Answers

1 Edward Limited

(a) Target costing process

Target costing begins by specifying a product an organisation wishes to sell. This will involve extensive customer analysis, considering which features customers value and which they do not. Ideally only those features valued by customers will be included in the product design.

The price at which the product can be sold at is then considered. This will take in to account the competitor products and the market conditions expected at the time that the product will be launched. Hence a heavy emphasis is placed on external analysis before any consideration is made of the internal cost of the product.

From the above price a desired margin is deducted. This can be a gross or a net margin. This leaves the cost target. An organisation will need to meet this target if their desired margin is to be met.

Costs for the product are then calculated and compared to the cost target mentioned above.

If it appears that this cost cannot be achieved then the difference (shortfall) is called a cost gap. This gap would have to be closed, by some form of cost reduction, if the desired margin is to be achieved.

(b) Benefits of adopting target costing

- The organisation will have an early external focus to its product development. Businesses have to compete with others (competitors) and an early consideration of this will tend to make them more successful. Traditional approaches (by calculating the cost and then adding a margin to get a selling price) are often far too internally driven.
- Only those features that are of value to customers will be included in the product design. Target costing at an early stage considers carefully the product that is intended. Features that are unlikely to be valued by the customer will be excluded. This is often insufficiently considered in cost plus methodologies.
- Cost control will begin much earlier in the process. If it is clear at the design stage that a cost gap exists then more can be done to close it by the design team. Traditionally, cost control takes place at the 'cost incurring' stage, which is often far too late to make a significant impact on a product that is too expensive to make.
- Costs per unit are often lower under a target costing environment. This enhances profitability. Target costing has been shown to reduce product cost by between 20% and 40% depending on product and market conditions. In traditional cost plus systems an organisation may not be fully aware of the constraints in the external environment until after the production has started. Cost reduction at this point is much more difficult as many of the costs are 'designed in' to the product.
- It is often argued that target costing reduces the time taken to get a product to market. Under traditional methodologies there are often lengthy delays whilst a team goes 'back to the drawing board'. Target costing, because it has an early external focus, tends to help get things right first time and this reduces the time to market.

(c) Steps to reduce a cost gap

Review radio features
Remove features from the radio that add to cost but do not significantly add value to the product when viewed by the customer. This should reduce cost but not the achievable selling price. This can be referred to as value engineering or value analysis.

Team approach
Cost reduction works best when a team approach is adopted. Edward Limited should bring together members of the marketing, design, assembly and distribution teams to allow discussion of methods to reduce costs. Open discussion and brainstorming are useful approaches here.

Review the whole supplier chain
Each step in the supply chain should be reviewed, possibly with the aid of staff questionnaires, to identify areas of likely cost savings. Areas which are identified by staff as being likely cost saving areas can then be focussed on by the team. For example, the questionnaire might ask 'are there more than five potential suppliers for this component?' Clearly a 'yes' response to this question will mean that there is the potential for tendering or price competition.

Components
Edward Limited should look at the significant costs involved in components. New suppliers could be sought or different materials could be used. Care would be needed not to damage the perceived value of the product. Efficiency improvements should also be possible by reducing waste or idle time that might exist. Avoid, where possible, non-standard parts in the design.

Assembly workers
Productivity gains may be possible by changing working practices or by de-skilling the process. Automation is increasingly common in assembly and manufacturing and Edward Limited should investigate what is possible here to reduce the costs. The learning curve may ultimately help to close the cost gap by reducing labour costs per unit.

Clearly reducing the percentage of idle time will reduce product costs. Better management, smoother work flow and staff incentives could all help here. Focusing on continuous improvement in production processes may help.

Overheads

Productivity increases would also help here by spreading fixed overheads over a greater number of units. Equally Edward Limited should consider an activity based costing approach to its overhead allocation, this may reveal more favourable cost allocations for the digital radio or ideas for reducing costs in the business.

