Answers

1   To: Risk management committee of Mackerel Contracting
    From: A Accountant
    Date: 8 Dec 2011
    Subject: APV contract

Mackerel has to make a decision on which level of design expenditure and so on which type of APV to tender. This choice will be dictated by the objectives of the business and its appetite for risk.

(i)   Risks and risk appetite for APV contract

It is natural to assume that the main objective of a business is the maximisation of shareholder wealth and in the context of the APV project the main measure of performance will be the profit made on the contract, as this will drive the earnings over which the institutions are concerned.

However, in a decision where there is risk and uncertainty, the company also has to decide on its appetite for risk. Risk appetite is usually divided into three categories:

–   risk averse individuals tend to assume the worst outcome and seek to minimise its effect
–   risk seekers are interested in the best outcomes and seek to maximise their returns under these circumstances
–   risk neutral individuals are interested in the most probable outcome

The risks for Mackerel arise from uncertainties in its external environment. The key stakeholders in this situation are the government (the customer) and Mackerel's shareholders. The other factor giving rise to uncertainty is the forecast price of steel, the main raw material in the APV's construction.

The shareholders have indicated a concern over earnings volatility and so seem to be risk averse. This is commercially sensible in a recessionary situation where the company's survival could be placed at risk if a large project (such as the APV) were to fail. The project can be seen to be large for Mackerel as the expected profit is $5m if package 1 is chosen and this is material when compared to the current operating profit of $20·4m.

A risk averse approach might also be called for where winning the bid could lead to additional future work so that securing a deal is more important than optimising profit. This appears to be the case here as the government is the major customer of Mackerel.

The demand level for the APV is also uncertain and, given that there are significant fixed costs of design and development, these different levels have a material impact on the return from the project. There appear to be problems in quantifying the level of risk that will affect the choice of method of analysing the return from the contract. Mackerel should evaluate the contract using different methods and come to a conclusion based on the most appropriate one for its objectives and risk appetite.

A further source of risk is the danger of cost over runs. If successful in its tender, Mackerel will be working towards a fixed price for the contract ($7·5 m + budgeted variable cost per unit plus 19%). Any over runs of actual cost as compared to budget will reduce the profit margin earned.

A major cost risk is the cost of the primary raw material of production (steel). However, this has been fixed by the forward purchase of the steel for the contract. This has eliminated the risk of price fluctuations during the contract.

(ii)   Risk evaluation methods and results

As was stated earlier, it is natural to assume that the main objective of the business is the maximisation of shareholder wealth and, in the context of the APV project, the main measure of performance will be the profit made on the contract. Although discounted cashflow would be a superior approach, there is insufficient data available here to calculate it.

The first priority is to ensure that the contract complies with the government requirement of a maximum per unit cost of $70,000 to Mackerel. The results per Appendix 2 are:

Cost per unit

	Demand		
	500	750	1,000
Package			
1	62,972	57,972	55,472
2	65,472	59,638	56,722
3	67,972	61,305	57,972

This complies with the contract specifications.

The total profit for each design package under the different demand levels is calculated at Appendix 2 as:

Profit ($)

	Demand		
	500	750	1,000
Package			
1	4,557,302	6,835,953	9,114,604
2	3,307,302	5,585,953	7,864,604
3	2,057,302	4,335,953	6,614,604

There are four possible approaches to selecting a package. The methods depend on the information available and the risk appetite of the decision-maker.

If we assume that there is insufficient information to make an estimate of the probabilities of the different demand levels then we are making a decision under uncertainty and there are three common methods of approach which depend on the risk appetite of the decision-maker (maximax, maximin and minimax regret). I have calculated payoff and regret tables in Appendix 1. The results can be summarised as follows:

Risk seekers and the risk averse will use profit under the different demand scenarios to make the appropriate choice.

Risk seekers will aim to maximise the possible returns from the different demand scenarios. The maximax method would be appropriate in this situation and here the company would be advised to choose design package 1 which will have a maximax profit of $9·1m.

Risk averse decision-makers will aim to maximise the minimum possible returns from the different demand scenarios. The maximin method would be appropriate in this situation and here the company would be advised to choose design package 1 which will have a maximin profit of $4·6m.

Pessimistic decision-makers will choose to focus on the lost profit (regret) compared to the best choice under that demand scenario. They aim to minimise the maximum level of regret that they can suffer under any demand scenario. This minimax regret method shows the company would be advised to choose design package 1 which will lead to no regret.

