

THE BCS PROFESSIONAL EXAMINATION

Professional Graduate Diploma

April 2003

EXAMINERS' REPORT

Management Information Systems

General

Most of the candidates for this examination had prepared themselves thoroughly and performed well in the examination. However, some candidates, in their rush to put pen to paper, failed to read the questions adequately and either omitted sections or answered a different question to that set. The importance of reading each question carefully cannot be over emphasised.

A significant number of candidates ignored the requirement to answer just three questions and wasted valuable time answering additional questions. Other candidates relied on repetition of the same points in order to fill the pages and gained no marks for their efforts. . In addition, some answers to questions were far too long for the number of marks apportioned to the question (e.g., six sides for a 3 mark sub-question). Candidates are advised to use the number of marks as a general guide as to how long to spend on each part of a question, and to ensure that they do not contradict themselves during their answers.

The questions are generally set on topics contained in the recommended reading lists. Candidates familiar with these texts and able to understand and absorb the information will achieve the required pass mark. However to maximise their marks, candidates are strongly advised to study the application of information technology within their own organisations.

Finally, if candidates have difficulty completing all the questions in the allotted time, they are advised to write down the main points of their answer. This may gain the vital extra marks that can make the difference between a pass and a fail.

Question 1

At the Board meeting of a large organisation, the Finance Director has formally proposed that to improve service and reduce costs the organisation should outsource all IS functions, including future IS strategy. The IS Director accepts some of the arguments for outsourcing but strongly disagrees that all functions be outsourced, particularly the IS strategy which he believes must remain within the organisation. The Board remains unconvinced by both arguments and seeks assistance.

- a) Describe the advantages and disadvantages of outsourcing all IS functions. (10 marks)**
- b) Discuss the implications of outsourcing just the computer operations function of IS. (5 marks)**
- c) Evaluate the arguments for and against outsourcing IS strategy. (10 marks)**

Answer Pointers

a) Advantages/Disadvantages of outsourcing

Advantages

- Access to expertise
- Resources readily available
- Management can concentrate on core business
- Lower initial costs/known costs
- Contractual relationship with your IS supplier
- Benchmarking against other organisations

Disadvantages

- Possible exploitation by supplier
- High long term costs
- Loss of corporate knowledge over long term
- Staff issues at handover
- Loss of control
- Business risk/risk of outsourcer going out of business
- Subsequent insourcing may be difficult
- Blame culture

(one mark for each point described and explained, maximum ten marks)

b) Outsourcing computer operations

- Outsourcing of computer operations is well-established
- Does not affect retained corporate systems knowledge
- Changing capacity requirements can be accommodated
- Outsourcer can take advantage of scale economies
- Can provide large scale capacity for special exercises (DB reorganisation etc)
- Less risk than outsourcing all functions
- Need to work in partnership with internal IT staff

(one mark for each point discussed and explained, maximum five marks)

c) IS strategy

Advantages

- Perception that outsourcing company knows IS and therefore is best placed to determine strategy.
- One less item for the Board to consider
- Belief that if the IS strategy is right for one organisation it is right for another
- Opportunities for genuine business partnership with outsourcing company

Disadvantages

- Board could lose all control of IS
- Outsourcing company likely to follow its own business agenda
- Loss of opportunity for organisation to have any significant competitive advantage
- Organisations interests could become secondary to other customers

(one mark for identification, another for evaluation , maximum ten marks)

(some scope for examiner's discretion)

(maximum 25 marks for question 1)

Examiner's Comments

This question was in three parts with each successive part requiring a deeper level of knowledge and understanding. Most candidates gained easy mark for the first part of the question that was concerned with the simple advantages and disadvantages of outsourcing. The second part introduced the concept of just outsourcing part of the IS

function and candidates began to lose marks as the implications were not understood and with some just repeating the advantages and disadvantages. Although the third part of the question sought a balanced evaluation of outsourcing, many candidates just produced one-sided arguments, limiting the marks that could be awarded. Despite the above criticisms, many candidates performed well and their understanding was evident in the high quality of the answers.

Question 2

A mail order wine company has expanded its business by mailing details of special offers to customers and by using a call centre to telephone customers and to send mobile telephone text messages. When a customer telephones with an order, call centre staff are paid commission to make further sales and special discounts can be applied if the customer immediately places a further order. Whilst this approach has been successful in increasing sales, poor record keeping by staff has resulted in errors.