(d) Cost per unit and cost gap calculation

Component 1	$ per unit
$(4{\cdot}10 + \frac{\$2{,}400}{4{,}000 \text{ units}})$	4·70
Component 2	
$(\frac{25}{100} \times 0{\cdot}5 \times \frac{100}{98})$	0·128
Material – other	8·10
Assembly labour	
$(\frac{30}{60} \times \$12{\cdot}60/\text{hr} \times \frac{100}{90})$	7·00
Variable production overhead	
$(\frac{30}{60} \times \$20/\text{hr})$	10·00
Fixed production overhead	
$(\frac{30}{60} \times \$12/\text{hr})$	6·00
Total cost	35·928
Desired cost	
($44 x 0·8)	35·20
Cost gap	0·728

Working

1. Production overhead cost

   Using a high low method

Extra overhead cost between month 1 and 2	$80,000
Extra assembly hours	4,000
Variable cost per hour	$20/hr
Monthly fixed production overhead	
$700,000 – (23,000 x $20/hr)	$240,000
Annual fixed production overhead ($240,000 x 12)	$2,880,000
FPO absorption rate $\frac{\$2{,}880{,}000}{240{,}000 \text{ hrs}}$ =	$12/hr

2 Ties Only Limited

(a) Financial performance of Ties Only Limited

Sales Growth

Ties Only Limited has had an excellent start to their business. From a standing start they have made $420,000 of sales and then grown that figure by over 61% to $680,000 in the following quarter. This is impressive particularly given that we know that the clothing industry is very competitive. Equally it is often the case that new businesses make slow starts, this does not look to be the case here.

Gross Profit

The gross profit for the business is 52% for quarter 1 and 50% for quarter 2. We have no comparable industry data provided so no absolute comment can be made. However, we can see the gross profit has reduced by two points in one quarter. This is potentially serious and should not be allowed to continue.

The cause of this fall is unclear, price pressure from competitors is possible, who may be responding to the good start made by the business. If Ties Only Limited is reducing its prices, this would reflect on the gross profit margin produced.

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It could also be that the supply side cost figures are rising disproportionately. As the business has grown so quickly, it may have had to resort to sourcing extra new supplies at short notice incurring higher purchase or shipping costs. These could all reduce gross margins achieved.

Website development
Website costs are being written off as incurred to the management accounting profit and loss account. They should be seen as an investment in the future and unlikely to continue in the long term. Website development has been made with the future in mind; we can assume that the future website costs will be lower than at present. Taking this into consideration the loss made by the business does not look as serious as it first appears.

Administration costs
These are 23·9% of sales in quarter 1 and only 22·1% of sales in quarter 2. This could be good cost control, impressive given the youth and inexperience of the management team.

Also any fixed costs included in the cost (directors' salaries are included) will be spread over greater volume. This would also reduce the percentage of cost against sales figure. This is an example of a business gaining critical mass. The bigger it gets the more it is able to absorb costs. Ties Only Limited may have some way to go in this regard, gaining a much greater size than at present.

Distribution costs
This is a relatively minor cost that again appears under control. Distribution costs are likely to be mainly variable (postage) and indeed the proportion of this cost to sales is constant at 4·9%.

Launch marketing
Another cost that although in this profit and loss account is unlikely to continue at this level. Once the 'launch' is complete this cost will be replaced by more general marketing of the website. Launch marketing will be more expensive than general marketing and so the profits of the business will improve over time. This is another good sign that the results of the first two quarters are not as bad as they seem.

Other costs
Another cost that appears under control in that it seems to have simply varied with volume.

(b) Although the business has lost over $188,000 in the first two quarters of its life, this is not as disastrous as it looks. The reasons for this view are:

- New businesses rarely breakeven within six months of launch
- The profits are after charging the whole of the website development costs, these costs will not be incurred in the future
- Launch marketing is also deducted from the profits. This cost will not continue at such a high level in the future

The major threat concerns the fall in gross profit percentage which should be investigated.

The owners should be relatively pleased with the start that they have made. They are moving in the right direction and without website development and launch marketing they made a profit of $47,137 in quarter 1 and $75,360 in quarter 2.

If sales continue to grow at the rate seen thus far, then the business (given its ability to control costs) is well placed to return significant profits in the future.

The current profit (or loss) of a business does not always indicate a business's future performance.

(c) Non-financial indicators of success

Website hits
This is a very impressive start. A new business can often find it difficult to make an impression in the market. Growth in hits is 25% between the two quarters. If this continued over a year the final quarter hits would be over 1·3m hits. The internet enables new businesses to impact the market quickly.

Number of ties sold
The conversion rates are 4% for quarter 1 and 4·5% for quarter 2. Both these figures may seem low but are ahead of the industry average data. (Industry acquired data must be carefully applied, although in this case the data seems consistent). It appears that the business has a product that the market is interested in. Ties Only Limited are indeed looking competitive.