These conclusions should not be surprising as design package 1 has considerably lower fixed costs and yet is scalable to cope with all levels of demand.

A risk neutral manager does not take an optimistic or pessimistic stance. They will choose the option that yields the maximum expected value. This method depends on the use of probabilities for each of the outcomes. The risk manager has attempted to quantify the probabilities of the different levels of demand given the different design packages employed. It would be wise to involve both the design and sales teams in these estimates as such estimates are usually highly subjective and a broad canvassing of opinion may help to gain more accurate values.

The estimated probabilities allow the calculation of an expected profit for each choice of design package. Appendix 2 shows that the maximum expected profit of $5·6m arises if design 2 is chosen. This is due to the much greater likelihood of higher demand in that case. Design 3 does not seem to increase the chances of higher demand sufficiently to outweigh the extra fixed cost of $1·25m compared to design 2.

(iii) Recommendation

In this situation, the choice of method will depend on the risk appetite of Mackerel, whether this type of decision is likely to be repeated many times and the accuracy of the probability estimates. As Mackerel shareholders seem risk averse, the profit under the contract is significant compared to the operating profit of the whole company and the economic environment is difficult so the low risk method of maximin seems appropriate. The use of expected values appears questionable as the probability estimates have not been widely debated and, in the current economic circumstances, the company's survival may be at risk and so the repeated trials necessary to make this method valid may not arise.

Design package 1 should be chosen as with unknown probabilities, it carries the least risk. The company could seek to sharpen the probability estimates and review the implications for company survival before considering the use of expected values, although there is the potential to make an additional expected profit of $573k if we could justify choosing design 2 over design 1.

The risk over steel prices has been removed by using forward (advance) contracts to cover the purchase of the material required. As steel is used in many of the company's products, this should be investigated as a general risk management technique for the company.

Appendix 1

Variable cost

Steel	11,412	9·4 Tonnes at $1,214
Engine/transmission	9,500	
Electronics	8,450	
Other	4,810	
Labour	13,800	
	47,972	

Payoff Table

Demand	500	750	1,000	Max payoff	Min payoff
Design package					
1	4,557,302	6,835,953	9,114,604	9,114,604	4,557,302
2	3,307,302	5,585,953	7,864,604	7,864,604	3,307,302
3	2,057,302	4,335,953	6,614,604	6,614,604	2,057,302

Maximum of the maximum payoffs	package 1	9,114,604
Maximum of the minimum payoffs	package 1	4,557,302

Regret table

Demand	500	750	1,000	max regret
Design package				
1	0	0	0	0
2	1,250,000	1,250,000	1,250,000	1,250,000
3	2,500,000	2,500,000	2,500,000	2,500,000

Minimum of max regret	package 1	0

Appendix 2

Demand	500	750	1,000
Variable cost	23,985,800	35,978,700	47,971,600

Fixed cost Package			
1	7,500,000	7,500,000	7,500,000
2	8,750,000	8,750,000	8,750,000
3	10,000,000	10,000,000	10,000,000

Total cost Package			
1	31,485,800	43,478,700	55,471,600
2	32,735,800	44,728,700	56,721,600
3	33,985,800	45,978,700	57,971,600

Cost per unit Package			
1	62,972	57,972	55,472
2	65,472	59,638	56,722
3	67,972	61,305	57,972

Revenue	$7·5M + (Budgeted variable cost x 1·19)		
	36,043,102	50,314,653	64,586,204

Profit ($) Package			
1	4,557,302	6,835,953	9,114,604
2	3,307,302	5,585,953	7,864,604
3	2,057,302	4,335,953	6,614,604

Expected profit Package	500	750	1,000	Total
1	3,873,707	683,595	455,730	5,013,032
2	826,826	2,792,977	1,966,151	5,585,953
3	411,460	2,167,977	1,984,381	4,563,818

[Tutor note: *These figures represent full calculations for teaching purposes. Working in thousands would be acceptable and indeed advisable. Using the contribution per unit of $9,115 (19% x $47,972) may alos yield faster results.*]

2 (a) The key features of performance measures are that:

– they should measure the effectiveness of the business and its processes in meeting the organisation's objectives in order to link to the overall strategy;
– they should measure the efficiency of resource utilisation within the organisation;
– they should contain internal and external measures of performance;
– they should comprise a mix of financial and non-financial (quantitative and qualitative) methods;
– they will require to make clear the different dimensions of performance so that judgements on trade-offs between them are explicit (e.g. quality and cost);
– they will link to the targets set for employee motivation;
– they should cover both the short-term and long-term performance of the organisation; and
– they should be flexible in order to respond to changes in the business environment.

