# FINANCIAL MANAGEMENT, SYSTEMS AND TECHNIQUES

**June 2005**
**Certificate stage**

# MARKING SCHEME

## Question 1

Syllabus area E2. Study session 8

**(a) Test the hypothesis that there is a difference at the 1% significance level in the performance of the North and South teams from the evidence of the samples taken.**

Information:

$\overline{x}_1 = 46.8$ $\overline{x}_2 = 45$
$S_1 = 4.26$ $S_2 = 2.21$
$n_1 = 50$ $n_2 = 50$

Hypothesis is that there is no significant difference at the 1% level of significance between North and South.

$H_o : \mu_1 - \mu_2 = 0$
$H_1 : \mu_1 - \mu_2 \neq 0$ *1*

A two tail test is required at the 1% significance level. *1*

Critical value is z* = 2.57 *1*

Test statistic is given by:

$$z = \frac{(\overline{x}_1 - \overline{x}_2) - (\mu_1 - \mu_2)}{\sqrt{\frac{s_1^2}{n_1} + \frac{s_2^2}{n_2}}}$$

$$\frac{= 46.8 - 45 - 0}{\sqrt{\frac{4.26^2}{50} + \frac{2.21^2}{50}}}$$

$$= \frac{1.8}{0.6787} = 2.65$$ *4*

This is greater than the critical value. Therefore the null hypothesis is rejected. There is a significant difference between the two samples. *1*

**(b) On the basis of the samples how much reliance can be placed on 45 minutes as an accurate estimate of the standard time for the job? Use a 5% significance level.**

Hypothesis that the sample is consistent with a population with a mean of 45 at a significance level of 5%.

$H_o : \mu = 45$
$H_1 : \mu > 45$ *1*

A one tail test is required at the 5% significance level. *1*

If a two tail test is used students would not be awarded this mark but marks should be awarded for a correct test (critical value will be 1.96).

Critical value z* = 1.645 *1*

$$z = \frac{\bar{x} - \mu}{\sqrt{s^2/n}} \text{ or } \frac{\bar{x} - \mu}{s/\sqrt{n}}$$

$$z = \frac{45.9 - 45}{\sqrt{3.3^2/100}}$$

$$z = \frac{0.9}{0.33} = 2.7272$$

*4*

This is greater than the critical value. Therefore the null hypothesis is rejected. The sample is not consistent with the average figure currently being used and on this evidence consideration should be given to increasing the standard time. *1*

**(c) Explain what is meant by:**

**(i) 5% significance level;**
**(ii) one tail test;**
**(iii) two tail test; and**
**(iv) indicate how your approach would have differed if the sample size had only been twenty.**

**5% significance level**
This is the level of significance that can be placed upon the result of a significance test. It suggests that there is a 5% chance of being wrong. *1*

**One tail test**
This tests only one tail of the distribution and will be used when testing whether the value is greater or lesser but not both ie population value $>$ or $<$ than x. *1*

**Two tail test**
This tests both tails of the distribution and tests whether the value is different. ie population value $\neq x$. *1*

**Indicate how your approach would have differed if the sample size had only been twenty**.

If the sample size is less than 25 the normal distribution cannot be safely used. In this case it is appropriate to use the t distribution and a t test. *1*

***(20)***

## Question 2

Syllabus area A2. Study session 17

The answer should be produced in the form of a report addressed to the chief executive. The report should be correctly addressed and should be structured and styled in report format. One mark should be awarded for presentation, to be taken from the allocation for part (a).

**(a) Outline the assumptions underlying the EOQ method and comment upon its suitability for this situation.**

Assumptions.

