The Institute of Finance Management

Accounting and Finance Department

TUTORIAL QUESTIONS

Advanced Variances

BACC 3 and BAIT 3

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QUESTION 1

BM Co is an electronics company which makes two types of televisions – plasma screen TVs and LCD TVs. It operates within a highly competitive market and is constantly under pressure to reduce prices. BM Co operates a standard costing system and performs a detailed variance analysis of both products on a monthly basis. Extracts from the management information for the month of November are shown below:

		Note
Total number of units made and sold	1,400	1
Material price variance	Shs 28,000,000A	2
Total labour variance	Shs 6,050,000A	3

Notes

1. The budgeted total sales volume for TVs was 1,180 units, consisting of an equal mix of plasma screen TVs and LCD screen TVs. Actual sales volume was 750,000 plasma TVs and 650,000 LCD TVs. Standard sales prices are Shs 350,000 per unit for the plasma TVs and Shs 300,000 per unit for the LCD TVs. The actual sales prices achieved during November were Shs 330,000 per unit for plasma TVs and Shs 290,000 per unit for LCD TVs. The standard contributions for plasma TVs and LCD TVs are Shs 190,000 and Shs 180,000 per unit respectively.

2. The sole reason for this variance was an increase in the purchase price of one of its key components, X. Each plasma TV made and each LCD TV made requires one unit of component X, for which BM Co's standard cost is Shs 60,000 per unit. Due to a shortage of components in the market place, the market price for November went up to Shs 85,000 per unit for X. BM Co actually paid Shs 80,000 per unit for it.

3. Each plasma TV uses 2 standard hours of labour and each LCD TV uses 1·5 standard hours of labour. The standard cost for labour is Shs 14,000 per hour and this also reflects the actual cost per labour hour for the company's permanent staff in November. However, because of the increase in sales and production volumes in November, the company also had to use additional temporary labour at the higher cost of Shs18,000 per hour. The total capacity of

BM's permanent workforce is 2,200 hours production per month, assuming full efficiency. In the month of November, the permanent workforce were wholly efficient, taking exactly 2 hours to complete each plasma TV and exactly 1·5 hours to produce each LCD TV. The total labour variance therefore relates solely to the temporary workers, who took twice as long as the permanent workers to complete their production.

REQUIRED:

a) Calculate the following for the month of November, showing all workings clearly:
   (i) The sales price variance and sales volume contribution variance;
   (ii) The material price planning variance and material price operational variance;
   (iii) The labour rate variance and the labour efficiency variance

b) Explain the reasons why BM Co would be interested in the material price planning variance and the material price operational variance.

QUESTION 2

Simba plastic is a manufacturing company. It has a small permanent workforce but it is also reliant on temporary workers, whom it hires on three-month contracts whenever production requirements increase. All buying of materials is the responsibility of the company's purchasing department and the company's policy is to hold low levels of raw materials
in order to minimize inventory holding costs. Simba uses cost plus pricing to set the selling prices for its products once an initial cost card has been drawn up. Prices are then reviewed on a quarterly basis. Detailed variance reports are produced each month for sales, material costs and labour costs. Departmental managers are then paid a monthly bonus depending on the performance of their department.

One month ago, Simba began production of a new product. The standard cost card for one unit was drawn up to include a cost of Shs 84 for labour, based on seven hours of labour at Shs12 per hour. Actual output of the product during the first month of production was 460 units and the actual time taken to manufacture the product totaled 1,860
hours at a total cost of Shs 26,040.

After being presented with some initial variance calculations, the production manager has realized that the standard time per unit of seven hours was the time taken to produce the first unit and that a learning rate of 90% should have been anticipated for the first 1,000 units of production. He has consequently been criticized by other departmental managers who have said that, 'He has no idea of all the problems this has caused.'

REQUIRED:

(a) Calculate the labour efficiency planning variance and the labour efficiency operational variance AFTER taking account of the learning effect.
   Note: The learning index for a 90% learning curve is –0·1520 (5 marks)

(b) Discuss the likely consequences arising from the production manager's failure to take into account the learning effect before production commenced.

QUESTION 3

ABC Co makes high quality, hand-made chocolate ABCs which it sells to a local retailer. All chocolates are made in batches of 16, to fit the standard boxes supplied by the retailer. The standard cost of labour for each batch is Shs 6·00 and the standard labour time for each batch is half an hour. In November, ABC Co had budgeted production of 24,000 batches; actual production was only 20,500 batches. 12,000 labour hours were used to complete the work and there was no idle time. All workers were paid for their actual hours worked. The actual total labour cost for November was Shs 136,800. The production manager at ABC Co has no input into the budgeting process.

At the end of October, the managing director decided to hold a meeting and offer staff the choice of either accepting a 5% pay cut or facing a certain number of redundancies. All staff subsequently agreed to accept the 5% pay cut with immediate effect.

