

# ACCOUNTING FOR DECISION MAKING

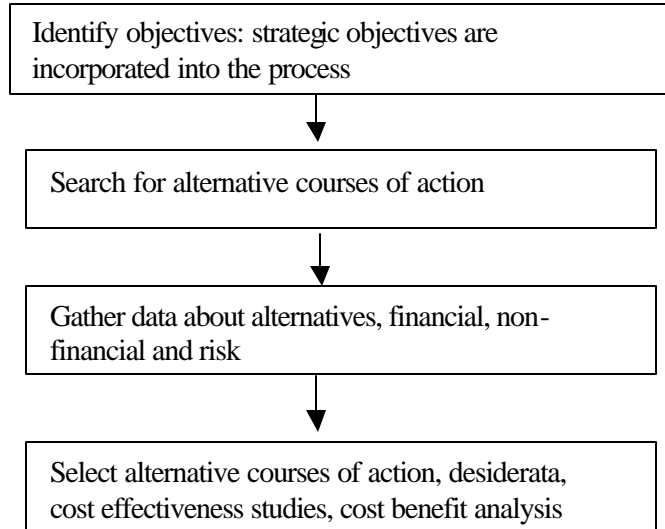
**Professional 2**  
**June 2002**

## MARKING SCHEME



**Question 1**

(a) **Theoretical decision-making model**



The public sector dimension:

- the fact that the public sector has many differing objectives (rather than the overlying profit objective of the commercial sector);
- that there are often differing constraints from the private sector (eg funding availability); and
- political dimensions.

Satisficing: Not searching for the optimal solution but being willing to accept one which is satisfactory to the main criteria set down by which the project is to be judged.

Bounded rationality: Recognising that people are limited in their understanding and can only deal with a limited amount of information. These people tend to search for alternatives until the first acceptable solution is found. The accountant may therefore filter out information in order that the decision maker can concentrate on main areas.

*1 mark per step identified in decision making, up to a maximum of 2  
1 mark per point made in relating to public sector, up to a maximum of 2  
Satisficing and bounded rationality (1 mark each)*

(6)

(b) This section should be answered in a report format and include sections on:

- Financial evaluation.
- Non-financial evaluation.
- Assumptions.
- Discussion.
- Recommendations

### **Financial**

Cost of capital:

$$\begin{aligned}\text{Real cost} &= \frac{(1 + \text{Nominal Kc})}{(1 + \text{inflation})} - 1 \\ &= (1 + .078)/(1 + .026) - 1 = .051 \text{ (round to 5\%)}\end{aligned}$$

Financial calculations for cash flow, NPV and IRR in appendix below.

Explanations of NPV and IRR :

Definitions

### **Net present value**

This technique recognises that money has a time value ie you would prefer money earlier rather than later as you could reinvest it. The technique calculates what a project is worth to you today by discounting the future cash flows into what they are worth in your hand today. The only weakness with NPV is that it is a difficult method for non-financial managers to understand.

### **Internal rate of return**

This method of appraising projects again takes into consideration the time value of money. The investment return will be stated in terms of percentage and will represent that return which provides a zero net present value. To arrive at the correct figure one has to attempt a number of different discount rates on the cash flows until a zero NPV is given.

The IRR method, whilst being conceptually as strong as the NPV method and easier to understand, has two main weaknesses. Firstly it is a relative measure and does not show the absolute value of the added value of a project. Therefore a small project with a high IRR but a small absolute NPV may be accepted in favour of a large project with a significant NPV and thus added value to the firm but has a marginally lower IRR. This is the case for this scenario as the IRR and NPV techniques give different solutions (IRR selects proposal 2 whilst the NPV selects option 1). Secondly where the cash flows of the IRR change from one year to the next there is the possibility of multiple IRRs.

### **Conclusions**

The most financially lucrative project is option 1 with a higher annual equivalent NPV.

**Financial and non-financial data**

Desiderata	Option 1	Option 2
Level of security of tenants (Weighted 3)	24 (8 x 3)	12 (4 x 3)
Acceptability to tenants (Weighted 2)	12	16
Creation of community (Weighted 3)	18	16
Minimisation of disruption to tenants during installation (Weighted 1)	3	5
Financial (Weighted as 2)	16 (8 x 2)	14 (7 x 2)
Confidence re filling of voids (Weighted as 2)	6	12
	79	75

Desiderata table: Allows non-financial and financial factors to be brought together and compared alongside each other. The criteria for the project can be weighted as regards their importance to the organisation. A group of key stakeholders should brainstorm the various criteria for suitability of the projects, the weightings given to each of the criteria and the scores attributed.

The scores for the different projects is so close as to make decision makers ambivalent. It would seem that whereas option 1 scores well in financial terms it may not be acceptable due to the risk associated with the proposal and the acceptability to tenants (eg due to lack of privacy). It may prove helpful to further investigate why these two elements are causing difficulties. It may well be that these fears could be removed by more careful consideration of the impact of the project on these factors.

**Assumptions:**

The above calculations have been based on a number of factors which have not been included in the NPV figures. This includes:

- Inflation remaining at 2.6%
- Opportunity cost of capital remaining at 7.8%
- The costs for the refurbishments being as stated.
- Central per capita cost are fixed and therefore irrelevant.

