

Instructors' Guide to Case Studies

Contents

Part 1

101 – The European Savings Bank	3
102 – The ethical dilemma at Northlake	6
103 – Electronic Boards plc	7

Part 2

201 – Permaclean Products plc	11
202 – The Good Night Motel	14

Part 3

301 – Zeros plc	17
302 – Instrumental Ltd	22

Part 4

401 – BBR plc	27
---------------	----

Part 5

501 – High-Tech Limited	32
502 – Tanner Pharmaceuticals and the price of new drug	37
503 – Osram	39

PART I

Management and cost accounting fundamentals

CASE 101

The European Savings Bank

This case provides a unique vehicle for covering the legal issues and raising the ethical awareness of students with regard to software piracy. The case allows students to apply ethical reasoning in a legal framework with which students may not be completely familiar, but of which they are aware. This is especially appropriate with today's increased copyright awareness, with cases such as Napster taking over the news headlines.

The software case can also be used to discuss other ethical issues, such as unethical behaviour. The motivations include a compulsion to win, a fear about economic uncertainty and/or the future and self-esteem. If an act is legal, does that make it ethical? Conversely, if an act is ethical, should it be legal? Since software piracy behaviour is so prevalent despite its illegality, it is particularly suited to this issue. The various issues related to copying software provide robust discussions in the classroom. Before presenting the case, it is helpful to present an overview of the legal issues related to software piracy. This will allow students to have an adequate background for the case discussion and will also highlight the variation in the rights granted to the licensees of different software packages. A comparison of the laws and the licensing agreements points out how difficult it is always to adhere to legal constraints and introduces areas where ethical judgement enters the process.

Software piracy

Legal issues

The laws regarding copying software were not clear for many years. This changed when the US copyright protection for computer software altered. Software became a literary work subject to copyright protection. Software is typically licensed rather than sold in an effort to control software piracy. Under the typical licensing agreement, the software is shrink wrapped with the agreement on the front – by opening the shrink-wrap, the end user automatically agrees to the details of the copyright agreement.

Ethical aspects

Ethical behaviour considers the impact of our actions on others and society as a whole. Software piracy differs from other ethical issues because it is so widespread and prevalent in today's society. The question, 'If everyone does it, then surely it's OK?' arises and this is further exacerbated by the muddle with technology: copyright regarding printed matter is fairly easy – only one person can read a book at any one time; with software, the issue becomes muddled – one person can use the same software on different computers in exactly the same way and if that person uses it on only one computer at a time, is it piracy?

Discussion of roles

To facilitate the use of the case, each role is discussed separately.

Nick Stringham

The major reason for including Nick in the case is to force the students to identify the creation of software with a particular individual (i.e. to personalise the issue). By attaching the issue to a person, rather than just considering the large software vendor, students recognise that an individual has invested considerable time and money in the creation of the software. Nick's fundamental concern or issue in the case is the fact that the software he has created *is* being stolen. One topic that can be discussed is what, if anything, he can do about his software being pirated. His actions may be limited because he has agreed to have Data Sources, SA, market his software.

Shelly Norduck

Shelly, as the representative of the software vendor, is mainly concerned with what to do about the software piracy. Some people have argued that companies should encourage software piracy because anyone who uses it will subsequently want to purchase the package – this is a typical ploy of freeware companies. Some options are reinstating copy protection, registration, encouraging whistle-blowing through incentives, hardware or software key and embedded user name and these are a useful starting point for discussion.

Joe Fordham

Joe is the individual in this case who faces the largest dilemma: what decision is he going to make regarding the software? He believes that the bank would benefit from a wider use of Loan Net, but he is unsure how to proceed. One of the grey areas often identified in the issue of software piracy occurs with work on multiple machines. As discussed before, would the use of multiple copies be a breach of the agreement? Sometimes it is the case that the agreement is unclear thereby adding to the confusion. The discussion of Joe's dilemma should also include other possible courses of action. One alternative is for Joe to talk to Judy Wardley and support his case for purchasing more copies of the software. In addition, Joe should read the actual licensing agreement and talk to the software company to determine what right he has to make extra copies.

Judy Wardley

Many companies will spend large amounts of money to collect data, but put that same data at risk by using pirated software that is undocumented, unsupported and typically lacking in access to updates. One suggestion usually made by one of the students is that the bank examines the possibility of a site licence. A site licence gives the purchaser the right to use the software on various computers located within a specific area. This is very typical of academic institutions, where IT-purchasing departments obtain licences to cover the whole organisation. Another important part of this discussion is Judy's role as a representative of the company. The group can discuss the costs and merits of establishing a clear policy regarding the copying of software.

Dave Saunders

Software piracy has become so prevalent that some argue it has almost become socially acceptable, despite the fact that it is illegal behaviour. Dave, as CEO of the bank, should recognise the potential costs that software piracy can cause his company. The other serious issue facing Dave is the ethical tone established by top management. One area that Dave should have responsibility for is maintaining a policy on ethical behaviour, including software piracy. How should managers respond when they become aware of unethical or illegal behaviour? This issue can give rise to discussions relating to the actions of those in top management as well as their proposed policies.

Society

Some people argue that unauthorised copying of software has a cost to society while others, following the 'hacker ethic', would argue that piracy results in the free sharing of information. Those who adhere to the hacker ethic argue that all software should be in the public domain, since this encourages the free flow of information. They argue that this will result in a greater benefit to society as a whole since more learning and growth will occur. Software is copyrighted to protect the intellectual rights of the developers. The underlying rationale for copyrights is that they will foster the sharing and growth of knowledge. If copyrights are not observed, the potential developer may well choose to work in another area.

CASE 102

The ethical dilemma at Northlake

The case assumes no technical knowledge of management accounting. It is aimed at introducing ‘ethical’ questions, which accountants often face. The following could be useful in guiding class discussion:

- Can professional ‘Standards of Ethical Conduct’ for management accountants help resolve the dilemma? (These could include ‘professional pillars’ such as Competence, Confidentiality, Objectivity and Integrity, established by the Institute of Management Accountants in the United States of America.)
- Is a ‘Hippocratic Oath’ appropriate for the management accounting professional?
- There are no ‘SSAPs’ in management accounting. Should matters of ethics be universally prescribed to management accountants?
- Is ‘whistle-blowing’ justified in this case? Should Frank obtain more accounting facts? What should he do?
- Responses of Canadian management accountants to the dilemma are given in the table below. You may wish to compare these with your students’ reactions.

Level of management	Junior	Middle	Senior
1. Sources of counsel regarding the dilemma:			
Him/herself	9%	9%	11%
Family	30%	24%	24%
Friends	6%	5%	7%
Legal	23%	32%	27%
SMA	25%	24%	30%
Other	8%	5%	2%
2. The (professional) Society’s role:			
Advice	48%	53%	50%
Employment	22%	36%	33%
Financial help	16%	9%	8%
Other	12%	1%	5%
Nothing	2%	1%	4%

CASE 103

Electronic Boards plc

This is a general case on the design of a management accounting system for a firm operating in a competitive 'high-tech' environment. It provides an opportunity for a broad discussion not only of the appropriateness of particular management accounting techniques, but also of the need to consider behavioural and organisational factors in the design of a management accounting system.

Use of the case

There are two possible uses for this case:

- (i) At an introductory stage in management accounting, where it can be used to illustrate the basics of management accounting and the role it can play within the firm
- (ii) At the latter stage of a management accounting course, where students may apply their knowledge and consider the appropriateness of various practices in the situation described.

The case has been used with excellent results as a prelude to teaching activity-based costing/management in that it captures the tensions between simplistic costing versus complex operational elements.

It has helped stimulate argument and discussion of the case to split students into several groups of 'managerial consultants' and have each present their proposals (and justify them) to another group representing the 'Board'.

