

Professional Pilot Paper – Essentials module

Business Analysis

Time allowed

Reading and planning: 15 minutes

Writing: 3 hours

This paper is divided into two sections:

Section A – This ONE question is compulsory and MUST be attempted

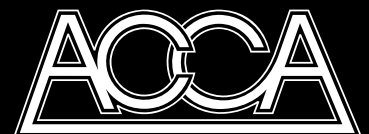
Section B – TWO questions ONLY to be attempted

Do NOT open this paper until instructed by the supervisor.

During reading and planning time only the question paper may be annotated. You must NOT write in your answer booklet until instructed by the supervisor.

This question paper must not be removed from the examination hall.

The Association of Chartered Certified Accountants



Paper P3

Section A – The ONE question in this section is compulsory and MUST be attempted.

The following information should be used when answering question 1.

The case study of this Business Analysis pilot paper is based on the one examined in Paper 3.5 – Strategic Business Planning and Development in June 2004. Slight amendments have been made to the scenario, questions and answers to reflect the Business Analysis syllabus and emphasis.

1 Introduction

Network Management Systems (NMS) is a privately owned hi-tech business set up in a location near London in 1993. NMS is the brainchild of a Canadian computer engineer, Ray Edwards. Ray is a classic hi-tech entrepreneur, constantly searching for ways to exploit technological opportunities and unafraid to take the risks associated with high technology start-ups. NMS's first product was a digital error detection box able to 'listen' to computer signals and detect faults. The original box, designed by Ray, was built on his kitchen table and manufactured in a garage. Ray is a flamboyant character and a committed entrepreneur. In his words an entrepreneur is "someone willing to work 18 hours a day for themselves ... to avoid working eight hours a day for someone else!"

Structure of the business and key product areas

By 2006 NMS employed 75 full time employees in a new, purpose built factory and office unit. These employees were a mix of technically qualified engineers working in research and development (R&D), factory staff manufacturing and assembling the products and a small sales and service support team. In 2006, NMS had three distinct product/service areas.

One of the three products NMS produced was data communication components which it sold directly to original equipment manufacturers (OEMs) that used these components in their hardware. Both the OEMs and their customers were predominantly large international companies. NMS had established a good reputation for the quality and performance of its components, which were also competitively priced. However, NMS had less than 1% share of the UK market in this sector and faced competition from more than twenty suppliers, most of who also competed internationally. Furthermore, one of NMS's OEM customers accounted for 40% of its sales. The European market for data communications equipment had increased from \$3.3 billion in 1999 to \$8.0 billion in 2006. Forecasts for 2007 and beyond, predict growth from increased sales to currently installed networks rather than from the installation of new networks. The maturity of the technology means that product lifecycles are becoming shorter. Success comes from producing large volumes of relatively low priced reliable components. However, all new components have to be approved by the relevant government approval body in each country being supplied. Approval for new data communication equipment is both costly and time consuming.

NMS's second product area was network management systems – hence the name of the company. Fault detection systems were supplied directly to a small number of large end users such as banks, public utility providers and global manufacturers. NMS recognised the unique configuration of each customer and so it customised its product to meet specific needs and requirements. They have pioneered a "modular building block" design, which allows the customer to adapt standard system modules to fit their exact networking requirements. NMS products focused on solving network management problems and the success of its products was reflected in the award of the prestigious Government Award for Technology for "technological innovation in the prevention of computer data communication downtime". This was recognition of the excellence of the R&D engineers who developed the software and related hardware. It further enhanced NMS's reputation and enabled it to become a successful niche player in this low volume market with gross margins in excess of 40%. NMS only faces two or three competitors in a specialist market where there is no need to gain government approval for new products and systems.

Finally, the complexity of NMS products means that technical support is a third key business area. NMS has established a reputation for excellent technical support, reflecting Ray's continuing concern with customer care. However, it is increasingly difficult and costly to maintain this support because the company lacks a national network. All technical support is provided from its headquarters. This contrasts with the national and international distributed service structure operated by its large, international competitors.

Emerging problems

NMS's growth has made Ray increasingly concerned about the ability of NMS to identify market trends, scan its competitive environment and create marketing strategies and plans. NMS's market and sales planning only covers the year ahead. Larger competitors invest heavily in market research analysis and customer relationship marketing. Business-to-business marketing is becoming an increasingly complex and sophisticated activity in this sector.

Accurate sales forecasting is also a key input into production planning and scheduling. NMS manufactures 40% of the components used in its products. The rest of the components, including semiconductors and microprocessors, are bought in from global suppliers. Serious production problems result from periodic component shortages, creating significant delays in manufacturing, assembly, and customer deliveries. Furthermore, the growth of NMS has outstripped the largely manual control systems designed to support its production and sales operation.

Ray is acutely aware of his key role as founder and chairman of the firm. He is also finding the skills and attributes necessary for founding and growing the business are not appropriate in a mature business. He is heavily reliant on his extrovert personality and his ability to muddle through with informal, flexible systems. The limitation of this approach is now beginning to show. He is finding it increasingly difficult to cope with the day-to-day demands of running the business while at the same time planning its future. Functional departments in the shape of sales and marketing, technical (R&D), manufacturing and administration are in place but strategic planning, such as there is, is very much his responsibility.

Recruitment of high calibre staff is also a problem – NMS's small size and location means that it struggles to attract the key personnel necessary for future growth. Ray feels pressure on him to either develop the necessary skills himself, or to develop the right people with the right skills. In Ray's words, starting a business is like "building your own airplane and then teaching yourself how to fly".

One particular skill in short supply is the financial capability of dealing with growth. His negotiations with bankers and other financial intermediaries have become increasingly difficult and time consuming. The financial control information required to support growth and, more recently, to ensure survival is often inadequate. However, 2006 had started well, with NMS approached as a target for a possible acquisition by a major data communications company. The opportunity to realise some of the equity in the business had considerable appeal. Unfortunately, while protracted negotiations were taking place, a downturn in the global economy occurred. Orders for NMS's products fell and the banks and venture capitalists supporting NMS through overdraft and long-term investment became much less sympathetic. The final insult occurred when Ray was approached by a venture capitalist with a management buyout proposal put together with NMS's financial director and sales manager. The value placed on the business was a derisory £50K. Ray was angry and hurt by the size of the offer and also at the disloyalty of his senior staff in seeking to buy the business. To make matters worse the uncertainty over the future of the business has led to a number of key members of staff deciding to leave the company. The financial director and sales manager are still both in post, but their future plans are uncertain. Financial data for NMS is presented in Table 1.

