
Answers

- 1 (a) An external environmental analysis considers political, economic, socio-cultural, technological, legal and environmental (ecological) forces that affect EcoCar.

Although it was external environmental factors that prompted Professor Jacques to develop the original EcoCar, it is primarily socio-cultural forces that are determining its current sales. There have to be customers prepared to pay a premium price for environmentally friendly cars, whose conventional rivals are \$2,000 cheaper, and are faster with better acceleration. These customers are prepared to pay this premium because they are concerned about the conventional car's use of non-renewable resources (oil) and the effect of its carbon emissions on climate change. They are essentially 'green' consumers. It is easier to be such a consumer in a developed, growing economy where there is sufficient disposable income to be able to make such choices. Thus the economic health and disposable income of the country are important to EcoCar and should be monitored.

Underpinning the green consumer market is the belief that environmental damage is caused by CO₂ emissions and that preserving natural resources for future generations is important. Any scientific evidence to the contrary could cause problems for the EcoCar, for example, if scientists discover that excess CO₂ is actually necessary for the planet's survival. Similarly, if people become increasingly pessimistic, less concerned about their children's future or resigned to the belief that there is nothing they can do to avert catastrophe then their buying behaviour may become more self-centred and hedonistic, spending discretionary expenditure on more immediate personal, sensory pleasures. EcoCar need to monitor such trends. Individual people do really need to believe that they can make a difference to the world in which they, and their descendents, live in.

Technological innovation is at the heart of EcoCar and the company needs to monitor technological trends for at least two reasons. Firstly, for potential alternatives to lithium-ion batteries that could seriously affect the viability of their whole product. Alternatives do exist (hydrogen for example) and so EcoCar is aware that the potential application of alternative technologies must be monitored. Secondly, the company has to be on the look-out for improvements in lithium-ion batteries that could make them cheaper, lighter or more powerful.

EcoCar has been the beneficiary of government policy which has been aimed at nurturing green technology by giving tax incentives, grants and interest-free loans. It has also placed heavy taxes on cars with high CO₂ emissions. Very importantly, it has also funded the development of 130 charging centres throughout the country where the EcoCar can be re-charged. The company needs to monitor the government's continued commitment to energy saving and the policies of any political opposition within the country.

Finally, the government has enacted a number of general laws on car safety that have to be complied with by EcoCar. Further legislation is expected, so the company must monitor this.

Thus there are a number of threats that EcoCar has to consider, using its risk management approach discussed in part (c) of this question. There are also risks associated with the potential decline of the green consumer and the emergence of alternative technologies.

The external industry analysis could use elements of Porter's five forces framework. Deciding the appropriate scope of the industry to be considered is important. This helps determine the competition facing EcoCar, either from the car industry as a whole, the sector concerned with reduced emissions or perhaps transport as a whole.

The technological environment is driving the threat of substitute products. This threat is relatively high in an industry (car manufacturing) where there is no clear successor to conventional petrol and diesel fuelled cars. A number of alternatives and hybrids are either available or under development. Furthermore, there may be a popular movement to 'do without it'. Cheap, frequent, reliable, safe public transport could lead to lower demand for private cars and indeed may be a better choice for the green consumer. Cycling could also pose a threat, combining a non-polluting alternative with exercise addressing problems of obesity and associated health issues.

In theory, the switching costs of the consumer are relatively low if the industry is perceived as the car industry as a whole. The consumer just purchases a different car. However, the EcoCar appeals to a segment of buyers who are prepared to pay a premium price for the 'cleaner' product. Although the cost of the product is relatively high, the buyer does not actively seek out cheaper alternatives. They know that these alternatives exist but they do not purchase them because of their green ideals. In a sense, the consumers do not wish to bargain for this product.

There is an ever-present threat of new entrants into this market. However, there are considerable capital investment costs which EcoCar have overcome with the help of grants, and interest-free loans. These incentives are unlikely to be available in all countries, or even all regions of Erehwon, given that they are linked to tackling areas of high unemployment. Furthermore, the absence of local car-building expertise, together with the processes patented by Professor Jacques should deter entrants into the market. It is interesting to note that Universal Motors (the second largest car manufacturer in the world) has decided to enter this sector of car production through acquisition, rather than developing its own product. It has brought further capital investment, which may not be available to potential competitors.

The bargaining power of suppliers in the industry is unclear from the case study. Certainly, it is normally difficult to switch suppliers in such an industry because of the nature of the product and the tightly linked supply chains of this industry. This is not a problem for the large car companies who are powerful and much larger than their supplier companies but it could be a problem for a small manufacturer such as EcoCar, which has little bargaining power. However, the ownership of Universal Motors might alter this. They should be able to negotiate favourable contracts with suppliers, reflecting a reduction in the bargaining power of these suppliers. If labour is seen as a supplier, the problem of skilled labour has meant that labour

rates have had to be increased and it is this increase (together with the shortage of skilled labour) that has prompted Universal Motors to consider outsourcing the production of the EcoLite model.