Teaching notes

Behavioural/organisational factors

1. There is the need to obtain the commitment and cooperation of all of the company directors to the creation of the system. The successful development of a management accounting system will be dependent upon the willingness of many non-accountants in the company to provide information (e.g. for budgeting) and to make their information needs known (e.g. for decision making) to the management accountants.
2. The organisational role of management accounting must be clarified. For example, most companies of this size will have a finance director with a responsibility for the total accounting function and for providing financial interpretation and advice to the Board. Such an appointment would help give credibility and authority to the new management accounting function in the company.

3. The placing of management accountants within the firm will be an important factor in determining their effectiveness. In a high-tech environment, it is especially important that they have a good knowledge of the product, business and market. Rather than be set up as an isolated service function, it may be possible to integrate them as part of the operational business team. In this way, a familiarity with operational factors is achieved and a responsiveness to managerial needs fostered.
4. The question of the type and background of new staff also requires attention. Given the lack of accounting expertise in Electronic Boards plc, the appointment of, say, newly qualified staff requiring in-house training appears inappropriate. Consequently, more experienced staff, perhaps from competitor firms, would provide the best possibility of effectively running and amending a new management accounting system.

Technical factors

Given the present poverty of management accounting within the firm, virtually all aspects of management accounting could be discussed. From the case data, however, certain issues are worthy of emphasis.

- a. Costing system: the establishment of an actual costing system would be important to the company for a number of reasons:
 - to ensure the preparation of more accurate profit statements (through more accurate stock revaluation);
 - to judge the profitability of the work being obtained by the company;
 - to assess the appropriateness of price quotations;
 - to build up a data bank of batch costs for future pricing;
 - to assist in cost reduction exercises;
 - to help foster cost awareness throughout the firm;
 - to help monitor direct material acquisition and stockholding (given its relative importance in total costs).
- b. Budgeting: the creation of a more cooperative environment for the management accounting function should help to ensure more success for the budgeting function. While the pace of market change makes forecasting problematic, the commitment of more accounting resources to the budgeting function could help here. To ensure realistic budgets, revisions – perhaps as frequently as every quarter – may be needed. Staff resources must be provided to enable this to happen. Management should be involved in both the preparation and use of the budgets to enhance their relevance and acceptance. A close link between the marketing function and the accountants also needs to be fostered to ensure that budgets set reflect the best available market intelligence.

- c. Capital budgeting: while non-financial criteria have traditionally been of little importance, here the size of the company's capital investment and the changed circumstances of the company, particularly the potential cash-flow problems, merit a financial perspective being included as one factor in capital-investment decisions.
- d. Performance: the current frequency of managerial reports (six monthly) needs to be improved. This should assist in the determination of remedial action for problem areas.

In addition to total profitability, performance reports should cover several of the areas that are critical to the success of the company, such as:

- batch/order profitability (check on pricing);
- cash flow (survival in recession);
- process yields (cost reduction);
- stock control for direct materials (cost reduction/reduction of working capital investment).

PART II

Accounting information for decision making

CASE 201

Permaclean Products plc

The central issue in the Permaclean case is basically one of the product pricing, but the analysis requires the estimation of appropriate costs from the accounting data that are provided and also the construction of a rudimentary price–demand curve from information about past sales. It also permits the use of linear regression analysis in forecasting-expected industry demand, although this is not essential. The case provides a relatively simple situation for the student to analyse, but one which captures the major elements of a real-life pricing problem. However, there is sufficient information in the case for it to provide the basis for a full decision analysis, using either a decision tree approach or a simulation model.

Use of the case

This case is helpful in two situations. It provides a useful summary case for students completing a basic management accounting course where the topics of variable costing and pricing have been addressed. Such students may need to be given some guidance as to the approach expected of them. Alternatively, we have used it as the first case in a more advanced management control systems course at both undergraduate and Masters level. The accounting information provided is sufficiently confusing to require students to have to think quite carefully about how they are to proceed. It, therefore, serves to sharpen up the previously acquired skills. Finally, the case is sufficiently open-ended to allow it to lead into a more extended discussion of several topics, such as:

- a. Problems in interpreting standard management accounting data, produced on both full and variable costing principles and the provision of relevant data for management decision making.
- b. Issues in pricing, including the advantages that can be obtained from differential pricing.
- c. The use of more advanced analytical techniques, such as decision tree analysis or simulation.

Teaching note

At its simplest, the problem facing the company can be reduced to make a choice between two alternative strategies. Either it can maintain its present, high-price policy and suffer a continuing fall in demand or it can revert to its previous policy of seeking a competitive price. This latter policy can best be interpreted as pricing at the top end of the competitors' price range. A further alternative that might be considered is for predatory pricing below the competition, but this raises more complicated marketing issues. An analysis of these alternatives requires the following steps:

- a. Projection of total industry demand for the coming year
- b. Estimation of Permashine's market share, at various possible prices
- c. Estimation of the variable costs of production
- d. A contribution analysis using this information.

Total industry sales are best represented on a graph, from which a steadily rising trend can be discerned, despite a slight recent drop. If a straight line is fitted to all seven years' data by linear regression, it is found that

Sales (000s) = $1771 + 141 \times (\text{Year number} = 1-7)$ giving a prediction of 2,900 for the coming year. However, this is exactly equal to the prior year's sales and recent history indicates a more rapidly rising trend. The final four years of data give a regression line of:

Sales (000s) = $1165 + 245 \times (\text{Year number} = 4-7)$ and a prediction for next year of 3,125. It would appear that Mr. Williams' estimate of 300,000 bottles for next year is probably conservative, although a slight drop was experienced in one previous year. A range from 2,850 to 3,200 would cover the reasonably possible outcomes.

The market share for Permashine will obviously depend on the price charged. The only information for which we have reliable data is for the 99p price and for a price set at the top end of the competitors' range, which is equivalent to a price of 80p before the increase.

At the higher price, market share fell by 5.5% in the first year and a further 4% in the second year, indicating a considerable degree of product loyalty. This fall also seems consistent with Mr Williams' view that there is a floor below which demand will not fall, although it is not clear on what evidence he bases his opinion. It is, therefore, reasonable to predict that market share may well fall by a further 3.5% in the following year if the 99p price is maintained, giving a demand of $(3,000 \times 10\%)$ 300,000 bottles for the year. A range of 250,000–350,000 bottles would cover most of the likely possibilities.

If the price is dropped to the top end of the competitors' range (i.e. 80p), we could probably assume that the previous market share of 24% could be attained again. The real question is how long it will take to achieve this level of sales. The market was sticky in a downward direction; how sticky will it be upwards? This is difficult to answer, but my own inclination is to think that it may take a couple of years to regain the previous position; some of those who gave up Permaclean because of its price may be satisfied with a competing product and not return. Thus, the movement from 13.5% share back to 24% may well yield only 18 or 19% share next year. Such a view is also consistent with Mr Williams' assertion that a price of 75p would give a 20% market share next year. Thus, the best prediction of demand is probably 540,000 bottles at a price of 80p (and may be 600,000 bottles at 75p).

Finally, there is the issue of estimating the variable costs of production. The direct labour and materials costs are clearly variable, with perhaps a slight increase in labour costs (due to overtime?) at the higher end. Departmental overhead also seems to be categorised correctly, with the fixed element being equivalent to an annual cost of £36,000. Factory overhead is more difficult to assign; however, it can only refer to items not attributable to the Department (as these would come under Departmental overhead). Although it appears to be a variable cost, this is only because it is allocated on the basis of direct labour costs. It is possible that it contains a small variable element (e.g. electricity costs, if these are not separately metered)

but it must also include substantial fixed elements (e.g. rates). However, it is small in total and no great damage will be done to the analysis if it is assumed to be totally fixed. Selling and administration costs are almost certainly totally fixed, for the sales force is remunerated on the basis of a salary, not commission. Thus, the truly variable costs amount to about 35p per bottle (i.e. 17.5p + 8p + 9p + a small proportion of 3.5p); certainly, 40p would be an overstatement.

