CHARTERED ACCOUNTANTS EXAMINATIONS

PROFESSIONAL LEVEL

P2: ADVANCED MANAGEMENT ACCOUNTING

TUESDAY 17 JUNE 2014

TOTAL MARKS – 100; TIME ALLOWED: THREE (3) HOURS

INSTRUCTIONS TO CANDIDATES

1. You have fifteen (15) minutes reading time. Use it to study the examination paper carefully so that you understand what to do in each question. You will be told when to start writing.

2. This paper is divided into TWO sections:
   Section A: One (1) compulsory question.
   Section B: Four (4) Optional questions. Attempt any three (3) questions.

3. Enter your student number and your National Registration Card number on the front of the answer booklet. Your name must NOT appear anywhere on your answer booklet.
4. Do NOT write in pencil (except for graphs and diagrams).

5. The marks shown against the requirement(s) for each question should be taken as an indication of the expected length and depth of the answer.

6. All workings must be done in the answer booklet.

7. Discount Factor tables/Present Value and Annuity Tables are attached at the end of the question paper.

8. Graph paper (if required) is provided at the end of the answer booklet.

SECTION A

This is a Compulsory Question and must be attempted.

QUESTION ONE

Sally Limited is an investment group which owns five subsidiary companies. The company has operated in Zambia for twenty years. The group is keen to ensure that each company operates as an autonomous profit centre. There has been several inter - company transactions within the group and therefore the need to devise appropriate rules governing the transfer prices attached to such transactions. The following details have been recorded between two subsidiaries namely Lusho Limited and Amano Limited.

Lusho Limited

Lusho Limited has spare production capacity which could be used to manufacture 4,167 units of a component (which cannot be bought or sold outside Sally Limited) each month. The variable cost of production would be K81 per unit and the fixed costs associated with this production capacity amount to K300, 000 per month.

Amano Limited

Amano Limited could manufacture a product which it could sell for K180 per unit by using one unit of the component produced by Lusho Limited and incurring additional variable costs of K45 per unit. Amano Limited has plenty of spare production capacity.

The Manager of Lusho Limited argues that the transfer price of components sold to other companies within the Sally Limited should be calculated as full cost of production plus a 25% mark-up, which is the formula applied in determining selling prices of products sold to external customers.

Required:

(a) Explain the consequences for Sally Limited of requiring transfer prices to be based on the full cost of goods transferred plus a mark-up. (6 Marks)

Assume now that Sally Limited is considering introducing a rule that the transfer price should be based on the marginal cost of production up to the point of making the transfer plus the opportunity cost associated with making the transfer.

Required:

(b) Explain why this rule would not necessarily result, in behavior, by those two companies which is optimal for Sally Limited as a whole? (4 Marks)

(c) Explain why two (2) other transfer pricing rules may be more satisfactory for Sally Limited. Your answer to this part should include explanations of the advantages and disadvantages of these two other transfer pricing rules, and indications of the steps which Sally Limited could take in order to minimise the impact of the disadvantages. (10 marks)

(d) Explain Three (3) benefits that may be claimed for the use of activity based budgeting rather than a traditional incremental budgeting system. (6 Marks)

(e) Explain Beyond budgeting and discuss its benefits to a company such as Sally Limited.

(14 marks)

(Total: 40 marks)

SECTION B

There are four (4) questions in this section. Answer any three (3).

QUESTION TWO

Chikakanta Limited based in Southern Province of Zambia produces different sizes of footballs. It has designed a new ball called the 'Kumi' and expects to produce this ball in a continuous operation over a 5 days period.

During this period, it is expected that a total of sixteen 'Kumi' will be produced and sold. The production of the 'Kumi' is a labour intensive operation and units are produced one after another.

The costs of producing the first 'Kumi' are as follows:

- Skilled labour – 4 hours at a rate of K2/ hour
- Unskilled labour – 6 hours at a rate of K1.50/ hour
- Materials – K20
- Overheads – K1/labour hour worked (total of skilled and unskilled)

It is known that in producing any product, skilled labour usage experiences a 75% learning curve effect and unskilled labour usage experiences an 85% learning curve effect.

Chikakanta Limited has decided to set the selling price per unit of the 'Kumi' as the average production cost per unit (for the full sixteen unit production run) plus a 25% addition thereon for profit.

Required:

(a) Calculate the selling price per unit of the 'Kumi'. (9 Marks)

(b) Calculate the forecast total production cost of the third and fourth Kumi produced. (5 Marks)

(c) Calculate the profit or loss arising from the sale of the third and fourth units using the unit selling price you have calculated in your answer to (a). (2 Marks)

(d) If the second 'Kumi' alone is expected to take 2 skilled labour hours and 4.2 unskilled labour hours to make, demonstrate how both learning rates of 75% and 85% have been calculated. (2 Marks)

(e) Explain Four (4) limitations of the learning curve theory. (2 Marks)

(Total: 20 Marks)

QUESTION THREE

Kafue Bakery Limited (KBL) has put up an ambitious expansion plan for its operations. The Managing Director believes that the acquirement of a computerised oven at cost of K150,000 will increase production levels. The oven will be depreciated over a period of five years and at the end of this time be sold off at K3, 000. The Directors of KBL have agreed to use a 10% post-tax discount rate to evaluate this investment. The KBL's market size for the year 2015 is expected to be 30,000 units with a growth rate of 10% per year in the subsequent four years.