- Known demand for inventory
- Constant usage of inventory items over the period
- Quantity ordered does not vary over time
- Order cost per item can be estimated and is constant
- Other variables are fixed over time
- Inventory replenishment is instantaneous when inventory level has reached zero
- Only two types of cost to be considered – holding costs and ordering costs

*1 mark for each assumption subject to a maximum of 4 marks*
*1 mark for presentation*
*(5)*

**(b) Calculate the EOQ and the number of orders required to meet the annual demand for sacks, and then estimate the overall cost of employing this method**

$$\text{EOQ} = \sqrt{\frac{2CD}{H}}$$

$$= \sqrt{(2 \times 27 \times 18 \times 26)/11}$$

$$= \sqrt{2297.45} = 47.93 = \underline{47{,}930 \text{ or } 48{,}000}$$ *2*

If EOQ is 48,000 there will be a need for:

(26 x 18,000) / 48,000 orders per year = <u>9.75 or 10</u> *1*

Costs

| | | £ |
|---|---|---|
| Holding costs | 48/2 x 11 | 264 |
| Ordering costs | 10 x 27 | 270 |
| Cost of sacks | 480,000 x .03 | 14,400 |
| Total | | <u>14,934</u> |

*3*

**(c) Estimate the cost of using bulk buying under the terms proposed by the contractor and compare the cost per sack with the EOQ method.**

Under the terms of this arrangement the Council would place either 3 or 4 orders per year, each for 150,000 sacks. The costs would be:

3 orders per year

| | | £ |
|---|---|---|
| Holding costs | 150/2 x 11 | 825 |
| Ordering costs | 3 x 27 | 81 |
| Cost of sacks | 450,000 x .0275 | 12,375 |
| Total | | 13,281 |

Unit cost of 2.9513p

4 orders per year

| | | £ |
|---|---|---|
| Holding costs | 150/2 x 11 | 825 |
| Ordering costs | 4 x 27 | 108 |
| Cost of sacks | 600,000 x .0275 | 16,500 |
| Total | | 17,433 |

Unit cost of 2.9055p
NB: holding cost is fixed

Unit cost of EOQ is 3.1112p

*It is not necessary to provide both calculations. Marks will be awarded for either or for both. 3 marks for correct cost plus 1 mark for unit cost calculation for discount and 1 mark for unit cost calculation for EOQ*
*(5)*

**(d) Make appropriate recommendations taking into account financial and non-financial considerations.**

Answers should include a positive recommendation for either bulk buying or EOQ.

Considerations

- Bulk buying is cheaper (based on unit cost calculation)
- Will simplify the ordering function
- Need to find storage facility to accommodate additional stocks of sacks
- EOQ provides a closer solution in terms of demand – bulk buying either falls short of annual demand or requires substantial additional purchases of sacks during the financial year
- Usage of sacks is continuous and spans financial years

*1 mark for a positive recommendation*
*Plus 1 mark for each relevant point subject to a maximum of 3 marks*
*(4)*

***(20)***

## Question 3

Syllabus area B3. Study session 2

**(a) Identify and briefly describe the three main methods and suggest what forms a hybrid approach might take.**

The three main methods are;

- Bespoke development – where the IS is developed from scratch by an IS professional to suit the business requirements of the application.
- Purchase of "off the shelf" software – where the organisation purchases a pre-written application that has not been written specifically for them.
- End user developed software – where the software is not written by IS professionals but by those who will be involved in the system itself.

In addition a hybrid approach is possible which combines elements of the three basic approaches. This may involve taking off the shelf software and tailoring it to the organisation's needs either by IS professionals or by end users. This may involve integrating systems through the use of enterprise application integration (EAI).

*1 mark for each of the three main methods plus up to 2 marks for explanation and illustration of hybrid approach*
*(5)*

**(b) Outline six factors that could be used in evaluating the best method to meet the needs of a particular situation.**

There are a number of factors that could be taken into account in choosing the best method:

- Time constraints
- Cost in relation to budget
- Quality considerations
- Organisation size
- In house expertise
- Complexity of the required system
- Uniqueness of the business/ business area to be supported
- Expertise amongst end users
- Linkages with existing applications software

Whilst the first three points are probably the most important considerations any of the above are relevant. There could be other valid points but it is likely that answers would be covered from the above.