At the same time, the retailer requested that the ABCs be made slightly softer. This change was implemented immediately and made the chocolates more difficult to shape. When recipe changes such as these are made, it takes time before the workers become used to working with the new ingredient mix, making the process 20% slower for at least the first month of the new operation.

The standard costing system is only updated once a year in June and no changes are ever made to the system outside of this.

REQUIRED:

a) Calculate the total labour rate and total labour efficiency variances for November, based on the standard cost provided above.
b) Analyse the total labour rate and total labour efficiency variances into component parts for planning and operational variances in as much detail as the information allows.
c) Assess the performance of the production manager for the month of November.

QUESTION 4

Valet Co is a car valeting (cleaning) company. It operates in Kenya, which has been badly affected by the global financial crisis. Petrol and food prices have increased substantially in the last year and the average disposable household income has decreased by 30%. Recent studies have shown that the average car owner keeps their car for five years before replacing it, rather than three years as was previously the case. Figures over recent years also show that car sales in Kenya are declining whilst business for car repairs is on the increase.

Valet Co offers two types of valet – a full valet and a mini valet. A full valet is an extensive clean of the vehicle, inside and out; a mini valet is a more basic clean of the vehicle. Until recently, four similar businesses operated in Valet Co's local area, but one of these closed down three months ago after a serious fire on its premises. Valet Co charges customers Shs 50 for each full valet and Shs 30 for each mini valet and this price never changes. Their budget and actual figures for the last year were as follows:

	Budget		Actual	
Number of valets				
Full valets	3,600		4,000	
Mini valets	2,000		3,980	
	Shs	**Shs**	**Shs**	**Shs**
Revenue		240,000		319,400
Variable costs				
Staff wages	(114,000)		(122,000)	
Cleaning materials	(6,200)		(12,400)	
Energy costs	(6,520)		(9,200)	
		(126,720)		(143,600)
Contribution		113,280		175,800
Fixed costs:				
Rent, rates and depreciation		(36,800)		(36,800)
Operating profit		76,480		139,000

The budgeted contribution to sales ratios for the two types of valet are 44·6% for full valets and 55% for mini valets.

REQUIRED:

(a) Using the data provided for full valets and mini valets, calculate:

(i) The total sales mix contribution variance;

(ii) The total sales quantity contribution variance.

(b) Briefly describe the sales mix contribution variance and the sales quantity contribution variance.

(c) Discuss the SALES performance of the business for the period, taking into account your calculations from part (a) AND the information provided in the scenario.

QUESTION 5

Best Bite Cakes make cakes, which are sold directly to the public. The new production manager (a celebrity chef) has argued that the business should use only organic ingredients in its cake production. Organic ingredients are more expensive but should produce a product with an improved flavour and give health benefits for the customers. It was hoped that this would stimulate demand and enable an immediate price increase for the cakes.

Best Bite Cakes operates a responsibility based standard costing system which allocates variances to specific individuals. The individual managers are paid a bonus only when net favourable variances are allocated to them.

The new organic cake production approach was adopted at the start of March 2016, following a decision by the new production manager. No change was made at that time to the standard costs card. The variance reports for February and March are shown below (Fav = Favourable and Adv = Adverse)

Manager responsible	Allocated variances	February Variance Shs	March Variance Shs
Production manager			
	Material price (total for all ingredients)	25 F	2,100 A
	Material mix	0	600 A
	Material yield	20 F	400 F
Sales manager			
	Sales price	40 A	7,000 F
	Sales contribution volume	35 A	3,000 F

The production manager is upset that he seems to have lost all hope of a bonus under the new system. The sales manager thinks the new organic cakes are excellent and is very pleased with the progress made.
Best Bite Cakes operate a JIT stock system and holds virtually no inventory.

REQUIRED:
(a) Assess the performance of the production manager and the sales manager and indicate whether the current bonus scheme is fair to those concerned.

In April 2016 the following data applied:

Standard cost card for one cake (not adjusted for the organic ingredient change)

Ingredients	Kg	Shs
Flour	0·10	0·12 per kg
Eggs	0·10	0·70 per kg
Butter	0·10	1·70 per kg
Sugar	0·10	0·50 per kg
Total input	0·40	
Normal loss (10%)	(0·04)	
Standard weight of a cake	0·36	
Standard sales price of a cake		0·85
Standard contribution per cake after all variable costs		0·35

The budget for production and sales in April was 50,000 cakes. Actual production and sales was 60,000 cakes in the month, during which the following occurred:

Ingredients used	Kg	Shs
Flour	5,700	Shs 741
Eggs	6,600	Shs 5,610
Butter	6,600	Shs 11,880
Sugar	4,578	Shs 2,747
Total input	23,478	Shs 20,978
Actual loss	(1,878)	

Actual output of cake mixture	21,600	
Actual sales price of a cake		Shs 0·99

All cakes produced must weigh 0·36 kg as this is what is advertised.

