

# Tutorial letter 201/3/2013

## Production and Operations Management MNO3701

Semesters 1 & 2

Department of Business Management

**IMPORTANT INFORMATION:**

This tutorial letter contains important information  
about your module.

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## 1 INTRODUCTION

This tutorial letter contains the solutions to and feedback on Assignments 01 and 02 for both the first and the second semesters. It also provides useful comments and gives you details of the format of the examination paper which you will be writing in May/June (1st semester) and/or October/November (2nd semester).

## 2 SOLUTIONS TO AND FEEDBACK ON ASSIGNMENT 01/2013 AND 02/2013

### ASSIGNMENT 01

|                       |            |
|-----------------------|------------|
| COMPULSORY ASSIGNMENT | DUE DATE:  |
| 1ST SEMESTER          | 12/03/2013 |
| UNIQUE NUMBER:        | 746243     |
| 2ND SEMESTER          | 03/09/2013 |
| UNIQUE NUMBER:        | 776213     |

This assignment for module MNO3701 **only** covers the multiple-choice questions for topic 1 (study units 1 & 2), topic 2 (study unit 3) and topic 3 (study units 4 & 5).

The assignment is applicable to both the first and second semesters.

### MULTIPLE-CHOICE QUESTIONS

You were asked to answer 10 multiple-choice questions. All the questions were of equal value and counted one mark. No negative marking was applied.

#### Question 1

Options (c) and (d) are incorrect; therefore alternative 5 is correct. Option (c) is incorrect because both transforming (facilities and staff) and transformed (materials, information and customers/clients) resources are inputs that are fed into the transformation process at the start and their relative position to the term “output resources” (incidentally a term that we made up) is irrelevant. Option (d) is incorrect because the factory plant is a transforming rather than a transformed resource. Options (a), (b) and (e) are all correct.

## Question 2

Options (c), (d) and (e) are incorrect; therefore alternative 3 is correct. Option (c) is incorrect because the production/operations system hierarchy deals with the idea of many micro-operations which together make up or form a larger macro-operation. Option (d) is incorrect because the terms “internal customer” and “internal supplier” are used to describe micro-operations which take outputs from and give inputs to any other micro-operation, respectively. Option (e) is also incorrect because a build-up of stocks of input and output resources would be the result of buffering rather than the stocks being significantly reduced. Options (a) and (b) are both correct.

## Question 3

Alternative 2 is correct. Thus alternatives 1, 3, 4 and 5 are all incorrect.

Alternative 1 is incorrect because while the first question contained in the statement is applicable (ie the question dealing with the role of or part that production/operations management is expected to play) the second question included in the statement is not really relevant. The second question that should be asked in order to understand the contribution of the production/operations function to the business involves determining the specific performance objectives against which the business can assess the operation’s contribution to its strategic aspirations.

Alternative 3 is incorrect because stage 3 of Hayes and Wheelwright’s four-stage model refers to an aspirations state of being “internally supportive” (captured by the phrase of “be clearly the best”) and not “internally neutral” (captured by the phrase “stop making mistakes”).

Alternative 4 is incorrect because the role of “effector” which refers to the production/operations function as implementer of the strategy (ie we could say it is the second most “active” role) clearly cannot be associated with the lowest or poorest level of the contribution of the production/operations function to the business (described in your prescribed book as “inward looking and at best reactive”).

Alternative 5 is incorrect because the “best” position or role according to Hayes and Wheelwright’s four-stage model is when the production/operations function of the business becomes “externally supportive” (ie the production/operations function becomes central in strategy making and provides the foundation for future competitive success). Note: the function could not become internally neutral **and** internally supportive because these refer to two completely different aspirations states.

**Question 4**

The correct answer is alternative 4 because the statement about flexibility as opposed to a speed advantage in the case of keeping delivery promises is incorrect. Such an advantage would be classified as a dependability advantage.

**Question 5**

Alternative 4 is correct because options (a) and (d) are correct. Options (b), (c) and (e) are thus incorrect. Option (b) is incorrect because the hierarchical position of the production/operations strategy relative to the corporate or business strategy (note: the corporate and business strategy are actually two separate, distinct strategies with their own, different points of focus) per se, is not directly determined by “how management view the potential of the production/operations function to contribute to the long-term success of the business”. The hierarchical model is a convenient way of illustrating the role of the corporate, business and functional strategies, individually, but also the relationships or linkages between one another. Option (c) is incorrect because the content and not process aspects of the production/operations strategy will determine the relative priority of the performance objectives of the business (note: the process aspects concern the way in which the content decisions are made). The remainder of the statement, namely the part referring to the specific decision areas will then, if this correction is made, be correct. Option (e) is incorrect because the production/operations activities (ie design, planning and control, and improvement) as influenced by the structural and infrastructural strategy areas, were switched around. The comparison between the “hardware” and “software” of a computer system and the operation’s structural and infrastructural strategy areas, is however, correct.