**Other factors:**

- Legal factors re the right to privacy
- Need for market research on the reaction to CCTV and elasticity re the change to the pricing on demand.

**Recommendations:**

- Ambivalence between projects per the calculations of the desiderata.
- Need for further investigation into the non-financial aspects holding back option 1.

- Sensitivity analysis around the revised occupancy rates after research of current and potential should be carried out to see the impact of key factor changes.

<i>Cash flow workings Option 1:</i>	2
<i>Cash flow workings Option 2:</i>	2
<i>Annual equivalent calculation</i>	2
<i>Cost of capital:</i>	2
<i>NPV calculations at 5%:</i>	1
<i>IRR calculations: 1 mark per option</i>	2
<i>Interpolation(s):</i>	2
<i>Comment on financial findings:</i>	3
<i>Desiderata table calculations:</i>	2
<i>Explanation of table:</i>	2
<i>Assumptions:</i>	2
<i>Recommendations:</i>	2

*Report format and style 2*  
(26)

- (c) Introduction: The Competitive Tendering process.
- Involves the preparation of tender documents by competing firms and the selection of the best by the “client” organisation.
  - Distinction should be drawn between two tendering processes.
  - Where all suppliers vying to win the contract are external to the client organisation.
  - Where the client organisation offers all or parts of the contract to external organisations and a section of their own organisation. There is clearly a need to separate out the duties of the in-house provider and the client department especially at the tender evaluation stage.
  - This form of competition will cause each of the organisations to consider the most qualitatively effective and cost efficient means of provision.

### **Processes**

The following process may be appropriate for the tendering of a service:

1. The client organisation should draw up a contract specification. The contract specification will become the legally binding document governing the responsibilities and legal liabilities of both the contractor (private or in-house provider) and the client when the contract is awarded. The contract should include:

#### 1.1. Outputs

- The objectives of the service should be defined including measureable outputs describing the minimum quality standards.
- Consider the importance of ensuring achievement of each of the objective criteria assigning preliminary marks to each.

#### 1.2. Processes (or tasks)

- Describe the different tasks to be carried out identifying work methods, time expectations, grade of labour in order that labour costs can be estimated, physical material requirements.
  - Recognise any constraints that may restrict the task completion eg there being no weekend work.
- 1.3. Inputs: Assess the costs of providing each of the resources identified in the task identification above including labour, material, other direct costs, apportionment of appropriate overheads and an appropriate factor to be built in for inflation.
2. An estimate of the realistic cost for the service provision should be made. This estimate will be used as a benchmark against which the various tenders can be assessed. The costing of this contract should be based on the full cost of providing the service on a fully commercial basis. Cost estimates could also be prepared using sensitivity analysis including a look at an optimistic, realistic and pessimistic case. Note also should be taken of existing or potential variations eg in demand, and usage of resources/facilities.
  3. The client should then publish a notice in order to communicate to possible suppliers the intention to start a tendering process, communicated in a mode whereby all interested parties will be made aware of the situation.
  4. The various interested contractors should then show an initial expression of interest.
  5. The client may then send a questionnaire and outline details to the contractors whilst making the specification (per 1 above) available for inspection. The questionnaire is used in order that the information collected can be used to allow a short listing of contractors deemed suitable who will then be invited to tender.
  6. Formal notification of interest by contractors eg via the return of the questionnaire.
  7. An invitation to tender should then be sent to the short listed contractors ie send contract documentation.
  8. Contractors should then submit their tender within the space of 40 days to 3 months.
  9. Tender documents should be received sealed with all bids being opened at a specified date in order that there be no favouritism and the process is seen as completely fair to all parties.
  10. The tenders are then evaluated and an announcement made within, hopefully, a period of 4 to 6 weeks.

*1 mark per point made  
Up to a maximum of 8  
(40)*

Appendix 1: Financial calculations:

**Annual cash flows, Option 1:**

	Void	60% reduction	Current rental	Additional rents	Annual Increase			
Increase in rentals								
Category A flat	10	6	60	360	18,720			
		(10 x .6)		(6 x 60)	(360 x 52)			
Category B flat	20	12	70	840	43,680			
Category C flat	30	18	80	1,440	74,880			
		<u>36</u>			<u>137,280</u>			
Increase in rent charges	Existing Rentals	Additional flats	Revised flats	Additional rent	Annual Increase			
Category A flat	170	6	176	1.50	13,728			
				(176 x 1.5 x 52)				
Category B flat	100	12	112	1.50	8,736			
Category C flat	70	18	88	1.50	6,864			
		<u>36</u>			<u>29,328</u>			
<b>Present Value calculations</b>	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Total
Capital costs	-530,000						20,000	
Void flat rents		137,280	137,280	137,280	137,280	137,280	137,280	
Increase rentals		29,328	29,328	29,328	29,328	29,328	29,328	
Maintenance		-40,000	-40,000	-40,000	-40,000	-40,000	-40,000	
New staff		-10,000	-10,000	-10,000	-10,000	-10,000	-10,000	
Additional variable costs (£500 x 36)		-18,000	-18,000	-18,000	-18,000	-18,000	-18,000	
Existing maintenance saved		20,000	20,000	20,000	20,000	20,000	20,000	
Total cash flow	-530,000	118,608	118,608	118,608	118,608	118,608	138,608	201,648
NPV factor: 5%	1.0000	0.9524	0.9070	0.8638	0.8227	0.7835	0.7462	
PV	-530,000	112,962	107,577	102,454	97,579	92,929	103,429	86,931
Annual equivalent		<u>17,126</u>						
		(86,931/5.076)						

