THE BCS PROFESSIONAL EXAMINATION
The Professional Graduate Diploma
April 2000

EXAMINERS' REPORT

Management information systems

Question 1

According to Fidler & Rogerson (1996), Strategic Management Support Systems (MSS) are those MSS that are aligned with corporate strategy and mission. Describe the essential activities of Strategic Information Systems Planning (SISP) and explain how SISP can be used to aid the identification of Strategic MSS. Make sure you include suitable examples based on your reading and/or your practical experiences within your answer.

(25 marks)

Answer Pointers

Essential activities of SISP:

- Formulating the correct SISP team and specifying the Terms of Reference
- Analysing the company's strategy and objectives and deriving IS requirements from that (top down view)
- Analysing the existing IS/IT and where this can be used more strategically (bottom up view)
- Looking out for new IT opportunities around (middle out)
- Formulating from this a portfolio of IS/IT needs, and prioritising them
- For each important IS/IT need, establishing a schedule for action
- Report to management

Examples of SISP techniques to use at different steps may be provided.

How can it be used to aid Strategic MSS identification:

Strategic MSS, by definition, are aligned with strategy and mission. Given that mission and strategy are used to shape IS/IT requirements, and sometimes IS/IT is used to influence strategy and mission, the result is that IS/IT, of which MIS is a part, are aligned with corporate strategy and mission. In detail, candidates could show examples of how SISP techniques such as Value Chain Analysis, CSF and MacKenney & MacFarlan grid could be used to pinpoint IS/IT opportunities.

Marks breakdown:

- *For a comprehensive overview of SISP – 10 marks*
- *For overview of how Strategic MSS are identified using SISP – 7 marks*
- *For examples and use of techniques – 8 marks*
- *Total 25 marks*

Examiners Guidance Notes

This question relates to the subject of Strategic Information Systems Planning (SISP), and indeed is not dissimilar to the question presented in the current MIS specimen examination paper. The question was attempted by approximately half of the candidates. The average of 9 marks out of 25 highlighted the general weakness in candidates' knowledge of this topic. It is important that candidates should not attempt questions that they are not prepared for and therefore do not understand.

The question required candidates to know what activities commonly occur during SISP, such as formulating the correct team, specifying the Terms of Reference for SISP, performing a top down, bottom up and middle out analysis of IS/IT requirements, consolidating the IS/IT portfolio and prioritising each item with their individual schedule of action, and reporting the recommendations to management. Very few candidates were able to demonstrate sufficient SISP knowledge, and some only described strategic planning activities at a business level rather than at an IS/IT level. This limited the amount of marks they could attain.

The question also required candidates to relate SISP to the identification of Strategic Management Support Systems (MSS). This required candidates to understand what Strategic MSS meant with regard to Fidler and Rogerson's text, that is, MSS that are aligned with corporate strategy and mission. The very fact that this alignment is what SISP is all about should mean that MSS that result from SISP are Strategic MSS. However, many candidates failed to appreciate this relationship. To show how Strategic MSS result from SISP, candidates could have shown the application of SISP techniques such as McKenney and McFarlan's strategic relevance and impact grid, CSF technique, Value Chain Analysis (VCA) and so on. However, the examples of SISP techniques and their application were very few in number. When techniques were mentioned, they were often too briefly described or vague in description, and not applied in an MSS context.

Question 2

You are appointed as project manager for a system to record hospital patient details and to account for drug and other purchases related to medical operations.

a) Choose two alternative development approaches and explain and justify which of these would be suitable for the system described above. (15 marks)

b) Describe in outline and give examples of the type of management information that may be required by the hospital at the strategic and tactical level. (10 marks)

Answer Pointers

Suitable development methodology

This question tests the candidate's knowledge and understanding of two system development approaches. No definite answer is required, but the reasons for any selection must be cogently argued. For example, a structured methodology, such as SSADM, could be argued to be appropriate as the hospital application described has both financial and possible safety-critical requirements. The rigour implied by a structured approach could be considered as more suitable than the alternative of RAD (say).