We are now in a position to perform a contribution analysis. At the 99p price:

$$\text{Contribution} = 300,000 \times (99\text{p} - 35\text{p}) = \text{£}192,000$$

At the 80p price:

$$\text{Contribution} = 540,000 \times (80\text{p} - 35\text{p}) = \text{£}243,000$$

At the 75p price:

$$\text{Contribution} = 600,000 \times (75\text{p} - 35\text{p}) = \text{£}240,000$$

Thus, the lower prices are clearly better than the highest, although there is little to choose between 80p and 75p. Such a choice would require more information.

A decision tree analysis with most likely, optimistic and pessimistic industry sales forecasts and market shares could also be performed, again using two or three possible prices. Crudely, even if pessimistic forecasts are made for the performance with an 80p price, compared with optimistic forecasts at the 99p price, the ordering of the alternatives is only just reversed:

$$\text{Contribution (optimistic)} = 375,000 \times (99\text{p} - 35\text{p}) = \text{£}240,000$$

$$\text{Contribution (pessimistic)} = 500,000 \times (80\text{p} - 35\text{p}) = \text{£}225,000$$

Overall, there is every likelihood that the lower price will give the better results. However, even with the lower price, it is probable that not more than 600,000 bottles will be sold, compared with a plant capacity of 800,000 and a marginal cost of production between 35p and 40p. It may, therefore, be possible for Permaclean to find another outlet for this unused capacity. For example, it may wish to consider export sales, bulk sales to commercial cleaning firms or the production of a supermarket own-label product.

Provided these additional sales do not affect existing sales of Permaclean, any price in excess of the marginal cost of production (plus any additional costs incurred in meeting the special order) will generate additional contribution to profit. To extend the discussion along these lines, students can be asked to give examples of products that are commonly sold at different prices. Supermarket 'own' brands, electricity and telephone services, rail fares and airlines provide some examples. In general, if a market can be effectively segmented, differential pricing provides improved contribution because those consumers who are willing to pay more than the lower 'market' price are made to do so, while only those who would not buy at the higher price are given the benefit of the lower price. The art is segmenting the market!

CASE 202

The Good Night Motel

This case demonstrates the use of both qualitative and quantitative analyses in business decision making through the decision. Justin McGregor, owner of the motel, must decide on as to whether or not to accept an offer to fill all 30 of his rooms during the last weekend of October at half the price. We will consider two aspects—finance and reputation in our analysis.

Financial analysis

The quantitative analysis focuses on the use of cost behaviour; concepts of break-even point, contribution and contribution margin.

Variable costs are heating (\$5/night) and cleaning and laundry expenses (\$2.74/night), totalling \$7.74/night. All other expenses (utilities, maintenance,...) are fixed (do not vary with occupancy rate/number of room occupied). While wages are calculated by the hour, the working time appears to be fixed every day, even for the part-time and seasonal hires. Hence, anything above \$7.74/night will add the motel's contribution margin.

Alward proposed to rent all 30 rooms at half price (\$40/night) for the weekend (2 nights) when the occupancy rate is at most 25%.

Should McGregor accept, revenue will increase by $\$40 \times 2 \times 30 = \2400

Incremental costs incurred will be $\$7.74 \times 2 \times 30 = \464.40

Hence, Contribution margin will be \$1935.60

However, in order to rent out the whole motel for those nights, McGregor will not be able to accept other guests (who could occupy up to 25% of the motel), which means a loss of contribution margin of

$25\% \times 2 \times 30 \times (\$80 - \$7.74) = \1083.90 , which is lower than \$1935.60

So, accepting Alward's offer would be beneficial financially.

Alternatively, using break-even analysis, we could look at the number of rooms needed to yield a contribution margin of \$1935.60. This would be:

$$\frac{\$1935.60}{\$80 - \$7.74} = 26.79 \text{ rooms}$$

Or $\frac{26.79}{2 \times 30} = 44.65\%$ occupancy rate, which is much higher than the usual 25%.

Qualitative analysis

There are a number of non-financial factors that we need to consider.

From the exhibit, we can see that there are other motels which may accept the offer if McGregor turns it down. Good night falls into the “high end” category, while there are cheaper options given Alward’s limited budget.

However, if it becomes public that he is willing to offer the rooms at such a deep discount, other customers may regard it as unfair and demand the same discount later. This could have negative financial impacts, especially during the peak season.

Note also, the net income figure for the motel in 2012 is low at just \$3177, yet McGregor’s salary is very high- at \$100,000. Possibly there may be tax implications that motivate this.

All in all, the motel is better off by accepting the offer given the increase in margin as well as taking up the opportunity to fill the rooms during slow season. However, McGregor should make sure such drastic discounts do not set precedent other customers come to expect and affect the business later. Nor should lower pricing alter the clientele the motel ordinarily aims to attract.

PART III

Planning and budgetary control systems

CASE 301

Zeros plc

This case is concerned with limitations in the use of ROI as the major measurement of divisional performance. It also addresses the problem of using an integrated standard costing system to produce profit statements in a situation where it is difficult to set meaningful standards. Finally, it provides the opportunity to contrast full- and variable-cost approaches to profit measurement and to consider the scope under the former approach for a window-dressed, medium-term performance advised through the physical build-up of stock.

Use of the case

This case has been used mainly with specialist accounting students undertaking a second level course in management accounting. It calls for a fairly detailed appreciation of not only divisional performance measurement, but also standard costing and variable costing systems. The first of two questions call for an identification and discussion of theoretical issues which are widely discussed in the literature. This case requires that they are backed up by the use of available data. It is perhaps worth emphasising to students at the outset that calculations are an important part of the solution. The third question provides scope for wide-ranging discussion.

Questions 1 and 2

1. Major problems with the particular ROI denominator used by the board of Zeros Plc:

- 1.1 The artificially low value of assets resulting from the non-revaluation of land or buildings and the age of plant and machinery inflates the ROI. This factor would be compounded by the government grant aid received.
- 1.2 The resultant low depreciation charges, which would inflate divisional profits.
- 1.3 The adverse motivational impact of the above factors on divisional management's investment policies.
- 1.4 The use of total assets as a denominator means financing decisions may not be fully reflected in the ratio.

2. Major problems with the numerator of the ROI ratio:

- 2.1 Standards only revised annually means that variances caused by unfulfilled cost forecasts are almost inevitable.
- 2.2 Standards based on a 'middle of the range' product will result in variances if production levels are skewed to the larger or smaller ends of the range.

- 2.3 Stocks valued at full standard cost result in the carry-forward of fixed costs to future periods. Thus, production levels can be used to influence profits in the short run. See Exhibit 301.4A for identification of the financial effects of this in 2018 and 2019.
- 2.4 No comparison or reference to budgeted profit is made (see Exhibit 301.1A).
- 2.5 Stated profit performance is well below budget but considerably better than that shown on a variable costing basis (Exhibits 301.1A and 301.4A).

3. Situational factors:

- 3.1 The divisional managers' basis of remuneration reinforces the importance of ROI and operating profit.
- 3.2 The proximity of Joe Cool to retirement might result in his taking a short-term rather than long-term view of divisional performance.
- 3.3 Joe Cool, being a qualified accountant, has the knowledge to 'massage' the division's financial performance.
- 3.4 The motive, the opportunity and the capability, therefore, exist for the factors outlined in 1.3 and 2.3 to have occurred.

4. Other factors:

- 4.1 A standard costing system is designed to enable management to assess not only the 'bottom line' but also a variety of the factors contributing to it.
- 4.2 The use of a rigid pricing policy (standard cost + 33%) may be unsuited to this market. Certainly sales are falling in a growing market.
- 4.3 The 'cost plus 33%' pricing boast is misleading as actual costs considerably exceed standard (as evidenced by the large favourable variances). The actual mark-up is around 10% (see Exhibit 301.2A).
- 4.4 The physical volume of stock held has been allocated to grow considerably and now represents 75% of sales. This has occurred despite budgets which allowed for no stock increase, i.e. a stock level of 10% of sales (see Exhibits 301.1A and 301.3A).
- 4.5 The continuation of investigation of large unfavourable variances appears to indicate a breakdown in the use of the primary control information within the Division.
- 4.6 Sales forecasting (2,000,000 units in each year) has been extremely poor. Why was there no forecast for sales growth given the growing product market?
- 4.7 Unit costs have increased significantly. Cost control seems a problem area (see Exhibit 301.2A).

