

**THE BCS PROFESSIONAL EXAMINATION
Professional Graduate Diploma**

April 2001

EXAMINERS' REPORT

Management Information Systems

QUESTION ONE

RockingHorse is a small chain of retail stores selling high quality, fashionable childrens clothes and toys. The IT Manager is considering the purchase of an MIS for RockingHorse, but does not know whether to purchase a package “off-the-shelf” or to develop a bespoke system.

As an expert MIS consultant, prepare a report for the IT Manager that discusses the relative merits and disadvantages of:

- 1. purchasing an off-the-shelf MIS package.**
- 2. developing a bespoke MIS system.**

**State any assumptions you make about RockingHorse within your answer.
(25 marks)**

Generally, this question was done quite well, with candidates providing several reasons for and against each option. Sometimes, reasons were not fully thought through. For example, cost would be mentioned as being lower for off-the-shelf MIS, yet there are many different facets to cost involved in the decision to purchase an off-the-shelf package – costs of purchasing, tailoring, maintaining & amending, costs of training, etc.

These were not always enumerated and their respective cost implication explained. Secondly, some candidates seemed to think that by simply providing long answers, they would gain more marks. This is probably true if the answer is of good quality throughout.

However, sometimes candidates contradicted themselves during the course of a long answer, which made the examiner wonder whether they actually understood the question set.

Some candidates did not focus on the question asked, thereby gaining little if any marks for those aspects of the answer that were irrelevant.

Answer Pointers

This is a typical “off-the-shelf” vs. bespoke system question, although candidates should discuss this from an MIS rather than DP perspective.

Some of the advantages that candidates may mention with respect to an “off-the-shelf” MIS system could be:

1. It is a tried and tested system, with good user and technical documentation.
2. It is usually well supported and the vendor company is not as likely to go out of business and/or change its priorities or business emphasis.
3. The cost is known w.r.t. package (but not w.r.t. any tailoring required).
4. It may have additional features/reports that turn out to be useful for the company.

But:

1. It may be inflexible and therefore not satisfy requirements exactly.
2. It may cost much to tailor to special needs – may need to hire contractors to do this or even any changes may need to be made by the package proprietor.
3. There may not be any packages that run on hardware platform and satisfy sufficient MIS needs.

On the other hand, a bespoke MIS has the following advantages:

1. It can match exactly the MIS needs as seen at development time.
2. It may run more efficiently as it is developed in a language that is effective for the hardware provided.

But:

1. It may be very costly and indeed costs may be largely unknown until detailed user requirements are determined.
2. If the expertise to develop such systems is not in-house, then the company may need to hire contractors to develop it. Apart from the obvious cost implications, support and maintenance may be lacking, and technical/user documentation minimal.
3. People who know the application leave – loss of understanding of the developed system.

Marks Breakdown

Explanation of advantages and disadvantages	(3 marks up to 20)
Overall report style and quality	(5 marks)

QUESTION TWO

a) Explain THREE of the following MIS concepts, highlighting the principal benefits that they bring to organisations. Illustrate your answer with appropriate examples.

1. Executive Information System (EIS)
2. Decision Support System (DSS)
3. Data Warehouse
4. Office Automation (OA)
5. Multidimensional Database System

(15 marks)

b) For the THREE concepts you have chosen to explain in a), describe the ways in which they could be combined in the provision of a company's MIS.

(10 marks)

Part a) was done reasonably well by most candidates, although one or two candidates still managed to define all five MIS concepts when only three were expected (in which case the best three marks were taken). Several candidates described a concept but did not talk about its business benefits, thereby losing 2 marks straightaway. Of the descriptions given, the OA and Data Warehouse concepts were generally well understood. EIS was defined in a very traditional way (i.e., for top management use only) by most candidates and DSS was defined in very vague terms on many occasions (e.g., no mention of mathematical models and model bases in many answers). The multi-dimensional database concept was the least popular choice, and the answers highlighted a generally lack of appreciation as to what multi-dimensional databases are and how they are applied to business advantage.