Ray's future at NMS

Ray is currently considering his future at NMS. He has identified three main exit options. The first is to personally lead the company out of its current problems, which he largely attributes to global economic slowdown, and to launch the business on the stock exchange as soon as its economic position improves. His second option is to sell the business for a figure which more accurately reflects its real value and to walk away and reflect on his future. His final option is to seek acquisition by one of his large customers (or competitors) and so become part of a much larger organisation. In such circumstances he would offer to stay on and develop NMS within the structures imposed by a parent organisation. By nature a fighter, the recent uncertainties over ownership and gloomy forecasts for the global economy have made him seriously reflect on his own priorities. His hands-on approach and involvement with all aspects of the business seems increasingly inappropriate for handling the problems of a hi-tech business such as NMS.

Table 1: Financial data for Network Management Systems

	2004	2005	2006	2007 (forecast)
Sales	£'000	£'000	£'000	£'000
UK sales	4,500	6,300	6,930	6,235
Export sales	300	500	650	520
Total sales	4,800	6,800	7,580	6,755
Cost of sales	2,640	3,770	4,550	4,320
Gross margin	2,160	3,030	3,030	2,435
Expenses				
Administration	500	630	700	665
Distribution	715	940	945	885
Marketing	50	60	70	70
R&D	495	590	870	690
Overheads	200	280	320	325
Operating profit	200	530	125	-200
Sales Interest paid	25	120	150	165
Net profit	175	410	-25	-365
Financing				
Long-term liabilities	160	750	1,000	1,100
Share capital and reserves	375	605	600	575
Other information				
Employees	50	60	75	60
% of orders late	5	7	10	6
Order book	4,725	4,150	3,150	2,500

Required:

- (a) **Assess the macro-environment of NMS by undertaking a PESTEL analysis.** (10 marks)
- (b) **Using appropriate models and financial and quantitative data from the scenario, provide an environmental and financial analysis of NMS, highlighting problem areas.** (25 marks)
(Including 4 professional marks)
- (c) **Ray is considering three main exit options from the business as it currently exists. Assess each of the three identified exit options in terms of their ability to solve the problems highlighted in your analysis and in terms of Ray's future role in the business.** (15 marks)

(50 marks)

Section B – TWO questions ONLY to be attempted

- 2 The Environment Management Society (EMS) was established in 1999 by environment practitioners who felt that environmental management and audit should have its own qualification. EMS has its own Board who report to a Council of eight members. Policy is made by the Board and ratified by Council. EMS is registered as a private limited entity.

EMS employs staff to administer its qualification and to provide services to its members. The qualification began as one certificate, developed by the original founding members of the Society. It has since been developed, by members and officers of the EMS, into a four certificate scheme leading to a Diploma. EMS employs a full-time chief examiner who is responsible for setting the certificate examinations which take place monthly in training centres throughout the country. No examinations are currently held in other countries.

If candidates pass all four papers they can undertake an oral Diploma examination. If they pass this oral they are eligible to become members. All examinations are open-book one hour examinations, preceded by 15 minutes reading time. At a recent meeting, EMS Council rejected the concept of computer-based assessment. They felt that competence in this area was best assessed by written examination answers.

Candidate numbers for the qualification have fallen dramatically in the last two years. The Board of EMS has concluded that this drop reflects the maturing marketplace in the country. Many people who were practitioners in environmental management and audit when the qualification was introduced have now gained their Diploma. The stream of new candidates and hence members is relatively small.

Consequently, the EMS Board has suggested that they should now look to attract international candidates and it has targeted countries where environmental management and audit is becoming more important. It is now formulating a strategy to launch the qualification in India, China and Russia.

However, any strategy has to recognise that both the EMS Board and the Council are very cautious and notably risk-averse. EMS is only confident about its technical capability within a restricted definition of environmental management and audit. Attempts to look at complementary qualification areas (such as soil and water conservation) have been swiftly rejected by Council as being non-core areas and therefore outside the scope of their expertise.

Required:

Internal development, acquisitions and strategic alliances are three development methods by which an organisation's strategic direction can be pursued.

- (a) **Explain the principles of internal development and discuss how appropriate this development method is to EMS.** (8 marks)
- (b) **Explain the principles of acquisitions and discuss how appropriate this development method is to EMS.** (8 marks)
- (c) **Explain the principles of strategic alliances and discuss how appropriate this development method is to EMS.** (9 marks)

(25 marks)

- 3 CCT Computer Systems plc specialises in the development and implementation of software for the logistics industry. After experiencing a number of years of growth and profitability the company is continuing to report growth in turnover but, for the last five quarters, it has also reported small losses. An investigation into this has revealed that costs have risen greatly in systems development and support and consequently margins have been eroded in recently completed projects. It appears that this trend is going to continue. Many people within the company attribute this worsening financial performance to a perceived reduction in software quality. Here are three testimonies received during the investigation

Amelia Platt: Software Development Manager CCT Computer Systems plc

“You have to remember that the original logistics system was developed by Ilya Borisova (the founder of CCT) and three of his friends from university days. They did not build the software with expansion or maintenance in mind. Also, it is difficult to know what some of the programs actually do, so making changes is a nightmare. Programmers make changes to program code without really knowing what the knock-on effect will be.”

Tony Osunda: General Manager QANDO logistics – a major customer

“We feel that the last project was most unsatisfactory. We specified our requirements very carefully but the delivered system did not work the way we wanted. We found it cumbersome to use and key areas of functionality were either wrong or missing altogether. After implementation, we asked for a number of changes so that the system would work as it should. We were originally asked to pay for these changes but we pointed out that they weren't really changes – they were things we had asked for all along. Eventually, CCT backed down and so we got the changes for free. The system works fine now, but it has been delivered late and we are still seeking compensation for this.

Carlos Theroux: One of the original programmers of the CCT logistics software solution: Now lead programmer CCT Computer Systems plc

“It is no fun here anymore. When we were smaller we could all dive in and solve the problems. When I joined we had three programmers, now we have one hundred and thirty. What do they all do? There is no work ethic. We all used to stay over until we got the problem solved. Now there is documentation, documentation and documentation. We have now adopted a formal project management method, more documentation! I am not sure this place suits me anymore.”

Required:

- (a) **A perceived reduction in software quality is blamed by many people for the decline in profitability at CCT. Discuss the importance and characteristics of software quality and explain how each of these characteristics might be measured.** (10 marks)
- (b) **Explain the levels within the Capability Maturity Model Integration (CMMI) process and discuss their implications for CCT.** (15 marks)

(25 marks)

4 DRB Electronic Services operates in a high labour cost environment in Western Europe and imports electronic products from the Republic of Korea. It re-brands and re-packages them as DRB products and then sells them to business and domestic customers in the local geographical region. Its only current source of supply is ISAS electronics based in a factory on the outskirts of Seoul, the capital of the Republic of Korea. DRB regularly places orders for ISAS products through the ISAS web-site and pays for them by credit card. As soon as the payment is confirmed ISAS automatically e-mails DRB a confirmation of order, an order reference number and likely shipping date. When the order is actually despatched, ISAS send DRB a notice of despatch e-mail and a container reference number. ISAS currently organises all the shipping of the products. The products are sent in containers and then trans-shipped to EIF, the logistics company used by ISAS to distribute its products. EIF then delivers the products to the DRB factory. Once they arrive, they are quality inspected and products that pass the inspection are re-branded as DRB products (by adding appropriate logos) and packaged in specially fabricated DRB boxes. These products are then stored ready for sale. All customer sales are from stock. Products that fail the inspection are returned to ISAS.