In the car industry as a whole there are many competing firms and buyers can switch easily from one to another. The industry has high fixed costs and the cost of leaving the industry is high. Thus competitive rivalry in the car industry is high. However, in EcoCar's sector there are not as many competing firms and they tend to be fairly well differentiated. Thus competitive rivalry appears to be less in this sector than in the car marketplace as a whole. Whichever perspective is adopted, risks will be identified that need to be dealt with by the company's risk management process.

(b) In support of outsourcing

The economic argument for outsourcing the manufacture of the EcoLite is best made if the manufacturing of this model is viewed in isolation. The proposed outsourcing supplier has quoted a cost for manufacture of \$3,500. This is \$1,000 less than the variable cost of manufacturing the current car at Lags Lane. It is still \$750 per car cheaper even when transport costs are taken into consideration. Supporting information is given in Figure 1.

	EcoLite
Selling price per car (\$)	6,999
Variable cost per car (\$)	4,500
Weekly demand (cars)	6
Production time per car (machine hrs)	8
Contribution	2,499
Contribution/machine hour	312
Production time (hours)	48

Figure 1: Information relevant to the outsourcing issue

One of the reasons for the high variable cost of the car is the high cost of labour and inbound logistics. All evidence suggests that these costs will continue to increase to reflect the shortage of skilled labour in the region (as more people retire) and the high cost of moving goods in the congested roads of Midshire. The high cost of the car means that the most profitable combination of products (see below) produces a relatively small margin. This must be of concern to Universal Motors.

Overall, the Lags Lane site is unable to meet the weekly demand for EcoCar's products. The weekly demand for the three-car range is currently 152 hours (see Figure 2) and so the company (with 112 hours of production capacity) cannot meet product demand. Outsourcing will allow EcoCar to meet the demand for their products as well as increasing overall profitability.

The EcoLite has fewer parts in common with the two other cars. The EcoPlus is essentially a slightly more sophisticated car than the Eco and the delay when switching production from Eco to EcoPlus is probably relatively small. In contrast, the EcoLite has only 70% of parts in common with the two other cars which suggests that it is the obvious candidate to switch to a different plant. Overhead costs at Lags Lane should be reduced as there is no need to build and stock sub-assemblies and parts which are only used in the EcoLite. It has been suggested that there will be a \$1,250 reduction in weekly overhead costs at Lags Lane if the production of the EcoLite model is outsourced.

Against outsourcing

The economic argument for outsourcing is weakened if the complete product range is considered.

	Eco	EcoPlus	EcoLite
Selling price per car (\$)	9,999	12,999	6,999
Variable cost per car (\$)	7,000	10,000	4,500
Weekly demand (cars)	6	5	6
Production time per car (machine hrs)	9	10	8
Contribution	2,999	2,999	2,499
Contribution/machine hour	333	300	312
Production time (hours)	54	50	48

Figure 2: Further information relevant to the outsourcing issue

At present the following production combination represents the best product mix with the limited resources. See Figure 2 for supporting information.

Six Ecos consuming 54 hours of production contributing \$17,994 (6 x \$2,999)

Six EcoLites consuming 48 hours of production contributing \$14,994 (6 x \$2,499)

One EcoPlus consuming 10 hours of production contributing \$2,999 (1 x \$2,999)

This total contribution of \$35,987 per week exceeds the estimated \$35,000 per week overhead cost.

However, if the EcoLite model is made elsewhere, then the following combination of cars will be made at Lags Lane

Six Ecos consuming 54 hours of production contributing \$17,994 (6 x \$2,999)

Five EcoPlus consuming 50 hours of production contributing \$14,995 (5 x \$2,999)

This total contribution of \$32,989 is less than the forecast \$33,750 per week overhead cost.

There are also eight unused production hours. It is possible that the future of the Lags Lane production facility could be in doubt if the EcoLite model is outsourced.

The issue of the capacity of Lags Lane could be addressed by becoming a seven-day week three-shift operation (pushing capacity up to 168 hours per week) which would also allow 16 hours for maintenance, given that total demand currently comes to 152 hours. Whether this maintenance time would be sufficient would have to be investigated. There still remains, however, the problem of finding skilled labour in the Midshire area.

Universal Motors might expect political opposition to the proposed outsourcing of the car even if they maintained production of the remaining two cars. Regional and national grants have been given to the company to help develop and produce the car. It has meant that part of a skilled workforce has been kept on in an area of high unemployment, reducing social costs to the community. The feeling that it is the region's car is reflected in its image and sales. Outsourcing might have a detrimental effect on sales. People who were buying it because it was, in part, some reflection of regional pride may now buy elsewhere.