Marks:

- *Description of two alternative development methodologies 5 marks each*
- *Quality of argument in arriving at recommendation 5 marks*
- *Total 15 marks*

MIS at the strategic and tactical level

Strategic level. At this level the hospital are likely to require information that will assist in the long-term strategic decision making. This could be summary of illnesses and treatments, success rates by surgeons, recovery rates, average time in hospital per type of operation etc. Strategic information will be required to determine long term trends and future markets.

Tactical level. Tactical information will be required by the managers of accounts and purchasing to ensure that the tactical objectives of the hospital are being performed to budget and possibly within an agreed

SLA. Tactical MIS may include data regarding costs and usage of alternative drugs, forward plans of bed utilisation against waiting lists, meeting government and hospital performance standards etc.

Marks:

- *Description of strategic MIS - 2 marks*
- *Description of tactical MIS – 2 marks*
- *Example of strategic MIS - 3 marks*
- *Example of tactical MIS – 3 marks*
- *Total 10 marks*

Examiners Guidance Notes

Most candidates achieved reasonable marks here. Some of the explanations of the development methodology lacked definition and candidates lost marks. It is important that candidates prepare for the examination by understanding system development fundamentals. Those candidates who understood development methodologies included detailed diagrams and authoritative text, gaining high marks as a result. This question was attempted by around half of the candidates.

Question 3

Wine Barrel 2000 sells quality wine through mail order and has created a loyal and established client base. Customer research has established that at least half of their customers possess Internet PCs and consequently Wine Barrel 2000 want to reduce costs by providing a premium service for display and ordering of their products.

a) Explain what is meant by a free branded Internet Service Provider facility and how the provision of this would be of advantage to Wine Barrel 2000 and their customers. (10 marks)

b) Explain what is meant by an Extranet. How could an Extranet be used to assist with stock control and reordering from key suppliers? (8 marks)

c) Identify the barriers to the possible future use of e-commerce by Wine Barrell 2000 and their customers. (7 marks)

Answer Pointers

Free branded ISP.

A free branded ISP facility is a free Internet service where the 'subscriber' has only to pay for telephone calls, although some ISPs are now providing this free or unmetered. The ISP provider will provide a portal through which customers subsequently access the Internet. Advertisers will pay to use space on the portal and other screens. Typically this will be used by related organisations, for example quality cheese suppliers and glassware manufacturers. The portal would provide a route for access to a range of services, including the wine catalogue, order forms/shopping trolleys and controlled access to past customer orders. Customers benefit by having access to the up-to-date catalogues and cost savings resulting from reduced administration.

Marks:

- Description of a free branded ISP – 3 marks
- How it would operate – 3 marks plus an example 4 marks
- Total 10 marks

Extranet – a subsection of the Internet that is not in the public domain, such as a website where access is restricted by using a Username and Password. The lines that the communication takes place in are still public though. An Extranet is typically used by suppliers or other external 'stakeholders' to the

organisation. For Wine Barrel 2000, an Extranet could be used by suppliers to view the sales and stockholdings and automatically reorder with management information following.

Marks:

- Explanation of Extranet – 2 marks
- How it could operate – 2 marks
- Example – 4 marks
- Total 8 marks

Barriers to e-commerce.

Security concerns –credit card usage, availability of personal information
Technology problems – orders not received, suppliers misuse, system failures
Usage problems – Wine Barrel 2000's customers just do not adopt the technology

Marks:

- Security explanation – 3 marks
- Any other – 2 marks each to a maximum of 4 mark
- Total 7 marks

Examiners Guidance Notes
Practically all candidates were able to answer this question well demonstrating an understanding and interest in current internet developments. Those candidates that provided structured, well-argued answers obtained the highest marks.

Question 4

a) Explain what is meant by each of the following MIS concepts:

i) Data Warehousing (4 marks)
ii) On-line Analytical Processing (OLAP) (4 marks)
iii) Data Mining (4 marks)

b) Describe, with supporting examples, how Data Warehousing, OLAP and Data Mining facilities could be combined to provide a computer-based management support system. (13 marks)

Answer Pointers

Data Warehousing.