Question 3

Improvement could perhaps be made to the divisional performance assessment by providing additional information or making changes as listed below.

1. Current market values for divisional assets and consequential revision of depreciation charges.
2. Individual product standards to permit product mix and individual product profitability analysis.
3. More accurate unit standards – based on more frequent revisions.
4. Identification of any production constraints (see 4.6 above).
5. Information to produce market share and size variances.
6. Production capacity (to assess the unitisation of fixed overheads).
7. The controllability of divisional costs (e.g. are any the result of central cost allocations?).
8. Measures of product quality and fixed asset investment (to help guard against a short-term perspective being taken by the divisional manager).
9. Contribution-based variance calculations may help to assess the economic impact of problems.
10. Comparisons of divisional results with other divisions and original budgets.

Exhibit 301.1A Divisional budgets**a. Physical terms**

	2018 (000) units	2019 (000) units
Opening stock	200	600
Production*	<u>2,000</u>	<u>2,000</u>
	<u>2,200</u>	<u>2,600</u>
Sales **	2,000	2,000
Closing stock	<u>200</u>	<u>600</u>
	<u>2,200</u>	<u>2,600</u>
* No fixed overhead volume variance.		
** Sales volume variance permits this calculation.		

b. Financial terms (in variable costing format)*

	2018 (£000s)	2019 (£000s)
Sales	8,000	10,940
Variable cost of sales	<u>3,500</u>	<u>4,200</u>
	4,500	6,740
Fixed costs	<u>2,500</u>	<u>4,000</u>
	<u>2,000</u>	<u>2,740</u>

* As stocks are constant, a full costing format would give the same profit.

Exhibit 301.2A Actual unit costs

	2018		2019	
	Total (£000)*	Unit cost (£)	Total (£000)	Unit cost (£)
Materials	1,320	0.66	1,560	0.78
Labour	1,850	0.925	2,230	1.11
Variable overhead	1,430	0.715	1,775	0.89
Fixed overhead	2,620	<u>1.31</u>	4,150	<u>2.08</u>
		<u>3.61</u>		<u>4.86</u>
Actual mark-up(%)		<u>10.8%</u>		<u>11.2%</u>

* Standard cost of actual production plus relevant unfavourable cost variances.

Exhibit 301.3A Stock ratios

	2018	2019
Stock Production	$\frac{600}{2,000} = 30\%$	$\frac{1,400}{2,000} = 55\%$
Stock Production	$\frac{600}{1,600} = 37.5\%$	$\frac{1,100}{1,500} = 73.3\%$

Exhibit 301.4A Variable costing-based profit report

	2018	2019
Budgeted sales	8,000	10,940
Budgeted variable cost of sales	<u>3,500</u>	<u>4,200</u>
Budgeted contribution	4,500	6,740
	<u>900 U</u>	<u>1,685 U</u>
	3,600	5,055
Budgeted fixed costs	<u>2,500</u>	<u>4,000</u>
'Standard' profit	1,100	1,055
Cost variances	<u>1,220 U</u>	<u>1,515 U</u>

Operating profit (loss)	<u>(120)</u>	<u>(460)</u>
Operating profit (loss) as in case study	<u>380</u>	<u>540</u>
Difference	<u>500</u>	<u>1,000</u>
Accounted for as follows:		
Fixed costs in stock (opening)	250	1,200
Fixed costs in stock (closing)	<u>750</u>	<u>2,200</u>
	<u>500</u>	<u>1,000</u>

CASE 302

Instrumental Ltd

There are really three ways in which the Jennifer could analyse the situation.

Approach 1: The Annual Report approach

	Budget (000s)	Actual (000s)
Sales	16,872 (100%)	17,061 (100%)
Cost of goods sold	9,668 (58%)	9,865 (58%)
Gross margin	7,204 (42%)	7,196 (42%)
Less other expenses		
Marketing	1,856 (11%)	1,440 (8%)
R&D	1,480 (9%)	932 (6%)
Administration	1,340 (8%)	1,674 (10%)
	4,676 (28%)	4,046 (24%)
Profit before taxes	2,528 (14%)	3,150 (18%)

Approach 2: A management-oriented variance analysis

A traditional management accounting analysis might highlight the following:

Marketing	
Market share [(share of market (SOM)) increase benefited the firm;	1,443 F
But unfortunately sales mix was managed towards the lower margin product;	921 U
Control over marketing expenditure benefited the firm especially	416 F
Net effect	938 F
Unfortunately, the overall market declined and cost the firm	680 U
Overall evaluation: Very good performance	
Manufacturing	
Manufacturing cost control cost the firm	48 U
Overall evaluation: Satisfactory performance	
R&D	
Savings in R&D budget	548 F
Overall evaluation: Good performance	
Administration	
Administration budget overspent	334 U
Overall evaluation: Poor performance	

Variance Summary

Overall market decline	680 U
Size of market change	1,443 U
Sales mix change	921 U
Sales price improved	198 F
Manufacturing cost control	48 U
Other:	
R&D	548 F
Administration	334 U
Marketing	416 F
Total	622 F

Strategic contexts of the two businesses

	Electric motors (EM)	Electronic instruments (EI)
Overall market (units):	1,248,000	440,000
Plan	886,080	690,800
Actual	Declining Market (29% Decrease)	Growth Market (57% Increase)
Instrumental's share:		
Plan	10%	15%
Actual	16%	9%
Instrumental's prices:		
Plan	40	180
Actual	30	20
	We apparently cut price to build share.	We apparently raised price to ration the high demand.
Instrumental's margin:		
Plan	520	130
Actual	9	152

	Electric motors (EM)	Electronic instruments (EI)
Industry prices:		
Actual	50	100
	We are well below 'market'.	We are well above 'market'.
Industry costs:		
Actual	18	46
Product/market characteristics:	Mature Lower technology	Evolving Higher technology

	Declining market	Growth market
	Lower margins	Higher margins
	Low unit price	High unit price
	Industry prices holding up	Industry prices falling rapidly
Instrument's apparent strategic mission	'Build'	'Skim' or 'Harvest'
Instrument's apparent competitive strategy	The low price implies we are trying for low cost position.	The high price implies we are trying for a differentiation position.
A more plausible strategy	'Harvest'	'Build'
Key success factors (arising from the plausible strategy)	Hold sales prices <i>vis-à-vis</i> Competition Do not focus on maintaining and improving SOM. Aggressive R&D to reduce unit costs.	Competitively price to gain (share of market) SOM. Product R&D to create differentiation. Lower costs through experience curve effects.

Approach 3: A strategic management accounting analysis

Variance summary

	EM Division	EI Division
Market size	724 U	4891 U
Market share	1064 F	5389 U
Sales price	1418 U	1616 F
Variable manufacturing costs	142 U	248 U
R&D	–	548 F
FIRM-WIDE COSTS:		
Manufacturing	342 F	
Marketing	416 F	
Administration	334 U	
Total	622 F	
Performance evaluation summary		

	Electric motors 'Harvest versus Build'	Electronic instruments 'Build versus Skim'
Marketing comments	<p>If we held our prices and share, decline in this mature business would have cost us 724 U.</p> <p>We were further hurt by price cuts to build our SOM (our price was 30 versus industry price of 50) leading to a net 1078 U variance (1418 U (price) and 1064 F (market)).</p> <p>This is a market that has declined by 29% – why are we sacrificing margins to build a position in a declining market?</p>	<p>We raised our price over the industry price to ration our scarce capacity losing significant market share (3,773 U)</p> <p>This is a booming market which grew by 57% – why are we trying to improve margins at the expense of SOM?</p> <p>Growth in the total market improved our profit picture (4,891 F) but we underspent the marketing budget</p>
Overall evaluation	Poor Performance	Poor Performance
Manufacturing comments	Manufacturing control was awful and cost us 142 U – if we are trying to be a cost leader, where are the benefits of our EOS?	Does our higher cost compared to the market give us a higher product quality – apparently not, given our declining market share.