The motivation of the buyers really has to be considered in more depth. It is acknowledged that people pay a premium for this car because they wish to make a social statement. The car uses less energy, has lower emissions and provides employment in the country where it makes most of its sales. Taking away employment may mean that the car may no longer fit the social buying criteria of some of its customers. However, the realisation that non-renewable energy is being used to transport these cars back to Erewon where 95% of all sales are made may be even more problematic. Buyers may no longer feel that it represents an ethical choice. Building the car in a country where labour costs are low and then transporting it long distances in ships and environmentally unfriendly car transporters may completely undermine the brand.

- (c) Answers to the three internal weaknesses are given below. However, other responses could be just as valid and appropriate credit will be given.

Lack of control and co-ordination

The company needs to implement a comprehensive budgeting system. A rudimentary budgeting system appears to exist, focused on planning rather than co-ordination or monitoring.

The scenario shows a lack of co-ordination between production, procurement, inventory and finance. Recently, car production was halted by lack of an important sub-assembly. This led to the emergency purchase of components and overtime working to minimise the delay in re-starting car production. This raised the cost of production and would have reduced the profit margin on finished vehicles. Furthermore, there is evidence that purchases of bought-in finished inventory items (superior quality seats) have been made at times when there was insufficient demand for them or the money available to pay for them. This led to short-term financing requirements at a premium interest rate to resolve a public row with a supplier. There is also a cost associated with storing unwanted inventory.

What the company needs is a plan which co-ordinates all these activities. This is known as a budget. Budgets would be prepared for production, for raw materials and for bought-in finished goods. The latter two budgets would be linked to the trade payables budget, which in turn is linked to the cash budget. Budgets facilitate planned co-ordination between the departments and activities of the organisation. Because they require planning, budgets also promote forward thinking and should help identify any forthcoming problems. These problems can be tackled in a planned way, for example, putting finance in place, before being prompted to do so by potential legal action from a supplier. A longer planning timeframe should have also helped the company arrange such finance at a better rate.

Finally, budgets facilitate control. Deviations from the plan can be spotted early and appropriate action taken. Ordering excessive components would have been identified as a major deviation from plan and senior management action could have been taken. There is evidence of a lack of proper control at EcoCar (for example, training costs) and budgets would have helped address this.

Research and Development succession and learning

The company needs to consider the principles of Human Resource Development (HRD).

Research and Development has been central to the success of EcoCar. However, Universal Motors have recognised that the senior managers are getting older and that there is no succession planning or development in this area of expertise. Furthermore, they have also identified that although the senior managers may be technically competent, their people management skills are limited, losing key graduates that they failed to motivate or recognise. There is a concern that new technological opportunities are not being recognised or exploited because of an inappropriate culture within R & D.

EcoCar needs to completely re-think its approach to Human Resource Development (HRD) if it is to retain an intellectual lead in the industry. HRD is concerned with investing in the learning of people who work for the company, replacing concern about short-term training costs (as expressed about the graduate training scheme) with the vision of long-term training investment. As well as providing an internal pool of capable employees, proponents of this approach also argue that it engenders loyalty and commitment to the organisation, reducing staff turnover and all the costs associated with it. Consequently, it is a key approach to planning for staff succession from within.

The strategic implications of such an approach should also not be overlooked. EcoCar is working in a challenging leading edge environment. Central to the concept of the learning organisation is the belief that adopting such a concept is one of the best ways of challenging and moving away from the current culture of the organisation. This is necessary at EcoCar. Overall,

human resource development has the ‘prospect of unleashing the potential that lies within all people, allowing employees to contribute to and indeed transform strategy’ (Jeff Gold).

The understanding of risk

EcoCar needs to establish a risk management process that identifies and documents risks and put into place policies for eliminating, reducing or coping with them if they occur. In general, Universal Motors believe that EcoCar often recognise risks but do little about them except discuss them. Overall, it is concerned with the amount of risk that senior managers appear to take. Although individually the senior managers are risk averse, as a group they seem to seem to take increasingly riskier decisions as a way of overcoming their individual fears.

In a risk management system risks would be identified and documented, usually on a risk register. Once they have been documented, risks need to be assessed, both for the probability of the risk occurring and for the impact it has if it does occur. Risk is also related to corporate governance. There is strong evidence to suggest that there is risk-related motivation for monitoring and improving corporate governance. EcoCar needs to consider the establishment of a main board risk committee. Revised corporate guidance, building on the Turnbull Report (FRC, 2005), states that companies ‘should, as a minimum, disclose that there is an ongoing process for identifying, evaluating and managing the significant risks faced by the company and that it is regularly reviewed by the board’.