*1 mark for each valid point subject to a maximum of 6 marks. Points must at least be briefly explained in order to be awarded a full mark.*

**(c) Suggest, with reasons, which method might be most appropriate in the following circumstances**

**(i) Payroll application**
**(ii) Financial management system in a small college**
**(iii) Service delivery system in large government department**
**(iv) Electronic point of sales (EPOS) system in retail chain**

To be awarded full marks students must explain why they favour a particular method. Whilst there is a more likely answer in each case if valid reasons are given marks will be awarded for an alternative answer.

(i) Payroll application – off the shelf as a common application likely to be available cheaply and quickly.

(ii) Financial management system in a small college – off the shelf as there is unlikely to be IS expertise within the college. Possible that a hybrid approach involving end user tailoring would be used.

(iii) Service delivery system in large government department – bespoke development where IS expertise exists (or can be bought in) and where specific business requirements need to be addressed.

(iv) Electronic point of sales (EPOS) system in retail chain – this could be bespoke or it could be bought in depending upon the business requirements and the size of the chain.

*1 mark for each of the examples*
*(4)*

***(15)***

## Question 4

Syllabus areas D1 and B1. Study sessions 11 and 1

**(a) Using the project manager direction finder model, identify and describe the three main areas of management in which the project manager should be involved.**

The direction finder model (OLM p.839) identifies the different activities which a project manager must manage at the same time. There are six directions which are classified into three main areas:

- Management of stakeholders – this involves managing the project sponsor (looking upwards) and the project client or end user (looking outwards).
- Management of the project lifecycle – this involves making project plans (looking forwards) and monitoring those plans against results (looking backwards).
- Management of performance – this involves managing the project team (looking downwards) and managing one's own performance (looking inwards).

*2 marks for each area – 1 mark for naming the area and 1 mark for describing what is involved*
(*6)*

**(b) What problems might be faced by the project manager in these three areas and what can the project manager do to overcome them?**

Relevant points are contained in the OLM pages 837-840 and 848-849. Problems can be related to each of the areas but there is also a potential problem of achieving the right balance in managing the three areas together.

Management of stakeholders

Problems here can include:

- Poor communications with sponsor and/or end user/client.
- Difficulty of keeping up with changes in specifications and project requirements.
- Reconciling conflicting objectives and needs.
- Lack of effective support.
- Inability to reconcile political differences within the organisation.
- Remoteness of sponsors.

Management of lifecycle

Problems here can include:

- Poor planning caused by poor or incomplete information.
- Poor feedback of project progress.
- Ineffective management of lifecycle.
- Not enough resources to carry out the project.

Management of performance

- Setting of inappropriate or unachievable performance targets.
- Concentration upon hard (or soft) criteria for measuring performance.
- Poor quality information upon which to base judgements of performance.
- Inability of team to work together.
- Inability to self appraise.

*1 mark should be awarded for each valid point subject to a maximum of 6 marks. There should be a reasonable balance between the three areas of activity and to ensure this there should be maximum of 3 marks for points relating to any one area.*

The project manager can do a number of things to avoid or reduce the impact of the problems:

- Establish good communication links and hold regular meetings etc with relevant stakeholders.
- Collect relevant information from outside and inside the organisation on issues likely to affect the project.
- Be prepared to negotiate and compromise to achieve political balance.
- Establish clear goals and objectives for the project and reach agreements with stakeholders.
- Put together the best team available and arrange support for the team.
- Identify and plan activities, set budgets and make use of techniques such as CPA as appropriate.
- Determine performance measures for the team and for individuals using hard and soft criteria.
- Monitor project and team performance.
- Be prepared to look critically at own performance.