	Electric motors 'Harvest versus Build'	Electronic instruments 'Build versus Skim'
Overall performance	Poor performance	Poor performance
R&D comments:	N/A	Why are we not spending enough on R&D? – could this partly explain the fall in SOM?
Overall performance	N/a	Poor performance
Administration comments:	Inadequate cost control over overhead costs (334 U)	Admin budget overspent (334 U)
Overall performance	Poor performance	Not satisfactory

Lecturers could also take the opportunity in the case to stress the importance of strategy in business management and the use of tools such as the Boston Control Group Matrix and product life cycle diagrams to facilitate business decision making.

PART IV

Management control systems and performance issues

CASE 401

BBR plc

This case highlights the classical transfer-pricing problem where divisions operating in their own interests may reduce total company profitability. In addition to requiring the calculations using marginal analysis, the case investigates the potential costs and benefits of a transfer-pricing procedure based on divisional management negotiation. The trade-off between head office involvement as mediator or arbitrator that may allow optimal economic decisions and a ‘hands-off’ policy, which promotes decentralised profit responsibility, but with the danger of suboptimal decision making can be explored.

Use of the case

When exploring the many transfer prices which are used in practice and advocated in theory, it is relatively easy to underplay the importance of the procedures whereby the transfer price is set. This case is useful in recognising the fact that the ultimate transfer price is only a part of a transfer-pricing system, which includes administrative procedures. These procedures, as much as the transfer price itself, can influence the degree of control and responsibility, which divisional managers perceive they exercise.

At the postgraduate or final year undergraduate level, the case allows reinforcement of economic marginal analysis and its defects, places the transfer-pricing system in an organisational context and provides a springboard for a far-reaching discussion about implications of alternative transfer-pricing systems.

It is feasible with a well-prepared class to cover these issues within a one-hour period. The open-ended discussion of alternatives and their implications may lead to greater time being taken.

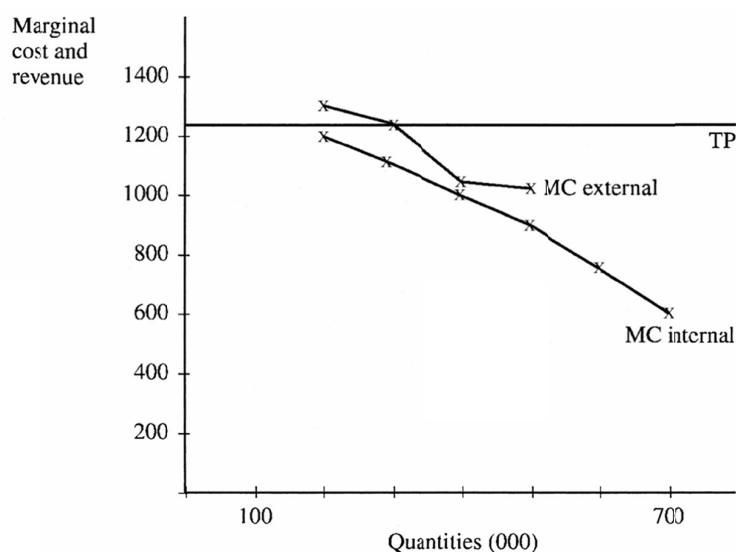
Exhibit 401.1A Explanation of Giddings’ argument

Preston Division

Output (000 metres)	Total cost (£000)	Marginal cost (£000)	Total revenue (at TP = £12.50)	Marginal revenue
100	1,300	–	1,250	–
200	2,500	1,200	2,500	1,250
300	3,660	1,160	3,750	1,250
400	4,680	1,020	5,000	1,250
500	5,550	870	6,250	1,250
600	6,300	750	7,500	1,250
700	6,860	560	8,750	1,250
800	7,280	420	10,000	1,250
900	7,560	280	11,250	1,250
1,000	7,700	140	12,500	1,250

Shewsbury Division

Buy-in quantities (000 metres)	Total cost	Marginal cost
100	1,400	—
200	2,700	1,300
300	3,900	1,200
400	4,950	1,050
500	5,950	1,000



A comparison of the marginal costs of internal as opposed to external purchase reveals that Shewsbury Division should buy internally. However, Giddings will base his decision on the price he is charged, the £12.50 transfer price and the external suppliers' price.

Potential actions

If Giddings acts rationally, he should be willing to purchase at least 300,000 metres of rubber hose internally (£3.75m vs. £3.9m).

To operate at full capacity, consistent with the objective of increasing market share, Giddings may buy externally either two lots of 100,000 metres as he thinks is likely or one lot of 200,000 metres. The total cost to his division of operating at full capacity is then £6.55m (£3.75m internally + £2.8m externally) and £6.45m, respectively. Internal purchase of the total 500,000 metres will cost £6.25m. However, Giddings argues that while lower than the feasible alternatives, the cost of internal trade at this level is £300,000 more than if he were to place the entire order externally.

Company's view	Giddings' view
Buy 300,000 metres internally	£3,750,000 versus £3.9m buy internally
Cost £3,660,000	
Buy 500,000 metres	
Cost £5,550,000	£6,250,000 internally
	£5,950,000 externally
	£6,550,000 mix internal + external
	£6,450,000 mix internal + external

Given the unavailability of an external supplier who will provide 500,000 metres of rubber hose, Giddings is faced with limited, uneconomic external purchasing, operating at below capacity or paying what he believes to be an 'unfair', uncompetitive transfer price to attain full capacity.

From the information given in the case (paragraph 2), it would seem that Giddings in the past has opted to operate at below capacity or bought externally at uneconomic prices. This may be logical from his point of view because it prevents a potential rival for promotion, the Preston divisional manager, being shown in a better light by scoring relatively higher profits. The negotiation process may also have had an impact causing Giddings' dysfunctional behaviour.

The current procedure and hidden costs

Negotiated transfer prices (TP) appear consistent with a decentralised management control system. Both parties have the opportunity to discover each other's views, perspectives and opinions and the resulting TP may be seen as an integrating mechanism.

However, for the negotiated TP to be equally acceptable, both parties must be able to provide verifiable data to the discussions. Shewsbury is using list prices, which may be based on past market conditions and the discounts may not have been subject to actual past transactions. Preston incorporates cost data from the central purchasing office without knowing whether these are relevant or accurate. Both parties may have legitimate differing views of the future market conditions and, coupled with the discount structure, the price range over which the negotiations could wander appears wide. At these volumes of interdivisional trade, a price alteration of only pence per metre may result in significant changes in the profits reported for each division. The danger is that the negotiations may become a feuding ground where animosity and retribution occur rather than cooperation because of dissatisfaction with past TP 'agreements'. The better poker player may win. Divisional profit figures will not reflect economic efficiency or managerial effectiveness. There is the real danger that parochial interest will become supreme and future collaboration and cross-fertilisation between the divisions will not occur.

Improvements

Having a head office (HO) mediator who excludes the most outlandish data and narrows the focus may improve the existing system. Such an arbitrator would take a more active role in the negotiations, but there is no guarantee that he/she would not be drawn or be perceived as being drawn into the feuding.

A plausible alternative is to gain agreement on the TP by first agreeing the standard variable cost and then allocating a period cost (based on fixed and allocated costs) to represent the proportion of Preston's capacity earmarked for Shewsbury. This ignores market conditions. Substituting an *ex-post* contribution gained from external sales by Preston as the period cost may allow enhanced profit responsibility, but this is not without its own difficulties (*viz* external purchasers' orders in smaller volumes than internal orders).