In general, there are four strategies for dealing with risk. Risk avoidance is concerned with removing the factors that give rise to the risk. In the context of EcoCar, the risk of adverse publicity due to poor performance in a rally could be avoided by not running a car in the rally. Risk transference is achieved by passing the risk on to someone else. There is a certain element of this in the outsourcing approach being considered by Universal Motors for the manufacturing of EcoLite. Risks associated with employing and fully utilising staff are passed on to the outsourcer. Risk reduction is concerned with reducing the chance of the risk occurring and is usually associated with a mitigation response which details what the organisation should do if the relevant event actually takes place. For example, the risk of employees passing on technical information about the company’s products could be reduced by strict contractual terms with deterrent penalties, reducing the chance of them actually passing on this information. The risk would be mitigated by immediate legal action against the employees and an action plan put in place with company’s lawyers. Finally, certain risks are just recognised and absorbed. The potential risk is recognised and accepted as part of doing business in that sector, but the risk is continually monitored.

Risks are linked to the external factors identified in the first part of this question. For example, the risk of consumers losing interest in green issues affects the attractiveness of the industry to potential competitors.

- 2 (a) In the scenario, Barry Blunt commented on simple payback (and its supposed advantage over discounted cash flow), the selection of the discount rate, the role of the IRR, the importance of intangible benefits and the realisation of benefits. Each of these five themes is elaborated on below:

Simple Payback calculation (time to payback)

Job One All figures in \$000

C/F	0	-110	-60	-45	-5
	Year 0	Year 1	Year 2	Year 3	Year 4
Total costs	110	10	10	10	10
Total savings	0	60	25	50	70
Cumulative	-110	-60	-45	-5	55

Job Two All figures in \$000

C/F	0	-90	-50	-35	-5
	Year 0	Year 1	Year 2	Year 3	Year 4
Total costs	90	20	20	10	10
Total savings	0	60	35	40	35
Cumulative	-90	-50	-35	-5	20

Figure 1: Payback calculations for 8-Hats

The calculations (Figure 1) show that Barry Blunt’s assertion is not true, both jobs payback early in year 4. If payback (time to payback) had been used, Job One would probably still have been selected because it pays back more in Year 4 than Job 2.

Barry also seems to misunderstand the limitations of payback. It ignores all cash flows beyond the payback period, which in longer projects can be very significant. In this example, payback ignores the fact that Job 1 has a significantly higher net cash flow inflow on year 4 than Job 2.

The discount rate

Inflation is taken into account in setting the discount rate. However, interest forgone, the cost of capital (if money is being borrowed to fund the investment) and risk will also have an influence. Interest forgone is concerned with the opportunity cost of investing the money in a bank deposit account and earning interest. The cost of capital is concerned with the cost of borrowing money to fund investment. A risk premium would reflect the perceived risk associated with these two internal projects. The discount rate used will incorporate an allowance for risk which will determine the required rate of return or ‘hurdle rate’ that a project must exceed for it to be viable. Information about risk-free interest rates during the period, the risk

profile of the company and the company's cost of capital (using the Capital Asset Pricing Model) would also have been of relevance.

Even if there was an economic logic to changing the discount rate to 3% or 4% this would have no overall effect on the selection of the projects. In fact it is likely to have made Job 1 even more attractive than Job 2, as the cash flows in year 3 and 4 would have been discounted less. In fact, if a discount rate of 4% is used (and this calculation is not expected of the candidate) then the gap in NPV between Jobs 1 and 2 increases.

The Internal Rate of return (IRR)

The IRR is basically the discount rate that produces an NPV of zero for net project cash flows. If the selection is between two projects with the same scale of investment (which is the case here), then it has no effect on which project is selected. The project with the greatest NPV will usually produce the higher IRR. However, the IRR does become important when any project selected has to achieve a pre-specified company rate, or where projects with different scales of investment are being compared. This is not the case at 8-Hats.

Tangible and intangible benefits

The fundamental problem with investment appraisal generally is the reliability of cash flow estimates made for future cash inflows and outflows. For both jobs there seems to be an inclusion of specific monetary values for what appear to be intangible benefits – better information and improved staff morale. As Barry Blunt says, these are important, but it is very unlikely that either of these could be predicted with any certainty, particularly at the start of the project. Estimating for later time periods in the project is also very difficult and it is significant that these benefits increase as the project progresses. These intangible benefits amount to \$110,000 for Job One and \$50,000 for Job Two. If these intangible benefits are deducted from the analysis then, in fact, Job Two has a higher NPV than Job One. However, both are negative, suggesting that neither project should be attempted.

Benefits realisation

Finally, Barry has a fundamental misunderstanding of benefits realisation. The feasibility study is concerned with establishing the business case of a project and it should identify the project's benefits and costs. Benefits realisation is concerned with establishing whether the predicted benefits in the business case have been realised once the product or service delivered by the project has been in place for some time. It compares actual costs and benefits with those predicted in the business case. It cannot take place after the feasibility study of the project because at that point the project has not been completed and so any predicted benefits could not, at that stage, have been realised.

