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ACCA

Paper F5

Performance Management

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Final Assessment – Answers

To gain maximum benefit, do not refer to these answers until you have completed the final assessment questions and submitted them for marking.

1

Tutorial note

The first step is to determine the overhead absorption rate/cost driver rate for each type of beanbag; these rates can then be applied to the data given for each product.

Product	*Standard*	*Deluxe*	*Total*
Production Quantity	25,000	2,500	
Direct labour hours required	250,000	25,000	275,000
Total Production overhead			1,100,000
OAR per labour hour($)			**4.00**
Machine hours required	125,000	12,500	137,500
Total purchase orders	400	200	600
Total setups	150	100	250
Cost per cost driver			
Volume related overheads ($)			275,000
Machine hours required			137,500
Volume related overheads per machine hour ($)			2
Purchases related overheads			300,000
Total purchase orders			600
Purchases related overheads/order ($)			500
Setup related overheads ($)			525,000
Total set-ups			250
Setup related overheads per setup			$2,100

1 Unit cost for deluxe beanbag using the current absorption costing method | $302.50

Unit costs using existing overheads absorption rate

Product	*Standard*	*Deluxe*
Direct material, $	25	62.50
Direct labour costs, $	200	200
Overheads (10 labour hours × $4)	40	40
Total cost per unit	**$265**	**$302.50**

2 Unit cost for deluxe beanbag using the proposed activity-based costing approach is:

Unit costs using ABC	$396.50

Product	*Standard*	*Deluxe*	
Direct material, $	25.00	62.50	
Direct labour costs, $	200.00	200.00	
Overheads			
Volume related ($2 × 5 machine hours)	10.00	10.00	
Purchases related ($500 × 400 orders /25,000)	8.00	40.00	($500 × 400 orders /2,500)
Setup related ($2,100 × 150 set-ups /25,000)	12.60	84.00	($2,100 × 100 orders /2,500)
Total cost per unit	**255.60**	**396.50**	

3 D

4 D

Sales Revenue 500 units @$250	**125,000**
Return on Investment required 15% × $250,000	37,500
Total cost allowed	87,500
Target cost per unit	$175

5 D

By setting up your own business, you will be giving up the opportunity to earn $25,000 per annum. The salary is therefore an opportunity cost. By taking on the rent of the business unit you will be increasing your cost base, so the rent is an incremental cost.

6 C

$$\text{Budgeted breakeven sales} = \frac{\text{Budgeted Fixed costs}}{\text{C/S ratio}}$$

We know the budgeted fixed costs but the C/S ratio is a little more involved, since the company produces more than one product.

However, since the three products have to be sold in a given mix, we can calculate the average C/S ratio as follows: 0.3 × 27% + 0.2 × 56% + 0.5 × 38% = 38.3%

$$\text{So, Budgeted breakeven sales} = \frac{\text{Budgeted Fixed costs}}{\text{C/S ratio}} = \frac{\$592{,}000}{0.383} = \$1{,}545{,}692$$

7 D

8 B

Total employees will be x +y

Number of skilled technicians is x

Number of skilled technicians cannot be more than (and so must be less than or at most equal to) 2/5 i.e. 40% of the total number of employees.

Therefore the inequality must be $\times \leq \frac{2(x+y)}{5}$

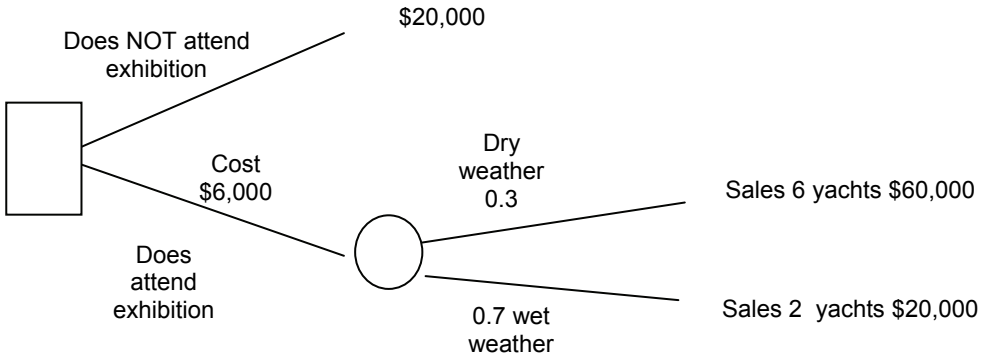
9 D

It is only worth undertaking further processing if the additional revenue generated exceeds the additional processing cost incurred. This type of further processing decision does not depend on how the joint or common cost is apportioned over the products.