Currently 60% of sales are made to domestic customers and 40% to business customers. Most domestic customers pick up their products from DRB and set them up themselves. In contrast, most business customers ask DRB to set up the electronic equipment at their offices, for which DRB makes a small charge. DRB currently advertises its products in local and regional newspapers. DRB also has a web site which provides product details. Potential customers can enquire about the specification and availability of products through an e-mail facility in the web site. DRB then e-mails an appropriate response directly to the person making the enquiry. Payment for products cannot currently be made through the web site.

Feedback from existing customers suggests that they particularly value the installation and support offered by the company. The company employs specialist technicians who (for a fee) will install equipment in both homes and offices. They will also come out and troubleshoot problems with equipment that is still under warranty. DRB also offer a helpline and a back to base facility for customers whose products are out of warranty. Feedback from current customers suggests that this support is highly valued. One commented that "it contrasts favourably with your large customers who offer support through impersonal off-shore call centres and a time-consuming returns policy". Customers can also pay for technicians to come on-site to sort out problems with out-of-warranty equipment.

DRB now plans to increase their product range and market share. It plans to grow from its current turnover of £5m per annum to £12m per annum in two years time. Dilip Masood, the owner of DRB, believes that DRB must change its business model if it is to achieve this growth. He believes that these changes will also have to tackle problems associated with

- Missing, or potentially missing shipments. Shipments can only be tracked through contacting the shipment account holder, ISAS, and on occasions they have been reluctant or unable to help. The trans-shipment to EIF has also caused problems and this has usually been identified as the point where goods have been lost. ISAS does not appear to be able to reliably track the relationship between the container shipment and the Waybills used in the EIF system.
- The likely delivery dates of orders, the progress of orders and the progress of shipments is poorly specified and monitored. Hence deliveries are relatively unpredictable and this can cause congestion problems in the delivery bay.

Dilip also recognises that growth will mean that the company has to sell more products outside its region and the technical installation and support so valued by local customers will be difficult to maintain. He is also adamant that DRB will continue to import only fully configured products. It is not interested in importing components and assembling them. DRB also does not wish to build or invest in assembly plants overseas or to commit to a long-term contract with one supplier.

Required:

- (a) **Draw the primary activities of DRB on a value chain. Comment on the significance of each of these activities and the value that they offer to customers.** (9 marks)
- (b) **Explain how DRB might re-structure its upstream supply chain to achieve the growth required by DRB and to tackle the problems that Dilip Masood has identified.** (10 marks)
- (c) **Explain how DRB might re-structure its downstream supply chain to achieve the growth required.** (6 marks)

(25 marks)

End of Question Paper

Answers

At the Professional level it is not always possible to publish a suggested answer which is fully comprehensive. Credit will be given to candidates for points not included in the suggested answers but which nevertheless, are relevant to the questions.

The suggested answers presented below give more detail than would be expected from a candidate under examination conditions. The answers are intended to provide guidance on the approach required from candidates, and on the range and depth of knowledge, which could be written by an excellent candidate.

- 1 (a) The PESTEL framework may be used to explore the macro-environmental influences that might affect an organisation. There are six main influences in the framework: political, economic, social, technological, environmental and legal. However, these types are inter-linked and so, for example, political developments and environmental requirements are often implemented through enacting legislation. Candidates will be given credit for defining the main macro-environmental influences that affect NMS, rather than the classification of these influences into the PESTEL framework.

Political – NMS is situated in a country with a relatively stable political system. Like many industrialised countries, all political parties in this country appear to value and promote technology. Tax incentives and grants are often given to companies to invest in technology and research and development. These incentives are not only available to NMS, but also (in the United Kingdom) to their customers. This has helped fuel the growth in the data communications market and although evidence suggests that this growth is tailing off, investment is still significant. Government itself is a major investor in communications technology, often using such investments to facilitate economic growth in this sector. However, most governments are also anxious to set standards that any company supplying equipment that links into the national telecommunications network have to meet. There is evidence of government control in the shape of the approvals process. This may arise from fears about technical reliability and compatibility but it may also be designed to hinder competition from foreign suppliers. Finally, government may promote the recognition of technology through an awards scheme. NMS has received such recognition through a Government Award for Technology.

Economic – again a significant factor, in that the stage in the economic or business cycle can clearly affect buying decisions. The case study suggests that 2006 has seen a slight downturn in the UK and international economy and a consequent slowing down in large customers' commitment to long-term investment. The bad news is that customers can postpone such investment. The good news is that if innovation creates products and systems that bring cost and communication advantages to customers then eventually they will have to invest in them. Wage rates remain high in the United Kingdom and NMS may wish to re-consider their commitment to manufacturing 40% of their components in the United Kingdom. Labour costs (allied to compliance costs – see below) and legal obligations makes manufacturing in the UK extremely expensive. It is likely that many of their competitors source 100% of their components abroad and only assemble their products in the UK.

Social – communication and information exchange will continue to increase with consequent implications for companies supplying the products and systems to meet these growing needs. All evidence suggests that the social use of services on such networks will increase. Hence, although demand appears to be dropping off, new social uses for telecommunication networks might spark off a new wave of economic investment.

Technological – clearly a significant factor in shaping the life cycles of existing products and the introduction of new ones. The hi-tech sector is extremely innovative, with new and improved technologies constantly emerging. NMS must scan the marketplace for such technologies and identify how such they might affect the future of their products. NMS must also consider how such emergent technologies might be used in their own products.

Environmental issues – continue to have an impact on organisations. Organisations are encouraged by politicians and by legislation to reduce their emissions and improve their re-cycling. The cost of disposal of raw materials is also increasing. There is no direct evidence of such issues in the case study scenario. However, as a manufacturing company in the United Kingdom it is highly likely that NMS will be affected by such factors.

Legal – NMS operates in a country where there are many laws defining employer responsibilities and employee rights. It is likely that regulation will continue and the NMS will, like all organisations working in the European Union (EU), have to evaluate the benefits and cost of working within such legal structures. Some organisations seek to gain advantage by moving to countries where regulation is more lax and hence avoid the compliance costs incurred by their competitors. The case study scenario suggests that NMS has significant international competitors. It is likely that some of these will be based in countries where legislative requirements are less onerous.