Part b) was poorly done overall, as many candidates failed to grasp what was required in this part of the question. A lot of candidates repeated the answers given in part (a), which was insufficient, and several failed to attempt the part at all (thereby losing 10 marks straightaway). Leaving any (sub)question unanswered is bad examination technique, and should be avoided.

Answer Pointers

This question is not dissimilar to one on last year's paper, but the question provides more choice on how the candidates may answer. It also covers related but not identical topic areas.

a) This part requires candidates to choose three MIS concepts and explain them, highlighting their principal business benefits. Some issues that candidates may mention include the following:

Executive Information System (EIS).

1. A system that allows flexible and direct easy access by managers to internal and external data, thereby enabling the effective monitoring and control of company operations.
2. Briefing books provided.

3. Business benefits include the more effective monitoring of key performance indicators, and the ability to drill down to underlying more detailed data.
4. Originally targeted towards top management use, but in reality middle and lower management are more keen users (re: everybody's information system).
5. Examples include Express EIS and Powerplay.

Decision Support System (DSS).

1. A system that uses data and models to support management decision making.
2. Business benefits include more effective decision making, although whether decision making is really more effective because of the use of the DSS is difficult to assess in many situations.
3. Many examples can be given, including the Connoisseur Foods DSS.

Office Automation (OA).

1. A system that supports the many functions within an office.
2. Usually a bundle of capabilities, including e-mail, spreadsheets, word processing, diary management and databases.
3. System talked about in terms of "the paperless office".
4. Individual productivity enhancements, in terms of enhanced communication and information analysis/reporting.

Examples from industry such as All-in-1, Microsoft Office, etc.

Data Warehouse.

1. A separate data store that integrates and consolidates the disparate data sources within a company so that data can be used effectively for business intelligence and management support applications.
2. Typically, relational in nature but could be multidimensional.
3. Terabytes of transaction processing data integrated.
4. Separate from transaction processing systems to ensure best arrangement of data for management support and not to hold up operational speeds.
5. Business benefits include the ability to analyse an integrated dataset in an immediate manner because of the data warehouse provision.
6. Can be integrated with external data sources.
7. E.g. the data warehouse at BP or at Federal Express.

Multidimensional Database System.

1. A database system that has its data structured in a multidimensional form as opposed to the two dimensional tabular structure of relational database systems.
2. It allows the end-user to slice and dice the data to examine and detect trends and issues of importance.
3. Better as a database structure for end-user analysis rather than classic DP systems.
4. Examples are the databases within business intelligence packages such as Powerplay and Express.

b) The relationships will depend on which three are chosen. However, they are all potentially interrelated in some way, and some of these interrelationships are explained given below:

Concept From	Concept To	Relationship
Data Warehouse	Multidimensional DB	Feeds operational data
Data Warehouse	EIS	Feeds operational data
Data Warehouse	DSS	Feeds operational data
Data Warehouse	OA	Feeds operational data into database or spreadsheet systems in OA
Multidimensional DB	EIS	May form the data store of an EIS, enabling flexible multidimensional analysis
EIS	DSS	Feeding in data for subsequent model application
OA	EIS	May form part of the EIS capabilities – email found in many EIS packages
DSS	EIS	May form part of the EIS capabilities. EIS/DSS combinations are sometimes called Executive Support Systems (ESS).
DSS	OA	Spreadsheets are simple DSS generators, so DSS can be considered a subset of OA capabilities

Marks Breakdown

- a)** Each concept with explanation (3 x 5 marks)
A good explanation without any business benefits gains a maximum of 3 marks.
- b)** Balance of number of relationships presented vs. depth of description (10 marks)

QUESTION THREE

a) You are the recently appointed IT Director of a small insurance company with several small remote branches. Although the company has used departmental local networks for many years, it has resisted progressing to a corporate network that could link both departments and branches. Your fellow directors have been to various presentations and read many articles concerning networks. Write a report to explain the following terms and their relevance an MIS function:

1. Local Area Network (LAN) and Wide Area Network (WAN)
2. Packet switching
3. Bandwidth
4. Client server
5. Electronic Data Interchange (EDI)

(15 marks)

b) One of the directors has read that Internet applications should be developed using a “thin client” technology. Explain the meaning of thin client in your report and discuss the implications upon future systems development. (10 marks)

Network Terminology. Generally well-answered, particularly LAN/WAN, bandwidth and EDI. Less well understood was packet switching and client-server. A large number of candidates appeared not to read the question thoroughly and omitted to explain the terms and their relevance to the MIS function.