- (b) 8-Hats Promotions are currently structured in functional departments, with each function representing activities of the company that have either been acquired (for example travel) or organically developed. Each job is passed between functions, with each function focusing on optimising its part of the transaction. Thus the sales department concentrates on winning the job by fiercely reducing prices because the sales managers are rewarded on turnover, not profit. The events department focuses on providing the most rewarding client experience and the travel department on selling travel options with the best profit margin. The focus of the travel department can cause conflict with the sales and marketing department and the operations department has the problem of trying to profitably deliver an event at a price agreed by sales and marketing department but with the functionality promised by the events department. The finance department has responsibility for managing the cash flow of the job and the payment of invoices and collection of money owing. There have been occasions where a job has been jeopardised by the failure of the company to pay key suppliers on time.

The problems described above are typical of a functional structure and the 'silo effect' caused by departments sub-optimising based on their own objectives and interests. The job, which is effectively being passed across the silos, suffers due to lack of co-ordination. Conflicts between two silos can often only be dealt with by managers who are above the silos. There is an example in the scenario where Barry Blunt has to intervene to arrange extra funding to pay supplier invoices when those suppliers threaten to boycott a folk music festival.

The matrix structure is an attempt to manage key elements of the company across the functional departments. This might be a product, project or a clearly defined client sector. In the context of 8-Hats it is jobs, which are effectively projects, and potentially, key accounts (such as Kuizan) that need to be managed across the functional silos.

Each job has the characteristics of a project. It has an established start, it runs for a few months, and then has a specified finish which is often the event itself (such as the folk festival or a Kuizan customer experience event). A multi-disciplinary project team drawn from all of the functional sections would allow continuity and focus on delivering a successful and profitable project. Because much of the company is project-based, a set of profitable projects should lead to a profitable company. Decisions within the project will, to some extent, reflect a consensus view of all concerned. The sales manager responsible for agreeing the deal would still be involved at event realisation and would also contribute to the management of cash flow through the complete project. This commitment to the project goal should lead to a more rewarding client experience. The need to keep clients satisfied is another potential element to the matrix, with account managers being appointed to key accounts with the responsibility of managing clients across both silos and projects.

The need for project teams to reflect a consensus view often means that decisions may take longer in a matrix structure and tension within the multi-disciplinary team may lead to a large amount of conflict. This conflict is more likely when cost and profit responsibilities are either unclear or counter-productive. At 8-Hats, the practice of rewarding sales managers on a turnover basis will have to be reviewed, otherwise there will be significant tension between the line (function) and the project. It has also been claimed that job and task responsibilities are unclear in a matrix structure and so the company will have to

address this. Johnson, Scholes and Whittington make the point that 'one arm of the matrix has to lead in the sense that it dictates some key parameters within which the other arm must work'. In the context of the case study scenario it seems reasonable to devolve profit responsibility and work allocation to the project, leaving the functions to provide technical support and (perhaps) appraisal and competence definition responsibilities. The line manager becomes primarily responsible for the person and the project manager for the project. Such a change would require key cultural changes at 8-Hats.

- 3 (a)** There is an acknowledged bottleneck in the task 'Enter question into Question Bank' (administration). The volume of questions received is too great for the number of administrators assigned to the task of entering them. This often means that questions received back from reviewers cannot be found on the database to have their outcome noted because they have not yet been entered into the system. This causes further frustration and delay. The simplification pattern assumes that most established processes have redundancies and duplication. It focuses on tackling bottlenecks and unnecessary tasks and unnecessary loops.

The backlog of question entering also seems to have had an effect on the quality of data entry. A recent check noted that one in ten questions had an error, making them unfit for purpose. The problem is accentuated by the fact that the administrators are not subject experts and so do not understand the content and context of the questions and answers they are inputting. Furthermore, the current process does not have any subsequent checks on the quality of the questions entered onto the system. This is potentially very serious, with students receiving questions which have spelling mistakes or answers where none of the solutions is correct.

One obvious solution is to increase the number of administrators entering questions into the question bank. However, this will be costly and the quality problems are likely to remain.

One of the potential ways of reducing the bottleneck is to delay question entry until the question has been accepted. Currently, 20% of questions are immediately rejected by the reviewer and a further 15% are sent back to the author for revision. Of these, 30% are rejected on the second review. This approach would also mean that the administrators would not have to enter the suggested amendments (Update Question), where further errors are almost certainly made.