Product	Additional revenue if processed further	Additional cost if processed further
1	($11 - $9) × 10,000 units = $20,000	$25,000
2	($17 - $11) × 6,000 units = $36,000	$35,000
3	($13 - $7) × 4,000 units = $24,000	$20,000

so only 2 and 3 should be processed further

10 B



If the owner does not attend the exhibition, contribution = $20,000

If the owner does attend the exhibition, EV of contribution is 0.3 × 60,000 + 0.7 × 20,000 = $32,000

But the cost of attending the exhibition is $6,000. So, expected net contribution if the owner attends exhibition = $32,000 - $6,000 = $26,000

Therefore, by attending the exhibition, the owner will be better off by $26,000 - $20,000 = $6,000

11 'feedforward'

12 A

13 A

Total cost of making all 8 units:

		$
Direct materials	(8 units × $2,500)	20,000.00
Direct labour	W1	2,457.60
Fixed costs	Given	9,600.00
Total cost		**32,057.60**

Cost per unit = 32,057.60/8 = $4,007.20

W1: Labour costs

- Given that there is a learning effect, we must find the total time that is expected to manufacture all 8 units. As cumulative output doubles, the average time per unit is multiplied by the learning effect percentage.
- Going from production of one unit to production of eight units, output doubles three times.
- First unit produced, average time taken = 100 hours
- So to produce 8 units, average time per unit = 100 hours × 0.8 × 0.8 × 0.8 = 51.2 hours
- Given that there are eight units, total time = 51.2 hours × 8 units = 409.6 hours
- Therefore, labour costs = 409.6 hours × $6 = $2,457.60

14 C

15 B

Liquid	*Standard mix litres*	*Actual mix*	*Mix variance*	*Standard price*	*Mix variance in $*
X	2,250	2,200	50F	$16	800F
Y	2,700	2,750	50A	$25	1,250A
	4,950 litres	4,950 litres			450 A

16 Original standard price $4.10

Revised standard price $4.50

Difference $0.40 × 11,200 units = $4,480 A

17

1,600 units should use (× 7)	11,200 kgs
1,600 units did use	12,000 kgs
Difference 800 kgs A	
valued at revised standard price $4.50	$3,600 A

18 B

P's return = (21,600 / 75,000) = 29%. This should be accepted as it is higher than the expected 24%

Q's return = (decrease in profit/Decrease in capital) = ($2,500 / $7,000) = 36% reject, because the average ROI will reduce.

19 B

20 A

1 MERTA

Tutorial note

This question tests your knowledge of the technique of throughput accounting and the philosophy behind it. You should provide an example when mentioning terms such as 'bottleneck' or 'limiting factor', to demonstrate your understanding to the Examiner. You should also read the last two articles written by the Examiner on Throughput Accounting, featured on the ACCA website.

(a) Throughput Accounting Ratio =

$$\frac{\text{Throughput per hour of bottleneck resource}}{\text{Operating expenses per hour of bottleneck resource}}$$

or, in the case of Merta, Throughput Accounting Ratio = $\frac{\text{Return per mixing hour}}{\text{Cost per mixing hour}}$

with Return per mixing hour = $\frac{\text{Throughput contribution for each type of mix}}{\text{Mixing time, in hours, for each type of mix}}$