We can use this statistic to calculate average price achieved for the ties

Quarter 1

$$\frac{\$420{,}000}{27{,}631} = \$15{\cdot}20 \text{ per tie}$$

Quarter 2

$$\frac{\$680{,}000}{38{,}857} = \$17{\cdot}50 \text{ per tie}$$

This suggests that the fall in gross profit has little to do with the sales price for the ties. The problem of the falling gross profit must lie elsewhere.

On time delivery
Clearly the business is beginning to struggle with delivery. As it expands, its systems and resources will become stretched. Customers' expectations will be governed by the terms on the website, but if expectations are not met then customers may not return. More attention will have to be placed on the delivery problem.

Sales returns
Returns are clearly common in this industry. Presumably, ties have to be seen and indeed worn before they are accepted as suitable by customers. The concern here is that the business's return rate has jumped up in quarter 2 and is now well above the average for the industry. In other words, performance is worsening and below that of the competitors. If the business is under pressure on delivery (as shown by the lateness of delivery) it could be that errors are being made. If wrong goods are sent out then they will be returned by disappointed customers.

The alternative view is that the quality of the product is not what is suggested by the website. If the quality is poor then the products could well be returned by unhappy customers.

This is clearly concerning and an investigation is needed.

System down time
System down time is to be avoided by internet based sellers as much as possible. If the system is down then customers cannot access the site. This could easily lead to lost sales at that time and cause customers not to try again at later dates. Downtime could be caused by insufficient investment at the development stage (we are told that the server was built to a high specification) or when the site is under pressure due to peaking volumes. This second explanation is more likely in this case.

The down time percentage has risen alarmingly and this is concerning. Ideally, we would need figures for the average percentage down time achieved by comparable systems to be able to comment further.

The owners are likely to be disappointed given the level of initial investment they have already made. A discussion with the website developers may well be warranted.

Summary
This new business is doing well. It is growing rapidly and ignoring non-recurring costs is profitable. It needs to focus on delivery accuracy, speed and quality of product. It also needs to focus on a remedy for the falling gross profit margin.

Workings

1. Gross profit

   Quarter 1: $\frac{218{,}400}{420{,}000} = 52\%$ Quarter 2: $\frac{339{,}320}{680{,}000} = 50\%$

2. Website conversion rates

   Quarter 1: $\frac{27{,}631}{690{,}789} = 4\%$ Quarter 2: $\frac{38{,}857}{863{,}492} = 4{\cdot}5\%$

3. Website hits growth

   Between quarter 1 and quarter 2 the growth in website hits has been:

   $$\frac{863{,}492}{690{,}789} = 1{\cdot}25 = 25\%$$

3 Spike Limited

(a) A budget forms the basis of many performance management systems. Once set, it can be compared to the actual results of an organisation to assess performance. A change to the budget can be allowed in some circumstances but these must be carefully controlled if abuse is to be prevented.

Allow budget revisions when something has happened that is beyond the control of the organisation which renders the original budget inappropriate for use as a performance management tool.

These adjustments should be approved by senior management who should attempt to take an objective and independent view.

Disallow budget revisions for operational issues. Any item that is within the operational control of an organisation should not be adjusted.

This type of decision is often complicated and each case should be viewed on its merits.

The direction of any variance (adverse or favourable) is not relevant in this decision.

(b) Materials

Arguments in favour of allowing a revision

– The nature of the problem is outside the control of the organisation. The supplier went in to liquidation; it is doubtful that Spike Limited could have expected this or prevented it from happening.

– The buyer, knowing that budget revisions are common, is likely to see the liquidation as outside his control and hence expect a revision to be allowed. He may see it as unjust if this is not the case and this can be demoralising.

Arguments against allowing a budget revision

– There is evidence that the buyer panicked a little in response to the liquidation. He may have accepted the first offer that became available (without negotiation) and therefore incurred more cost than was necessary.
– A cheaper, more local supplier may well have been available, so it could be argued that the extra delivery cost need not have been incurred. This could be said to have been an operational error.

Conclusion
The cause of this problem (liquidation) is outside the control of the organisation and this is the prime cause of the overspend. Urgent problems need urgent solutions and a buyer should not be penalised in this case. A budget revision should be allowed.

Labour

Arguments in favour of allowing a revision

– The board made this decision, not the departmental manager. It could be argued that the extra cost on the department's budget is outside their control.