*1 mark for each valid point subject to a maximum of 3 marks*

*Part (b) of the question will require students to bring together points from different parts of the OLM as this question is not directly answered within the OLM. Other valid points may be made and should be rewarded*

***(15)***

## Question 5

Syllabus area B1. Study session 1

**(a) Identify and briefly describe the three levels of management common to most organisations and explain how information needs may differ at each level.**

The three levels are:

(1) Strategic – concerned largely with long term planning and the nature and direction of the organisation. Information will be required for unstructured decision making and will be required less frequently and regularly. Information may come from outside the organisation and is likely to be summarised. It could be future based and, therefore, less certain.

(2) Tactical – principally concerned with medium term plans relating to performance management and resource allocation. Information needs will relate to semi structured decisions making and information will be needed more frequently. There would be greater use of internal information and a need for more detail.

(3) Operational – this relates to short term planning and day to day control of the organisation. Much of the decision making would be structured and information would be required frequently and on a regular basis. Most of the information will come from within the organisation and control information may be primarily backward looking and requiring a high degree of accuracy.

*1 mark for each of the three levels (½ mark for brief description) plus 3 marks for explanation of differing information needs. The above answers provides only a selection of possible points. Other relevant points should be rewarded (6)*

**(b) Choose three different types of information systems commonly found in business organisations and explain what management needs they are likely to meet and how they will meet them.**

The OLM (p4) identifies six types of information systems.

1. Transaction processing systems.
2. Information reporting systems
3. Executive information systems
4. Office automation systems
5. Process control systems
6. Decision support systems

Students should choose three systems from this list although different terminology may be used. The OLM goes on to distinguish the main classes of information systems and identifies management information systems as a category. This would be acceptable but writing about budgetary control or payroll systems would not as they could not be described as types of systems.

For each of the chosen types students must provide a brief description of the systems and indicate what particular management needs the systems is likely to meet. This should be related to the levels of management identified previously.

Finally the answer should explain how this need would be met possibly using an illustration of the kind of output which would be produced by the system.

*For each system – 1 mark for a brief description plus 1 mark for relating the system to management needs and explaining how this is done (6)*

**(c) *Chaffey (2003)* suggest that information systems can be used as a source of competitive advantage. How could this be achieved?**

*Chaffey (2003,54)* lists the following ways in which information systems can help to achieve competitive advantage.

- Improvement in operational efficiency – eg in manufacturing systems or through the reduction in administrative costs.
- Barriers to entry – heavy investment in IS can lead to organisations using expensive and complex systems which it would be difficult for new entrants to replicate.
- Locking in customers and suppliers – building up links and integration with suppliers and customers can have business benefits and may make it difficult for rivals to develop in the market place.
- Promoting business innovation – may result in the development of new products, methods of delivery etc
- Increasing switching costs – the greater the investment in IS and in integrated systems the less easy it will be for organisations and their rivals to switch to other suppliers, customers etc
- Leverage – IS may provide access to a resource base developed originally for an alternative business use, eg mailing lists from other customer records.

*1 mark for each relevant point to a maximum of 3 marks*

***(15)***

## Question 6

Syllabus area E3. Study session 10

**(a) Using time series decomposition forecast turnover figures for the final two terms of the current year and the first term of 2005/2006**

| Year | Term | Turnover £ | Three term average £ | Actual – Average £ | Period |
|---|---|---|---|---|---|
| 2001/02 | 1 | 212,600 | | | |
| | 2 | 215,600 | 205,867 | 9,733 | 0 |
| | 3 | 189,400 | 207,167 | -17,767 | 1 |
| 2002/03 | 1 | 216,500 | 207,733 | 8,767 | 2 |
| | 2 | 217,300 | 210,733 | 6,567 | 3 |
| | 3 | 198,400 | 211,333 | -12,933 | 4 |
| 2003/04 | 1 | 218,300 | 212,033 | 6,267 | 5 |
| | 2 | 219,400 | 213,767 | 5,633 | 6 |
| | 3 | 203,600 | 215,733 | -12,133 | 7 |
| 2004/05 | 1 | 224,200 | | | 8 |
| | | Forecast | | | |
| | 2 | 225,864 | | | 9 |
| | 3 | 205,684 | | | 10 |
| 2005/06 | 1 | 228,889 | | | 11 |