	Mix A	*Mix B*	*Mix C*
Throughput Contribution	\$340 – \$250 = \$90	\$450 – \$285 = \$165	\$270 – 175 = \$95
Mixing time	1 hour	3 hours	1.5 hours
Return per mixing hour	\$90	\$55	\$63.33

and with cost per factory hour = $\frac{\text{Total factory cost}}{\text{Total bottleneck resource available}}$

or, in the case of Merta, Cost per mixing hour = $\frac{\text{Other fixed costs} + \text{Labour costs}}{\text{Total mixing hours available}}$

Therefore

Cost per mixing hour = $\frac{\$224{,}000 + 5{,}000 \text{ hours @}\$10 \text{ per hour}}{5{,}000 \text{ mixing hours available}}$

so

Cost per mixing hour = $\frac{\$224{,}000 + \$50{,}000 \text{ hours}}{5{,}000}$

Cost per mixing hour = \$54.80

In summary:

	Mix A	*Mix B*	*Mix C*
Return per mixing hour	\$90	\$55	\$63.33
Cost per mixing hour	\$54.80	\$54.80	\$54.80
TPAR	1.64	1.003	1.16

(b) To be able to establish the optimum production mix, we need to rank the three product mixes according to their TPAR as calculated in (b).

Mix A has the highest of all three TPARs, followed by Mix C, then Mix B.

5,000 hours of labour are available. We first need to determine the number of hours needed to honour the existing contract:

	Mix A	*Mix B*	*Mix C*
Hours per batch	1	3	1.5
Batches for contract	50	50	50
Hours used up for contract	50	150	75

Total hours used to honour contract = 50 + 150 + 75 = 275 hours.

Therefore, the number of total hours available **after** the contract requirements have been met is 5,000 hours – 275 hours = 4,725 hours.

The highest ranking product is Mix A, with a TPAR of 1.64. 1,100 batches (ex-contract) need to be produced to meet demand, and this will use up 1,100 batches @ 1 hour per batch = 1,100 hours.

Therefore, the number of total hours available **after** the contract requirements have been met and **after** Mix A has been produced is 4,725 hours – 1,100 hours = 3,625 hours.

The second-highest ranking product is Mix C, with a TPAR of 1.16. 850 batches (ex-contract) need to be produced to meet demand, and this will use up 850 batches @ 1.5 hour per batch = 1,275 hours.

Therefore, the number of total hours available **after** the contract requirements have been met and **after** Mixes A and C have been produced is 3,625 hours – 1,275 hours = 2,350 hours.

Since Mix B takes 3 hours to produce, we have enough hours to produce

$$\frac{2{,}350 \text{ hours}}{3 \text{ hours per mix}} = 783 \text{ batches of Mix B.}$$

Maximum profit per quarter

Throughput Contribution – Mix A 1,150 batches × $90	$103,500
Throughput Contribution – Mix B 783 batches × $165	$129,195
Throughput Contribution – Mix C 900 batches × $95	$85,500
Labour costs	$(50,000)
Other fixed costs	$(224,000)
Profit	**$44,195**

Marking scheme	
	Marks
(a)	
Throughput Contribution all correct calculations	1.5
Mixing time all correct calculations	1.5
T/A ratio all correct calculations	2
(b)	
Evidence of ranking product according to TPAR	0.5
5,000 hours of labour used as bottleneck resource	1
Hours needed for contract	1
Hours available after contract	0.5
Quantities of Mix A	0.5
Quantities of Mix B	0.5
Quantities of Mix C	0.5
Maximum profit F/T	0.5
Total	**10**

2 MOC

(a) Profit will be maximised when marginal revenue = marginal costs. In each market, marginal costs = $40

Market 1

	MR	=	55 – 0.1X1

So that:

	55 – 0.1X1	=	40
	X1	=	150
	P1	=	55 – 0.05X1
when:	X1	=	150
	P1	=	$47.50

Market 2

	MR	=	200 – 0.4X2

So that:

	200 – 0.4X2	=	40
	X2	=	400
	P2	=	200 – 0.2X2
when:	X2	=	400
	P2	=	$120

The company should sell 150 units for $47.50 each to Market 1, and 400 units at $120 each to Market 2. In total, 550 units should be produced.