The key performance indicators (KPIs) at Cod fail to have many of these key features. The KPIs at present are purely focused on financial performance and do not address issues of quality, customer service and product innovation which are all mentioned in the mission statement. The KPIs have no strong external features such as customer satisfaction or share price performance. It is unclear how they will link to employee motivation and indeed, the board recognise this fact and intend to use the performance pyramid in order to address it. The overall picture of the performance measurement system is a traditional one which will lack the flexibility to address the concerns of the key stakeholders of Cod.

(b)
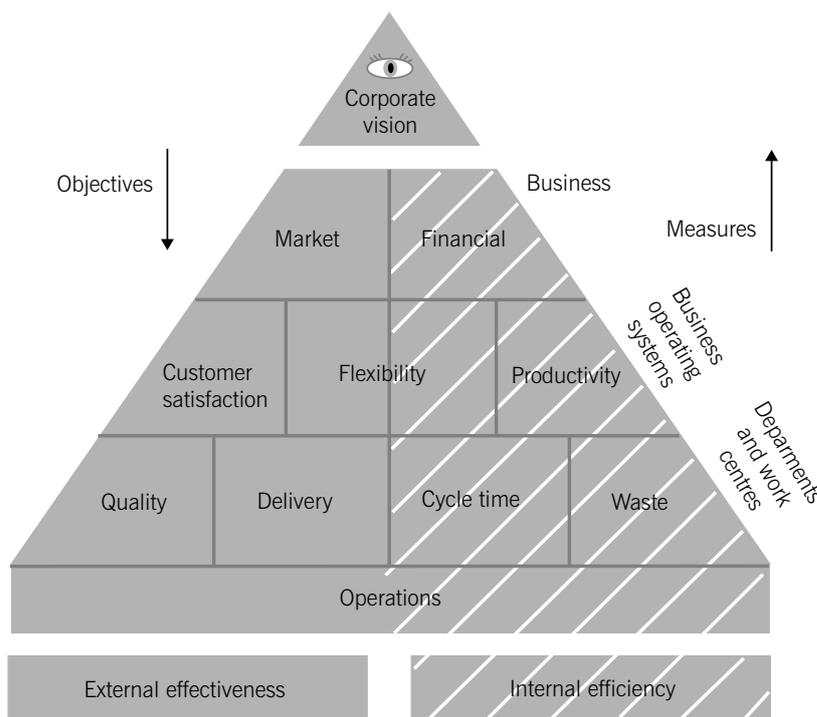
The pyramid firstly focuses on the development of a coherent set of objectives from the overall corporate vision. The pyramid views a range of objectives from the strategic to the operational, linking these through the themes of external effectiveness and internal efficiency.

The strategic level concerns relate to market and financial factors and these are fed by the tactical level drivers of customer satisfaction, flexibility and productivity. These objectives will reflect that business systems at this level will cross functional boundaries and so cannot be drawn into the specifics of the operational details. The operational objectives are then derived from the tactical drivers.

The performance measurement system is then built up to reflect the objectives and so ensure that each of the performance measures at the operational level feed the tactical level requirements and measures at this level drive the strategic objectives of the organisation. For example, cycle time reductions will improve productivity which will enhance the profitability of Cod.

This will help Cod to achieve the coherence that the board desires in the performance measurement systems.

(c) The driving forces, according to Lynch and Cross, that are appropriate to meeting an organisation's objectives are customer satisfaction, flexibility and productivity. At present Cod's KPIs do not address these as they lack any mention of areas of customer satisfaction (quality and service standards), flexibility (innovation and the ability to adapt to change in the external business environment) and productivity (efficiency and waste). It could be argued that some of these are more appropriate at the tactical and operational levels of the management hierarchy but the existing measures have only a tenuous link to them and hence the board is right to be concerned by the current KPI system.

The additional performance information provided would allow the calculation of various indicators appropriate to these driving forces. For example:

Customer satisfaction
Percentage of orders generating a complaint (5·4% in 2011 compared to 5·0% in 2010) measures customer satisfaction.