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IRR Calculations		0.1000		0.0900	
Year 0	-530,000	1.0000	-530,000	1.0000	-530,000
Year 1-6	118,608	4.3550	516,538	4.4860	532,075
Year 6	20,000	0.5645	11,290	0.5963	11,926
			<u>-2,172</u>		<u>14,001</u>

Interpolation:

$$9\% + 1\% \times 14,001 / (14,001 + 2,172)$$

$$\text{IRR} = 9.866\%$$

**Annual cash flows: proposal 2**

Increase in rentals	Void	30% reduction	Current rental	Additional rents	Annual increase
Category A flat	10	3	60	180	9,360
	(10 x .3)		(3 x 60)	(180 x 52)	
Category B flat	20	6	70	420	21,840
Category C flat	30	9	80	720	37,440
					<u>68,640</u>
Increase in rent charges	Existing Flats	Additional flats	Revised flats	Additional rent	Annual increase
Category A flat	170	3	173	1	8,996
				(173 x 1 x 52)	
Category B flat	100	6	106	1	5,512
Category C flat	70	9	79	1	4,108
		<u>18</u>			<u>18,616</u>



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NPV calculations	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Total
Capital costs	-356,000									10,000
Void flat rents		68,640	68,640	68,640	68,640	68,640	68,640	68,640	68,640	68,640
Increase rentals		18,616	18,616	18,616	18,616	18,616	18,616	18,616	18,616	18,616
Existing maintenance saved		20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000
Maintenance		-30,000	-30,000	-30,000	-30,000	-30,000	-30,000	-30,000	-30,000	-30,000
Extra variable costs (18 x 500)		-9,000	-9,000	-9,000	-9,000	-9,000	-9,000	-9,000	-9,000	-9,000
Total cash flow	-356,000	68,256	68,256	68,256	68,256	68,256	68,256	68,256	78,256	200,048
NPV factor	1.0000	0.9524	0.9070	0.8638	0.8227	0.7835	0.7462	0.7107	0.6768	
PV	-356,000	65,007	61,908	58,960	56,154	53,479	50,933	48,510	52,964	91,913

Annual equivalent 14,221  
(91,913/6.4631)

	10%	11%			
Year 0	-356,000	1.0000	-356,000	1.0000	-356,000
Year 1-8	68,256	5.3350	364,146	5.1460	351,245
Year 8	10,000	0.4665	4,665	0.4339	4,339
		<u>12,811</u>		<u>-416</u>	

Interpolation  
10% + (1% x  
12,811/(12,811+416))  
IRR = 10.968%

## Question 2

(a) Business process re-engineering.

- Encourages employees to ask fundamental questions re the way that outcomes are achieved in an organisation.
- Not cost cutting per se but consideration of potential changes to organisational structures and activity/process design.
- Focus on business processes (how it is done) rather than what is done.
- Can focus on the entire organisation, departments and staff roles.
- Includes an analysis of customer and key stakeholder needs.
- Information can be provided to assist BPR by: employees, customers, suppliers.
- Review should include the relationship between the area being considered and its outside environment as well as an internal review.
- A detailed activity analysis of the organisation should be prepared and reviewed.

*1 mark per point made to a maximum of 5*

(b) Optimal price is set by using calculus to arrive at point where marginal cost (mc) = marginal revenue (mr).

$$\text{Maximum demand} = 3,800 + (38 \times 100) = 7,600$$

$$\text{Demand equation: } Q = 7,600 - (P \times 100)$$

$$\text{Thus: } 100P = 7,600 - Q$$

$$\text{Thus: } P = 76 - .01Q$$

To get total revenue multiply both sides by Q ( as  $TR = P \times Q$ )

$$TR = P \times Q = (76 - .01Q) \times Q$$

$$TR = 76Q - .01Q^2$$

To get MR we use differential calculus of the TR equation to find the slope of the TR function.

$$MR = 76 - .02Q$$

To find the optimal price we take  $MR = MC$ . NB  $MC = £5 \times 0.95$

$$\text{Thus: } 76 - .02Q = 4.75$$

$$\text{Therefore } .02Q = 71.25$$

$$\text{Optimal demand is : } Q = 3,562$$

Using earlier equation to solve for P:

$$P = 76 - .01Q = 76 - (.01 \times 3,562) = \text{£}40.38$$

*Using calculus: 1 mark for demand equation, 1 mark for total revenue equation  
1 mark for marginal revenue, 1 mark for equating mr to mc,  
1 mark each for arriving at optimal price and quantity  
Maximum marks for part (b) 6*

*If tabular approach adopted marks should be given up to 4 marks for logic of approach taken*

(c) The effect of the change in pricing and consultant is as follows:

	Present situation	Localised		Change	Savings	Revised
Maintenance	96,000	100%	96,000	-15%	-14,400	81,600
Estates	63,000	60%	37,800	-15%	-5,670	57,330
Supplies and services	42,000	100%	42,000	-15%	-6,300	35,700
Administration	32,000	50%	16,000	-15%	-2,400	29,600
Consultant					15,000	15,000
	<u>233,000</u>				<u>13,770</u>	<u>219,230</u>
Variable costs (3,800 x 5)	19,000			-5%	£4.75 each	16,919.5
Total costs					(3,562 x £4.75)	<u>236,149.5</u>
	<u>252,000</u>					
Income (3,800 x £38)	144,400					143,833.56
					(3,562 x £40.38)	<u>-92,315.94</u>
	<u><u>-107,600</u></u>					<u><u>-92,315.94</u></u>

Note that the effect overall is for the deficit to have been reduced by £15,284 (£107,600 - £92,316).

This has been affected by:

Change in pricing	
Existing contribution (3,800 x (£38 - £5))	= £125,400
New contribution (3,562 x (£40.38 - £5))	= £126,023
Change	= £623

Consultants impact	
Reduction in fixed costs	= £28,770
Reduction in variable costs (3,562 x .25)	= £890.5
Less consultants costs	= -£15,000
Change	<u>£14,660.5</u>
Total change	<u>£15,284</u>

Comment

- Targeted subsidy level not yet met.
- Objectives of the service re maximisation of facilities not met via pricing increase and drop in demand.
- The reduction resulting increase in contribution is small in relation to the 6.2% decrease in the use of the facility.

*Calculations: 1 mark for change in pricing effects, 1 mark for impact of consultant  
1 mark per point made in conclusion (up to maximum of 2)  
(4)*

(d) Alternative pricing structures.

- No charge being made to maximise the usage of the facility. However this is unfair to the taxpayers not availing themselves of this non-essential service.
- Variable costing: only charging clients with the variable/incremental costs of their booking. However the general public are therefore subsidising the facility regarding the fixed overhead infrastructure.
- Partial overhead charging: All variable/incremental costs are recovered but only a proportion of fixed costs. The proportion of overheads applied may be those seen directly to relate to the park booking. However this again incurs a level of subsidy for the non-specific overheads.
- Full cost charging: All costs incurred in the provision of the service should be charged. This ignores the level of demand and the objectives of the organisation to increase health etc.
- Full cost plus a profit margin: A charge is set in order to create a surplus in order to subsidise other services such as sport for the disabled. Again this ignores the needs of society.
- Going rate charges: This rate could be that set by other public sector providers of this type of event, in other localities or the private sector. It should consider the differences in service that may exist. This may ignore the objectives of the organisation the public sector is benchmarked against, as it will see profit maximisation as paramount.

- Demand orientated charging: Set the charges at levels which different groups of users are willing to pay. This may be based on a comparison with private sector provision of like services. Thus weekend rates may be at a premium as this is where different leagues arrange their ties.
- Differential pricing: eg off peak, unemployed groups, disadvantaged/advantaged.
- Discounted pricing eg for block bookings.

*1 mark per point made up to a maximum of 5*

*(20)*

### Question 3

(a) Benchmarking

- Benchmarking can be defined as a systematic and continuous measurement process, continually comparing and measuring an organisation's business processes against business leaders.
- The overall aim of the technique is to gain information that will help the organisation take action to improve its performance.
- The areas to be benchmarked are numerous and may cover the whole range of company activities eg production activities, distribution processes, research procedures etc.
- Benchmarking looks at all aspects of an organisation including performance indicators, procedures and processes.

**External benchmarking** is where an external entity is benchmarked against. This can be with an entity in the same industry eg a health trust in a different geographical location to your own. However it may be with an entity in a different industry which has some common features eg distribution channels, procurement functions. A common example cited is competitive cost benchmarking whereby an organisation attempts to understand how other companies attain certain levels of cost efficiency in order to emulate them.

**Internal benchmarking** is the comparison of internal processes with the aim of spreading good practice. It is particularly useful in multi-site operations where there are regional structures such as in the Inland Revenue. However it should not be ignored in centralised operations as different departments still have comparable operations eg secretarial support, training. Its advantages include its ease in setting up, being relatively inexpensive and its perception as less threatening to staff as a first experience of benchmarking.

The outcomes from the process may be:

- The identification of opportunities not previously identified.
- Finding the solution to an existing problem.
- Identifying best practice within areas of significance to the company which an entity can attempt to emulate.
- Improving on an understanding of the external environment (customers and competitors).
- Learning from others' successes and mistakes.
- Improving in areas where the organisation has been criticised eg references made by external auditors.

