

Dear Student

This tutorial letter consists of an additional question illustrating cost-volume-profit analysis incorporating a mix of products. This concept is introduced on pages 68 to 70 of your textbook. It is in your own interest to also work through all the questions in the study guide, prescribed text book and assignments.

With kind regards

	Telephone number	Room number	E-mail
Mrs S Klopper	012 429 8526	1 – 40	ACN306Y-12-S1@unisa.ac.za (for use during the **first semester**)
Mrs A Raath	012 429 4490	1 – 39	
Mrs P R Berry	012 429 4415	1 – 37	ACN306Y-12-S2@unisa.ac.za (for use during the **second semester**)

LECTURERS: ACN306Y

ADDITIONAL COST-VOLUME-PROFIT QUESTION
(COST-VOLUME-PROFIT ANALYSIS AND MULTIPLE PRODUCTS)

The Board of Directors of African Safaris (Pty) Ltd has identified the need to expand their operations. The marketing manager has taken the initiative to do extensive market research and proposes the following:

1. African Safaris (Pty) Ltd to obtain the exclusive rights to operate game drives in a world renowned nature reserve in the heart of the Karoo which accommodates mostly international tourists.
2. The marketing manager proposes the signing of an agreement with the nature reserve to guarantee the operation of five (5) double-decker vehicles. The vehicles will operate on different routes with the ability to do two (2) game drives per day for five (5) days a week. The nature reserve is open for the full 52 weeks each year. Obtaining exclusive rights will entail a cost of R5 000 000 per year which can be paid in 12 equal monthly installments.
3. The purchase price of the vehicles will be R300 000 each which will include additional costs to ensure that the vehicles comply with international safety standards. The vehicles will be financed through cash reserves. Depreciation will be written off according to the straight line method at 20% per year.
4. The vehicles will accommodate 15 economy class passengers to be seated on the lower level and 12 first class passengers to be seated on the upper level.
5. The operations manager has provided the following estimates per passenger:

	Economy class	**First class**
	R	**R**
Income per game drive	332	500
General operating costs (variable)	50	50
Refreshments and headsets to hear the tour guide	-	75
Fees paid to service staff on the vehicle	10	15

Other expected costs include:

- Vehicle maintenance and running costs of R7 000 per month per vehicle; and
- Drivers will be permanently employed at a rate of R150 per game drive. The salaries are based on a 100% capacity.

6. Market research has shown that the expected number of passengers per game drive is ten (10) economy and six (6) first class passengers.
7. Assume that all game drives will go ahead as planned regardless of the number of passengers on the vehicle and that the ratio of passengers will remain the same as per the market research done.

REQUIRED:

(a) Calculate the maximum capacity of passengers per year.
(b) Determine the break-even point in number of passengers per year.
(c) Calculate the margin of safety and explain the significance thereof.

SOLUTION TO THE ADDITIONAL COST-VOLUME-PROFIT ANALYSIS QUESTION:

(a) Maximum capacity of passengers per year

Number of game drives per year = 5 x 2 x 5 x 52
= 2 600

Therefore maximum capacity of passengers = (15 + 12) x 2 600
= 70 200 passengers per year

(b) Break-even point in number of passengers per year

$$= \frac{\text{Fixed costs}}{\text{Weighted marginal income}}$$

= R6 110 000 ① / R305 ②

= 20 032,79 passengers

≈ 20 033 passengers

Calculations:

① ***Calculation of fixed costs***

	R
Depreciation on vehicles [(R300 000 X 20%) X 5]	300 000
Exclusive rights	5 000 000
Vehicle maintenance and running cost [(R7 000 X 12) X 5]	420 000
Drivers' salaries [(150 X 2 X 5 X 52) X 5]	390 000
Total	**6 110 000**

② ***Calculation of marginal income per passenger:***

	Economy class R	**First class R**
Income per game drive	332	500
Less: Variable costs	60	140
General operating costs	50	50
Refreshments and headsets to hear the tour guide	-	75
Fees paid to service staff on the vehicle	10	15
Marginal income	**272**	**360**

Weighted marginal income per passenger:

= [R272 X (10 / 16)] + [R360 X (6 / 16)]

= R170 + R135

= R305

(c) Margin of safety

$$\frac{\text{Expected sales} - \text{Break-even sales (calculated in (b) above)}}{\text{Expected sales}}$$

$$= \frac{41\,600\ ③ - 20\,033}{41\,600}$$

$$= 51{,}84\%$$

Actual sales may therefore decline by 51,84% before African Safaris (Pty) Ltd will suffer a loss.

Calculations:

③ ***Expected sales***

First class passengers (2 600 x 6)	15 600
Economy class passengers (2 600 x 10)	26 000
TOTAL	**41 600**