Preferred supplier status (58% of market in 2011 and 50% in 2010 [if we assume that there are only 24 possible customers that offer this status])

Flexibility
New products launched in the year (one each of 2011 and 2010) measures innovation.

Productivity
Quality costs ($4·35m in 2011 and $3·46m in 2010) measures inefficient production.

These should be added to the current KPIs used by the board.

The operational performance measures suggested by the pyramid will involve the four areas of quality, delivery, cycle time and waste.

Quality: The existing measures of failure costs supply a measure of quality, although variances to budget may be a more helpful presentation. The customer complaint numbers also address this issue, although they are a weak measure as no indication of the strength or ease of resolution of the complaint is given. It should be noted that the complaint category of 'other' is unacceptably large compared to the other categories and it should be broken down into further subcategories. The level of training days and long-term unfilled posts indicates the employee environment that will also impact on quality and delivery. It would be helpful to have industry benchmarks for these figures in order to understand them better.

Delivery: The preferred customer status indicates customer satisfaction and is fed by the complaint numbers on delivery and service. As before, it is worth noting that the severity of the complaint is not being measured, for example, by discounts offered or orders lost as a result.

Cycle time: There is no useful information currently collected to allow measurement of the cycle times of processes. Possibly the indicative numbers on products being developed may give an idea of time to market, however, an average measure of this in months would be more useful.

Waste: No figures are collected that indicate waste in production. Variance analysis of idle time for employees and materials usage would be helpful in measuring this area.

3 (a) The controls necessary over management information would involve the use of standard templates and definitions for all information that has to be collated. This will be important at Bluefin where the information processing is decentralised to the departments. The department heads are preparing information in different formats using different methods of presentation. This could be potentially confusing to the governors if they were trying to compare departmental performance. Comparison will also be made more difficult if different performance measures are used by each department (such as average class marks and exam pass rates). These controls are important to ensure that time is not wasted in understanding the different formats or in devising different formats.

The reports should be examined periodically to ensure that they are actually being used. For example, the governors should be asked if the reports are read or the minutes of the board meeting should be reviewed for references to the reports.

The cost of producing the reports should be compared to the benefit that they supply. It will be difficult at Bluefin to quantify the benefits as it is not financially driven. The reporting will be to satisfy the major stakeholders such as the government who fund the school. Costs of the system would also be difficult to identify as this would require the measurement and costing of department heads' time.

In order to safeguard data, there should be a policy on regular backups. Bluefin has a decentralised information system where controls relating to the backup of records are more difficult to enforce.

The security concerns at the school will relate to the sensitive, personal nature of individuals' exam performance and the school's financial information. In a decentralised system, there are more locations from which sensitive data can be accessed. Security protocols are more difficult to enforce, for example, it is necessary to ensure that PCs are not in publicly accessible areas. It will also be important to ensure that password controls are observed (such as regular changes to passwords) and that they are not easy to guess or in a written form beside the relevant computer.

The current system of passing information by memory stick could easily lead to misplacement or loss of data. If memory sticks are to be used then data should be encrypted. It will also mean that there may be different versions of the data files on the department PCs and the administration system which will require to be controlled. It can also lead to virus infection being passed around the computers in the school. All files should be screened by anti-virus software that is installed across the school's computers.

(b) The positive aspects of the current governors' pack are that it addresses the financial and educational performance of the school; it provides the raw numerical data on which judgements about the quality of teaching and financial management can be made; and it utilises the skill of the department heads in giving them the choice of how to present data on pupil performance.

However, the current governors' pack for the annual review suffers from a number of basic flaws. Firstly, there is too much information being provided and that information is too detailed for a non-expert audience such as the governors. The financial information may well be too detailed and since this is a review rather than an executive control meeting it would be more helpful to provide a summary of the financial highlights.

The information on exam performance is also too detailed. The governors will not cope easily with 11 department reports, each possibly listing about 20 sets of individual class average marks (if the mathematics department report is of average length).

Secondly, there appears to be a lack of narrative in the pack to explain the data given. For example, the class averages themselves are not explained in any commentary, although the previous year's comparative figure is provided.

Thirdly, the school's ethos provides a guide to the overall mission of the school. However, the governors' pack does not attempt to measure the performance of the school in areas such as citizenship and self-confidence. The current pack only provides information on the financial and examination performance of the pupils. Possible measures of citizenship could be number of pupil hours spent in community service. The additional information on self-confidence will be difficult to collect as it is qualitative and the measurement will be subjective.