- a) **Describe a type of application package solution that could collect, manage and store details of the various communications made with the customers.**
(5 marks)
- b) **Discuss the possible implications that the use of this package would have on other systems that store customer information.**
(10 marks)
- c) **Describe the management information that could be provided by such a package and outline how it could be used.**
(10 marks)

Answer Pointers

a) Type of package/description

- Customer relationship management (CRM) systems (or similar) collect, manage, share and store all information that may be used to acquire and keep customers, improve services and maximise the potential for greater sales. Every contact made with customers to be recorded and be available for all.
- Provides up-to-date information on all contacts and, based on such information, can select those customers most likely to spend.
- Will have simple input facilities, possibly web-based, for call centre staff to input details of every call received and made.

(one/two marks for each point raised and described, maximum five marks)

b) Implications

- Requires update and integration of the CRM database from other contact media (mailing companies, telephone preference, telephone lists etc).
- Interfaces will have to be made with other customer systems, notably accounts, marketing and customer DIP systems.
- Two-way replication may be necessary in some instances to cope with duplicate data
- If not on-line update, special considerations for multiple transactions in the same day
- Possible candidate for message broking solution
- Could have implications on network traffic
- Will require possible end user facilities for interrogation of CRM database.

(two marks for each point discussed, maximum ten marks)

c) Management information

- Every customer contact, irrespective of contact medium, can be maintained.
- Statistics of sales resulting from the various sales campaigns can be analysed to focus on the best type of campaign.
- Call centre staff can be paid commission based on the records in the CRM system.
- Customer enquiries can be answered immediately and with confidence.
- CRM software can integrate the information from different areas, ensuring that anyone who views it on screen sees all relevant customer details
- Once a customer's details have been captured into a CRM system, everyone in the organisation knows what information that customer has already provided
- CRMs allow more effective monitoring and control by management
- Regularly updated sales figures allow accurate budget planning for sales targets

(two marks for each item described and its use, maximum ten marks)

(maximum of twenty five marks for question 2)

Examiner's Comments

The question was generally answered well with candidates gaining marks freely in parts "a" and "c" of the question. Although CRM systems were not always specifically named in the first part of the answer, descriptions of systems designed to gather appropriate customer information gained marks. The second part of the question attracted the least percentage of available marks as candidates either failed to identify any meaningful implications or concentrated on just one. The third part of the question sought to identify the candidates' understanding of how data could be used to assist a business and most produced prolific lists of possible management information.

Question 3

The Minister responsible for a government department is concerned by the increasing number of failed high profile MIS projects.

- a) Explain how the risks inherent in a large MIS development project could be minimised.**

(15 marks)

- b) Using examples, explain why cost benefit analysis may be inappropriate for large MIS projects.**

(10 marks)

Answer pointers

a) Project risk

A reasoned and logical approach to risk management should include most of the following:

- A formal development methodology to ensure that system requirements, boundaries, budgets and contingencies are established
- The project management organisation needs to be established with appropriate sponsors, structure, project managers, steering committees and user representation.
- A project plan to include phasing, pilot projects, sign-offs and review points
- Strategic risk management to take account of the impact of technology developments, changes in requirements and cyclical changes.
- Formal ongoing frequency/severity risk management to identify, prioritise and resolve the day-to-day risks
- Change management
- Communication management

(two/three marks for each point addressed and explained, maximum 15 marks)

b) Explanation

No prescribed answer, but seeking a reasoned discourse on why cost benefit analysis is inappropriate for large scale MIS.

- With MIS, costs and benefits have different time frames. The costs are immediate and tangible, whereas the benefits may take some time to appear and may be intangible. This may cause problems in trying to justify an IS initially, as immediate benefits may be expected. Example - a new road or a new building will have immediate and constant benefits, whilst the benefits of a MIS may take time.
- Despite these different timescales, the pay-back period for an MIS must be quicker and the rates of return higher than for cost benefit analysis.
- MIS systems may bring intangible benefits such as improved customer service, better understanding or more information. These cannot be directly measured or quantified but they may lead to quantifiable gains in the long term.
- MIS can change very quickly during a project and this will cause some systems to become obsolete very quickly. This affects initial budget estimates considerably and may require them to be changed several times.
- As the life of MIS is often much shorter than a traditional projects, it may require further investments throughout its life to maintain, redesign, rebuild or reprogram it.