**Question 6**

Alternative 2 is correct because options (b) and (c) concerning the case example of Rover are incorrect. Option (b) is incorrect because the most significant element of Rover’s improvement strategy was not on the “narrow” (our choice of word) reorganisation of the company structure but rather on the “whole” (again our choice of word) reorientation towards its human resources. Furthermore, the introduction of “re-engineering principles” does not specifically feature as an element of the improvement strategy in the case example but rather the effort to understand how Japanese “lean” operations practices could be adapted to a Western environment. Options (a), (d) and (e) are all correct.

### **Question 7**

Alternative 1 is correct because options (a), (b) and (c) are all correct. Option (d) is incorrect because the matters concerning the robustness of the product and attentiveness during manufacture/delivery rather refer to a producibility/operability guideline and not a quality guideline. Furthermore, while the phrase added when referring to the robustness of the product appears appropriate, the phrase “one could make the product or provide the service with one’s eyes closed” when referring to the avoidance of designs that require too much attentiveness, definitely goes too far, and is thus considered to be inappropriate. Option (e) is incorrect because while most of the key questions in assessing the feasibility of design are applicable, we should note that the question concerning an acceptable financial return per se should not feature at this point in time.

### **Question 8**

The correct answer is alternative 2 because options (b), (c) and (d) are incorrect. Option (b) is incorrect because the primary purpose of the design activity is to satisfy the needs of customers/clients. Option (c) is incorrect because generally the overlap is greater for services than for products because in many cases the customer/client is part of the transformation process itself. Option (d) is incorrect. The design activity for high-volume, low-variety operations should emphasise the process design because the degree of product/service standardisation is high and the staff skills should rather be system oriented rather than task specific.

### **Question 9**

Alternative 5 is correct because options (a), (d) and (e) are all correct. Option (b) is incorrect because the distinction between product/service technology and process technology is easier to make in the case of the video recorder (a manufactured product) than the amusement park (which is an example of a service operation). Option (c) is incorrect because while the rate of innovation is high during the introduction of new products and services, the emphasis should be on product rather than process technology.

### **Question 10**

Alternative 3 is correct because options (b) and (e) are both incorrect. Option (b) is incorrect because the company did not win the award for installing the “greatest possible number” of robotic assembly tools (this is actually not said in the case exercise), but for its good performance in terms of flexibility, utilisation, lead times, overnight unmanned production, et cetera, through the use of the four computer-integrated FMS. This enabled it to become one of

the most advanced machine tooling operations in Europe, and as a result for the Japanese tool manufacturer to directly compete with European manufacturers. Option (e) is incorrect because the primary interaction between the technology and customers of Robeco is not direct. In other words, the staff or advisors interact directly with the company's computer system to access and provide various sources of financial information which are then passed on to the customer telephonically. The customer is thus the "navigator" of the technology. Nor is the interaction active - in other words the customer, is not the "driver" of the technology.

**YOUR NUMBER OF CORRECT ANSWERS x 1 = MARK OUT OF 10**

| ASSIGNMENT 02          | COMPULSORY ASSIGNMENT |
|------------------------|-----------------------|
| 1ST SEMESTER: DUE DATE | 10/04/2013            |
| UNIQUE NUMBER:         | 713111                |
| 2ND SEMESTER: DUE DATE | 01/10/2013            |
| UNIQUE NUMBER:         | 735250                |

This assignment consists of **ten** multiple choice questions (MCQs) for topic 4 (study units 6 and 7), topic 5 (study unit 8), topic 6 (study units 9 and 10) and topic 7 (study units 11 and 12).

The assignment is applicable to the **both** the first and second semesters.

### Question 1

Alternative 2 is correct because options (c) and (d) are incorrect. Option (c) is incorrect because the constraints placed upon the planning and control task are not due to an infinite but rather a finite supply of resources which has to meet unlimited rather than a limited demand. Option (d) is incorrect because long-term planning (and not long-term control) has more potential to influence decisions and is thus more important than long-term control. Similarly, short-term control is more important than short-term planning. Alternatives (a),(b) and (e) are all correct.

### Question 2

Options (c), (d) and (e) are incorrect; therefore alternative 4 is the correct choice. Option (c) is incorrect because in "make-to-stock" operations the throughput time, P, will always be greater (and not smaller) than the demand time, D. Option (d) is incorrect because the scheduling activity in the planning and control task in operations deals with setting up timetables showing at

what time or on what dates jobs should start and when they should end. The sequencing activity must, however, determine which tasks must be performed before (or have priority over) others. Option (e) is incorrect because the hospital does not follow a “first-in-first-out” sequencing priority system at all. Instead, as patients arrive, medical staff quickly sort and classify them to determine into which category of urgency each patient fits. Then a suitable schedule for the various treatments (and patients) is worked out - in other words, very serious cases or illnesses are treated first.

### **Question 3**

Alternative 5 is correct because options (b), (c) and (d) are correct. Option (a) is incorrect because material requirements planning systems are used in dependent rather than independent demand conditions. Option (e) is incorrect because the “internal working” or functioning of the MRP system is not described correctly. The master production schedule (not the MRP system) must be analysed to ensure that the weekly loadings on each work centre are realistic.