Selling price, unit variable cost and fixed overhead costs (excluding straight line depreciation) are expected to be as follows during the year ended 2015:

	K
Selling price per unit	6.0
Variable production cost per unit	3.5
Variable selling & distribution cost per unit	1.0
Fixed production cost for the year	20,000
Fixed selling & distribution cost for the year	6,000
Fixed administration cost for the year	3,000

The following rates of annual inflation are expected for each of the four years:

	%
Selling prices	10
Production costs	9
Selling and distribution costs	7
Administration costs	6

The company pays taxation on its profits at the rate of 35%, with half of this being payable in the year in which the profit is earned and the remainder being payable in the following year. Capital allowances for such an investment is at the rate of 25% per annum on reducing balance basis.

Required:

(a) Calculate the Net Present Value of this investment. (12 Marks)

(b) Calculate the Internal Rate of Return of the investment. (3 Marks)

(c) Explain the real rate of return and the money rate of return and explain how they would be used when calculating the Net Present Value of a project's cash flows. (5 Marks)

(Total: 20 Marks)

QUESTION FOUR

Teyabeko Ltd is a manufacturing company and sells a single product. The company operates a standard marginal costing system.

Details of the budget and actual data for the previous six month period are given below.

Budget data

Standard production cost per unit:

Direct material	2.6 litres @ K6.50/litre
Direct labour	2.25 hours @ K6/hour
Variable overheads	2.25 hours@ K2/hour

Standard selling price:	K63 per unit
Budgeted fixed production overheads:	K704,000
Budgeted production and sales:	60,000 units

Actual data

Direct material	2.56 litres @ K6.80/litre
Direct labour	2.2 hours@ K6.3/hour
Variable overheads	2.2 hours @ K2.5/hour
Actual selling price:	K62 per unit
Actual fixed production overheads:	K650,000
Actual production and sales:	61,000 units

After the end of the six-month period and prior to the preparation of the above operating statement, it was decided to revise the standard costs retrospectively to take account of the following:

- A 9% increase in the direct material price per litre;
- A labour rate increase of 12%;
- The standard for labour efficiency had anticipated buying a new machine leading to a 30% decrease in labour hours; instead of buying a new machine, existing machines had been improved, giving an expected 15% saving in material usage.

Required:

(a) Calculate the variances that could be included in an Operating Statement. (13 Marks)

(b) Prepare an Operating Statement which reconciles the budgeted gross profit and the actual gross profit. (4 Marks)

(c) Explain why planning and operational variances provide better information for planning and control purposes. (3 Marks)

(Total: 20 Marks)

QUESTION FIVE

Njanji Railways Limited (NRL) operates a passenger train service. The directors of the company have always focused solely on the use of traditional financial measures in order to assess the performance of NRL. The company has recorded profits since its inception about ten years ago. However, recently the company has witnessed an upward trend in the staff turnover rate which has worried the directors. The staff turnover has been attributed to poor remunerations and long working hours employees have been subjected to in the past two years. The Managing Director of NRL has asked you, as a management accountant, for assistance with regard to the adoption of a balanced scorecard approach to performance measurement and the Fitzgerald and Moon Model within Njanji.

Required:

(a) Explain the weakness of using the traditional financial measures and how non-financial measures can be manipulated. (6 Marks)

(b) Discuss three (3) aspects of a reward system using Fitzgerald and Moon Model that could be used to help resolve the problem of high staff turnover rates. (6 Marks)

(c) Prepare a Memorandum explaining the potential benefits and limitations that may arise from the adoption of a balanced scorecard approach to performance measurement within NRL. (8 Marks)

(Total: 20 Marks)

END OF PAPER

Formulae Sheet

Learning curve

$Y = ax^b$

Where Y = cumulative average time per unit to produce x units
a = the time taken for the first unit of output
x = the cumulative number of units produced
b = the index of learning (log LR/log2)
LR = the learning rate as a decimal

Demand curve

$P = a - bQ$

$b = \dfrac{\text{change in price}}{\text{change in quantity}}$

a = price when Q = 0

$MR = a - 2bQ$

Modified Internal Rate of Return

$$MIRR = \left[\frac{PV_R}{PV_I}\right]^{\frac{1}{n}}\left(1 + r_e\right) - 1$$

Present Value Table

Present value of 1 i.e. $(1 + r)^{-n}$

Where r = discount rate
n = number of periods until payment

Discount rate (r)