- (b) Michael Porter provides, through his five forces model, a useful means of analysing the competitive environment. Analysis suggests the following key factors are shaping this environment.

Bargaining power of buyers

There is evidence that large industrial customers are becoming more cost conscious and this is likely to lead to increased price negotiation with their suppliers. At the same time customers are placing a premium on quality and service. Data communications products are becoming important in virtually every area of large organisations, causing greater sensitivity to price, quality and reliability. The end users of this equipment are becoming less technically proficient and more demanding, particularly in their unwillingness to adopt products that are difficult to use.

The supplying industry is relatively fragmented and so buyers have a wide choice and can compare competitors and exert buyer power on them. Information on NMS and their competitors' products and services is easily available to potential buyers. Buyer power is therefore likely to become more significant – particularly in view of the downturn in the global economy.

It is important to recognise that NMS is competing in two discrete markets. Firstly, data communications components, where with a 1% market share, they are at best a marginal supplier. The customers are OEMs who are large industrial buyers with the ability to demand a testing combination of low prices, high quality and reliability. This is expected both in terms of component performance and even more significantly, in view of recent manufacturing and assembly problems, guaranteed delivery. A combination of circumstances suggests that OEM's have significant bargaining power in this market. The OEM who accounts for 40% on the company's current sales is in a particularly strong position.

In the second market, where network management systems are supplied to large end users, buyers appear to have less bargaining power. NMS is a significant supplier in this market place with only two or three competitors. NMS is catering for each customer's specific network needs and so each solution is to some degree a bespoke solution. This makes it much harder for buyers to compare the prices of potential suppliers, particularly given the modular design of the NMS product. Furthermore, this product represents a relatively small part of the overall cost of the end user's investment in information and communication systems. This is also likely to make such products less price sensitive and hence provides an opportunity to generate good margins.

Bargaining Power of Suppliers

Evidence from the information provided gives no real insight into the bargaining power of suppliers but the purchase of components such as semiconductors and microprocessors is likely to be from major global companies such as Intel and, as a consequence, supplier power may be very significant. NMS, as a small company, will not have the power to exert buyer pressure on its suppliers, either in terms of price or delivery. Such components form 60% of current product production and problems over deliveries and scheduling are having significant impact on the company's ability to meet customer deadlines. Clearly an audit needs to be made of supplier performance and the opportunity, or otherwise, for NMS to concentrate on suppliers able to deliver on time. However, for a small company like NMS, the supplier is in an excellent bargaining position.

Threats from New Entrants

NMS is operating in an industry where the costs of entry are significant because it is capital and knowledge intensive. NMS has shown there is a place for smaller innovative companies able to identify specialist market niches. Economies of scale compel new entrants to enter at significant output levels or suffer a cost disadvantage. The products are complex and there is likely to be a significant learning curve with costs only falling as volume builds up over time. Large international customers (such as OEMs, banks, public utilities) are likely to be cautious in moving to new suppliers.

The need for government approval of new data communications equipment creates a process that is both lengthy and expensive and this creates a significant barrier to entry. New entrants may be discouraged by the considerable uncertainty surrounding the industry – both in terms of technology, user acceptance and the R&D investment necessary to create components and systems compatible with the OEM's equipment and end user systems. Furthermore, the need to offer comprehensive support, although something of a problem to a small company such as NMS, does also create a significant barrier to new entrants.

Evidence suggests that market knowledge as an input into product design and delivery is becoming more critical and NMS's ability to create a recognised brand with its end users is creating a competitive advantage. Finally, the barriers to exit from the industry in the shape of knowledge, skills and assets which are very industry specific also reduces the attractiveness of the market place to new entrants.

Rivalry among Competitors

Very different levels of competition are being experienced in the two market places NMS is operating in. Unfortunately the financial data given does not separate out the results from each market but it is clear that the high-volume, low-margin component business offers intense competition with buyers who are able to use their size to extract favourable prices. The ability of NMS to generate better market share and margins through product innovation in this market seems highly unlikely.

Intensity of rivalry in the network management systems market is significantly less because there are only two or three competitors in this specialist market. NMS is dealing with a small number of large end users and designing products specific to their needs. In Porter's terms, NMS are adopting a focused differentiation strategy. In these low-volume, high-margin markets the emphasis has to be on increasing the volume side of the business, but at the same time making sure they have the resources to handle new customers.

Threats from Substitutes

High-tech industries are, almost by their very nature, prone to new technologies emerging that threaten and then eventually replace the established technology. Hence it is important that companies in the industry have scanning systems in place to warn of such threats. NMS will need to ensure that it has innovative new products under development which incorporate any significant technological change. There is evidence that suggests that large successful, high-tech companies are particularly vulnerable to ignoring the challenge coming from disruptive new technologies. However, NMS being small may have a competitive advantage in its ability to respond quickly and flexibly to such change.

Financial Analysis

The significant slowdown in sales growth and its predicted decline in 2007 is a major cause for concern. The extent to which this is externally determined through the economic downturn, as opposed to internal management, product and sales force failings is difficult to determine. It would be useful to compare the performance of NMS with its competitors and the market place as a whole. Export sales continue to form less than 10% of total sales and this is worrying for a company operating in a global industry. It appears from the 2007 forecast, which predicts a more significant decline in export sales than home sales

that nothing is being done to address this. Equally concerning is the upward drift in the cost of sales over the 2004–2006 period. Evidence from the case suggests that supplier performance and consequent production scheduling problems needs to be investigated. The inevitable result of these revenue and cost trends is a falling gross margin.

Expenses do not seem to have been controlled, increasing at a faster rate than turnover. The impact of this on net profit is all too obvious. Failure to control expenses in a period of reduced growth suggests poor management control systems and inadequate management response. The forecast for 2007 suggests an increase in overhead expenses despite the decline in sales.

Commitment to research and development (R&D) in a hi-tech business is crucial to continued product innovation and NMS have maintained an R&D:Total sales ratio of 10% or more each year. However, R&D is notoriously difficult to predict in terms of its success and the timing of breakthroughs. The commitment of NMS should be applauded, but funding it from borrowing, as is increasingly occurring, could explain some of the problems the company is having with the banks and other financial intermediaries. Again, not untypical in a hi-tech business, there is little spending on marketing, perhaps because the company is under the impression that the products sell themselves. However, NMS could point out that the marketing spend was also relatively low at a time that they were relatively successful.

Perhaps one of the most worrying performance features is the slowing down in new business being generated. In 2004 unfulfilled orders virtually matched total sales but the forecast for 2007 sees that key ratio fall to barely one-third of total sales. This issue clearly has to be addressed.

Finally, in terms of measuring performance, the balanced scorecard could be used to good effect. Financially, the current position does not augur well – growth in turnover is slowing down, profitability is falling, the debt ratio is high and stock levels are worrying.