Thin Client. The examiner was seeking an explanation of thin client that could be understood by a layman and be expanded to illustrate how this could prepare the organisation for moving into internet sales and possibly teleworking. Instead, many answers consisted of vague descriptions of multi-tier client-server applications with no great connection to the question. However, those candidates that understood the question attracted high marks.

Answer Pointers

a) Network terminology

LAN and WAN: LAN (Local Area Network) is a network that is located within one site or one group of servers. WAN (Wide Area Networks) cover a wider geographic area and will typically be used to join together disparate sites.

Packet switching: Messages sent over a network are broken down into a number of packets each containing the destination address of the packet. Once sent from a device, the packet becomes the responsibility of the network. The receiving device has the responsibility of rearranging the packets to arrive at the correct message. Packet switching is the method used in most network management systems.

Bandwidth: Bandwidth is the measure of how much data can be transmitted to one location to another in a given period of time. It is the difference between the two extreme frequencies in any band. Bandwidth is increasing at a rapid rate due to advances in digital communications, greater use of cable and satellite communication and the introduction of improved switching hardware.

Client server: Refers to an approach where the storage and processing of data is shared across devices according to suitability and convenience, examples being word processing software on PCs incorporating data from file servers. Can be multi-tier, eg mainframe/server/PC.

EDI: Electronic Data Interchange is used to exchange data between organisations according to prescribed standards and requirements. A typical application could involve the exchange of order and accounting information between customer and major supplier.

b) Thin Client

A thin client situation exists where functionality at the client is confined to use of standard browser software with remaining software being present on a local or remote server. If organizations use thin client approach their existing business functions can then be easily used by external parties with standard internet connections. If they use fat client (e.g. each PC needs special application software to operate) separate applications will be needed for future use by internet customers. As the world moves towards internet self-service and communications and hardware make step changes in performance, there are advantages in adopting a thin client approach.

Marks Breakdown

- | | |
|----------------------------------------------------|-----------|
| a) Each description | (2 marks) |
| Each explanation of the application to the company | (1 mark) |
| Maximum 15 marks | |
|
b) Explanation | (5 marks) |
| Relevance to the future | (5 marks) |
| Maximum 10 marks | |

QUESTION FOUR

You have been employed as an IT consultant for an electrical goods manufacturer. The Managing Director is very concerned that the success of past commercial computer developments is mixed, with some developments exceeding user expectations and others being complete failures. Upon investigation you find that either Rapid Application Development (RAD) or structured approaches were used for the development of these systems, although there appears no correlation between success or failure and the methodology used.

- a) Describe the key drivers for a successful project. (9 marks)**
- b) Describe in general terms the differences between RAD and structured development methodologies. (8 marks)**
- c) Choose one of the development approaches described and give reasons why this would be suitable for developing a system for customers purchasing via the Internet. (8 marks)**

a) Critical Success factors. Consistently well answered, although some candidates interpreted the question to be a request for a description of development life cycle stages.

b) Development Methodologies. Again, well answered and logical explanations. The best answers were those that included clear diagrams to accompany the text. Candidates appeared to have a good understanding of the differences between the two methodologies.

c) Methodology for Internet Project. There was no right answer to this question. The examiner was seeking to understand a thought process and argument to back up the recommendation. Answers that just repeated the advantages with no justification gained low marks.