Arguments against allowing a budget revision

– This decision is entirely within the control of the organisation as a whole. As such, it would fall under the definition of an operational decision. It is not usual to allow a revision in these circumstances.
– It is stated in the question that the departmental manager complained in his board report that the staff level needed improving. It appears that he got his wish and the board could be said to have merely approved the change.
– The department will have benefited from the productivity increases that may have resulted in the change of policy. If the department takes the benefit then perhaps they should take the increased costs as well.

Conclusion

This is primarily an operational decision that the departmental manager agreed with and indeed suggested in his board report. No budget revision should be allowed.

An alternative view is that the board made the final decision and as such the policy change was outside the direct control of the departmental manager. In this case a budget revision would be allowed.

(c) Total sales variances

Sales price variance = (Actual SP – Std SP) x Act sales volume
= (16·40 – 17·00) x 176,000
= $105,600 (Adverse)

Sales volume variance = (Actual sales volume – Budget sales volume) x Std contribution
= (176,000 – 180,000) x 7
= $28,000 (Adverse)

(d) Market size and share variances

Market size variance = (Revised sales volume – budget sales volume) x Std contribution
= (160,000 – 180,000) x 7
= $140,000 (Adverse)

Market share variance = (Actual sales volume – revised sales volume) x Std contribution
= (176,000 – 160,000) x 7
= $112,000 (Favourable)

(e) Comment on sales performance

Sales Price

The biggest issue seems to be the decision to reduce the sales price from $17·00 down to $16·40. This 'lost' $105,600 of revenue on sales made compared to the standard price.

It seems likely that the business is under pressure on sales due to the increased popularity of electronic diaries. As such, they may have felt that they had to reduce prices to sustain sales at even the level they achieved.

Volume

The analysis of sales volume into market size and share shows the usefulness of planning and operational variances. Overall, the sales level of the business is down by 4,000 units, losing the business $28,000 of contribution or profit. This calculation does not in itself explain how the sales department of the business has performed.

In the face of a shrinking market they seem to have performed well. The revised level of sales (allowing for the shrinking market) is 160,000 units and the business managed to beat this level comfortably by selling 176,000 units in the period.

As mentioned above, the reducing price could have contributed to the maintenance of the sales level. Additionally, the improved quality of support staff may have helped maintain the sales level. Equally the actions of competitors are relevant to how the business has performed. If competitors have been active then merely maintaining sales could be seen as an achievement.

Spike should be concerned that its market is shrinking.

4 (a) Sniff should consider the following factors when making a further processing decision.

- **Incremental revenue**. The new perfume, once further processed, should generate a higher price and the extra revenue is clearly relevant to the decision.
- **Incremental costs.** A decision to further process can involve more materials and labour. Care must be taken to only include those costs that change as a result of the decision and therefore sunk costs should be ignored. Sunk costs would include, for example, fixed overheads that would already be incurred by the business before the further process decision was taken. The shortage of labour means that its 'true' cost will be higher and need to be included.
- **Impact on sales volumes.** Sniff is selling a 'highly branded' product. Existing customers may well be happy with the existing product. If the further processing changes the existing product too much there could be an impact on sales and loyalty.
- **Impact on reputation.** As is mentioned in the question, adding hormones to a product is not universally popular. Many groups exist around the world that protest against the use of hormones in products. Sniff could be damaged by this association.
- Potential legal cases being brought regarding allergic reactions to hormones.

(b) Production costs for 1,000 litres of the standard perfume

		$
Aromatic oils	10 ltrs x $18,000/ltr	180,000
Diluted alcohol	990 ltrs x $20/ltr	19,800
Material cost		199,800
Labour	2,000 hrs x $15/hr	30,000
Total		229,800
Cost per litre		229·80
Sales price per litre		399·80

Lost contribution per hour of labour used on new products

($399,800 – $199,800) ÷ 2,000 hrs = $100/hr

Incremental costs

	Male version	$	Female version	$
Hormone	2 ltr x $7,750/ltr	15,500	8 ltr x $12,000/ltr	96,000
Supervisor	Sunk cost	0	Sunk cost	0
Labour	500 hrs x $100/hr	50,000	700 hrs x $100/hr	70,000
Fixed cost	Sunk cost	0	Sunk cost	0
Market research	Sunk cost	0	Sunk cost	0
Total		65,500		166,000

Incremental revenues

	Male version	$	Female version	$
Standard	200 ltr x $399·80/ltr	79,960	800 ltr x $399·80	319,840
Hormone added	202 ltr x $750/ltr	151,500	808 ltr x $595/ltr	480,760
Incremental revenue		71,540		160,920
Net benefit/(cost)		6,040		(5,080)

The Male version of the product is worth further processing in that the extra revenue exceeds the extra cost by $6,040.