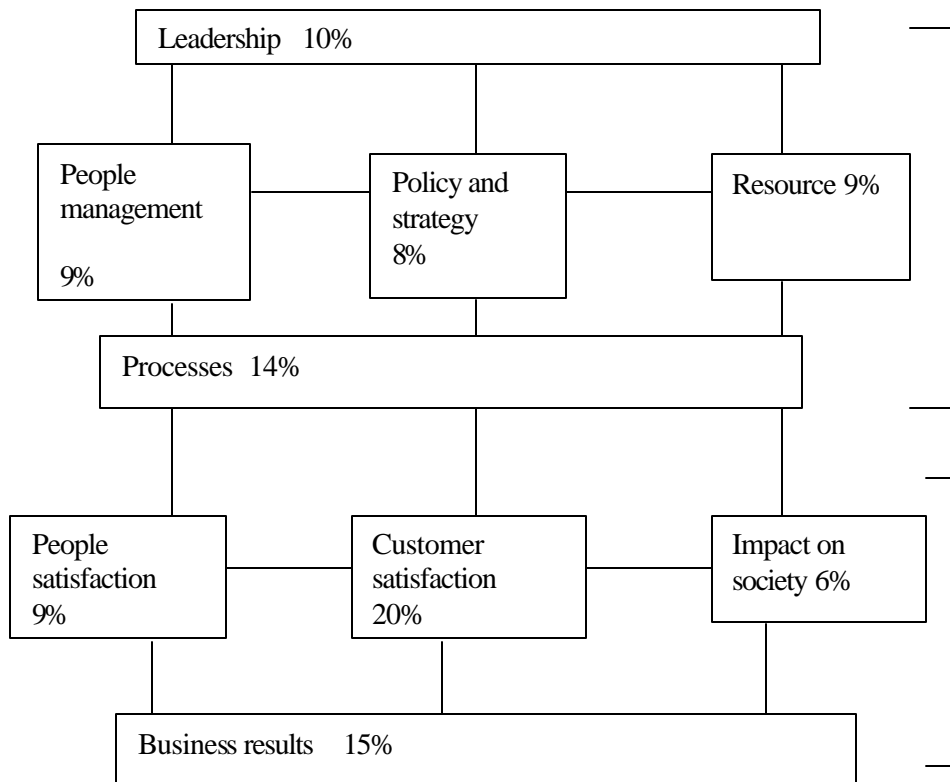
A number of areas within an organisation can benefit from benchmarking. These may include:

- Functions representing the higher percentage of costs eg materials.
- Activities impacting on the key success factors of the business.
- Perceived problem areas.
- Functions which determine the differentiation of our product/service from the market and are thus vital to our competitiveness.
- Areas where there is a great scope for improvement.

**Business Excellence Model**

In performance measurement the business excellence model has been developed in order that an organisation can critically assess whether it is operating effectively across a broad range of criteria.

The model is designed to focus on five “enabler” measures which make the organisation work and four “result enablers” measuring what success has been achieved. It can be illustrated by the following diagram:



The model can be summarised by the statement that: effective leadership inspires staff and targets resources to continuously improve working methods in order to satisfy customers, staff and others and produce excellent business results.

It can be seen that the top section of the diagram focuses on the management of a business unit whilst the lower section considers what the business unit achieves. Also you should note that the 9 aspects are all weighted regarding their importance (totalling 100%).

The model then seeks pertinent information to gauge the effectiveness of each of the 9 aspects. Questions are set to management and staff, performance measures are recorded and analysed in order to assess each area. For example within the area of leadership, this aspect could require an assessment of areas such as the following in order to assess if it is effective:

- Industry awareness
- Initiative taking
- Understanding of organisation strategy
- Relationships with subordinate staff etc

For each question set against the 9 factors, scores can then be developed in relation to the importance of the question set.

In answering the questions set a classification can then be given as to how well the organisation meets the criteria in the question set. At the one end of this spectrum would be clear evidence that there is an established systematic approach to meeting the criteria which is fully deployed, regularly reviewed and effective. At the other end of this scoring system is a 0% allocation of the score where there is no evidence whatsoever of a sound approach existing.

In addition to this benchmarks can be set against which the business unit can be compared as well as comparison with other internal divisions (eg comparing with divisions achieving best practice). This benchmarking can be applied to the entire score for a business unit, or for the total scores for each of the 9 aspects individually or even by individual question. The benchmarks achieved can also be compared over time to see whether there is any improvement in each of the criteria and questions set.

One further advantage of this scheme is that an organisation is comparing itself with a world class model for business excellence as set by the European Foundation for Quality Management. This system will help to produce fair and objective feedback on the strengths and opportunities for improvement and to establish a prioritised key issue list for action planning.

*Benchmarking 1 mark per point made up to a maximum of 5*  
*Business Excellence Models 1 mark per point made up to a maximum of 5*

(10)



(b) Business excellence model comparison.

There are areas of strength in the oral surgery department and also areas of weakness:

*Strength*

Resources: The oral surgery department is very strong regarding the efficient use of its resources, in comparison with Orthodontics they are 38% higher in terms of their score.

Processes: A score of 70/98 is very high. The organisation may well be strong regarding its processes as both departments score high.

Business results: A high score has been achieved here (70/105) which is similar to Orthodontics.

*Weakness*

Leadership: 24/70, Orthodontics far superior (117% higher score than Oral surgery).

People management: 22/56, Orthodontics again far superior (82% higher than Oral Surgery score).

Policy and strategy: 19/63, Orthodontics slightly superior (26% higher), the organisation may have a problem regarding business strategy as both scores are very low.

Customer satisfaction: 40/140 (29%), Oral surgery is very poor in relation to its own mark and also in relation to Orthodontics who score a mark 135% above Oral surgery.

Impact on society: 25/42, Orthodontics again is superior scoring a mark 28% above Oral Surgery.