Fourthly, no statement of financial position information is given which might allow an understanding of the school's investment in its buildings and equipment. This could be important in making a decision over the proposed IT improvements.

Finally, although not mentioned in the school's ethos, it would be expected that external comparisons of the school's performance would be appropriate, so this benchmark data should be provided along with the school's performance.

(c) The suggested improvements will bring the benefit of removing possible duplication of files and reducing storage requirements by unifying the data in one database. The network should facilitate the transfer of information between the departments and the school office making errors in transfer less likely. The centralising of the data in the school should make control over security tighter, it will be easier to enforce a policy on the backup of data and it should facilitate the standardisation of departmental report formats. By connecting the network on the internet, communication with key stakeholders such as the government will be improved. It may be possible to share data with other schools which could assist in a benchmarking exercise in order to identify best practice in the region.

However, the changes could lead to problems. The opening of the school network to the internet will provide additional opportunities for the spread of viruses and possibly open the network to hackers. The centralising of all data may make a loss more catastrophic although backup procedures will reduce this risk. The costs of such an upgrade may not be outweighed by the benefits as the benefits are all non-financial.

4   (a)   The branch information appears to be inadequate on a number of levels to appraise the shop manager's performance. The manager should only be held responsible for those areas of performance that they can control.

The branch manager should be appraised on a realistic sales budget. The overall market fall of 12% suggests that the original budget of no change on the previous year was not realistic. It is possible to analyse this by calculating planning and operational variances as follows:

	$	
Revised budgeted sales given market fall	234,080	
Budgeted gross margin	60%	
Revised budgeted gross margin	140,448	
Original budgeted gross margin	159,600	
Planning variance	19,152	A
Actual sales	237,100	
Revised budgeted sales	234,080	
	3,020	F
Budgeted gross margin	60%	
Operational variance	1,812	F

The operational variance reflects more accurately the manager's work and from this we can see the manager has done well by limiting the fall in gross profit by $1,812.

This analysis could be extended to other areas of the performance report. For example, if the breakdown of sales prices and volumes for individual product lines were given together with details of market volumes and price movements then the sales price variance could be broken down into operational and planning elements to reflect the manager's use of the limited discounting power that she has. Overall at the Tunny branch, the gross margin has remained constant (at 60%) which indicates that the manager may not have made use of the sales price discounting authority.

There are a number of other non-controllable costs in the branch information. It is unlikely that the branch manager can affect the price variance of heating and lighting costs as the prices are set through central purchasing, although they will have some control over usage. The rental cost will reflect head office property management and is not controllable. The manager's own wages are not controllable, although the staff costs will reflect the fact that the manager can choose to work longer hours and so save on part-time staff, therefore a labour efficiency variance would be appropriate.

A revised report would split the costs into two groups (controllable and non-controllable) so that a controllable profit would be shown as well as the overall shop profit. The report would also contain a breakdown of the controllable and non-controllable elements of each variance.

The manager would be assessed on the controllable profit performance of the branch. If we exclude the gross margin planning variance ($19,152A) and allow that the part-time staff costs and marketing costs are controllable then we see that there is a favourable variance in controllable profit of $6,312 ($19,152 – $12,840).

(b) The management style at Albacore is highly budget-constrained (Hopwood). It is driven by financial performance to meet the needs of the venture capitalist owners who have probably highly geared the business at the time of purchase. The cost control attitude is illustrated by the focus on achieving budget in the reward system and the enforcement of staff pay rates. This management style leads to stress for employees and difficult working relationships – as illustrated by the unhappiness of the shop managers. It can also motivate manipulation of performance reports, although given the centralised nature of Albacore, this appears unlikely at the shop level. It does however focus attention on achieving budget. This could be desirable in difficult economic circumstances.

Alternative styles are:

– profit-conscious, where the performance is evaluated on longer-term effectiveness of the business unit in question (plausible here given Albacore's aim of profit maximisation)
– non-accounting, where the budget is of low importance in performance evaluation

The performance appraisal system at Albacore reflects this cost-conscious, budget constrained approach. The shop managers are instructed as to their objectives and there appears to be no discussion of this target between the appraiser and the shop manager. For the branch given, it is striking that the failure to make budgeted profit (by $12,840) has led to no bonus being paid, although the shop made an operating profit of $43,160 and the operating margin of the shop has held up at 18% compared to 21% per the budget.