- An approach to integrate and consolidate the disparate data sources within a company into a separate data store so that data can be used effectively for business intelligence and management support applications.
- Typically, relational in nature but could be multidimensional
- Terabytes of transaction processing data integrated
- Separate from transaction processing systems to ensure best arrangement of data for management support and not to hold up operational speeds.
- Candidates may provide a diagram of the cleansing of data, integrating and consolidating activities involved in data warehousing

On-line Analytical Processing (OLAP).

Software packages that enable end-users to analyse data in a data store in an ad-hoc, customised fashion as and when required by the task in hand in a user-friendly way. May require data to be stored in a multi-dimensional database and allow the end-user to slice and dice the data to examine and detect trends and issues of importance. Examples are spreadsheets, business intelligence packages such as Powerplay and

Express. Data may not be exactly up to date – could be updated weekly or daily, depending on how current the data needs to be for the task in hand.

Data Mining.

Software packages that provide automatic or semi-automatic ways of spotting trends or relationships between data items in a given data store. Examples include neural networks, and candidates may explain how these have been used to aid management e.g., in fraud detection and targeting most likely customers for new products, and other sophisticated packages that perform heuristic searches for relationships (e.g., Clementine).

*2 Marks for a basic definition of each concept + 2 additional marks for added commentary = 4 marks each * 3 concepts = 12 marks*

b) A Data Warehouse can provide the base data which can then be fed into either an OLAP database (with transformations and filtering of data as required) or a data mining tool (some as case studies to explore rules and relationships, and others to test relationships and rules once identified). Candidates may provide a suitable diagram of the process to support their answer, and may include examples of data about orders being used by an OLAP facilities to examine sales by customer by region by month details in different ways.

Marks:

- *Explanation of combination, including possible diagram = 8 marks*
- *Examples to explain process = 5 marks*

Total 13 marks

Examiners Guidance Notes

This question relates to more modern approaches to providing MSS, via the application of Data Warehousing, OLAP and Data Mining. The question was attempted by about three-quarters of candidates, and the average mark was a healthy 12.5 out of 25. This indicated a generally sound awareness of Data Warehousing, OLAP and Data Mining concepts, and their combined use in supporting management.

Part (a) required candidates to define the three aforementioned concepts. Most candidates understood what Data Warehousing was about, that is, an approach to consolidating the disparate data sources within a company so as to provide a basis for management information and business intelligence. Many candidates provided an overview of how a Data Warehouse might be structured and what it may contain.

Some candidates did not appreciate what OLAP is about, considering it to be a networking technology which it is not. Rather, a suitable OLAP definition would be the process of analysing data in a data store by the end-user in an adhoc customised fashion as and when required, using available easy-to-use software packages. Any definition along these lines was considered acceptable.

Additionally, candidates did not always understand the concept of Data Mining. Some mentioned correctly the process of applying software tools to spot trends and relationships between data items in a given data store. Candidates then went on to describe Data Mining tools that are available on the current market. However, the ability of some Data Mining tools to uncover trends and relationships automatically was not always mentioned.

Part (b) required candidates to show how Data Warehousing, OLAP and Data Mining can be combined to provide management support. Examples were asked for to illustrate candidates' descriptions. This part was generally done well, with many candidates highlighting the Data Warehouse as a possible data feeder system for OLAP and Data Mining tools, and that relational data in the warehouse might have to be translated into a multidimensional structure for either OLAP or Data Mining use. A lot of candidates' examples, however, only served to partially illustrate the relationships between the three concepts, thereby losing some marks.

Question 5

a) Developing a MIS is as much a social process as it is a technical one.

Describe TWO non-technical/social problem situations that a MIS development team might face during MIS development and suggest ways by which each of the problem situations could be addressed. (10 marks)

b) In the 1980s, a study showed that only a small number of managers were end-users of MIS and that many MIS were operated by technical specialists on behalf of management. Discuss why it is thought that the number of managers that are end-users of MIS has significantly increased since this study was performed. Use examples to support your answer.