*External benchmarking:*

	Oral	Comparative
Patients	24,000	28,000
Medical staff	12	11
Administrative staff	4	3
Waiting list time	2 months	3 months
Repeat referrals	8%	4%
Space (square metres)	300	400
Deficit/surplus	-5%	+1%
Patients/medical staff	2,000	2,545
Patients/ admin staff	6,000	9,333
Medical staff/admin staff	3.0	3.7
Space/total staff	19	29

*Strengths:*

Waiting list time. This may tie in with the strength indicated above regarding processes.

Space: The amount of space per staff member is low. This may tie in with the good use of resources noted above. However, are the working conditions cramped (leading to staff management problems noted above) and the facilities for customers inadequate (leading to customer dissatisfaction)?

*Weaknesses:*

The number of referrals. This may tie in with the lack of customer satisfaction noted above.

Staffing seems high as shown by the patients to staff ratios. This may have led to the reduced waiting lists.

High deficits: Caused by high staffing levels.

*From business excellence model: 1 mark per point up to a maximum of 4*

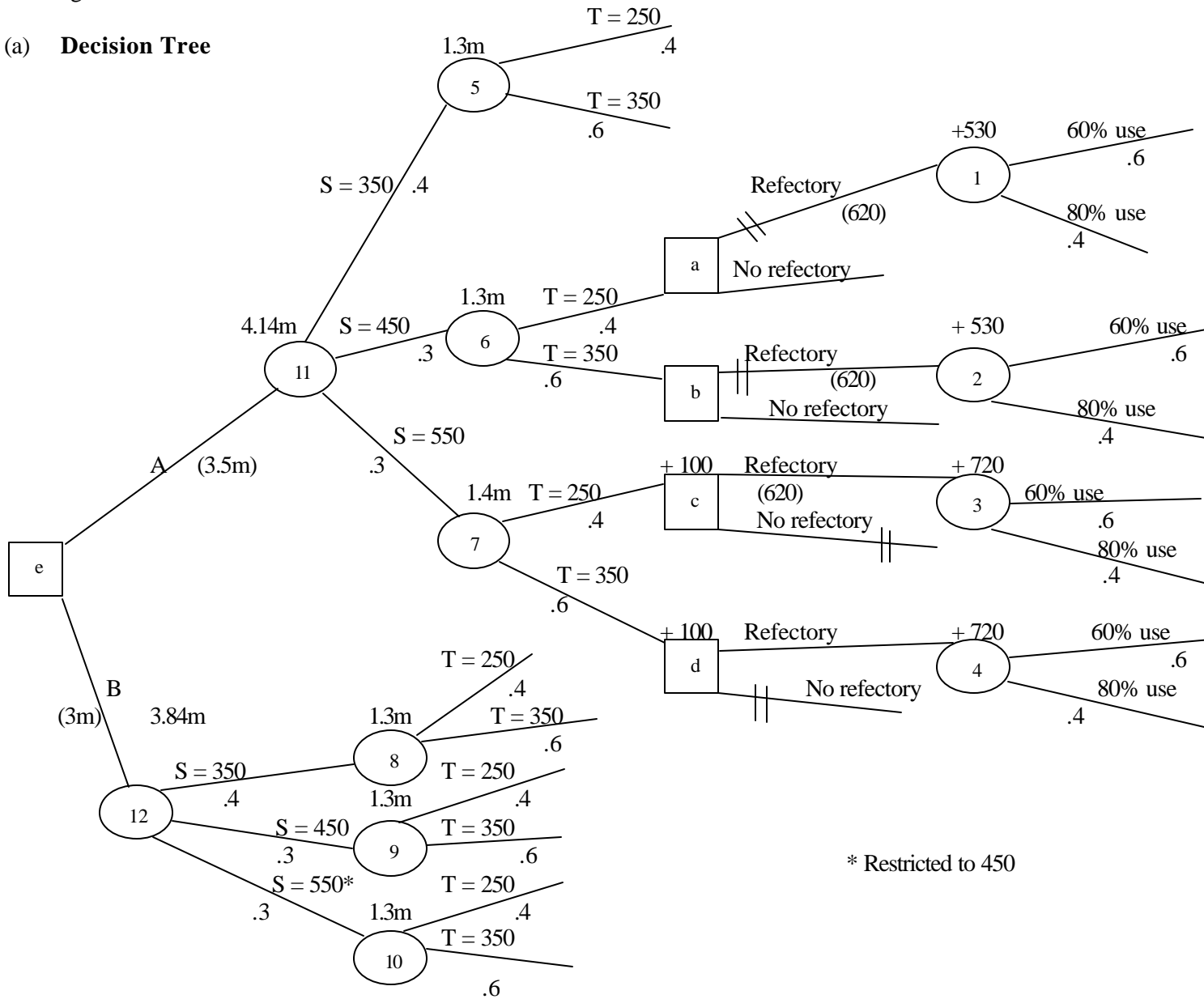
*From external benchmark: 1 mark up to a maximum of 4*

*Conclusion and comment: 2 marks*

*(10)*

*(20)*

(a) Decision Tree



(4)

(b)