The branch information needs to reflect the areas that the manager can control as mentioned in part (a) to this answer. Using the analysis of revised controllable profit, we have seen that the manager has returned a good performance $6,312 ahead of budget. The increased use of operational and planning variances should help to motivate the managers and reduce the friction with senior staff.

The current contract between the manager and Albacore could be described as coercive as it is imposed. The budget should be agreed between the manager and their appraiser using the detailed knowledge of both parties to improve the budget estimates. Although for Albacore, the likely budget will reflect the expectations of the senior management in order to achieve the business' overall financial objectives.

The reward system could move to a more calculative basis where the manager is paid a percentage of the profit above a certain level, usually this bonus is capped to a maximum as in the current system. The senior management will need to assess the trigger level based on head office costs (administrative support and financing costs). Therefore, the operational director's assessment would become more objective and this could remove lack of clarity in how performance is assessed.

Performance appraisal could also recognise longer-term and non-financial factors in the manager's performance, such as innovative marketing ideas and staff development (branch staff who progress from part-time to shop manager).

5 (a) The costs of quality will probably be hidden in overheads in the standard costing system at Tench. They relate to design, inspection and repair and reworking. The existing system will need to be modified to separate these costs.

The quality costs that will need to be collected will include the following:

– Costs of conformance: ensuring that cars produced are at the acceptable quality standard. This includes prevention costs such as training for staff, building quality into the design of the cars and the design of the business processes in order to avoid quality rejections. It also includes appraisal costs which include the inspection of components from suppliers before they are used and inspection of work-in-progress and finished cars.

– Costs of non-conformance: cost of dealing with cars that do not meet the prescribed quality standards. These costs include internal failure costs when a quality fault is noticed before the car leaves the factory and is rectified. External failure costs also arise when a customer finds a fault with the car which must be handled through customer complaints.

There are quality costs that an accounting system will tend to omit such as the opportunity cost of lost future sales resulting from customer dissatisfaction and the knock-on effects of faulty component purchases in lost time in the rest of the manufacturing process.

The identification and collection of these costs will probably lead to greater management focus on the quality issue as 'what gets measured, gets done'. This will help Tench to raise the quality of its products in order to compete more effectively with the new imports.

The issues discussed above represent the traditional view of quality costs where there is an optimal effort that minimises but does not eliminate quality faults. There is a trade-off occurring since the reduction of non-conformance costs requires an increase in conformance costs in order to prevent product failures and there comes a point where the cost of reducing the error rate further is greater than the benefit from preventing that additional fault. For a national manufacturer faced with multinational competitors, this may seem an appropriate approach as Tench will not have the resources to be able to drive out all quality faults.

(b) The Kaizen costing process focuses on producing constant, small, incremental cost reductions throughout the production process during the product's life. Kaizen can be translated as continuous improvement. Kaizen costing applies functional analysis in the design phase to create a target cost for each production function. These are totalled to give a product target cost which, after the first year of production, is used as the baseline for further on-going reductions. These reductions in turn reduce the baseline cost and so on as the production process improves. The cost reduction rate is set as a target and managed by exception throughout an accounting period often on a monthly basis compared to the annual setting of standard costs.

The effect of this on the standard costing system at Tench is significant since, in a process that is continually improving, standard costs have much less value as they are fixed over the relevant period. Therefore, Kaizen costing can respond more easily to a dynamic business environment. Standard costing is used to control costs while Kaizen costing focuses on cost reduction.

The management attitude to employees is different in the two systems, as in continuous improvement systems they are the source of the improvement solutions while in standard costing systems with its analysis of variances of labour rates and efficiencies, the employees are often seen as the source of problems. In the Kaizen system, the employees often work in teams and are empowered to make changes to production that would have to be cleared through a management hierarchy in a more static standard costing system. Changing the costing system would be likely to represent a major cultural change at Tench with its history of bureaucratic control.

The benefit of continuous improvement, which has been successfully followed at many multi-national car manufacturers such as Toyota, is that it will allow the company to address quickly the changing nature of Tench's competitive environment. It will increase staff motivation through empowerment. However, there may be significant management difficulties initially in getting workers who are used to a command and control structure to change their behaviour and speak out about possible improvements.

(c) Just-in-time (JIT) is a demand-pull system of ordering from suppliers which aims to reduce inventory levels to zero. It can be broken into two parts: purchasing and production. Each part has a similar goal to produce the components for the next stage of the production process only when they are needed (hence demand-pull). The system is often used in conjunction with the continuous improvement methods discussed earlier.