Average termly increase in turnover is (215,733 – 205,867)/7 = £1,409.52

Forecast using

y = 205.867 + 1,409.52x

Adjustment for termly variation

| Year | Term 1 £ | Term 2 £ | Term 3 £ |
|---|---|---|---|
| 2001/2002 | | 9,733 | -17,767 |
| 2002/2003 | 8,767 | 6,567 | -12,933 |
| 2003/2004 | 6,267 | 5,633 | -12,133 |
| Average | 7,517 | 7,311 | -14,278 |

*Marks to be awarded as follows;*
*2 marks for three term average*
*2 marks for actual – average*
*2 marks for forecast equation*
*2 marks for termly average figures*
*3 marks for calculation of forecast figures (1 mark per figure)*
*Note that roundings may cause slight variations in the figures*
*1 mark for presentation*
*(12)*

**(b) Comment upon the results of your calculations and upon the benefits and limitations of the technique.**

Results show a continuing upward trend for all terms and a significant difference in turnover between term 3 and the other two terms.

Time series provide a simple technique for forecasting future trends. Decomposition allows for seasonal trends to be taken into account.

It is useful for short term forecasting and when conditions are relatively stable but it makes assumptions abut future behaviour without examining fully the causal relationships involved.

*1 mark for comment upon results of calculation plus 2 marks awarded for benefits and limitations*
*(3)*

***(15)***

## Question 7

Syllabus area A4. Study session 19 (and 15 – outsourcing).

*The answer should be produced in the form of a report addressed to the Management Board. The report should be correctly addressed and should be structured and styled in report format. 1 mark should be awarded for presentation, to be taken from the allocation for part (a).*

**(a) Identify and describe the four main areas in which an organisation can improve its debtor position and suggest possible improvement measures.**

The OLM identifies four areas as being:

- Credit vetting – where the organisation decides who it will give credit to and how much.
- Terms of credit offered – the terms under which credit is offered to the debtor including any incentives to pay.
- Collection procedures – all those procedures and documentation used by the organisation, including the payments methods made available.
- Follow up procedures – actions taken where payment has not been made in accordance with the terms.

*1 mark for each of these areas (4)*

Improvements could be made in each of these areas. Examples might include:

- Vetting those potential debtors over whom the organisation has control through using information collected in-house, from an external source or through a credit bureau.
- Debtors could be offered discounts for prompt payments or different payment methods could be introduced.
- Collection procedures could be improved by improving the quality of management information or by reviewing the processes involved.
- Follow up can be improved through taking prompt action against debtors issuing reminders, making follow up contact, negotiation and/or through taking legal proceedings.

*There are many other possible suggestions. 1 mark for each valid point subject to a maximum of 4 marks. No marks should be given for discussion of outsourcing at this stage as this is covered in part (b) of the question (4)*
*Plus one mark for presentation 1*

**(b) Outline how outsourcing could work and what effects it might have upon the areas identified previously.**

Outsourcing would involve the provision of part or all of the debtor function by an external organisation. The OLM refers to:

- Factoring – which is equivalent to outsourcing your sales ledger management and involves passing over invoices to the factor and receiving an immediate cash advance in exchange for a fee charged by the factor.
- Debt collection agencies or bailiffs – who will be involved in the collection and any follow up procedures, either in exchange for a flat rate fee or a percentage of debt recovered.

*3 marks should be awarded for explanation of how outsourcing can operate. 1 mark for defining outsourcing and 1 mark each for reference to factoring and agencies (3)*

Effects of outsourcing should be identified and discussed. These could include:

- Outside specialist make use of latest methods and enjoy economies of scale
- Improved success rate in collection
- Charge for service
- Possible adverse impact upon organisation's image

*1 mark for each valid point, which may include additional points to those made above, subject to a maximum of 3 marks*

***(15)***