(15 marks)

Answer Pointers

This is a question about social factors in MIS development and End-user Computing w.r.t. MIS. The second part requires candidates to discuss modern technological trends and their impact on MIS design.

Two social problem situations could be:

- Problem of no ownership of the MIS by the organisation. This may be due to several reasons: no organisational champion (in which one approach is to find a suitable champion and persuade him/her to adopt the role), no education as to why the development is taking place and how it relates to strategy and mission of the company (in which case, some education needs to be provided in a manner and at times suitable for the stakeholders in the project), development methods are not participative enough (in which case, the team should consider some prototyping at certain points in development).
- Employees not being forthcoming about their requirements and activities, as they may see the MIS as a threat to their jobs and/or will change their jobs. Holding onto information, as the MIS is invading their territory – company politics dimension. Education as to the purpose of the MIS would help here, as would careful definition of job descriptions post-MIS to ensure they are enriched rather than de-skilled.

*2 * valid social situation explained (2 marks) and ideas for addressing it (3 marks) = 5 marks for each social situation * 2 situations = 10 marks*

b) This question is for candidates to show they can argue a particular case properly. The most likely answer will be that end-user MIS are expected to have significantly increased since the early 80s, due to the technological developments that have occurred (PC revolution, GUIs, voice recognition, internet so more portable and accessed via familiar web page approach), the greater exposure of management to computers during their formative years and the ubiquitous provision of easy-to-use analytical tools such as spreadsheet packages. On the other hand, some candidates may argue that managers are more busy than ever, given the global and international nature of business. As such, they have to delegate more and more to others, so it is less likely that they will use MIS directly. Some may use their own experiences of management in companies, for example the lack of PCs on manager's desks particularly relative to certain functional areas of the business such as production and personnel. Indeed, their overall answer might have a "depends" nature, for example certain functions have increased usage whereas others have stayed the same or decreased.

Marks:

- *A stance taken – 1 mark*
- *Arguments quality, in terms of number and logic – both for and against provided in discussion - 10 marks*
- *Arguments backed up by examples – 4 marks*
- *Total 15 marks*

Examiners Guidance Notes

Question 5 covers non-technical factors associated with MIS development, and end-user aspects with respect to MIS. The question was attempted by approximately 65% of candidates, and the average mark was a sound 12.7 out of 25.

Part (a) required candidates to describe two social/non-technical issues that an MIS development team might face. Most candidates managed to describe two non-technical issues to a reasonable level of accuracy and detail, covering issues such as:

- Lack of ownership of the system being developed
- Resistance by employees towards the system being developed
- Staffing issues, such as lack of resources during intensive development stages
- Economic issues such as budget considerations
- Legislation, such as the Data protection Act and its bearing on the development of the system

Some candidates, although mentioning some valid issues, failed to suggest how to address them and therefore obtained at most a bare pass for this part of the question. Some candidates described issues relating to the on-going use and maintainance of the MIS, rather than describing development issues.

Part (b) was for candidates to show they can argue a particular case properly with respect to an MIS situation. This was generally done well, with many candidates mentioning points such as:

- The technological developments since the early 80s, such as the proliferation of PCs, GUIs, voice recognition, the Internet, which enable more easy use of computers and applications software by end-users.
- The greater exposure of management to computers, either through informal or formal training/education.
- The ubiquitous provision of much more easy-to-use analytical tools such as spreadsheet packages.
- The requirements of companies that management have PC familiarity and use applications as part of their job.

Some listed several issues (not just two as was asked for) and failed to describe any of them further. It is important that candidates do exactly as the question requires, otherwise they will lose marks needlessly!

Chris Fidler Questions 1,4,5 =18+30+21=69
Phil Questions 2,3=19+23+42
MIS

> 1	**2**	**3**	**4**	**5**	**6**
> 18	**19**	**23**	**30**	**21**	**2**