(b) Market 1

Total contribution = ($47.50 − $40) × 150 units = $1,125

Market 2

Total contribution = ($120 − $40) × 400 Units = $32,000

Total profit

$1,125 + $32,000 − $20,000 = $13,125

Marking scheme		
		Marks
(a)	Stating optimum profit is reached when MR=MC	0.5
	Stating that MC = $40	0.5
	Optimum Quantity in Market 1	1
	Optimum Price in Market 1	1
	Optimum Quantity in Market 2	1
	Optimum Price in Market 2	1
(b)	*OFR applies to figures calculated in a)*	
	M1 Contribution	1
	M2 Contribution	1
	Fixed costs taken away in Total Profit computation	1
	Maximum Profit OFR	1
Total		**10**

3 GC

(a) If spreadsheets are used for budgeting, the part-qualified accountant could be rekeying large amounts of data taken from the company's systems. It would be very easy for him to make a mistake when he is entering his data, especially without someone else to check his work.

Similarly, if his spreadsheet formulae contain any errors, all the numbers in the budget will be wrong. A model can become easily corrupted simply by putting a number in the wrong cell. The accountant is unlikely to spot this, because of his lack of experience and because of the time pressure he is under due to his heavy workload.

When spreadsheets are used, there is no audit trail that can be followed in order to check the numbers.

(b) The potential benefits and disadvantages of involving GC's new and existing managers in the budgeting process can be explained as follows :

(1) If managers are involved in setting budgets, then the budgets may be more relevant to the business, because the manager will have specialist knowledge of their area of the business and they can incorporate this into their budgets. This is particularly true for GC's existing managers. As a result the budgets will provide a more realistic target and are a better indicator of likely results, which can then be used in strategic planning and decision making with a view to meeting the terms of the local government contract.

(2) If managers are involved in the budget setting process then they are likely to take ownership of the budget, and feel that failing to achieve it is a personal failure. This means that managers will be motivated to achieve the targets they have set and agreed, and consequently the target is more likely to be achieved than one that is simply handed to them without their involvement.

(3) The new managers may gain valuable knowledge of the business by working closely with the existing managers when preparing the budgets. The existing managers may have detailed knowledge of current operations and the availability of resources that are of benefit for the new contract.

Disadvantages

(1) The managers may deliberately set themselves targets that are easier to achieve by the inclusion of budgetary slack. This may result in the company's performance being lower than it would have been had more difficult targets been imposed on the managers.

(2) Some of the managers may have less experience than others in managing waste recycling operations. Consequently, they may not understand the relationships that exist between different budgets and the impact that one has on the other and they may take decisions in their own area that are detrimental to another area of the business and to the company as a whole.

Marking scheme		
		Marks
(a)	Any relevant comment 1 mark, maximum 5. Give one mark for mention, and 1 mark for explanation	5
(b)	Any relevant comment on advantages 1 mark, maximum 5. Give one mark for mention, and 1 mark for explanation. Likewise, for disadvantages.	5
Total		**20**

4 BWEALTH

(a) **Assessment of financial performance**

There are various financial observations that can be made from the data:

– Turnover is up by over 5%. This is higher than the rate of inflation, and the sign of a growing business.

– The main weakness identified in the financial results is that the net profit margin has fallen from 20% to 19.8%, suggesting that cost control may be getting worse or fee levels are being competed away.

– Profit is up 4.2%. In absolute terms profits are impressive, given that the market is becoming more and more competitive.

– Average cash balances are up 5% – indicating improved liquidity. Positive cash balances are always welcome in a business.

– Average debtors days are down by 2 days – indicating improved efficiency in chasing up outstanding debts. It is noticeable that BWealth's days are lower than the industry average indicating strong working capital management. The only possible concern may be that the company is being particularly aggressive in chasing up outstanding debts.

Overall, with a possible concern about margins and low growth, the business looks in good shape and would appear to have a healthy future.

(b) The extra non-financial information gives much greater insight into key operational issues within the business and paints a bleaker picture for the future.