Customer measures are mixed – the company's products are well regarded but production scheduling problems are leading to increasing waiting time for customers. Market share in data communications is small and measuring the market share in network management systems is difficult because of the bespoke nature of the product. Technical support to customers is perceived as a key business area and NMS still has an excellent reputation for customer care.

There is a mixture of signals in terms of the progress being made with internal processes. Products are innovative and the ability to tailor the network management system means that end user needs are met. However, operational and management control processes appear weak – flexible but informal. Operations have a need for more sophisticated planning and scheduling systems and although post-sales performance in the shape of technical support looks good, this appears to be expensive to maintain.

Finally, from the perspective of learning/innovation, NMS has recognised the need to grow people in order to develop the business, but seems unable to recruit and retain the right calibre of people. Failure to do so will prevent Ray from being able to delegate to subordinates and focus his energies on the strategic threats to the survival of the company. Evidence suggests that a number of key personnel have left the company, hopefully not the innovative R&D engineers who gained the company its Government Award for Technology.

- (c) The decision of the founding owner-manager to leave the business is clearly a critical one, particularly in terms of a company such as NMS where the value of the business is very much linked to the founder's vision.

Any exit strategy must be carefully planned so as to not jeopardise the future of the business. In the strategy literature, considerable attention is paid to the entry barriers that do or do not discourage the entrance of new competitors. Exit barriers receive far less attention but are very relevant to an owner-manager such as Ray looking to leave the business as a going/growing concern and realising a return on their personal investment – financial and emotional – in the business. As identified above there are barriers to entry into the industry but unfortunately for Ray there are significant barriers to exit as well – exit in this case referring to him rather than the business. The assets of the business are not easily put to alternative use. Alternative markets for the company's products are difficult to find. Above all in knowledge based, R&D intensive businesses such as NMS, these less tangible assets are very specific to the products, markets and customers that the firm currently has.

Johnson, Scholes and Whittington offer what is now regarded as the classic framework for choosing between strategic options or in their terms determining the 'success criteria' of suitability, acceptability and feasibility in choosing between options. Using their language – 'suitability is concerned with whether a strategy addresses the circumstances in which a company is operating (its environment, its resources/competences and the expectations of its stakeholders) – the strategic position or rationale of a strategy and whether it makes sense'. Alternative options can be ranked, decision trees drawn up or scenarios used to compare the relative suitability of each option in achieving a desired position. 'Acceptability is concerned with the expected performance outcomes of a strategy', where acceptability is measured against the rewards, risk and anticipated stakeholder reactions to the chosen option. 'Feasibility is concerned with whether the organisation has the resources and competencies to deliver a strategy' – and in particular the funding flows and resource deployment capabilities associated with each option.

The three identified exit strategies and an assessment of each option against the three success criteria is given below. Comparing the three options shows the inevitable uncertainties and trade-offs associated with having to make a choice. Ray will face an opportunity cost (the value of the best alternative option not chosen) whichever option he chooses. Such choices are particularly hard in the owner-managed business where there is a need to reconcile personal goals with the well-being of the business. Essentially Ray faces a difficult choice as to when he leaves the business and his degree of involvement in helping solve its current problems – is his presence a cost or benefit to the business?

Option 1: Turnaround and going public Suitability

This is clearly an ambitious long-term strategy, which will require significant time and effort to turn the company round. It is difficult to see who else could achieve this, other than Ray, and the retention of Ray's know-how may be crucial to success. Ray will need to address how he transfers that knowledge to key managers in the business.

Acceptability

This appears to be a relatively high risk and return option, which prolongs Ray's role in the business. The reactions of customers may be favourable, the reactions of the bank and venture capitalist less so, particularly as Ray has no track record in this area. He has no experience of floating a company on a stock exchange and of meeting shareholder expectations.

Feasibility

The willingness of the financial agencies to provide the necessary funding to support the recovery is open to question and may be a function of developing a coherent recovery plan including a phased withdrawal of Ray and the identification of able managers to succeed him.

Option 2: Outright sale

Suitability

This option depends on the ability to identify a suitable buyer able to put in the necessary resources to turn the company round. Selling out is not really a strategy for recovery, as it does not address the initial strategic problems identified in the analysis. It just transfers the problems to someone else.

Acceptability

This can be seen as a medium risk-low return option, but one which allows Ray to make a reasonably swift and clean exit from the business. The reaction of Ray's customers will be crucial to the success of this strategy. Given Ray's recognition of his management limitations in a mature company, banks and other financial stakeholders might find this approach very acceptable.

Feasibility

This depends on the ability to obtain a fair price for the business and for the new owners to have the necessary funds to carry out the necessary changes to NMS and the necessary resources to cope with Ray's departure from the firm. Failure to find a buyer may mean this is not the short-term solution that Ray is looking for. The (low) valuation of their companies is always an issue for entrepreneurs. Perhaps this is what was behind the protracted negotiations with a potential suitor in 2006?

Option 3: Friendly acquisition

Suitability

The support and resources of a large customer (or competitor) company may be just what NMS needs. Ray's expertise and technical knowledge could be useful to the new holding company and so he could therefore be retained in this business for an agreed length of time. This option should address the identified weaknesses regarding staff, systems and structure if the acquisition is properly implemented.

Acceptability

This is likely to be a medium risk and return strategy with any price premium for NMS dependent on the value placed on Ray's continued contribution. Its acceptability to Ray depends on his willingness to give up control. It is likely to find favour with the financial stakeholders. The problem may be Ray's ability to work in a corporate structure, particularly in the light of his declaration that an entrepreneur is "someone willing to work 18 hours a day for themselves.... to avoid working eight hours a day for someone else!"

Feasibility

Funding issues should not be a problem given the resources of the acquirer. The key problem will be in integrating Ray and the firm into a large company environment.

Clearly this is a complex set of options for Ray to consider, and it requires him to be clear about his personal goals and objectives and how far any strategy is either helped or hindered by his presence in the firm. Each option will have a different timescale for achieving Ray's goal of exiting from the business.

2 Context

The decline in the number of people taking the qualification appears to be a reflection of the maturity of the marketplace. The large pool of unqualified environmental managers and auditors that existed when the qualification was launched has now been exploited. There are now fewer candidates taking the examinations and fewer members joining the EMS. The organisation's response to this has been to look for international markets where it can promote the qualifications it currently offers. It hopes to find large pools of unqualified environmental managers and auditors in these markets.

The scenario suggests that EMS currently has relatively limited strategic ambitions. There is no evidence that EMS plans to develop new qualifications outside its current portfolio. Indeed, attempts to look at complementary qualifications (such as soil and water conservation) have been rejected by Council. Hence, expansion into new strategic business markets does not appear to be an option.