Reducing the number of swim lanes is often advocated by proponents of business process change. It is a central tenant of the gaps and disconnects redesign pattern. Handoffs between departments are often a source of problems and bottlenecks. One possibility is to move the tasks currently performed in the administration department into the education department where the employees have a greater understanding of the question subject matter and so are unlikely to make as many errors in data entry. This could be combined with the suggestion outlined in the previous paragraph. However, it seems unlikely that the education department would welcome the suggestion and there seems likely to be staff issues and changes, reducing the number of people in administration and employing higher-cost employees in education.

Changing the sequence of tasks may also bring benefits. For example, the Select Reviewer process (Education) could be performed before the questions are submitted. Therefore all questions from a particular author are automatically sent to a specific reviewer. The need for anonymity would seem to preclude the direct despatch of questions from the author to the reviewer and this could reduce the efficiency of the proposal. However, the time taken to forward the proposed questions to reviewers would probably be reduced by this pre-selection approach.

The inclusion of the finance department as a swim lane also raises certain possibilities. This may be due to some agreed separation of duties between administration/education and the processing of payments. However, the inclusion of 'raise a reject notification' on this swim lane seems a poor fit. It is essentially an administrative process (as it has no apparent financial implications) and so should be performed by either administration or education. So, this task needs to be relocated in the proposed business process.

The re-engineering pattern essentially starts with a blank sheet of paper and the process is re-designed from the beginning focusing on its goals. At the IAA, the goal might be 'to have reviewed questions accurately entered into a computer system at the cheapest cost possible'.

Whether or not it qualifies for the term 're-engineering', a radical solution is to implement a workflow-type system where the author enters the question into a computer system and the question is routed automatically (through anonymously pre-assigning reviewers to authors) to the specified reviewer. If the author enters the question, he or she is unlikely to make many errors in data entry. Furthermore, if they do, these can be corrected by the reviewer. From the perspective of the IAA, the cost of entering the questions is transferred to the author and so the bottleneck is removed and administrative costs are reduced at one stroke.

The indication of the acceptability of the question is now the responsibility of the reviewer. Accepted responses can lead to the automatic raising of a payment notification which is sent to Finance. Rejection would lead to the automatic raising of a reject notification which is sent electronically to the author. Questions that need revising would also automatically be returned to the author to make amendments prior to re-submission to the second review process.

This re-engineered solution potentially removes IAA departments from the process completely, except for payment by Finance and even this could be automated. The need for administrative staff would be greatly reduced and it is difficult to see how this would not lead to redundancies. There may also have to be fewer employees in Education, although they could perhaps be redeployed on more strategic issues.

The implications for IAA staff of such a solution may mean that it is internally unpopular and difficult to implement, despite the financial and time benefits it will bring to the organisation.

(b) The advantages to the IAA of purchasing a software package include the following:

Speed of implementation: The software package is already available in the market. It has a number of significant users. The IAA only has to configure it for its environment and populate it with data. This must be quicker than the alternative of building a bespoke solution which would require specifying requirements in detail, developing a design, building the solution and testing its functionality and reliability. Thus, as speed to market is an important issue for IAA, the software package solution has significant implementation advantages over the bespoke build.

Quality of the software: A bespoke build will require significant testing. Faults will be found that will need fixing and this will delay the availability of the package. It is impossible to find all faults in testing and so problems are likely to occur with the implemented solution which could cause operational problems and costs. The software package is already implemented at a number of sites and it can reasonably be assumed that most faults will have been found and fixed. The package is, in comparison to the bespoke build, a tried and tested solution.

Try before buy: The requirements for a bespoke build are specified in text and in appropriate models. Although prototypes may be built during system construction, it is not until the end of the build that users get the opportunity to experience the system that they have specified. At this stage it is usual to find misunderstandings that need to be rectified. In contrast, the software package is already available and users can experiment with it before buying it. Any failure to fulfil requirements can be identified prior to the package being purchased and presumably this was part of the evaluation of competing software solutions undertaken by IAA. Any compromises that IAA needs to make to accommodate the package should have been taken into account in the selection process.

Predicted maintenance costs: With a bespoke software build it is difficult to predict future maintenance costs. Much will depend upon future requirements and the design quality of the software. However, with software packages, maintenance fees are agreed in advance. Such fees will include further fault fixes (which would be an unpredictable cost in a bespoke build) and new features requested by the user community and with costs shared across all users. It is likely that IAA will be able to contribute requests and might reasonably expect to have some of these requests agreed by the software supplier and implemented in a release. Furthermore, although less appropriate in the IAA scenario, the software supplier will also build in legislative changes or requirements. The scenario mentions that the package offers invoicing and there may be changes in product taxes made by the government.

Access to expertise: It might also be expected that the software provider will have built up a considerable amount of domain expertise in implementing software at a number of examination boards. The company may have ideas and the software features that have not been envisaged by IAA but would bring unforeseen benefits to the organisation. It is difficult for many companies to frame requirements outside their normal ways of business and hence many bespoke systems are restricted to the requirements envisaged by people whose horizons are restricted by their experience of the organisation they are currently working in. A software package may bring in new ideas and possibilities.