Node	NPV	Probability	EMV
1	450,000	0.6	270,000
	650,000	0.4	260,000
			530,000
2	450,000	0.6	270,000
	650,000	0.4	260,000
			530,000
3	600,000	0.6	360,000
	900,000	0.4	360,000
			720,000
4	600,000	0.6	360,000
	900,000	0.4	360,000
			720,000
5, 6, 8, 9,10	1,000,000	0.4	400,000
	1,500,000	0.6	900,000
			1,300,000
7 (1m + 100k)	1,100,000	0.4	440,000
	1,600,000	0.6	960,000
(1.5m + 100k)			1,400,000
11 (2m+1.3m)	3,300,000	0.4	1,320,000
	4,200,000	0.3	1,260,000
	5,200,000	0.3	1,560,000
(2.9m+1.3m)			4,140,000
(3.8m+1.4m)			
12 (2m+1.3m)	3,300,000	0.4	1,320,000
	4,200,000	0.3	1,260,000
	4,200,000	0.3	1,260,000
(2.9m+1.3m)			3,840,000
(2.9m+1.3m)			
*			

Restricted to 450

Decisions			
a and b	EMV of canteen cash inflows	530k	
	Capital costs	-620	
	Gain/loss	-90k	Reject
c and d	EMV of canteen cash inflows	720k	
	Capital costs	-620k	
	Gain/loss	+100k	Accept
e	EMV of project A	4.14m	
	Capital costs	-3.5m	
	Gain/loss	640k	
	EMV of project B	3.84m	
	Capital costs	-3m	
	Gain/loss	840k	Accept B

(6)

(c) **Decision tree logic**

A decision tree is a diagram which illustrates the choices and possible outcomes of a decision. All the possible choices that can be made are shown as branches on the tree and all the possible outcomes of each choice are also shown as subsidiary branches.

It is conventional to draw decision trees from left to right and to use symbols to distinguish between points at which decisions must be made (a square) and points at which the outcome of a particular alternative is uncertain (a circle).

The evaluation of the decision tree is done by 'rolling' back from right to left and calculating the expected value of each possible outcome, taking account of its probability.

A further extension of this technique is applied where there are multiple decisions to take. The same principles applied to single decisions still hold true. However at the end of certain decision branches with their respective probability branches there may then ensue a further decision.

When there are multiple decisions a decision node should be drawn out of the branch from which a further decision may be taken. Again from this square node should follow all options relating to that further decision and then the probabilities of different events as in a one decision tree. This should be continued until all decisions have been presented logically on the tree as well as all of the possibilities emanating from those decisions.

The best decision is worked out by starting at the right of the decision tree ie the later decisions and then working backwards to the start. For the later decisions you should calculate the EMV of the alternatives from the last decision taken. Once you have decided which of the alternatives is best this is then taken as the decision taken should earlier events occur. That decision's payoffs should then be taken into the earlier decisions.

This process continues until we reach the start at the far left of the decision tree. It may well be that the EMV calculations for each decision should be worked out separately with the final solutions brought back for inclusion in the decision tree itself.

### Comments

The decision recommended using the EMV theory is to adopt project B, with a resultant EMV of £840k.

However the £840k does not link specifically to any one outcome but is an average based on different outcomes and their probabilities, of which there are six.

This technique ignores the type of decision maker. If the decision maker was a risk taker he/she may prefer to see those possibilities with the highest possible outcomes eg Plan A, with 550 students and 250 tourists and a refectory with 80% usage.

If the decision taker is pessimistic and risk averse then we would want to highlight the downside of the decision being faced eg if the decision for plan B is accepted there is a 16% possibility that there would be 350 students and 250 tourists. This would result in no profit being made (+£2m +£1m -£3m).

The decision tree is limited by:

- How confident we are in the probabilities set.
- How confident we are in the cash flow predictions.
- Have we looked at all possible alternatives re student accommodation?

*Decision tree explanation: 1 mark per point made up to a maximum of 3*

*Comments: 1 mark per point made up to a maximum of 3*

(6)

(d) Other factors:

- Have all alternatives been considered.
- Are there adequate funds to finance the project.
- Is the accommodation closer to the University than the present residences.
- Does this project fit best with the strategic objectives (suitability).
- What do the stakeholders feel about the proposal (acceptability).
- Will planning consent be given (feasibility).

*1 mark per point made up to a maximum of 4  
(20)*

### Question 5

- (a) The major differences between traditional management accounting and SMA can be summarised as follows:
- Strategic management accounting would tend to focus on the key business units of the entity whilst traditional management accounting often reflects on the entire business.
  - The focus of SMA would be on both the external factors affecting the organisation (eg competitors) as well as the internal (business processes). Traditional management accounting would tend to focus on the latter with such techniques as standard costing.
  - Management accounting in the past has tended to focus on profitability by product, which again has an inward focus. SMA on the other hand may use profitability analysis with a more external focus including customer and market profitability analysis as well as considering products.
  - Traditional management accounting functions are often seen as the sole responsibility of the accounting function eg standard costing. Within SMA the accountant is seen as part of a multi-disciplinary senior management team.
  - SMA should have a future focus although at present the emphasis is often on an inward focus also looking at the past. Whilst traditional management accounting utilised such techniques as budgeting, standard costing and the setting of performance targets these may be seen as inadequate in the long term perspective of the organisation. Often these techniques are too short sighted in their range (eg a one-year budget) whereas strategic thinking has a longer term focus eg 5 to 10 years. Also much time is spent on reviewing past events eg comparisons of budgets/standards/targets with actuals.
  - Investment proposals are often evaluated using strict financial criteria such as net present values. SMA on the other hand considers investments in the light of financial criteria along with many other objectives, many of which may be subjective. Thus whilst the former models attempted to enumerate as many factors as possible the second approach introduces non-financial elements into the equation eg the effect on the environment and shareholders.
  - Whilst traditional management accounting reviews performance on a monthly basis (at the least) SMA may warrant reviews on a quarterly or six-monthly cycle. Traditional techniques are focused on the operational aspects of the business where factors change whose impact can be noted in the short term. Strategic changes are often slower to impact and thus less frequent reporting may suffice. Also the form of reporting is more likely to be of a multi-dimensional nature with an emphasis on external factors (eg market share) as well as internal factors.