As intangible benefits are often impossible to quantify, it is difficult to budget.

(One mark for each point raised and discussed, maximum 6 marks, use of appropriate examples 4 marks, some examiner discretion)

(maximum of twenty five marks for question 3)

Examiner's Comments

Of the five questions this was the least popular with the widest range of marks being awarded. The first part of the question sought an understanding of the important issue of how risk management could apply within MIS development. Candidates either understood this or not, although some picked up marks for individual points related to the main points. The second part of the question raised the thorny issue of justifying MIS projects. This caused difficulties for many candidates who, although making some valid points, failed to justify their answers or omitted any examples.

Question 4

Describe each of the following IS development concepts and discuss its usefulness for MIS development.

- | | | |
|-----------|---|------------------|
| a) | Evolutionary development approach. | (6 marks) |
| b) | Object-oriented methodology. | (6 marks) |
| c) | CASE tool. | (6 marks) |
| d) | End-User Computing (EUC). | (7 marks) |

Answer Pointers

This question is about the use of CASE, OO, End-User Computing (EUC) and the development life-cycle for MIS development. Candidates should ensure their respective answer is suitably MIS-oriented, not simply IS (DP) development examples and applications. Overviews of the concepts should be short and provided essentially to aid the discussion on MIS usefulness.

Points that candidates may include for each:

- a) Evolutionary Development Approach (3 marks for overview, 3 marks for applicability)
- Iterative Prototyping, where prototype eventually forms the final system
 - Candidates may present a diagram of the approach
 - Useful when requirements are not easily determined or understood at outset – very useful for certain types of MIS such as DSS or EIS. Indeed, more appropriate approach for MIS than traditional life-cycle in many cases.
 - Candidates may give examples of the approach being adopted for a particular MIS application e.g., development of a shoe manufacturer's EIS or a pharmaceutical company's EIS (both in main textbook)
 - Problems of tunnel-vision and "when to stop developing and start maintaining" can persist.
- b) OO Methodology (3 marks for overview, 3 marks for applicability)
- A methodology (guidelines, techniques and tools) that centres around the representation of what exists and/or what is required as objects. Students may provide a brief overview of the object concept, and its underlying principles.
 - Candidates may describe one or more OO methodologies, including the application of techniques such as Use Case Diagrams, Class diagrams, etc., but only to a point where this is necessary to understand the arguments for MIS application.
 - The application of OO Methodology – candidates may present some examples of where OO can be used to model management information requirements.
 - The fact that OO methodology has been applied in mainly DP/structured information reporting situations – do you ever hear of OO being used for EIS and ES applications, etc.?
- c) CASE tool (3 marks for overview, 3 marks for applicability)
- CASE tool – computer-aided software engineering tool, different types of tool (Upper CASE, lower CASE), techniques supported by a CASE tool e.g., ER diagramming, Data Flow Diagramming, project management techniques such as CPA and more recently support for OO techniques such as class diagramming.
 - CASE tool use in MIS applications e.g., the use of ER Diagramming tool to enable EIS and Data warehousing applications, the use of project management tool to ensure suitable resources are available and the critical path of the development is understood, etc.
 - Aspects of CASE tools more appropriate than others, e.g., Dataflow diagramming more appropriate for DP type applications
- d) End-user Computing (EUC) (3 marks for overview, 4 marks for applicability)
- The development and/or use of applications by non-IS specialists (most typically where development is by the non-IS specialist, and then its use afterwards by the same person at least at the outset to satisfy his/her particular IS requirement).
 - Can be useful for some MIS applications, particularly individual DSS (e.g., spreadsheet-based ones or even some simple ES applications where the accuracy of processing a simple set of rules known to the "expert" is most important). Not applicable in large MIS, such as corporate-wide EIS except from the "MIS usage is EUC" perspective.
 - Benefits are that there is no problem of mis-communicating requirements to an analyst. Disadvantages are IS developers can approach development in a comprehensive and disciplined way, using appropriate methods/techniques, and generating appropriate and thorough documentation. There are some horror stories of DSS being used to support expensive decisions, and then found to be erroneous, due to technical limitations of the "developer". Without suitable

documentation, appropriate assumptions made by the “developer” may be unknown to someone else who uses the system: this can also lead to incorrect usage.