Strategy Development

(a) Internal development

Internal development takes place when strategies are developed by building on or developing the organisation's own capabilities. It is often termed organic growth. This is how EMS has operated up to now. The original certificates were developed by the founders of the Society. Since then, additional certificates have been added and the Diploma programme developed at the instigation of members and officers of the Society.

In many ways this type of organic growth is particularly suited to the configuration of the organisation, one where there is a risk-averse and cautious culture. The organic approach spreads cost and risk over time and growth is much easier to control

and manage. However, growth can be slow and indeed, as in the case of EMS, may have ceased altogether. Growth is also restricted by the breadth of the organisation's capabilities. For example, EMS has not been able to develop (or indeed even consider developing) any products outside of its fairly restricted product range. Furthermore, although internal development may be a reasonable strategy for developing a home market it maybe an inappropriate strategy for breaking into new market places and territories. This is particularly true when, as it appears in the case of the EMS, internal resources have no previous experience of developing products in overseas markets.

In summary, internal growth has been the method of strategy development at EMS up to now, based on a strategic direction of consolidation and market penetration. There is no evidence that EMS is considering developing new products to arrest the fall in qualification numbers. However, the Board has suggested developing new markets for the current qualification range and India, China and Russia have been identified as potential targets. It seems unlikely that internal development will be an appropriate method of pursuing this strategic direction.

(b) Mergers and Acquisitions

A strategy of acquisition is one where one organisation (such as EMS) takes ownership of other existing organisations in the target countries. One of the most compelling reasons for acquisition is the speed it allows an organisation to enter a new product or market area. EMS might look to acquire organisations already offering certification in its target markets. These organisations would then become the mechanism for launching EMS qualifications into these markets. In addition, it is likely that these organisations will have qualifications that the EMS does not currently offer. These qualifications could then be offered, if appropriate, in EMS's home market. This arrangement would provide EMS with the opportunity to quickly offer its core competences into its target markets, as well as gaining new competencies which it could exploit at home.

However, acquisitions usually require considerable expenditure at some point in time and evidence suggests that there is a high risk that they will not deliver the returns that they promised. It is unlikely that the EMS will have enough money to fund such acquisitions and its status as a private limited entity means that it cannot currently access the markets to fund such growth. Any acquisitions will have to be funded from its cash reserves or from private equity investment groups. Furthermore, acquisitions also bring political and cultural issues which evidence suggests the organisation would have difficulty with. Under achievement in mergers and acquisitions often results from problems of cultural fit. This can be particularly problematic with international acquisitions, which is exactly the type of acquisition under consideration here. So, although acquisitions are a popular way of fuelling growth it is unlikely that EMS will have either the cash or the cultural will to pursue this method of strategy development. There is no evidence that EMS has any expertise in acquiring organisations in its home market and so such acquisitions overseas would be extremely risky.

(c) Strategic Alliances

A strategic alliance takes place when two or more organisations share resources and activities to pursue a particular strategy. This approach has become increasingly popular for a number of reasons. In the context of EMS it would allow the organisation to enter into a marketplace without the large financial outlay of acquiring a local organisation. Furthermore, it would avoid the cultural dislocation of either acquiring or merging with another organisation. The motive for the alliance would be co-specialisation with each partner concentrating on the activities that best match their capabilities. Johnson, Scholes and Whittington suggest that co-specialisation alliances "are used to enter new geographic markets where an organisation needs local knowledge and expertise". This fits the EMS requirement exactly.

The exact nature of the alliance would require much thought and indeed different types of alliance might be forged in the three markets targeted by EMS. A joint venture is where a new organisation is set up jointly owned by the parents. This is a formal alliance and will obviously take some time to establish. EMS will have to contribute cost and resources to the newly established company, but such costs and resources should be much less than those incurred in an acquisition. However, joint ventures take time to establish and it may be not be an option if EMS wants to quickly move into a target marketplace to speedily arrest its falling numbers. A licence agreement could be an alternative where EMS licenses the use of its qualification in the target market. This could be organised in a number of ways. For example, a local organisation could market the EMS qualification as its own and pay EMS a fee for each issued certificate and diploma. Alternatively, the qualification may be marketed by the local organisation as an EMS qualification and EMS pays this organisation a licence fee for every certificate and diploma it issues in that country. This requires less commitment from EMS but it is likely to bring in less financial returns, with less control over how the qualification is marketed. Furthermore, if the qualification is successful, there is the risk that the local organisation will develop its own alternative so that it gains all the income from the transaction, not just a percentage of the transaction fee.

At first sight, the strategic alliance appears very appropriate to EMS's current situation. The licensing approach is particularly attractive because it seems to offer very quick access to new markets without any great financial commitment and without any cultural upheaval within EMS itself. However, the uptake of the qualification is unpredictable and the marketing and promotion of the qualification is outside the control of EMS. EMS may find this difficult to accept. Furthermore, the EMS will only be receiving a fraction of the income and so it must ensure that this fraction is sufficient to fuel growth expectations and service the newly qualified members in other countries. Finally, there is often a paradox in organisations where internal development has been the strategic method adopted so far. An organisation used to internal development and control often finds it difficult to trust partners in an alliance. Yet trust and cooperation is probably the most important ingredient of making such strategic alliances work.

3 (a) Software quality is notoriously difficult to define, but at least four issues deserve consideration.

Conformity to requirements

This is concerned with the software performing business functions correctly. It does what the user expects it to do and does not do what it is not expected to do. This issue is about meeting expectations. The conformity to requirements might be measured by the number of change requests submitted immediately after the system has gone live. If the system performs to requirements then there should be very few change requests until the system has been in operation for some time. Evidence at CCT suggests that this is a major issue. These problems are highlighted by Tony Osunda. He states that “the delivered system did not work the way we wanted” and that “key areas of functionality were either wrong or missing altogether”. The fact that changes were subsequently made for free indicates why margins are falling. Doing these would have significantly eroded into the projected profitability of the project.

Reliability

The software behaves consistently and reliably and so is available for the user. The reliability of software can be measured by availability and downtime. Indeed, reliability is often defined within service level agreements (SLAs). For example; the software must be available for 99% of the agreed service time, where service time is defined as 07.00 – 22.00, Monday to Friday. Reliability is relatively easy to measure because it concerns the availability of the software. There is no evidence at CCT that their software has reliability problems.

Usability

The ease of use of software is a major issue in software delivery and e-business development. The usability of software may be assessed in a number of ways. For example;

- By logging the nature and number of calls to a HELP desk. This should be relatively low if the software is easy to use.
- By observing users actually using the software and recording the problems and difficulties they encounter.
- By using questionnaires to ask users how easy they have found the system to use.