The Female version of the product is not worth further processing in that the extra cost exceeds the extra revenue by $5,080.

In both cases the numbers appear small. Indeed, the benefit of $6,040 may not be enough to persuade management to take the risk of damaging the brand and the reputation of the business. To put this figure into context: the normal output generates a contribution of $170 per litre and on normal output of about 10,000 litres this represents a monthly contribution of around $1·7m (after allowing for labour costs).

Future production decisions are a different matter. If the product proves popular, however, Sniff might expect a significant increase in overall volumes. If Sniff could exploit this and resolve its current shortage of labour then more contribution could be created. It is worth noting that resolving its labour shortage would substantially reduce the labour cost allocated to the hormone added project. Equally, the prices charged for a one off experimental promotion might be different to the prices that can be secured in the long run.

(c) The selling price charged would have to cover the incremental costs of $166,000. For 808 litres that would mean the price would have to be

$$\frac{(\$166{,}000 + \$319{,}840)}{808 \text{ ltrs}} = \$601{\cdot}29/\text{ltr}$$

or about $60·13 per 100 ml.

This represents an increase of only 1·05% on the price given and so clearly there may be scope for further consideration of this proposal.

(d) Outsourcing involves consideration of many factors, the main ones being:

- **Cost.** Outsourcing often involves a reduction in the costs of a business. Cost savings can be made if the outsourcer has a lower cost base than, in this case, Sniff. Labour savings are common when outsourcing takes place.
- **Quality.** Sniff would need to be sure that the quality of the perfume would not reduce. The fragrance must not change at all given the product is branded. Equally Sniff should be concerned about the health and safety of its customers since its perfume is 'worn' by its customers
- **Confidentiality.** We are told that the blend of aromatic oils used in the production process is 'secret. This may not remain so if an outsourcer is employed. Strict confidentiality should be maintained and be made a contractual obligation.
- **Reliability of supply.** Sniff should consider the implications of late delivery on its customers.
- **Primary Function.** Sniff is apparently considering outsourcing its primary function. This is not always advisable as it removes Sniff's reason for existence. It is more common to outsource a secondary function, like payroll processing for example.
- **Access to expertise.** Sniff may find the outsourcer has considerable skills in fragrance manufacturing and hence could benefit from that.

Fundamentals Level – Skills Module, Paper F5
Performance Management **December 2007 Marking Scheme**

			Marks
1	**(a)**	**Process description**	
		Product specification	1
		Selling price	1
		Cost calculation	1
			3
	(b)	**Benefits of target costing**	
		Per benefit	1
			4
	(c)	**Methods to reduce the cost gap**	
		Per idea	1
			5
	(d)	**Cost calculation**	
		Component 1	2
		Component 2	2
		Material other	1
		Assembly labour	2
		Variable production overhead	1
		High low calculation	2
		Fixed production OAR calculation	1
		Fixed production overhead	1
		Cost gap identified	1
			13
			25
2	**(a)**	Sales	2
		Gross profit	3
		Website development	2
		Administration	2
		Distribution	1
		Launch marketing	2
		Overall comment	2
		Max	**12**
	(b)	Future profits comment	**4**
	(c)	Website hits	2
		Number of tie sales	1
		Tie price calculation	2
		On time delivery	2
		Returns	2
		System down time	1
		Summary comment	1
		Max	**11**
			25

			Marks
3	**(a)**	When adjustment allowed	$2^1/_2$
		When adjustment not allowed	$2^1/_2$
			5
	(b)	Materials discussion	3
		Conclusion	1
		Labour discussion	3
		Conclusion	1
			8
	(c)	Sales price variance	2
		Sales volume variance	2
			4
	(d)	Market size variance	2
		Market share variance	2
			4
	(e)	Comment on sales price	2
		Comment on sales volume	2
			4
			25
4	**(a)**	Per factor outlined	1
			4
	(b)	Hormone costs	2
		Supervisor excluded	1
		Direct labour	3
		Fixed cost allocation excluded	1
		Market research	1
		Incremental revenue	3
		Net benefit	2
		Concluding comment	2
			15
	(c)	Breakeven calculation	2
			2
	(d)	Per factor outlined	1
			4
			25