Internal business processes

Error rates

Error rates for jobs done are up from 9% to 15%. This is probably a result of reducing turnaround times to improve delivery on time percentages. This is critical, as users expect the accounts to be correct. Errors could lead to problems for clients with the Inland Revenue, bankers, etc. What is worse, Bwealth could be sued if clients lose out because of such errors. One could say that errors are unlikely to be revealed to clients. Businesses rarely advertise mistakes that have been made. They should of course put mistakes right immediately.

Customer Knowledge

Client retention

The number of clients has fallen dramatically – this is alarming and indicates a high level of customer dissatisfaction. In such a business, one would normally expect a high level of repeat. Clearly existing clients are not happy with the service provided.

Average fees

It would appear that the increase in revenue is thus due to a large increase in average fees rather than extra clients – average fee is up from $450 to $549, an increase of 22%! This could explain the loss of clients in itself, however there could be other reasons.

Market share

The result of the above two factors is a fall in market share from 19% to 12%. Looking at revenue figures one can estimate the size of the market as having grown from $5m to $8.3m, an increase of 66%. Compared to this, Bwealth's figures are particularly worrying. The firm should be doing much better and looks to being left behind by competitors.

Learning and Growth

Non-core services

The main weakness of the firm seems to be is its lack of non-core services offered. The industry average revenue from non-core work has increased from 25% to 30% but BWealth's figures have dropped from 5% to 4%. It would appear that most clients are looking for their advisers to provide a wider range of products but BWealth is ignoring this trend.

Employee retention

Employee turnover is up, indicating that the staff are dissatisfied. Continuity of staff at a client is important to ensure a quality service. Conservative clients may resent revealing personal financial details to a variety of different people each year. Staff turnover is possibly a result of extra pressure to complete jobs more quickly without the satisfaction of a job well done. Also, staff may realise that the lack of range of services offered by the firm will limit their own experience and career paths.

Conclusion

In conclusion, the financial results do not show the full picture. The firm has fundamental weaknesses that need to be addressed if it is to grow into the future. At present it is being left behind by a changing industry and changing competition. It is vital that BWealth reassesses its attitude and ensures that the firm has a better fit with its business environment.

In particular, Bwealth should seek to develop complementary services and reduce errors on existing work.

Marking scheme		
		Marks
(a)	Turnover growth	2
	Profitability	1
	Cash position	1
	Debtor management	1
(b)	Comment on error rates	1
	Comment on client retention	1
	Comment on average fees	1
	Comment on market share	1
	Comment on non core services	1
	Comment on employee retention	1
	Any other valid comment 1 mark, maximum 2 marks	2
	Conclusion	2
Total		**15**

5 LOIRE ESTATES

(a) (i) **Material price planning variance**

The 3% fall in market prices results in a planning variance since operational managers could not have controlled this fall.

Revised standard material cost per kg = $40 × 0.97 = **$38.80**

	$
Original budget: actual material of 4,500 kgs should cost $40/kg	180,000
Revised budget: actual material of 4,500 kgs should cost $38.80/kg (W1)	174,600
Planning variance	5,400 F

Material price operational variance

The remaining 2% fall in material price is due to short term operational improvements. These improvements are under the control of Loire Estates and therefore should be taken into account as part of the operational variance.

	$
Actual material of 4,500 kgs should cost $38.80/kg (revised budgeted cost)	174,600
Actual material of 4,500 kgs did cost $38/kg	171,000
Operational variance	3,600 F

Standard kg of material per bottle = 5,000 kgs/3,000 bottles = **1.6667 kg per bottle**

	kg
Actual production of 3,600 bottles should use 1.6667 kg per bottle (W2)	6,000
Actual production of 3,600 bottles did use	4,500
Variance	1,500 F

1,500F kgs × revised standard cost per kg of $38.80 = **$58,200F**

(ii) **Labour rate planning variance**

6% of the increase in labour costs is due to an under-estimation of a wage award. This was due to poor planning and should therefore be included as part of the calculation of the planning variance.