PART V

Strategy, quality, time and emerging issues

CASE 501

High-Tech Limited

Teaching notes

Students are encouraged to respond with a manuscript including an introduction, body and conclusions. The introduction should include all the major topics discussed in the body of the paper. The body of the paper should address all issues presented in the introduction and the summary should not discuss any topic that has not been addressed in the body of the paper. The following model answer reflects a typical approach to be taken in answering the case.

Implementing and monitoring strategy

High-Tech (H-T) Corporation has historically been a leading multinational manufacturer of computer hardware. In more recent years, H-T has begun to lose market share because its costing system does not reflect its underlying operations and is not related to H-T's strategy. The objective of this study is to recommend the value chain, balanced scorecard and tableau de bord for H-T in developing a costing system that focuses on its strategy and reflects its underlying operations.

First, a value chain is developed that shows the functions necessary for H-T to achieve its strategy. Next, the balanced scorecard is used to develop cost measures useful in measuring and monitoring management strategy. Concurrently, a value chain and tableau de bord are developed for the Yorkshire plant that is congruent with H-T's corporate-wide strategy.

H-T's corporate-wide strategy is to get all SAP adopters to purchase H-T hardware. SAP, or 27 Systems, Applications and Products, is the world's leading business client/server application. H-T's value chain functions include test marketing SAP consumers for their hardware preferences. H-T must develop inexpensive and timely market distribution methods that are appealing to its potential customers. Product design must incorporate efficiency in producing SAP hardware, flexibility in production and less costly production processes with quality output.

The Yorkshire Division is a subunit of H-T, located in Yorkshire, UK. It focuses on the production of low-end servers and personal computer systems. Its functions are limited to product design, production and distribution costs. Yorkshire must continuously work with product design to ensure that the design sources efficient production of a quality product. Yorkshire is also concerned about getting the goods to the customer just in time. Yorkshire wants a costing system that timely monitors how well they are meeting their responsibility in achieving corporate-wide strategy.

After developing its value chains, H-T's next task is to develop a balanced scorecard that monitors the company's strategy within its value chain functions. The balanced scorecard has four perspectives that are designed to provide a 'balanced' view of the company (Kaplan and Norton, 1992). The balanced scorecard focuses on the past (financial) and the present (customer perspective) focusing at both a financial and non-financial perspective.

Management's challenge is to develop measures and targets for these four perspectives on one scorecard. H-T's balanced scorecard reflects their desire to attract SAP customers by minimising customer response time. SAP will enable H-T to accept online orders, notify production managers and update accounting records instantaneously with almost no human intervention.

H-T will also benefit from less time associated with closing accounting records. SAP is an integrated data processing system, integrating financial accounting, controlling, asset accounting, project systems, workflow, industry solutions, sales and distribution, materials management, production planning, quality management, plant maintenance and human resources across all of its divisions. Overhead costs associated with receiving, production and accounting are minimised when SAP is used.

Yorkshire's financial perspective is limited to cost reduction because it is a cost centre. H-T's financial perspective includes revenues and costs because it is an investment centre. Yorkshire is focusing on increasing profits through cost reduction efforts. They plan to install SAP to minimise manufacturing overhead costs, minimise lead-time and reduce accounting time/costs. If Yorkshire can minimise lead-time, then dealers can order in smaller quantities, thus reducing inventory-holding and obsolescence costs.

Yorkshire will work with product design to develop computer products that can be produced in 20–30 days and with a web page communicate directly with customers through e-commerce. These steps will reduce the lead-time from order initiation to product delivery. Further, customers will be satisfied when their orders are received in shorter windows of time.

H-T should adopt a balanced scorecard for H-T company-wide and a tableau de bord for each of its divisions that reflects corporate strategy. The corporate balanced scorecard will include balancing profits, costs, investments and non-financial measures. The tableau de bord focuses on the divisions (subunits) of the organisation.

Unlike H-T's traditional cost/managerial accounting measures, the balanced scorecard and tableau de bord will provide a balanced array (financial, non-financial, leading, lag and four perspectives) of measures that will be useful in monitoring strategy achievement. Implementing SAP should result in significant cost savings, especially accounting cost/time and help them to understand the hardware needs of potential SAP customers. In summary, using a balanced scorecard and tableau de bord will help management focus on meeting corporate strategy.

Are standard and activity-based costing appropriate for H-T?

High-Tech Corporation (H-T) is concerned about monitoring how well it is achieving its goals and objectives. Monitoring these objectives requires an accurate costing system. While SAP can be used to facilitate tracing and allocating costs, activity-based costing can be used to accurately allocate indirect costs.

Currently, H-T, at its Yorkshire plant, uses normal costing in the production department and activity-based costing (ABC) in the shipping and warehousing department. The normal costing system is antiquated and does not reflect Yorkshire's underlying production operations. To provide an accurate indicator of how activities are used in the production of SAP products, Yorkshire will need to use ABC. Yorkshire should

also consider using standard costing in conjunction with ABC to develop pre-determined cost rates that reflect corporate strategy.

H-T is currently using a normal costing system. Direct costs are traced at the actual rate and indirect costs are allocated at a predetermined manufacturing overhead (MOH) rate using direct labour dollars as the allocation base. Direct costs for Yorkshire's production departments are direct materials and direct labour.

Yorkshire currently uses ABC in its warehousing department and should implement it in its production department. Activities in production are kiting, debugging of kiting parts, assembling the SAP hardware and inspection. Yorkshire should use ABC to develop cost pools for each of these activities and to allocate these costs to the cost object based on what drives the costs within each cost pool.

First, Yorkshire should diagram its production process so it can understand how costs are incurred in producing PCs and servers. Yorkshire has two direct cost pools, direct materials and direct labour. Both these costs are variable and thus respond directly to the level of output. Yorkshire has four MOH cost pools. Cost drivers are developed that reflect underlying operations and reflect tableau de bord measures.

Yorkshire wants to reduce the time it takes to manufacture its products. One would recommend Yorkshire using debugging time, throughput time and inspection time to develop MOH allocation rates for debugging, assembling and inspecting, respectively. Some might argue that debugging costs are driven more by the number of parts per order than debugging time. However, our objective is to reduce time. Because time reflects Yorkshire's tableau de bord and strategy better, one would suggest debugging time as the cost driver instead of debugging costs.

Yorkshire wants to decrease the rate of reworked units or internal failure costs. This means that inspection must find 5% fewer output units as defective. Yorkshire will probably work with the product design department to develop products that have fewer parts and are more tolerant of size misspecifications. Fewer parts mean less materials handling during production, which converts into less defective and reworked output. More tolerant parts means that if a direct material part is mis-specified in size by 1/16 of a centimetre, it will not affect the quality of the output. Managers will work closely with production design to ensure that although the number of hours of inspection is reduced, quality output is increased because the number of parts per unit is decreased and the tolerance for misspecification of input is increased.

Number of hours of inspection is selected as the cost driver for inspection costs because it accurately depicts the incurrence of actual MOH and is useful in monitoring the tableau de bord measure and throughput time. Developing a predetermined inspection time per unit of output requires balancing the cost of internal failures with the cost of external failures. SAP can be used to reduce the time to inspect output using bar codes and simulated SAP tests. Inspecting fewer units of output can further reduce time. However, the cost of inspecting fewer units could result in greater external failure costs such as customer dissatisfaction. Yorkshire managers must set a predetermined inspection-time standard that reflects almost no external failure costs and 5% decrease in reworked units – internal failure costs. This sounds contradictory and is one of the many issues management faces when establishing challenging standard MOH rates. The tableau de bord is very useful for Yorkshire because it takes a balanced focus.

Management must minimise the number of reworked units, minimise inspection time/costs and increase overall customer satisfaction. In essence, ABC can be used to establish predetermined cost driver rates that reflect a balanced perspective, internal and external failure costs, in managing corporate and subunit goal congruence.