Total marks: 6 + 6 + 6 + 7 = 25 Marks

Examiner's Comments

This was a very popular question, and there were some candidates who clearly understood the required IS development concepts and their application to MIS development. These candidates scored very high marks as a consequence. However, there were many candidates who did not understand one or more of the concepts well. This was particularly the case with EUC (being described as either a system for management use or the end user, both of which are incorrect) and OO Methodology (being described as OO programming, rather than a complete development methodology). There were also candidates who did not discuss the usefulness of the development concept for MIS development specifically (rather than for IS development in general) and therefore lost marks.

Question 5

Your organisation is considering the implementation of an Intranet through which the corporate Executive Information System (EIS) and several Decision Support Systems (DSS) will be made available.

- a) **Describe the principal features of:**
- i) **an EIS**
 - ii) **a DSS**
- (12 marks)**
- b) **Discuss the advantages and disadvantages of an Intranet-based MIS provision.**
- (13 marks)**

Answer Pointers

This question is about Executive Information Systems (EIS)/Decision Support Systems (DSS) and the issues when setting up an intranet-based MIS provision.

Part (a) requires candidates to consider the key features of an EIS and the key features of a DSS:

- i) EIS: (1 mark per good key feature described to 6 marks). Example features include:
- Very user friendly interface, to enable rapid and easy retrieval and manipulation of data
 - Used to be for senior management, but now for all types of executive
 - Access to external and internal data sources
 - CSF hierarchy and information based on this
 - Slice and dice through graphical interface, that enables flexible, easy reports at differing levels of abstraction
 - Drill down of reports, both fixed and with flexibility.
- ii) DSS: (1 mark per good key feature described to 6 marks). Example features include:
- Wide range of systems that support management decision making
 - Data, model and dialogue (input and output language) components

- Models typically of a mathematical nature
- Group versus individual systems
- Frequent, repetitive use or one-off use – with design to reflect this
- Can support decisions in a data-oriented or a model-oriented way
- Many built using an evolutionary development approach

Marks: 6 + 6 = 12 marks

Part (b) asks candidates to discuss the advantages and disadvantages of providing MIS via the Internet (Intranet). The answer can be focussed on all types of MIS, rather than just focused on EIS/DSS.

- Advantages are to do with accessibility of the MIS for those that work remotely from the office where the MIS is physically housed and/or travelling. Its accessibility is at any time of the day or night, so issues such as time zones are not a problem. Teleworking is more effectively supported – candidates may discuss what teleworking is and how an Intranet-based MIS might support teleworking.
- Disadvantages include the problems that any Intranet brings with regard to security. MIS may include personal data. In some cases, they may include highly sensitive business data, so there can be an enormous risk to corporate and personal security. Candidates may discuss the current state of security approaches, such as firewalls. Another disadvantage is the additional skill base required in the (M)IS department, so that they can support the software development, etc. This may require the hiring of additional and suitably skilled personal, or involve (re-)training of existing staff. Finances may need to be available to ensure that the right staff are employed.

Marks: 1 mark for each appropriate advantage/disadvantage statement or for each appropriate additional discussion comment to a maximum of 13 marks

Examiner's Comments

This was also a very popular question, and Part (a) was generally well done by candidates. However, there was a tendency in some candidates to write down “everything they knew about EIS and DSS” without thinking about what they were writing. This meant that some candidates contradicted themselves halfway through their answers. Many answers contained vague statements, such as a “DSS helps decision making” without any further explanation as to how it helps. On the other hand, some answers were too specific to a particular implementation (e.g., a specific EIS that a candidate knew about), and therefore could not be generalised sufficiently for good marks.

Part (b) was variable in quality across candidates, signifying a wide discrepancy in knowledge about the Intranet concept and its use in MIS provision. Some answers did not provide any advantages or disadvantages that were Intranet-specific (any multi-user MIS, for example, would have the same benefits/problems). Other answers did not focus on MIS (as opposed to DP) provision, therefore discussing issues such as paperwork reduction and automated support of processes. Further, many candidates failed to notice the focus of the question, which was the Intranet, rather than the Internet in general or an Extranet. As such, their answers centred on the connection and transactions between the organisation and its customers and suppliers via the Internet, which were largely inapplicable.