Periods (n)	1%	2%	3%	4%	5%	6%	7%	8%	9%	10%	
1	0·990	0·980	0·971	0·962	0·952	0·943	0·935	0·926	0·917	0·909	1
2	0·980	0·961	0·943	0·925	0·907	0·890	0·873	0·857	0·842	0·826	2
3	0·971	0·942	0·915	0·889	0·864	0·840	0·816	0·794	0·772	0·751	3
4	0·961	0·924	0·888	0·855	0·823	0·792	0·763	0·735	0·708	0·683	4
5	0·951	0·906	0·863	0·822	0·784	0·747	0·713	0·681	0·650	0·621	5
6	0·942	0·888	0·837	0·790	0·746	0·705	0·666	0·630	0·596	0·564	6
7	0·933	0·871	0·813	0·760	0·711	0·665	0·623	0·583	0·547	0·513	7
8	0·923	0·853	0·789	0·731	0·677	0·627	0·582	0·540	0·502	0·467	8
9	0·914	0·837	0·766	0·703	0·645	0·592	0·544	0·500	0·460	0·424	9
10	0·905	0·820	0·744	0·676	0·614	0·558	0·508	0·463	0·422	0·386	10
11	0·896	0·804	0·722	0·650	0·585	0·527	0·475	0·429	0·388	0·350	11
12	0·887	0·788	0·701	0·625	0·557	0·497	0·444	0·397	0·356	0·319	12
13	0·879	0·773	0·681	0·601	0·530	0·469	0·415	0·368	0·326	0·290	13
14	0·870	0·758	0·661	0·577	0·505	0·442	0·388	0·340	0·299	0·263	14
15	0·861	0·743	0·642	0·555	0·481	0·417	0·362	0·315	0·275	0·239	15

(n)	11%	12%	13%	14%	15%	16%	17%	18%	19%	20%	
1	0·901	0·893	0·885	0·877	0·870	0·862	0·855	0·847	0·840	0·833	1
2	0·812	0·797	0·783	0·769	0·756	0·743	0·731	0·718	0·706	0·694	2
3	0·731	0·712	0·693	0·675	0·658	0·641	0·624	0·609	0·593	0·579	3
4	0·659	0·636	0·613	0·592	0·572	0·552	0·534	0·516	0·499	0·482	4
5	0·593	0·567	0·543	0·519	0·497	0·476	0·456	0·437	0·419	0·402	5
6	0·535	0·507	0·480	0·456	0·432	0·410	0·390	0·370	0·352	0·335	6
7	0·482	0·452	0·425	0·400	0·376	0·354	0·333	0·314	0·296	0·279	7
8	0·434	0·404	0·376	0·351	0·327	0·305	0·285	0·266	0·249	0·233	8
9	0·391	0·361	0·333	0·308	0·284	0·263	0·243	0·225	0·209	0·194	9
10	0·352	0·322	0·295	0·270	0·247	0·227	0·208	0·191	0·176	0·162	10
11	0·317	0·287	0·261	0·237	0·215	0·195	0·178	0·162	0·148	0·135	11
12	0·286	0·257	0·231	0·208	0·187	0·168	0·152	0·137	0·124	0·112	12
13	0·258	0·229	0·204	0·182	0·163	0·145	0·130	0·116	0·104	0·093	13
14	0·232	0·205	0·181	0·160	0·141	0·125	0·111	0·099	0·088	0·078	14
15	0·209	0·183	0·160	0·140	0·123	0·108	0·095	0·084	0·074	0·065	15

Annuity Table

Present value of an annuity of 1 i.e. $\frac{1-(1+r)^{-n}}{r}$

Where r = discount rate
n = number of periods

Discount rate (r)

Periods (n)	1%	2%	3%	4%	5%	6%	7%	8%	9%	10%	
1	0·990	0·980	0·971	0·962	0·952	0·943	0·935	0·926	0·917	0·909	1
2	1·970	1·942	1·913	1·886	1·859	1·833	1·808	1·783	1·759	1·736	2
3	2·941	2·884	2·829	2·775	2·723	2·673	2·624	2·577	2·531	2·487	3
4	3·902	3·808	3·717	3·630	3·546	3·465	3·387	3·312	3·240	3·170	4
5	4·853	4·713	4·580	4·452	4·329	4·212	4·100	3·993	3·890	3·791	5
6	5·795	5·601	5·417	5·242	5·076	4·917	4·767	4·623	4·486	4·355	6
7	6·728	6·472	6·230	6·002	5·786	5·582	5·389	5·206	5·033	4·868	7
8	7·652	7·325	7·020	6·733	6·463	6·210	5·971	5·747	5·535	5·335	8
9	8·566	8·162	7·786	7·435	7·108	6·802	6·515	6·247	5·995	5·759	9
10	9·471	8·983	8·530	8·111	7·722	7·360	7·024	6·710	6·418	6·145	10
11	10·37	9·787	9·253	8·760	8·306	7·887	7·499	7·139	6·805	6·495	11
12	11·26	10·58	9·954	9·385	8·863	8·384	7·943	7·536	7·161	6·814	12
13	12·13	11·35	10·63	9·986	9·394	8·853	8·358	7·904	7·487	7·103	13
14	13·00	12·11	11·30	10·56	9·899	9·295	8·745	8·244	7·786	7·367	14
15	13·87	12·85	11·94	11·12	10·38	9·712	9·108	8·559	8·061	7·606	15