Answer Pointers

a) Critical success factors:

1. Must be based on an agreed methodology which is communicated to the project team.
2. Must have a 'user champion' as the project leader or sponsor.
3. Project team is to include all necessary skills for the project.
4. The team must be empowered and have top management support.

b) Development Methodologies.

A brief description of two development methodology types required.

c) Methodology for Internet Project:

No right answer but seeking qualified answer:

Structured:

1. Financial systems require the rigour of the structured approach and the documentation resulting.
2. The involvement of the customer indicates that a formal approach is required.
3. The system is business critical and this indicates a least risk approach.
4. Staff are likely to be more familiar with structured methodologies.

RAD:

1. Not necessarily financial as these type of applications 'hand off' to back office systems when order placed.
2. Need to get new concepts across – favours RAD prototyping approach.

3. Likely to appeal to the type of staff involved.
4. Use of multimedia etc in presentation is difficult to include in structured approach.

Marks Breakdown

- a)** Each success factor (1 mark)
 Each reason given for the success factor (1 mark)
 Maximum 9 marks
 Looking for lucid explanations. Alternative factors considered but no marks given for development life cycle stages.
- b)** Each methodology type (4 marks)
 For full marks candidates need to describe the methodologies in some detail and be able to demonstrate a depth of understanding.
- c)** Each reason given (1 mark)
 A further mark for reasoned explanation (up to a maximum of 8 marks)

QUESTION FIVE

An enthusiastic new Finance Director maintains that all IT functions be outsourced to save costs and improve service. The other directors are not entirely convinced of this and ask you to write a report to:

- a) Briefly describe the advantages and disadvantages of outsourcing all IT functions. (11 marks)**
- b) Discuss how outsourcing may fundamentally affect the relationship between the business users and their new IT service providers. (7 marks)**
- c) Consider the implications if all IT functions are outsourced. (7 marks)**

a) Advantages/Disadvantages: A great many candidates wasted time writing lengthy introductions to outsourcing that gained no marks. They would be advised to read the question and just provide the answers requested. Marks were lost for repetition of the same point. However, most candidates achieved at least pass marks in this section.

b) Outsourcing and the relationship with the business: There was plenty the candidate could write about here, including the development of a partnership approach and the transition from a possibly informal relationship with the in-house IT department to the more formal SLA approach. However, many candidates missed the opportunity and gained few marks.

c) This part of the question was devised to test the candidates understanding of contemporary issues. Given the press coverage on outsourcing and selective sourcing there were many poor answers. Candidates should be urged to read current MIS articles as part of a general preparation for the examinations.

Answer Pointers

a) Advantages/disadvantages of outsourcing all IT

ADVANTAGES

Access to professional expertise
Resources readily available
Concentrate on core business
Lower initial costs
Better career for IT staff
Access to new technology

DISADVANTAGES

Exploitation by supplier
High long term costs
Loss of corporate knowledge
Staff not committed/low morale
Loss of control
Lose strategic control
Resources go to larger clients

b) Outsourcing and relationships with the business.

The candidate has the opportunity to demonstrate understanding of the dynamics of outsourcing and how it may change an organisation's approach to IT. Areas that could be covered include the concept of strategic partnership that may evolve – shared risks and rewards that could benefit both parties. Conversely, the hard-nosed commercial aspects and the use of structured methods and risk aversion by the outsource company may restrain the business. Management 'bullying' of the IT area will no longer be possible as the outsourcer will have legal and commercial reasons for not complying with a particular request that an internal IT department would not have.

c) Outsourcing all components.

The organisation may not get experts in every area. Some companies are specialists in operations, others development and others in network and desktop service. Outsourcing company could hold organisation to ransom on contract renewal. Conversely, different outsourcing companies could blame each other for service failures, creating a management issue.

Marks Breakdown

a) Each point including explanation (1 mark up to 11)

A number of candidates dwelt on confidentiality breaches, but as these rarely occur no marks were given for this disadvantage.

b) Understanding of positive and negative aspects of outsourcing in relation to long-term business relationship (Up to 7 marks)

c) Understanding of implications of outsourcing all components of an IT function (Up to 7 marks)