For Tench, this will bring benefits and problems. The benefits will be measured in lower working capital requirements, factory floor space savings and increased flexibility in meeting the customer's individual needs (faster response times to product specification changes).

There are a number of problems to be overcome. There will be an increased reliance on suppliers as any component quality failures are not necessarily rectifiable by going to inventory to pick a replacement. This can lead to costly stoppages to production. For Tench there could be difficulty in finding local suppliers who are capable of meeting the required component and delivery standards needed in order to run such a system. Quality systems are therefore a driver of the feasibility of JIT and the metrics associated with quality costs (mentioned above) will become important as a result.

Output must be matched to demand and each stage of the production process must match its output speed to the demand level. Teams must be formed to work by component or product rather than by the type of work performed. Staff will require training in order to work in these teams as they will have to be multi-skilled (able to operate and maintain the machinery in use by their team). This means that traditional functional divisions of costs become less appropriate, again requiring cultural change at Tench. Measures of spare capacity and bottlenecks in production will be critical to achieving these aims. Also, the amount and effectiveness of staff training will need to be measured during the implementation of these changes.

				Marks
1	**(i)**	Appropriate metrics		1
		Risk appetites	3 x 0·5	1·5
		Identify key stakeholders and risks		3
		Risk appetite		3
		Demand risk		1
		Cost overrun risk		2
		Other – 1 mark per point made		
		Maximum 9 marks total		
	(ii)	Variable cost per unit		1
		Total cost under each package		2
		Cost per unit contract check		2
		Revenue		1
		Profit total table		2
		Comments on metric used		1
		e.g. profit v NPV		
		Maximax calculation		1
		Conclusion		0·5
		Maximin calculation		1
		Conclusion		0·5
		Minimax regret		
		calculation		2
		Conclusion		0·5
		Expected value		
		calculation		1·5
		Conclusion		0·5
		(Working rounded to thousands is acceptable.)		
		Describe different methods	4 x 0·5	2
		Evaluate methods		4
		Maximum 19 marks total		
	(iii)	Recommend method		2
		Final recommendation on contract		1
		Other risk reduction comments		1
		Maximum 3 marks total		
		Up to 4 professional marks.		

Total 35 marks

2	**(a)**	Key features		
		Describe	0·5 mark per point	4
		Assess	1 mark per point up to	6
		Maximum 7 marks		
	(b)	Diagram	1 mark per point up to	2
		Explanation	1 mark per point up to	4
		Maximum 6 marks		
	(c)	Strategic level		
		Describe drivers	0·5 mark per point	1·5
		Assess current system	1 mark per point up to	2
		Suggest new KPIs	1 mark per point up to	3
		Operational level	1 mark per point made up to	8
		(in order to score full marks all four areas of the operational level of the pyramid must be addressed)		
		Maximum 12 marks		

Total 25 marks

				Marks
3	**(a)**	Controls and security Maximum 9 marks	1 mark per point up to	9
	(b)	Positive aspects Information overload Information confusing and unexplained Failure to cover overall objectives Other – 1 mark per point made Maximum 6 marks	1 mark per point up to	2 2 2 3
	(c)	Benefits Problems Maximum 5 marks	1 mark per point up to 1 mark per point up to	4 3

Total 20 marks

4	**(a)**	Variances Operation and planning Other variances Controllable costs Revised performance report Controllable profit Other – 1 mark per point made Maximum of 8 marks	1 mark per point up to 5	5 2 1 1 1
	(b)	Management styles Performance appraisal system Improvements Maximum of 12 marks	1 mark per point up to 6 1 mark per point up to 6 1 mark per point up to 3	6 6 3

Total 20 marks

5	**(a)**	Describe quality costs Impact of quality costs Use of quality costs And traditional view of quality costs Maximum of 6 marks	1 mark per point up to 4 marks 1 mark per point up to 5 marks	2 4 5
	(b)	Describe Kaizen costing Comparison of standard and Kaizen costing Effect on management of employees Maximum of 8 marks	1 mark per point up to 3 marks 1 mark per point up to 3 marks	4 3 3
	(c)	JIT Description Benefits Problems Other – 1 mark per point made Maximum of 6 marks	1 mark per point up to 2 marks 1 mark per point up to 3 marks	2 2 3

Total 20 marks