(n)	11%	12%	13%	14%	15%	16%	17%	18%	19%	20%	
1	0·901	0·893	0·885	0·877	0·870	0·862	0·855	0·847	0·840	0·833	1
2	1·713	1·690	1·668	1·647	1·626	1·605	1·585	1·566	1·547	1·528	2
3	2·444	2·402	2·361	2·322	2·283	2·246	2·210	2·174	2·140	2·106	3
4	3·102	3·037	2·974	2·914	2·855	2·798	2·743	2·690	2·639	2·589	4
5	3·696	3·605	3·517	3·433	3·352	3·274	3·199	3·127	3·058	2·991	5
6	4·231	4·111	3·998	3·889	3·784	3·685	3·589	3·498	3·410	3·326	6
7	4·712	4·564	4·423	4·288	4·160	4·039	3·922	3·812	3·706	3·605	7
8	5·146	4·968	4·799	4·639	4·487	4·344	4·207	4·078	3·954	3·837	8
9	5·537	5·328	5·132	4·946	4·772	4·607	4·451	4·303	4·163	4·031	9
10	5·889	5·650	5·426	5·216	5·019	4·833	4·659	4·494	4·339	4·192	10
11	6·207	5·938	5·687	5·453	5·234	5·029	4·836	4·656	4·486	4·327	11
12	6·492	6·194	5·918	5·660	5·421	5·197	4·988	4·793	4·611	4·439	12
13	6·750	6·424	6·122	5·842	5·583	5·342	5·118	4·910	4·715	4·533	13
14	6·982	6·628	6·302	6·002	5·724	5·468	5·229	5·008	4·802	4·611	14
15	7·191	6·811	6·462	6·142	5·847	5·575	5·324	5·092	4·876	4·675	15

Suggested Solutions –P2

SOLUTION ONE

Part (a):

- Full cost per unit in Lusho Ltd. = K81 + (K300, 000 / 4167) = K153 per unit.
- Transfer price = K153 * 125% = K191.25.
- Net revenue to Amano Ltd. (before cost of transfer) = K180 – K45 = K135.
- Lusho would agree to the transfer: K191.25 > K81.
- The transfer would benefit Sally Ltd.:K180 > (K81 + K45).
- However, Amano would not agree to the transfer: K135 < K191.25.
- The proposed transfer pricing rule can allow sub-optimisation, since the divisions are autonomous and are therefore free to reject transfers which would impact negatively on their reported profits.
- In this case, the transfer would benefit Sally Ltd. However, the transfer will not take place because Amano Ltd. will reject it.

Part (b):

- Marginal cost up to the point of transfer = K81.
- Opportunity cost of making the point of transfer = NIL.
- Hence: Transfer price = K81.
- Amano would agree to the transfer: K135 > K81.
- As shown in part (a), the transfer would benefit Sally Ltd.: K180 > (K81 + K45).
- However, the problem is that Lusho Ltd. would be indifferent to the transfer and therefore could not be relied upon to take part in it. The price offered would only equal the marginal cost.

Part (c): Alternatively: Market Price and Negotiated price.
One possible solution is "two-step" transfer pricing:

- Step 1: For each unit transferred, the buying division pays a transfer price to the selling division equal to the standard marginal cost of production).
- Step 2: Each month, the buying division pays a lump sum to the selling division to cover Lusho a constant fair share of the latter's fixed costs (e.g., K300,000 in the case of the transfer in part [a]) plus a profit element.
- This two-step transfer pricing system is likely to be goal congruent, since the buying division has an incentive to request transfers. The marginal cost of the transferred item to the buying division is the same as the marginal cost of the

transferred item to Sally Ltd. as a whole, so there is a significant likelihood of goal congruence.
- Also, the buying division will recognize that, to earn a profit, it must earn sufficient net revenues to cover all fixed costs (including fixed costs transferred to it from the selling division).
- The selling division is able to make a profit through its mark up on the monthly fixed costs transfer.
- The proportion of the selling division's capacity which is reserved for meeting the buying division's needs must be fixed. Otherwise, it would be impossible to arrive at the applicable fixed costs figure for Step 2 above.