Initial cost: No information is provided about the price of the software package solution. However, it seems likely that it will be cheaper than a bespoke build. Because the software is already built, its contribution to overheads (or profit) of the software producer is likely to be very significant. This should give IAA greater potential for negotiating a favourable price. It is also increasingly popular to pay for packages on a 'fee-for-use' basis with the software provided through a browser application. This means that the IAA can tailor the price paid to the number of students that they have attempting their examinations. In contrast, most bespoke builds have to be paid for in full as soon as the software is delivered.

How the software operates will help determine the pattern of how the IAA will work in the future. Although it is possible to tailor packages to fit requirements, this is not good practice. The cost of tailoring and the subsequent cost and difficulty of implementing new releases mean that any benefits of competitive advantage are soon eroded by the cost of maintaining the software solution. The users must be advised that they may not be getting the system they required in the initial requirements gathering stage. The difference between what they wanted and what the package offers should have been part of the software package evaluation. Users may have to change the way they work, re-assess how they want to work and adjust to how the software package actually allows them to work.

4 (a) This question uses four of the '6 Is' developed by McDonald and Wilson to explore the differences between traditional and e-marketing. Candidate answers do not have to be strictly classified within each of the factors identified below. In reality, suggestions will cross the boundaries of these factors.

Interactivity concerns the development of a two-way relationship between the customer and the supplier. The traditional display advertising and mail-shots used by CAR are examples of 'push media' where the marketing message is broadcast to current and potential customers. Their current website continues this approach, with the stock listing essentially representing a continually updated, but widely accessible, display advertisement. Supplementing mail-shots with e-mails could be immediately considered by CAR and would be a cheaper alternative to mail-shots. However, it still remains a 'push technique' with little dialogue with the customer.

Here are three ideas that CAR could consider to improve the interactivity of its site. Other legitimate suggestions will also be given credit.

(1) Encouraging potential buyers on their website to ask questions about any car that they are interested in. Both questions and answers are published. This may provide someone with the vital information that clinches the sale. It also creates a great enthusiasm around the car. Buyers may move quickly so that they do not lose the opportunity to buy the car.

On e-bay, customers are encouraged to 'ask a question' of the seller and this often leads to long threads where the supplier and potential buyers interact.

- (2) Many buyers would like to test drive a car before they purchase it. CAR could provide the opportunity for customers to book a test drive over the Internet.
- (3) Once a purchase had been complete, CAR might encourage feedback which could be published on the website. In this instance, customers are actually providing information that is commercially useful to buyers. This may be in the form of testimonials, or in the form of more structured feedback that e-bay encourages. Suppliers who have 100% positive feedback backed up by testimonials from previous buyers are powerfully reinforcing their marketing message.

Intelligence is about identifying and understanding the needs of potential customers and how they wish to be communicated with. It is traditionally the area of market research and marketing research. Currently CAR does very little research. It relies on a database that only consists of people who have actually bought cars from the company. Collecting email addresses through promotions and interactivity initiatives (see above) provides a much greater pool of potential customers who can be kept up-to-date through email. It can also give CAR significant intelligence about the type of cars that they are interested in and at what price. At present, the buyers for CAR use their experience when buying cars at auction and there is some concern that they buy what they would like to drive, not what the customers want to drive. It would be useful to support this experience with quantitative information about the type of cars potential buyers are really interested in. This may lead to a change in buying policy.

Individualisation concerns the tailoring of marketing information to each individual, unlike traditional media where the same message tends to be sent to everyone. Personalisation is a key element in building an effective relationship with the customer. In the context of CAR, individuals who have shown interest in a certain model or type of car may be selectively emailed when a similar car becomes available. This approach may also be used for current customers. For example, someone who purchased a particular car two or three years ago might be e-mailed about an opportunity to upgrade to an updated model. For individualisation to be successful, sufficient details must be collected through the intelligence and interactive facets of the '6 Is'.

Individualisation will also be key in offering relevant after-sales service. This may concern inviting customers to return their cars for servicing at the correct dates or offering services only appropriate to that type of car. For example, circulating details of air-conditioning renewal only to customers with air conditioned cars.

Independence of location concerns the geographical location of the company. Electronic media increases the geographical reach of a company. For many companies this gives opportunities to sell into international markets which had previously been inaccessible to them.

This facet of the new media is unlikely to be appropriate to CAR. Most sales are to customers who are within two hours' drive of the CAR premises. The commodity nature of the cars that CAR are selling means that similar cars will be available throughout the country, often from garages that offer local service and support. Independence of location would be more significant if CAR was selling collectors or classic cars where each car is relatively rare and people are prepared to travel long distances to view the car they are interested in. Furthermore, the long term lease on CAR's current premises makes it unlikely that they will be able to locate to a cheaper site and hence exploit the independence of location offered by the new media.