- Approaches in traditional costing systems have been seen to report variances after the event has occurred (known as ex-post control). Thus a budgetary control process would report on variances arising in the past month. However SMA has attempted to set in place systems that would predict variances in advance in order that unwanted variances can be eradicated prior to them being experienced. This is known as ex-ante cost control or feed-forward control whereby we look forward in order to control future events now. If the cost at present is too high then alternatives are considered eg product modification/redesign or changes to business processes or material requirements.
- Cost analysis at present is often focused on a product within the boundaries of the organisation. SMA may have different perspectives. For example the organisation may wish to cost the different attributes provided by the company's products and services. Thus if a certain attribute is to be added to a product this would be looked at as a separate issue from the overall product.

*1 marks per point made to a maximum of 10*

(b) Application of Strategic Management Accounting Techniques to the Public Sector.

Examples include;

- One technique associated with SMA is *value chain analysis*. Under this system the costs associated with the different processes (chains) in the production of a product or service are considered. Thus the production of a product can be split internally into the various processes and considered. At this juncture certain processes may be considered for outsourcing where it is more cost effective to do so. Alternatively the organisation may reconsider bringing a process within the confines of the business rather than outsourcing it as this will add value to the entity. This review is broader than merely looking at existing processes and should consider parts of the value chain that the organisation is not presently involved with. For example the organisation may consider vertical integration by deciding to produce some sub-assemblies previously produced by a supplier.
- Another technique that may be used could be *customer profitability analysis*. Thus if an organisation had several key customers who purchase 90% of an organisation's production then it would be useful to consider the profit made by each customer. Each customer will have distinct costs eg carriage and discounts, and therefore it would be useful to consider the contribution made and importance of each client. Examples could include the level of deficit funding given to certain undergraduate students within a college.

- Preparing long term plans: As senior management attempt to prepare a vision for the long term, which is integral to business strategy, this will include some form of financial analysis. Management accountants have traditionally produced short-term budgets (eg annual) whilst the longer-term vision of the organisation has not been given requisite attention. As longer term objectives and strategies are agreed there should be an attempt at providing medium term (5 year budgets) financial forecasts. Accountants should also offer flexible, easily adjusted planning models. These models should include internal and external factors and should be capable of rolling forward being easily adjusted using appropriate software. This roll-forward technique allows for an existing forecast to be updated by eliminating from the forecast those periods that are now history whilst adding in new periods that require to be included into the budget. At the same time the assumptions that were included in the original model may be updated based on the trading factors now being experienced. This long-term focus will include regular updating of long-term strategies.
- Life cycle costing where the long term effects of policies and investments would be considered as well as the breadth of impact to all stakeholders: eg considering the long term effects of differing environmental policies.
- Customer competitor analysis: The organisation can undertake a Competitor Strategy Analysis eg Health Trusts comparing themselves to the private sector competition. This might include:
  - Constant comparison with competitors.
  - Consideration of their strengths and weaknesses.
  - Comparison with our firm re critical success factors ie those factors regarded by the entities as being fundamental to their success.
  - Consideration of our advantages over other companies.
- Brand analysis, including the Understanding/valuing of the Strength of Brands. A key element in many organisations' marketing philosophy is the long-term strength of its brand name. At present the accounting profession has been lax in its integration of the brand into financial reporting. Obviously the valuing of brands due to its intangible nature is fraught with difficulty. However that should not mean that accountants should not be informed of its importance nor should they neglect areas where they could meaningfully be involved. This may be important in areas where brand name is important eg brand name for University or leisure sport centre. Areas where the accountant could conceivably be involved might involve:
  - Attempting to value the impact of the various elements of a brand image.

- Valuing the brand image that exists at present. At present the accounting profession may place a value on acquired brands as this has a recognisable value (ie what was paid to acquire the brand). However many brands are developed over a long period of time and are more difficult to place a value on. The value arrived at could be valued at the costs incurred to develop and maintain the brand but also from a perspective of the value to the company. The valuing of brands may provide information to assist management in recognising its importance to the business as regards its effect on the organisation's overall value whilst also showing the level of investment being made in this asset.
- Brand maintenance should be budgeted for. Thus within the budget framework an allowance could be made to develop or maintain the current branding of products and services.

*2 ½ marks per technique given to a maximum of 10*

*(20)*