There is some evidence that CCT software has usability problems. Crispin Peters-Ward stated that “We found (the system) cumbersome to use.”

Degree of excellence

The software should exhibit elements of good build, such as maintainability, flexibility and expandability. This software quality is about long-term design potential. This is quite difficult to measure. However, there are technical measures which allow the modularity of the software to be assessed. If the modularity of the software is low then the software is likely to be easy to maintain and test. There is evidence that the CCT software has long-term design problems. Amelia Platt comments that the software was not built “with expansion in mind. Also, it is difficult to know what some of the programs actually do, so making changes is a nightmare. Programmers make changes to program code without really knowing what the knock-on effect will be.” There are now one hundred and thirty programmers in the company. It is unlikely that they all understand how the software has been constructed. Hence, there is ample opportunity for introducing faults into the system.

Software quality is extremely important to end users. Users expect systems to perform functions correctly and reliably. They expect systems to be easy to use. Failure to fulfil these expectations may lead to frustration with the product, inefficient use of systems and the under-performance of organisations. In the extreme it may lead to organisational collapse and, where safety-critical software fails, to loss of life. The elements of product quality (degree of excellence) may not be immediately obvious to an end user. However, high maintenance costs become very clear to organisations over time, as they increasingly consume a company’s operational budget.

- (b)** The Capability Maturity Model Integration (CMMI) is a process improvement approach that provides organisations with the essential elements of effective processes. It can be used to guide process improvement across a project, a division, or an entire organisation. It has five levels of capability. Organisations are encouraged to move up the levels and to eventually achieve capability level 5. A successful appraisal at this level would assist CCT in delivering quality software as well as publicly demonstrating their competence to do so. Many customers mandate that suppliers should be at a certain level in the CMMI assessment.

Capability level 0 is where there is an incomplete process which is either not performed at all or is partially performed. One or more of the specific goals of the process area are not satisfied. There is no evidence of such a process at CCT. Capability Level 1 is defined as performed. A performed process is a process that satisfies all of the specific goals of a process area such as software development. At this level the processes are performed informally, without following a documented process description or plan. The rigour with which these practices are performed depends on the individuals managing and performing the work and the quality of the outcomes may vary considerably. Successful outcomes for an organisation operating at level 1 depend upon the heroic efforts of individuals. Carlos Theroux alludes to these days at CCT; “when we were smaller we could all dive in and solve the problems. We all used to stay over until we got the problem solved”.

A capability level 2 process is characterized as a managed process. A managed process is a performed (capability level 1) process that is also planned and executed in accordance with a defined procedure. A critical distinction between a performed process and a managed process is the extent to which the process is actually managed! A managed process is planned (the plan may be part of a more encompassing plan) and the performance of the process is managed against the plan. Corrective actions are taken when the actual results and performance deviate significantly from the plan. A managed process achieves the objectives of the plan and is documented as a standard for consistent performance. Carlos Theroux has alluded to the introduction of a project management methodology and its adoption will assist CCT to achieve capability level 2.

A capability level 3 process is characterized as a “defined process.” A defined process is a managed (capability level 2) process that is tailored from the organisation’s set of standard processes according to the organisation’s tailoring guidelines.

It contributes work products, measures, and other process-improvement information to the organisational process. A critical distinction between a managed process and a defined process is the scope of the process descriptions, standards, and procedures. In software terms, capability level 3 is achieved when a defined engineering process is in place so that the process of software development (not just its management) is consistent and standard. At this level of capability, the organisation is interested in deploying standard processes that are proven and that therefore take less time and money than continually writing and deploying new processes. Another critical distinction is that a defined process is described in more detail and performed more rigorously than a managed process. CCT does not appear to be at this level at the moment. It could be argued that the problems in requirements functionality highlighted by Tony Osunda would not happen in a defined process.

A capability level 4 process is characterized as a “quantitatively managed process.” A quantitatively managed process is a defined (capability level 3) process that is controlled using statistical and other quantitative techniques. Quantitative objectives for quality and process performance are established and used as criteria in managing the process. The quality and process performance are understood in statistical terms and are managed throughout the life of the process. A critical distinction between a defined process and a quantitatively managed process is the predictability of the process performance. A defined process only provides qualitative predictability. Clearly, CCT is not at this level yet. However, statistical analysis of faults, perhaps using Six Sigma principles, could deliver important quality improvements. The measurement of quality is fundamental to this level. Hence, the organisation must consider some of the issues raised in the answer to part a) of this question.

A capability level 5 process is characterized as an “optimizing process.” An optimizing process is a quantitatively managed (capability level 4) process that is changed and adapted to meet relevant current and projected business objectives. An optimizing process focuses on continually improving the process performance through both incremental and innovative technological improvements. A critical distinction between a quantitatively managed process and an optimizing process is that the optimizing process is continuously improved by addressing common causes of process variation. In a process that is optimized, common causes of process variation are addressed by changing that process. The process of continuous process improvement through quantitative feedback from the process itself is clearly not happening in CCT at present.

4 (a) A simple value chain of the primary activities of DRB is shown below.

Handling and storing inbound fully configured equipment Quality inspection	Re-branding of products Re-packaging of products	Customer collection Technician delivery and installation	Local advertising Web based enquiries	On-site technical support Back to base support
Inbound logistics	Operations	Outbound Logistics	Marketing and sales	Service

Comments about value might include:

Inbound logistics: Excellent quality assurance is required in inbound logistics. This is essential for pre-configured equipment where customers have high expectations of reliability. As well as contributing to customer satisfaction, high quality also reduces service costs.

Operations: This is a relatively small component in the DRB value chain and actually adds little value to the customer. It is also being undertaken in a relatively high cost country. DRB might wish to re-visit the current arrangement.

Outbound logistics: Customer feedback shows that this is greatly valued. Products can be picked up from stock and delivery and installation is provided if required. Most of the company’s larger competitors cannot offer this service. However, it is unlikely that this value can be retained when DRB begins to increasingly supply outside the geographical region it is in.

Marketing and sales: This is very low-key at DRB and will have to be developed if the company is to deliver the proposed growth. The limited functionality of the web site offers little value to customers.

Service: Customer feedback shows that this is greatly valued. Most of the company’s competitors cannot offer this level of service. They offer support from off-shore call centres and a returns policy that is both time consuming to undertake and slow in rectification. However, it is unlikely that this value can be retained when DRB begins to increasingly supply outside the geographical region it is in.