- (b)** Procurement is concerned with purchasing goods or services for the organisation. It is concerned with sourcing items at the right price, delivered at the right time, to the right quality, in the right quantity and from the right source. Many contemporary definitions of procurement also include the inbound logistics required to get the product from the supplier to the customer.

E-procurement looks at the opportunities presented by automating aspects of procurement to improve the performance of the five 'rights' identified above. There is a wide range of potential answers to this part of the question depending on the scope and focus of e-procurement selected by the candidate. Solutions may vary from the simple automation of part of the system, to re-thinking the way the company does business.

In the context of CAR, two distinct types of procurement can be identified. The first is production-related procurement and is directly related to the core activities of the organisation. This relates to the purchase of cars for sale and the purchase of parts required for servicing or repairing vehicles. The second is non-production procurement.

CAR has always purchased its vehicles through experienced buyers attending auctions. On average this attendance costs the company \$500 per day, leading to the purchase (on average) of five cars. This purchasing cost of \$100 per car represents 5% of the average profit margin on each car. This cost could be eliminated if cars were purchased through e-auctions, with bids made on-line. The risk here is that the cars bought were not of the right quality. CAR prides itself in the personal selection of its cars. However, it could be argued that cars which are less than two years old with a full service history are unlikely to have much wrong with them.

The parts needed for servicing and mechanical repairs are ordered from motor factors or manufacturers. A number of regular suppliers are retained, many in long-term relationships with CAR. This is known as systematic sourcing. Most of the problems here are caused by the need to pass requisitions for parts through a procurement manager. The first problem is the delay in the purchasing cycle. There is a backlog of requisitions that have to be reviewed, agreed and sourced by the procurement manager. This is particularly problematic when a customer's car is in the garage awaiting a part. The customer is likely to be frustrated and annoyed by the delay, whilst the car is occupying garage space that could have been profitably used for a fee-paying job. The second problem is the cost of the paperwork and the processing time of the procurement manager associated with the purchase. The final problem is that purchases can only be made between 10.00 and 16.00 when the

procurement manager is at work. Mechanics work 07.00 to 19.00 and are frustrated that they cannot make orders outside the times the procurement manager is at work. Giving the mechanics the systems and authorisation to order parts (up to a certain value limit) from specified suppliers over the Internet should deliver cost savings and speed up repairs and services. A direct ordering system should also reduce administrative errors and enhance customer goodwill. CAR might also use e-procurement to open up competitive bidding between potential suppliers; posting their requirements on their website and inviting competing bids. Parts could be sourced from a number of suppliers, taking advantage of the lowest prices for each part. This could be combined with just-in-time supply, reducing the cost of stock holding at CAR.

Non-production procurement is concerned with ordering things such as stationery, paper, ink toner and other office supplies. Christa Degnan (quoted in Chaffney, E-Business and E-Commerce Management) suggested that for 'every dollar a company earns in revenue, 50 cents to 55 cents is spent on indirect goods and services – things like office supplies and computer equipment. That half dollar represents an opportunity. By driving costs out of the purchasing process, companies can increase profits without having to sell more goods'. CAR is in this situation. It uses the same process for office supplies as it does for car parts. However, most office supplies are cheap, commodity products where sometimes the cost of ordering the product exceeds the value of the purchased product, particularly where a cumbersome purchasing process is in place. With little differentiation between products, it is the availability and cost of the product that become the most significant aspects in the procurement process. E-procurement should provide better information, identifying alternative suppliers and allowing spot sourcing of office products to fulfil immediate need.

Overall, e-procurement should reduce the administrative burden on the procurement manager, giving him or her the opportunity to concentrate on negotiating terms, agreements and product standardisation; more strategic tasks in the procurement process.

- 1 (a)** Up to 1 mark for each appropriate point up to a maximum of 16 marks
Professional marks are given for selection of appropriate models, structure and overall cogency of the analysis up to a total of 4 marks
- (b)** Up to 1 mark for each appropriate point up to a maximum of 15 marks
- (c)** Up to 1 mark for each appropriate point up to a maximum of 5 marks for each weakness, up to 15 marks for this part question.
- 2 (a)** Up to 1 mark for each appropriate point up to a maximum of 15 marks
- (b)** 1 mark for each appropriate point up to a maximum of 10 marks
- 3 (a)** 1 mark for each appropriate point up to a maximum of 15 marks
- (b)** 1 mark for each appropriate point up to a maximum of 10 marks
- 4 (a)** Up to 1 mark for describing the meaning of each of the four Is defined in the question. Up to 1 mark for appropriate point that applies them to the scenario up to a maximum of 16 marks for this part question
- (b)** Up to 1 mark for each appropriate point up to a maximum of 9 marks.