A second possible solution is "dual-rate transfer pricing":

• Description:
- The selling division is credited with the external selling price of the finished product;
- The buying division is charged with the standard cost of the transferred product;
- The difference is eliminated on consolidation in preparing the company financial statements.

• Advantages:
- Ensures that the division managers take goal-congruent decisions about whether to make transfers.
- Provides proper information for performance evaluation purposes.

• Disadvantages:
- Company Profits < Combined Business Unit Profits⇒ division managers must be told that their reported division profit significantly overstates how much profit they are earning for the company as a whole.
- Business units can come to regard internal transfers as "sheltered markets", instead of focusing on doing business in the real world. For performance evaluation purposes, one solution is to use a composite performance measure in which each K1 of profits from external transactions is weighted more heavily than K1 of profits from intra-company sales.

Part (d):

Advantages claimed for the use of activity based budgeting include the following:
- Resource allocation is linked to a strategic plan for the future, prepared after considering alternative strategies. Traditional budgets tend to focus on resources and inputs rather than on objectives and alternatives.

- New high priority activities are encouraged, rather than focusing on the existing planning model. Activity based budgeting focuses on activities. This allows the identification of the cost of each activity. It also allows the ranking of activities where financial constraints limit the range of activities that may be achieved.
- There is more focus on efficiency and effectiveness and the alternative methods by which they may be achieved. Activity based budgeting assists in the operation of a total quality philosophy.
- It avoids arbitrary cuts in specific budget areas in order to meet the overall financial targets. Non-value added activities may be identified as those which should be eliminated.
- It tends to increase management commitment to the budget process. This should be achieved since the activity analysis enables management to focus on the objectives of each activity. Identification of primary and secondary activities and non-value added activities should also help in motivating management in activity planning and control.

Part (e)

Beyond budgeting is 'an idea that companies need to move beyond budgeting because of the inherent flaws in budgeting especially when used to set contracts. It is argued that a range of techniques, such as rolling forecasts and market related targets, can take the place of traditional budgeting.'

CIMA Official Terminology, 2005

This entails devolved managerial responsibility where power and responsibility go hand in hand. Managers are forced to consider current and future opportunities and threats, particularly where rolling monthly forecasts of financial performance operate together with a focus on other non-financial value drivers.

<u>Benefits of beyond budgeting</u>

a) It creates and fosters a performance climate based on competitive success. Goals are agreed via reference to external benchmarks as opposed to internally-negotiated fixed targets. Managerial focus shifts from beating other managers for a slice of resources to beating the competition.
b) It motivates people by giving them challenges, responsibilities and clear values as guidelines.
c) It devolves performance responsibilities to operational management.

d) It empowers operational managers to act by removing resource constraints. Local access to resources is thus based on agreed parameters rather than line-by-line budget authorisations.
e) It establishes customer-oriented teams that are accountable for profitable customer outcomes. These teams agree resource and service-level requirements with service departments via the establishment of service level agreements.
f) It creates transparent and open information systems throughout the organisation, which should provide fast, open and distributed information to facilitate control at all levels. The IT system is crucial in flexing the key performance indicators as part of the rolling forecast process.

SOLUTION TWO

(a) 16 units

Average skilled hours per unit (W1)	1.27
Average unskilled hours per unit (W1)	3.13
Average skilled and unskilled hours per unit	4.40
Average cost per unit (16 units)	K
Skilled hours 1.27 × K2/hour	2.54
Unskilled hours 3.13 × K1.5/hour	4.70
Materials	20.00
Overheads (4.4 × K1) /hour	4.40
Average cost	31.64
Mark-up @ 25% of the average cost	7.91
Selling price	39.55

(Working 1)

Units	Cumulative average unit time (skilled)	Cumulative average unit time (unskilled)
1	4 x 0 .75	6 x 0.85
2	3	5.10
4	2.25	4.34
8	1.69	3.68
16	1.27	3.13

(b)	2 units	4 units
Average skilled hours per unit (W1)	3.00	2.25
Average unskilled hours per unit (W1)	5.10	4.34
	8.10	6.59
Average cost per unit	K	K
Skilled hours × K2 per hour	6.00	4.50
Unskilled hours × K1.5 per hour	7.65	6.51
Materials	20.00	20.00
Overheads × K1 per hour	8.10	6.59
Average cost per unit	41.75	37.60
Total cost for 2/4 units	83.50	150.40

(c).

Cost of 3rd & 4th unit = total cost of 4 units – total cost 2 units	K66.90
Sales revenue 3rd & 4th unit (K39.55 × 2 units)	K79.10
Profit 3rd & 4th unit	K12.20

(d)

A table is useful to show how the learning rate 75% has been calculated.

Number of Kumis	Time for Kumis (hours)	Cumulative time (hours)	Average time (hours)
1	4·00	4·00	4·00
2	2.00	6.00	3.00

The learning rate is calculated by measuring the reduction in the average time per ball as cumulative production doubles (in this case from 1 to 2).