In conclusion, one would strongly recommend that Yorkshire diagram its production function to ensure that its MOH cost pools reflect the underlying process of its operations. Then ABC can be used to develop cost drivers that reflect tableau de bord targets and accurate allocation of MOH costs to units of output.

Allocating costs in a multicultural company

H-T manufactures logic and memory chips from silicon wafers in its Essonnes, France plant. This division has experienced significant downsizing, 60%, in the past two years. Essonnes must compute its total cost per unit in developing its cost plus transfer pricing cost. This requires Essonnes to strategically implement a method of allocating service department and joint processing costs to the logic and memory chip. H-T also wants to implement standard costing at the Essonnes plant.

However, Essonnes employees are suspect of any changes that management seeks to implement for fear of losing their jobs. Moreover, the French have been found hesitant to change from full costing (see Bescos and Mendoza, 1995). My recommendation is to implement standard costing for Essonnes based on their tableau de bord targets and to consider the French culture when implementing this change.

H-T's strategy is to get all SAP adopters to purchase H-T hardware. We assume that these customers want low-cost and high-quality chips. Essonnes can contribute to this strategy by minimising joint processing costs. Joint production begins with a silicon cylinder costing £400 each. In the joint production process, the silicone cylinder is sliced into wafers and wafers are cleaned and chemically coated. Each cylinder yields 125 wafers after losing 20% of the cylinder during processing. Essonnes wants to allocate joint cost using a method that highlights the number of wafers yielded from each cylinder.

Essonnes produces 1,200 wafers within a 24-hour day. Joint production costs include engineering costs of £2,070,000 and depreciation, taxes, patent amortisation and other indirect manufacturing overhead costs totalling £120,000 monthly. Essonnes should select a cost allocation method that focuses on the yield per silicon wafer. The more wafers that can be produced from a cylinder, the less will be the cost of manufacturing cylinders. Therefore, Essonnes should use the physical measure method to allocate joint costs to the logic and memory chips since yield/volume is a desired target measure. The physical measure would allow management to focus on minimising the yield of wafers from each cylinder. During the year, H-T manufactures 211,400,000 good chips and allocates £0.0236 of joint processing costs to each chip using the physical measure method. Revenue methods, for example sales value at split-off, are not used to allocate joint costs because the selling prices at split-off are unknown.

Essonnes, next, allocates service department costs to the production departments and finally to the logic and memory chips. The direct method is recommended for allocating service department costs to production departments since it is easier to understand than the step-down and reciprocal methods.

At this point, Essonnes may want to develop the easiest to understand allocation methods so that employees will not be sceptical of the cost methods recommended. The direct method allocates costs by explicitly ignoring mutual services among support departments and allocating support department costs to production departments only. Support department costs allocated to the memory and logic chip using the direct method are £0.5696 and £2.3268 per chip, respectively.

The final step is to compute the total cost per unit so that a transfer price can be developed. The total cost of the memory chip is £0.5932 and the logic chip is £2.3504 per unit. Essonnes has a transfer price of 110% of cost. Thus, the transfer price for the memory and logic chip is £0.6525 and £2.5854 per chip, respectively. In addition to setting a transfer price for Essonnes, they have been asked by H-T to consider implementing a standard costing system. Essonnes should implement standard costing relative to their tableau de bord targets (see Epstein and Manzoni (1997)).

Standard costing would help Essonnes to continuously strive to minimise production cost. For example, management might establish a standard cost of £0.27 for the memory chip and £2.25 for the logic chip. These standards could be used to evaluate management performance.

Implementing standard costing can be frustrating to employees if they are too challenging. Essonnes may find these standards unachievable. Also, the French are resistant to change from full costing (Bescos and Mendoza, 1995). They may not believe that standard costing will result in more efficient behaviour than using actual full costs. Given that Essonnes is already sceptical of management as a result of downsizing, they may view these standards as a way of further downsizing when the standards are not met.

H-T might also have management and employee training sessions on how standard costing and full costing might be integrated to improve the efficiency of operations. To feel a part of the team, employees should play an active role in standard cost development. After all, standard costing is not designed to place blame on anyone, but to understand what caused variances so that appropriate changes, if possible, can be implemented. Moreover, Kaizen or continuous improvement standards should be implemented to ensure that standards are systematically updated to promote efficiencies congruent with tableau de bord targets.

The market for memory and logic chips is very competitive. To retain its competitive edge, H-T should use standard costing. Standard costing will force management to focus on cost reductions, especially if Kaizen standard costing is used. At the end of the quarter, they can compare actual costs to standard costs and investigate any significant variances. H-T must be sensitive to the Essonnes culture when implementing a standard cost system. I recommend that a tableau de bord be developed from the bottom up that includes standard cost targets. Essonnes employees will then have had a significant part in developing cost standards and will be less sceptical of management when the division is evaluated based on self-developed standards.

CASE 502

Tanner Pharmaceuticals and the price of a new drug

Pharmaceutical industry analysis using the 'Five Forces' model:

- Competitors: Patent enables monopoly when certain drugs are introduced and can remain for decades, lowering rivalry from competitors. Within a therapeutic class, competition can be fierce. However, no company can compete across all classes so company to company competition is likely low.
- Potential entrants into the market: Difficult to enter and high barriers to entry due to factors such as scale of production and high costs to develop products (R&D), obtaining approval from relevant authorities and compliance with regulatory regime. Marketing and distribution costs may also be very high.
- Equivalent products: no exact or close substitutes; available alternatives are exercise, healthy lifestyle and food, holistic and herbal medicine, acupuncture,...but these are unlikely to replace pharmaceutical products
- Bargaining power of customers:

Intermediaries (hospitals, insurance companies,...) have moderate bargaining power and could negotiate prices with producers (pharmaceutical companies) and may influence prices at the consumer end. Consumers usually follow doctor prescriptions and will be willing to pay for health reasons, therefore hold low bargaining power.

- Bargaining power of input suppliers (scientists, manufacturers, marketers,...): will be low

This is consistent with the high profit of major competitors and Tanner itself. Tanner's operating margin is 26%, which is much higher than that of companies in other industries.

Monopoly created by patents, high barriers to entry, low to medium bargaining power of suppliers and buyers, difficulty of substitute all lead to the pharmaceutical industry being among the most profitable.

Importance of the pricing decision

Pricing will naturally affect the profits of a company. If a company, such as Tanner, wishes to maximize its profits, it will have to adopt different pricing objectives for different markets, such as profit maximization in richer markets (North America, EU) and cost recovery in poorer ones (Africa, South America). This may also help the company's reputation and long-term performance and value but can hurt short-term profits.

Stakeholders impacted by the price of Zorstat:

- Competitors: could enter the market with lower price products
- Consumers infected with the nulux virus: cured and stay healthy
- Employees at Tanner: job stability

- Executives of Tanner: compensation for meeting targets (growth, profits,...), job security and advancement, good reputation (in case of seeking jobs elsewhere)
- Shareholders: stock value depends on Tanner's performance
- Community as a whole is healthier and has a lower cost of healthcare.
- Healthcare system: effective results and a manageable budget
- Distributors: high demand leads to financial gain/return

Tanner could adopt the following strategies: higher/lower prices everywhere or different prices for different markets (low for developing and higher for developed)

- Raising/lowering prices in all markets will directly impact the profits of the company, share price and the compensation of executives as well as the reputation of the company.
- Different prices for different markets will increase the returns in some markets and cause a decrease in some others but the pricing of Zorstat could potentially set a precedent for subsequent products so should be considered carefully.