REQUIRED:

(b) Calculate the material price, mix and yield variances and the sales price and sales contribution volume variances for April. You are not required to make any comment on the performance of the managers.

QUESTION 6

The Forma Soap Co makes environmentally-friendly soap using three basic ingredients. The standard cost card for one batch of soap for the month of September was as follows:

Material	Kilograms	Price per kilogram (Shs)
XA	0·25	10
XB	0·6	4
XC	0·5	3

The budget for production and sales in September was 120,000 batches. Actual production and sales were 136,000 batches. The actual ingredients used were as follows:

Material	Kilograms
XA	34,080
XB	83,232
XC	64,200

REQUIRED:

(a) Calculate the total material mix variance and the total material yield variance for September.

(b**)** In October the materials mix and yield variances were as follows:

Mix:	Shs	6,000 adverse
Yield:	Shs	10,000 favourable

The production manager is pleased with the results overall, stating:

At the beginning of September I made some changes to the mix of ingredients used for the soaps. As I expected, the mix variance is adverse in both months because we haven't yet updated our standard cost card but, in both months, the favourable yield variance more than makes up for this. Overall, I think we can be satisfied that the changes made to the product mix are producing good results and now we are able to produce more batches and meet the growing demand for our product.'

The sales manager, however, holds a different view and says:

'I'm not happy with this change in the ingredients mix. I've had to explain to the board why the sales volume variance for October was Shs 22,000 adverse. I've tried to explain that the quality of the soap has declined slightly and some of my customers have realized this and simply aren't

happy but no-one seems to be listening. Some customers are even demanding that the price of the soap be reduced and threatening to go elsewhere if the problem isn't sorted out.'

REQUIRED:

(i) Briefly explain what the adverse materials mix and favourable materials yield variances indicate about production at Farma Soap Co in October**.** Note: You are NOT required to discuss revision of standards or operational and planning variances.

(ii) Discuss whether the sales manager could be justified in claiming that the change in the materials

QUESTION 7

KTM manufactures bed sheets and pillowcases which it supplies to a major hotel chain. It uses a just-in-time system and holds no inventories.

The standard cost for the cotton which is used to make the bed sheets and pillowcases is Shs 5 per m2. Each bed sheet uses 2 m^2 of cotton and each pillowcase uses 0·5 m^2. Production levels for bed sheets and pillowcases for November were as follows:

	Budgeted production Levels (units)	Actual production levels (units)
Bed sheets	120,000	120,000
Pillowcases	190,000	180,000

The actual cost of the cotton in November was Shs 5·80 per m^2. 248,000 m^2 of cotton was used to make the bed sheets and 95,000 m^2 was used to make the pillowcases.

The world commodity prices for cotton increased by 20% in the month of November. At the beginning of the month, the hotel chain made an unexpected request for an immediate design change to the pillowcases. The new design required 10% more cotton than previously. It also resulted in production delays and therefore a shortfall in production of 10,000 pillowcases in total that month.

The production manager at KTM is responsible for all buying and any production issues which occur, although he is not responsible for the setting of standard costs.

REQUIRED:

(a) Calculate the following variances for the month of November, for both bed sheets and pillow cases, and in total:
   (i) Material price planning variance;
   (ii) Material price operational variance;
   (iii) Material usage planning variance
   (iv) Material usage operational variance.

(b) Assess the performance of the production manager for the month of November.

QUESTION .8

Choka Co is a company which manufactures and sells three types of biscuits in packets. One of them is called 'Ooze' and contains three types of sweeteners: honey, sugar and syrup. The standard materials usage and cost for one unit of 'Ooze' (one packet) is as follows:

		Shs
Honey	20 grams at Shs0·02 per gram	0·40
Sugar	15 grams at Shs0·03 per gram	0·45
Syrup	10 grams at Shs0·025 per gram	0·25
		1·10

In the three months ended 30 November 2011, Choka Co produced 101,000 units of 'Ooze' using 2,200 kg of honey, 1,400 kg of sugar and 1,050 kg of syrup. Note: there are 1,000 grams in a kilogram (kg). Choka Co has used activity-based costing to allocate its overheads for a number of years. One of its main overheads is machine set-up costs. In the three months ended 30 November 2011, the following information was available in relation to set-up costs:

Budget	
Total number of units produced	264,000
Total number of set ups	330
Total set-up costs	Shs 52,800

Actual	
Total number of units produced	320,000
Total number of set ups	360
Total set-up costs	Shs 60,000

REQUIRED:

(a) Calculate the following variances for materials in Ooze:

(i) Total materials usage variance;

(ii) Total materials mix variance;

(iii) Total materials quantity (yield) variance.

(b) Calculate the following activity-based variances in relation to the set-up cost of the machines:

(i) The expenditure variance;

(ii) The efficiency variance.

(c) Briefly outline the steps involved in allocating overheads using activity based costing.