The learning rate is therefore 3.00/4·00 or 75%

A table is useful to show how the learning rate 85% has been calculated.

Number of Kumis	Time for Kumis (hours)	Cumulative time (hours)	Average time (hours)
1	6·00	6·00	6·00
2	4.20	10.20	5.10

The learning rate is calculated by measuring the reduction in the average time per ball as cumulative production doubles (in this case from 1 to 2).

The learning rate is therefore 5.10/6·00 or 85%

(e) Limitations

- The learning curve phenomenon is not always present.
- It assumes stable conditions at work which will enable learning to take place. This is not always practicable, for example because of labour turnover.
- Breaks between repeating production of an item must not be too long, or workers will forget and the learning process will have to begin all over again.
- It might be difficult to obtain accurate data to decide what the learning curve is.
- Workers might not agree to a gradual reduction in production times per unit.
- Production techniques might change, or product design alteration might be made, so that it takes a long time for a standard production method to emerge, to which a learning effect will apply.

SOLUTION THREE

(a) Net Present Value computation

(Kwacha)

Year	2014	2015	2016	2017	2018	2019	2020
Investment	(150,000)						
Sales (w1)		180,000	217,800	263,538	319,041	385,645	
Variable costs (w2)		(135,000)	(161,370)	(192,390)	(229,598)	(274,519)	
Fixed production cost		(20,000)	(21,800)	(23,762)	(25,901)	(28,232)	
Fixed Selling cost		(6,000)	(6,420)	(6,869)	(7,350)	(7,865)	
Fixed admin. Cost		(3,000)	(3,180)	(3,371)	(3,573)	(3,787)	
Net Cash flow	(150,000)	16,000	25,030	37,146	52,619	71,242	
Residue value						3,000	
Tax payments		3,763	(542)	(2,809)	(6,440)	(4,687)	
			3,762	(541)	(2,809)	(6,440)	(4,686
Net cash flow after tax	(150,000)	19,763	29,334	34,878	43,370	63,114	(4,686
DCF 10%	1.000	0.909	0.826	0.751	0.683	0.621	0.564
Present Value	(150,000)	17,965	24,230	26,193	29,622	39,194	(2,643

Net Present Value = K15, 439

The investment is Not financially viable because of the negative NPV.

Workings

1. Sales revenue

Year	2015	2016	2017	2018	2019
Units	30,000	33,000	36,300	39,930	43,923
Selling Price	K6	K6.6	7.26	K7.99	K8.78
Revenue	K180,000	K217,800	K263,538	K319,041	K385,644

2. Variable costs

Year	2015	2016	2017	2018	2019
Units	30,000	33,000	36,300	39,930	43,923
Cost per unit	K3.5	K3.82	K4.16	K4.53	K4.94
Production costs	K105,000	K126,060	K151,008	K180,883	K216,980
Cost per unit	K1	K1.07	K1.14	K1.22	K1.31
Selling costs	K30,000	K35,310	K41,382	K48,715	K57,539
Total costs	K135,000	K161,370	K192,390	K229,598	K274,519

3. Capital Allowances

Year	2015	2016	2017	2018	2019
WDV	150,000	112,500	84,375	63,281	47,461
Sale					3,000
WDA 25%	37,500	28,125	21,094	15,820	44,461

4. Taxation

Year	2015	2016	2017	2018	2019
Net cash flows	16,000	25,030	37,146	52,619	71,241
WDA (W3)	(37,500)	(28,125)	(21,094)	(15,820)	(44,461)
Taxable profit	(21,500)	3,095	16,052	36,799	26,780
Taxation 35%	(7,525)	(1,083)	5,618	12,880	9,373

(b) Internal rate of return

Year	2014	2015	2016	2017	2018	2019	2020
Net cash flow	(150,000)	19,763	29,334	34,878	43,370	63,115	(4,686)
DCF 3%	1.000	0.971	0.943	0.915	0.889	0.863	0.838
Present value	(150,000)	19,190	27,662	31,913	38,556	54,468	(3,927)

Net Present Value = K17, 862

IRR = 3% + [17,862/ (17,862+15,439)] X (10-3) %

= 6.75%

(c) The real rate of return excludes the impact of inflation and can be used to discount cash flows shown at a common price level (usually today's prices).

The money rate of return includes the effect of inflation and can be used to discount money cash flows which include the effect of inflation.

The real rate of return can be used if inflation applies to all cash flows equally as the real rate of return can be found by taking the money rate given in the present value tables and adjusting for the rate of inflation. This can then be applied to the real cash flows in each year. In this way each cash flow does not need to be adjusted for inflation.

If cash flows are affected by different rates of inflation, as in the case of KBL, then to use the real rate would mean using a different rate for cash flow. This is very cumbersome so it is normally preferred to inflate the cash flows to their money equivalent. Discount rates given in the PV tables can then be used to discount the net cash flows to arrive at present values.