CASE 503

Osram

1(a) Annual power cost for the hotel

Incandescent: 100-watt bulbs

50 rooms, 7 hours/day \times 200 days/year = 35 m watt-hrs/year at €0.14/kwh = €4,900/year

50 W bulbs

240 bulbs \times 24 hours/day \times 365 days/year = 105.12 m watt-hrs/year at €0.14/kwh = €14,717/year

Total = €4,900 + €14,717 = €19,617

CFL: 18 W bulbs = €4,900 \times 0.18 = €882

9 W bulbs = €14,717 \times 0.18 = €2,649

Total = €882 + €2,649 = €3,531

Savings: €19,617 – €3,531 = €16,086/year

Fixtures retrofit

Cost:

Rooms:	4 table/vanity \times €7.00	= €28 \Rightarrow
	2 wall \times €15	= €30 \Rightarrow €106/room
	3 overhead \times €16	= €48 \Rightarrow
	Total = €106 \times 250 rooms €26,500	
Halls:	24 overhead \times €16	= €384/hall
	Total = 10 \times €384, €3,840	
Total	€26,500 + €3,840	€30,340

Price to the hotel (40% gross margin to the ESCO) €30,340 \div 0.60 = approx. €50,600

Loan payment = €7,425 (15 years/12%)

Net annual advantage: €16,086 – €7,425 = €8,661, before considering cost of replacement bulbs.

The hotel is currently paying €2,280 per year for incandescent bulbs (1,900 \times €1.20) and will use about 215 CFL bulbs/year (240 \times 8,760/10,000).

Present value to hotel for one CFL bulb equals (assume 15% cost of capital):

Let X = value to the hotel of one CFL bulb. Then,

$$\sum_{i=1}^{15} \frac{(\text{€}8,661 + \text{€}2,280 - 215(X))}{(1.15)^i} = 2,490 X$$

$$\sum_{i=1}^{15} \frac{(\text{€}8,661 + \text{€}2,280)}{(1.15)^i} - \sum_{i=1}^{15} \frac{(215 X)}{(1.15)^i} = 2,490 X$$

$$61,345 - 215X(5.85) = 2,490X; \text{ therefore, } X = 16.40 \text{ (approx.)}.$$

Value of the initial installation = €16.40 × 2,490 = approx. €40,800 for bulbs.

Maximum price of job to the hotel = €91,400 (50,600 + 40,800), assuming the ESCO is satisfied with the 40% gross margin on the retrofit job.

If we split the proposal into two parts as the hall lights and the hotel room lights, then, the value of the hotel room bulbs is:

$$1. \quad \text{Retrofitting } \text{€}26,500 \div 0.6 = \text{€}44,166$$

$$\text{Annual payment} = \text{€}6495 \text{ (15 years/12\%)}$$

$$2. \quad \text{Energy savings} = \text{€}4900 - 882 = \text{€}4018$$

$$3. \quad \text{Net saving is negative! That is, it does not pay the hotel to convert the hotel rooms.}$$

But, the value of the hall bulbs alone is:

$$1. \quad \text{Retrofitting} = \text{€}3,840 \div 0.6 = \text{€}6,400$$

$$\text{Annual payment} = \text{€}940 \text{ (15 years/12\%)}$$

$$2. \quad \text{Energy savings} = \text{€}14,717 - 2,649 = \text{€}12,068$$

$$3. \quad \text{The PV of one CFL bulb is:}$$

$$\sum_{i=1}^{15} \frac{(\text{€}12,068 - 940 + 1,440 \times 1.20 - 215X)}{(1.15)^i} = 240X$$

€75,174 - 215 (5.85) = 240X; therefore, X = €50.20. Thus, by separating the two segments, OSRAM can increase the EVC of each replacement bulb to €50+ versus €20+.

1(b)

The value to BES of the first round of CFL bulbs for the halls = €50.20 each, for a total of €12,048 (€50.20 × 240). The challenge for OEU is how much of this value to try to capture and how much to 'leave on the table' for BES as the 'value proposition'.

1(c)

The challenge for OEU is how much of the customer value of about €50 per CFL bulb to try to capture and how much to 'leave on the table' as the 'value proposition' to the hotel.

The hotel has been paying €1,728 per year for hall bulbs. A price of €50 per bulb means an annual outlay of €10,750, against energy savings, net of retrofitting, of €11,128. This should look marginally good to the hotel, but not much of the value proposed is being left for the hotel. But, pricing the bulbs at 50% of EVC (an equal split of EVC between customer and producer) should make it a very attractive deal to the hotel.

2(a)

Current changeover time = 4,684 scheduled hours (4,234 working hours)

With CFL bulbs, and still using 'group relamping', but with 90% of rated life: 8,000 halfway and casino bulbs at 8,760 hours usage a year and 9,000 hours life. Change each bulb once a year, at 12 per hour = 667 hours. This translates to 83.33 crew hours (8-person crew). At 7 usable hours per shift, this is 12 scheduled shifts. The labour cost is €15,360.

The annual savings in labour cost is €97,280 – €15,360 = €81,920. The savings in equipment rental is another €19,200 (64 saved visits at €300/visit).

FLS is currently spending €64,800 on bulbs each year.

The value to FLS of the conversion (8,000 CFL bulbs) is therefore €81,920 + €19,200 + €64,800 = 8,000X (where X is the value of one CFL bulb). Therefore X = €20.70. But, as in Question 1, why should FLS get any of this value which really accrues to the hotel's benefit? Does Osram really need FLS at all with the new bulbs? The casino should find someone to change the bulbs without giving the EVC to the maintenance contractor!

2(b)

Annual power cost to the Casino

Incandescent bulbs:

1,000 hall lamps × 50 W × 365 days/year × 24 hours/day × €0.12/kwh = €52,560/year

5,000 casino bulbs × 100 W × 365 × 24 × €0.12 = €525,600/year

Fluorescent bulbs:

2,000 casino bulbs × 25 W × 365 × 24 × €0.12 = €52,560/year

Total current power cost = €630,720 (€52,560 + €525,600 + €52,560) With CFL bulbs:

3,000 hall and casino bulbs \times 9 W \times 365 \times 24 \times €0.12 = €28,382
 5,000 casino bulbs \times 18 W \times 365 \times 24 \times €0.12 = €94,608

Total CFL power cost = €122,990 (€28,382 + €94,608)

Power cost savings = €630,720 – €122,990 = €507,730

One-time retrofit cost:

3,000 wall fixtures \times €30	= €90,000
5,000 overhead fixtures \times €35	= <u>€175,000</u>
Subtotal	€265,000
Mark-up*	<u>€177,000</u>
Total	<u>€442,000</u>

*The mark-up is to provide about 40% gross margin to the retrofit contractor.
 The annual instalment loan payment is €64,900 (15 years @ 12%).

Reduced casino downtime:

Profit impact = €75,000 gross margin = $(76 - 12)/76 = €63,000$ (approx.)

Net impact = €507,730 – €64,900 + €63,000 = €506,000/year (approx.)

The value per CFL bulb is €63.50 (508,000 \div 8,000).

2(c)

Obviously, CFL technology dramatically changes the nature of the relationship among the casino, FLS, and the light bulb supplier. With CFL technology, the casino is about €508,000 better off and FLS is about €166,000 better off, just because of OEU's bulbs. But FLS loses 5/6 of its work. The net result is €674,000 (€508,000 + €166,000) per year to be split, somehow, among the casino, FLS and ONA. Splitting it 1/3, 1/3, 1/3, would mean approximately €225,000 annual revenue for OEU on 8,000 replacement bulbs (after the initial installation). This is an average of about €28 per bulb. Of course, there is nothing to say that OEU should limit itself to 1/3 of the net value generation. A 40% split for OEU drives up the price per CFL bulb to €34. Clearly, this is a much more attractive segment for OEU than the ESCO segment because the potential revenue is much larger and the EVC per bulb to the end user is higher (about €63 versus about €50).

3

Both segments are very attractive for OEU although the LMC segment is better (EVC per bulb of €63.50 versus €50.20). If it is possible to price discriminate between the two segments, OEU can serve both. If price discrimination is not deemed feasible, the question is whether to walk away from €13+ of potential customer value to LMCs by charging some percentage of the EVC (50–70%) €50 in both markets or drop the ESCO segment to charge a higher price in the casino market segment. Pricing at some percentage of customer value reduces this split, but the concept is the same.