Revised standard cost of labour = $30 per hour × 1.06 = $31.80 per hour

	$
Original budget: actual labour hours of 7,000 should cost $30/hour	210,000
Revised budget: actual labour hours of 7,000 should cost $31.80/hour (W1)	222,600
Planning variance	12,600 A

Labour rate operational variance

The remaining 4% of the labour cost increase is due to poor short term decision making. These decisions are under the control of Loire Estates and therefore the impact should be included in the operational variance.

	$
Actual labour hrs of 7,000 should cost $31.80/hour (revised budgeted cost)	222,600
Actual labour hours of 7,000 did cost $33/hour	231,000
Operational variance	8,400 A

(b) **Material mix variance**

		Ingredient A	*Ingredient B*	*Total*
1	Actual kgs input	21,500	2,700	24,200
2	Actual kgs in standard proportions 5/5.5 : 0.5/5.5	22,000	2,200	24,200
3	Difference in kgs	500F	500A	0
4	Standard cost per kg	$0.50	$1.50	–
5	Mix variance	$250F	$750A	**$500A**

Comment

The actual mix has used more Ingredient B and fewer Ingredient A than the standard mix. Ingredient B is more expensive than Ingredient A resulting in an adverse variance.

Material yield variance

Standard cost of Ingredient A per bottle = 5 kg × $0.50 per kg	= $2.50
Standard cost of Ingredient B per bottle = 0.5 kg × $1.50 per kg	= $0.75
Standard cost per bottle	= $3.25

1	Standard yield = 24,200 actual kgs/std material of 5.5 kg per bottle	4,400 bottles
2	Actual yield	4,500 bottles
3	Difference in yield	100F bottles
4	Standard cost per bottle (W4)	$3.25
5	Yield variance = 100 × $3.25	$325F

Comment: The actual kgs of material used have yielded 100 more bottles than expected. This has resulted in favourable variance of $325.

(c) Using standard costing in a rapidly changing environment could be problematic, because:

(1) **Non-standard products**

Standard product costs apply to manufacturing environments in which quantities of an identical product are output from the production process. They are not suitable for manufacturing environments where products are non-standard or are customised to customer specifications.

(2) **Standard costs become outdated quickly**

Shorter product life cycles in the modern business environment mean that standard costs will need to be reviewed and updated frequently. This will increase the cost of operating a standard cost system but, if the standards are not updated regularly, they will be of limited use for planning and control purposes. The extra work involved in maintaining up-to-date standards might limit the usefulness and relevance of a standard costing system.

(3) **Production is highly automated**

It is doubtful whether standard costing is of much value for performance setting and control in automated manufacturing environments. There is an underlying assumption in standard costing that control can be exercised by concentrating on the efficiency of the workforce. Direct labour efficiency standards are seen as a key to management control. However, in practice, where manufacturing systems are highly automated, the rates of production output and materials consumption, are controlled by the machinery rather than the workforce.

(4) **Ideal standard used**

Variances are the difference between actual performance and standard, measured in cost terms. The significance of variances for management control purposes depends on the type of standard cost used. JIT and TQM businesses often implement an ideal standard due to the emphasis on continuous improvement and high quality. Therefore, adverse variances with an ideal standard have a different meaning from adverse variances calculated with a current standard.

(5) **Emphasis on continuous improvement**

Standard costing and adherence to a preset standard is inconsistent with the concept of continuous improvement, which is applied within TQM and JIT environments.

(6) **Detailed information is required**

Variance analysis is often carried out on an aggregate basis (total material usage variance, total labour efficiency variance and so on) but in a complex and constantly changing business environment more detailed information is required for effective management control.

(7) **Monitoring performance is important**

Variance analysis control reports tend to be made available to managers at the end of a reporting period. In the modern business environment managers need more 'real time' information about events as they occur.

ACCA marking scheme		
		Marks
(a)	Calculation of each variance – 2 marks each	4
(b)	Mix variance	2
	Mix variance commentary	1
	Yield variance	2
	Mix variance commentary	1
(c)	Each valid point 1 mark each, maximum 5 marks.	5
Total		**15**