SOLUTION FOUR

(a) Revised standard costs:

After 9% price increase, direct material price = 6.50 x 1·09 = K7.085/litre
After savings of 15%, direct material usage = 2.6 x 0·85 = 2·21litre/unit
Adding 12% wage increase, direct labour rate = 6·00 x 1·12 = K6.72/hr.
Adding back 30% decrease, direct labour hours = 2·25/0·7 = 3.214 hrs. /unit

Planning variances
These variances compare original standard costs with revised standard costs
Direct material price variance = (K6.5 – K7.085) x 61,000 x 2·21 = K78, 863.85 (A)
Direct material usage variance = (2.6 – 2·21) x 61,000 x K6.5 = K154, 635 (F)
Direct labour rate variance = (K6·00 – K6.72) x 61,000 x 3.214 = K141, 158.88 (A)
Direct labour efficiency variance = (2.25 - 3.214) x 61,000 x K6·00 = K352, 824 (A)

Operational variances
These variances compare actual cost with revised standard cost.
Direct material price variance = (K7.085 - K6.8) x (61,000 x 2·56) = K44, 505.60 (F)
Direct material usage variance = (2·21 - 2.56) x 61,000 x K7.085 = K151, 264.75 (A)
Direct labour rate variance = (K6.72 - K6.3) x (61,000 x 2.2) = K56, 364 (F)
Direct labour efficiency variance = (3.214 -2.2) x 61,000 x 6.72 = K415, 658.88 (F)

Variable overhead expenditure variance = (K2 - K2.5) x 61,000 x 2.2 = K67, 100 (A)
Variable overhead efficiency variance = (2.25 – 2.2) x 61,000 x K2 = K6, 100 (F)

Fixed overhead expenditure variance = K704,000 – K650,000 = K54, 000 (F)

Sales volume contribution variance = (60,000 - 61,000) x K28.1 = K28, 100 (F)
Sales price variance = (K63 – K62) x 61,000 = K61, 000 (A)

(b) Operating statement	K	K	K
Budgeted gross profit			982,000
Budgeted fixed production overhead			704,000
Budgeted contribution			1,686,000
Sales volume contribution variance			28,100
Sales price variance			(61,000)
			(32,900)
Actual sales less standard variable cost of sales			1,653,100

	Favourable	Adverse	
Variable overhead expenditure variance		67,100	
Variable overhead efficiency	6,100		
Planning variances			
Direct material price		78,863.85	
Direct material usage	154,635		
Direct labour rate		141,158.88	
Direct labour efficiency		352,824	
	160,735	639,946.73	(479,211.73)

Operational variances

	Favourable	Adverse	
Direct material price	44,505.60		
Direct material usage		151,264.75	
Direct labour rate	56,364		
Direct labour efficiency	415,659.88		
	516,529.48	151,264.75	365,264.73
Actual contribution			1,539,153
Budgeted fixed production overhead		704,000	
Fixed production overhead expenditure variance		54,000 (F)	

Actual fixed production overhead	(650,000)
Actual gross profit	889,153

(c)

The calculation of planning and operational variances is useful for the following reasons:

• The use of planning and operational variances will enable management to draw a distinction between variances caused by factors uncontrollable by the business and planning errors (planning variances) and variances caused by factors that are within the control of management (operational variances).

• The managers' performance can be compared with the adjusted standards that reflect the conditions the manager actually operated under during the reporting period. If planning and operational variances are not distinguished, there is potential for dysfunctional behaviour especially where the manager has been operating efficiently and effectively and performance is being judged according to factors outside the manager's control.

• The use of planning variances will also allow management to assess how effective the company's planning process has been. Where a revision of standards is required due to environmental changes that were not foreseeable at the time the budget was prepared, the planning variances are uncontrollable. However standards that failed to anticipate known market trends when they were set will reflect faulty standard setting. It could be argued that some of the planning variances due to poor standard setting
are in fact controllable at the planning stage.

• The information used in setting the ex-post standards can be used in future budget periods. The planning variances may also indicate problems in the standard setting process and the reasons for this can be identified and improvement made to the process.

SOLUTION FIVE

(a) **Weaknesses**

- Financial statements are published infrequently. If ratios are used to study trends and developments over time, they are only useful for trends or changes over one year or longer, and not changes in the short-term.
- Ratios can only indicate possible strengths or weaknesses in financial position and financial performance. They might raise questions about performance, but do not provide answers. They are not to interpret, and changes in financial ratios over time might not be easy to explain.
- Using financial ratios to measure performance can lead managers to focus on the short-term rather than the long-term success of the business.
- There is some risk that mangers may decide to manipulate financial performance, for example by delaying a large item of expenditure or bringing forward the date of a major business transaction, in order to increase or reduce profitability in one period. The risk of manipulating financial results is particularly significant when managers are paid annual bonuses on the basis of financial performance.