(b) DRB has already gained efficiencies by procuring products through the supplier’s web-site. However, the web site has restricted functionality. When DRB places the order it is not informed of the expected delivery date until it receives the confirmation e-mail from ISAS. It is also unable to track the status of their order and so it is only when it receives a despatch email from ISAS that it knows that it is on its way. Because DRB is not the owner of the shipment, it is unable to track the delivery and so the physical arrival of the goods cannot be easily predicted. On occasions where shipments have appeared to have been lost, DRB has had to ask ISAS to track the shipment and report on its status. This has not been very satisfactory and the problem has been exacerbated by having two shippers involved. ISAS has not been able to reliably track the transshipment of goods from their shipper to EIF, the logistics company used to distribute their products in the country. Some shipments have been lost and it is time-consuming to track and follow-up shipments which are causing concern. Finally, because DRB has no long term contract with ISAS, it has to pay when it places the order through a credit card transaction on the ISAS website.

DRB has stated that it wishes to continue importing fully configured products. It is not interested in importing components and assembling them. It also does not wish to build or invest in assembly plants in other countries. However, it may wish to consider the following changes to its upstream supply chain:

- Seek to identify a wider range of suppliers and so trade through other sell-side web sites. Clearly there are costs associated with this. Suppliers have to be identified and evaluated and financial and trading arrangements have to be established. However, it removes the risk of single-sourcing and other suppliers may have better systems in place to support order and delivery tracking.
- Seek to identify suppliers who are willing and able to re-brand and package their products with DRB material at the production plant. This should reduce DRB costs as this is currently undertaken in a country where wage rates are high.
- Re-consider the decision not to negotiate long-term contracts with suppliers (including ISAS) and so explore the possibility of more favourable payment terms. DRB has avoided long-term contracts up to now. It may also not be possible to enter into such contracts if DRB begins to trade with a number of suppliers.
- Seek to identify suppliers (including ISAS) who are able to provide information about delivery dates prior to purchase and who are able to provide internet-based order tracking systems to their customers. This should allow much better planning.
- Consider replacing the two supplier shippers with a contracted logistics company which will collect the goods from the supplier and transport the goods directly to DRB. This should reduce physical transshipment problems and allow seamless monitoring of the progress of the order from despatch to arrival. It will also allow DRB to plan for the arrival of goods and to schedule its re-packaging.

DRB might also wish to consider two other procurement models; buy-side and the independent marketplace.

In the buy-side model DRB would use its web site to invite potential suppliers to bid for contract requirements posted on the site. This places the onus on suppliers to spend time completing details and making commitments. It should also attract a much wider range of suppliers than would have been possible through DRB searching sell-side sites for potential suppliers. Unfortunately, it is unlikely that DRB is large enough to host such a model. However, it may wish to prototype it to see if it is viable and whether it uncovers potential suppliers who have not been found in sell-side web sites searches.

In the independent marketplace model, DRB places its requirements on an intermediary web site. These are essentially B2B electronic marketplaces which allow, on the one hand, potential customers to search products being offered by suppliers and, on the other hand, customers to place their requirements and be contacted by potential suppliers. Such marketplaces promise greater supplier choice with reduced costs. They also provide an opportunity for aggregation where smaller organisations (such as DRB) can get together with companies that have the same requirement to place larger orders to gain cheaper prices and better purchasing terms. It is also likely that such marketplaces will increasingly offer algorithms that automatically match customers and suppliers, so reducing the search costs associated with the sell-side model. The independent marketplace model may be a useful approach for DRB. Many of the suppliers participating in these marketplaces are electronics companies.

- (c) DRB's downstream supply chain is also very simple at the moment. It has a web-site that shows information about DRB products. Customers can make enquiries about the specification and availability of these products through an e-mail facility. Conventional marketing is undertaken through local advertising and buyers either collect their products or they are delivered and installed by a specialist group of technicians. DRB could tune its downstream supply chain by using many of the approaches mentioned in the previous section. For example:
- Developing the web site so that it not only shows products but also product availability. Customers would be able to place orders and pay for them securely over the web site. The site could be integrated with a logistics system so that orders and deliveries can be tracked by the customer. DRB must recognise that most of its competitors already have such systems. However, DRB will have to put a similar system in place to be able to support its growth plans.
 - Participating in independent marketplace web sites as a supplier. DRB may also be able to exploit aggregation by combining with other suppliers in consortia to bid for large contracts.
 - DRB may also consider participating in B2C marketplaces such as e-bay. Many organisations use this as their route to market for commodity products.

DRB may also wish to consider replacing its sales from stock approach with sales from order. In the current approach, DRB purchases products in advance and re-packages and stores these products before selling them to customers. This leads to very quick order fulfilment but high storage and financing costs. These costs will become greater if the planned growth occurs. DRB may wish to consider offering products on its website at a discount but with specified delivery terms. This would allow the company to supply to order rather than supply from stock.

- 1** (a) 1 mark for identifying an appropriate macro-environmental influence in each of the PESTEL areas – even if it is justifying the lack of influence. A further 4 marks are available for given credit to candidates who have extended their argument in selected areas of the framework. It must be accepted that each area of the PESTEL will have a differential effect. (10 marks).
- (b) 1 mark for each relevant point made in the competitive analysis of NMS (up to a maximum of 12 marks) and 1 mark for each relevant point made in the financial analysis of NMS (up to a maximum of 9 marks). A further 4 professional marks are available for such aspects as the structure, presentation and logical flow of the answer. (25 marks)
- (c) 1 mark for each relevant point up to a maximum of 5 marks for each of the three exit strategies. (15 marks)
- (50 marks)**

- 2** The question asks for principles and suitability.
- 1 mark for each relevant point up to a maximum of 8 marks for internal development. There is a maximum of 4 marks for points relating to principles. (8 marks)
- 1 mark for each relevant point up to a maximum of 8 marks for acquisitions. There is a maximum of 4 marks for points relating to principles. (8 marks)
- 1 mark for each relevant point up to a maximum of 9 marks for strategic alliances. There is a maximum of 5 marks for points relating to principles. (9 marks)
- (25 marks)**

- 3** (a) 1 mark for each relevant point up to a maximum of 5 marks for identifying and discussing software quality. 1 mark for each relevant point up to a maximum of 5 marks for identifying appropriate measures. (10 marks)
- (b) 1 mark for each relevant point up to a maximum of 2 marks for introducing the CMMI concept. 1 mark for each relevant point up to a maximum of 2 marks for a description of each capability level (five levels)
- 1 mark for each relevant point up to a maximum 3 marks for applying CMMI to the CCT scenario. (15 marks)
- (25 marks)**

- 4** (a) 1 mark for each relevant point up to a maximum of 3 marks for the value chain
1 mark for each relevant point up to a maximum of 6 marks for the significance and value of the primary activities. (9 marks)
- (b) 1 mark for each relevant point up to a maximum of 6 marks for identifying upstream changes.
1 mark for each relevant point up to a maximum of 4 marks for identifying how these changes address problems experienced by DRB. (10 marks)
- (c) 1 mark for each relevant point up to a maximum of 6 marks for identifying upstream changes. (6 marks)
- (25 marks)**