Manipulation of non-financial performance indicators

- Subjective – for example, what one customer considers being very good level of customer service another might be what another customer expects as standard.
- Biasness - If an organisation looks to measure customer service levels, and uses customer service questionnaires as a measure for collating customer feedback, customer service staff could manipulate the results by only giving questionnaires to customers they think are going to give favourable feedback.

(b) The rewards are the third aspect of the performance measurement framework of Fitzgerald and Moon. This refers to the structure of the rewards system, and how individuals will be rewarded for the successful achievement of performance targets. This aspect of performance also has behavioural implications.

One of the main roles of a performance measurement system should be to ensure that strategic objectives are achieved successfully, by linking operational performance with strategic objectives.

According to Fitzgerald, there are three aspects to consider in the reward system.

- The system of setting performance targets and rewarding individuals for achieving those targets must be clear to everyone involved. Provided that managers accept their performance targets, motivation to achieve the targets will be greater when the targets are clear.
- Employees may be motivated to work harder to achieve performance targets when they are rewarded for successful achievements, for example with the payment of an annual bonus.
- Individuals should only be held responsible for aspects of financial performance that they can control. This is a basic principle of responsibility accounting. A common problem, however, is that some costs are incurred for the benefit of several divisions or departments of the organisation. The costs of these shared services have to be allocated between the divisions or departments that use them. The principle that costs should be controllable therefore means that the allocation of shared costs between divisions must be fair. In practise, arguments between divisional managers often arise because of disagreements as to how the shared costs should be shared.

(c) To: Board of directors
From: Management Accountant
Date: 17 June 2014

The potential benefits of the adoption of a balanced scorecard approach to performance measurement within NRL are as follows:

A broader business perspective

Financial measures invariably have an inward-looking perspective. The balanced scorecard is wider in its scope and application. It has an external focus and looks at comparisons with competitors in order to establish what constitutes best practice and ensures that required changes are made in order to achieve it. The use of the balanced scorecard requires a balance of both financial and non-financial measures and goals.

A greater strategic focus

The use of the balanced scorecard focuses to a much greater extent on the longer term. There is a far greater emphasis on strategic considerations. It attempts to identify the needs and wants of customers and the new products

and markets. Hence it requires a balance between short term and long term performance measures.

A greater focus on qualitative aspects

The use of the balanced scorecard attempts to overcome the over-emphasis of traditional measures on the quantifiable aspects of the internal operations of an organisation expressed in purely financial terms. Its use requires a balance between quantitative and qualitative performance measures. For example, customer satisfaction is a qualitative performance measure which is given prominence under the balanced scorecard approach.

A greater focus on longer term performance

The use of traditional financial measures is often dominated by financial accounting requirements, for example, the need to show fixed assets at their historic cost. Also, they are primarily focused on short-term profitability and return on capital employed in order to gain stakeholder approval of short term financial reports, the longer term or whole life cycle often being ignored.

The limitations of a balanced scorecard approach to performance measurement may be viewed as follows:

The balanced scorecard attempts to identify the chain of cause and effect relationships which will provide the stimulus for Advocates of a balanced scorecard approach to performance measurement suggest that it can constitute a vital component of the strategic management process.

However, Robert Kaplan and David Norton, the authors of the balanced scorecard concept concede that it may not be suitable for all firms. Norton suggests that it is most suitable for firms which have a long lead time between management action and financial benefit and that it will be less suitable for firms with a short-term focus. However, other flaws can be detected in the balanced scorecard.

The balanced scorecard promises to outline the theory of the firm by clearly linking the driver/outcome measures in a cause and effect chain, but this will be difficult if not impossible to achieve.

The precise cause and effect relationships between measures for each of the perspectives on the balanced scorecard will be complex because the driver and

outcome measures for the various perspectives are interlinked. For example, customer satisfaction may be seen to be a function of several drivers, such as employee satisfaction, manufacturing cycle time and quality. However, employee satisfaction may in turn be partially driven by customer satisfaction and employee satisfaction may partially drive manufacturing cycle time. A consequence of this non-linearity of the cause and effect chain (i.e., there is non-linear relationship between an individual driver and a single outcome measure), is that there must be a question mark as to the accuracy of any calculated correlations between driver and outcome measures. Allied to this point, any calculated correlations will be historic. This implies that it will only be possible to determine the accuracy of cause and effect linkages after the event, which could make the use of the balanced scorecard in dynamic industries questionable. If the market is undergoing rapid evolution, for example, how meaningful are current measures of customer satisfaction or market share?

These criticisms do not necessarily undermine the usefulness of the balanced scorecard in presenting a more comprehensive picture of organisational performance but they do raise doubts concerning claims that a balanced scorecard can be constructed which will outline a clear cause and effect chain between driver and outcome measures and the firm's financial objectives.