### **Question 4**

Alternative 2 is correct. Should the quantity of sales orders in week 5 be 9 (thus an increase of 5 units), the quantity of the “available to promise” in the same week, week 5, will be 2 units (thus a decrease of 5 units). However, such an increase would have no effect on the quantity of the “available to promise” in week 7. This quantity remains 11 units.

### **Question 5**

Alternative 3 is correct because options (a) and (c) are correct. Option (b) is incorrect because JIT production/service means producing/rendering products/services **exactly when** they are needed - not before so that they have to wait in inventory, nor after so that customers/ clients have to wait. Option (d) is incorrect because reducing the level of inventory would probably mean that production and operations management may deal with the opposite as stated in terms of work-in-progress (a decreased amount), scrap and rework (less). However, we should note that the all-embracing benefit of reducing the level of inventory, lies in the removal (or at least partial removal) of the "blanket of obscurity" which hides problems in the operation. Option (e) is also incorrect because while the first three points contained in the statement concerning the JIT philosophy are correct, the last (the one dealing with the focus on high capacity utilisation) is part of the "traditional approach" and is not a focal point of the JIT approach.

**Question 6**

Alternative 3 is correct because options (c) and (d) are incorrect. Option (c) is incorrect because instead the company reduced its batch sizes to even smaller batches following the introduction of JIT principles into its manufacturing processes. It therefore meant they enhanced its flexibility to meet market needs just-in-time. Option (d) is incorrect because the specific JIT planning and control techniques used for components and smaller subassemblies, were the "move" kanbans (also referred to as conveyance kanbans) and for the major subassemblies, assembly line broadcasting. Furthermore, JIT pull (not push) scheduling and *Jidoka* are viewed broadly as the two pillars of TPS (Toyota's Production System) and would not be regarded as mere or specific JIT techniques.

**Question 7**

Alternative 1 is correct. Alternative 2 is incorrect because the operation's view of quality is not primarily manufacturing based but, in line with other viewpoints, possibly more customer/client oriented as implied by the phrase "consistent conformance to customers' expectations". Alternative 3 is incorrect because, firstly, it would not be fair to single out any one quality gap as the "most significant" since the existence of any one is likely to result in a mismatch between expectations and perceptions and results in poorly perceived quality. Secondly, production/operations management bears the most responsibility for quality gap 3, that is the quality specification-actual quality gap and the gap referred to in the statement, namely gap 1 which is the joint responsibility of marketing, production/operations management and product/-service development. Alternative 4 is incorrect because quality gap 4 to which the statement refers is the primary responsibility of the marketing function and does not lie with the production/operations function unless it is not providing the level of quality expected by the customer/client. Alternative 5 is regarded as incorrect because the statement "quality is like **beauty** - it lies in the eye of the beholder" is regarded as inappropriate because of the comparison with "beauty". While the phrase "quality is in the eye of the beholder and customer's perception of quality is all important" is used in your prescribed textbook, the operation's view of quality (ie "quality is consistent conformance to customers' expectations") implies that a clear specification, which is more quantitative, must be met.

## Question 8

Alternative 4 is correct because options (b), (c) and (d) are incorrect. Option (b) is incorrect because it must first be decided how to measure a quality characteristic itself before the standard for it can be set. Option (c) is incorrect because we believe that quality in this regard should not be loosely defined by a slogan such as "making customers happy". Furthermore, the reference to and examples of the so-called "quality standards" in the statement are incorrect. These are rather quality characteristics (ie a description of the pies in terms of size, filling, appearance, smell, durability and an indication of its measurement such as large, minimum of 100 mg per pie, appetising, etc). A quality standard, however, should then be set for each quality characteristic. For example, having set the pie size at 100 mm long x 40 mm wide x 20 mm high - the quality standard (ie the level of quality that defines the boundaries between acceptable and unacceptable) could be such that out of very 100 pies made, at least 95 may not deviate from the standard pie size by more five percent. Option (d) is incorrect because type I errors occur when a decision is made to do something (take an action to prevent quality problems), but it is later found that such actions were not necessary or warranted. Type II errors occur when a decision is made not to do anything (no actions are taken to prevent quality problems), but it is later found that the situation did indeed warrant such actions. The descriptions of type I and II errors in the statement were thus switched around. Options (a) and (e) are correct.

## Question 9

Options (a) and (c) are incorrect, therefore alternative 1 is correct. Option (a) is incorrect because project operations are usually low in volume (1 or a few units are usually produced, eg, building the space shuttle, constructing a hospital, retooling an assembly line at a motor vehicle manufacturer for a new model, etc) but high in variety (different types of projects are quite diverse as indicated in previous examples). Option (c) is incorrect because projects with high complexity (ie those of large magnitude, many groups involved or organisations to be coordinated, high diversity in skills needed to accomplish the work) need not necessarily be difficult to plan but could, however, require considerable effort and be problematic to control. Projects with high uncertainty (ie those whose final outcomes in terms of the dimensions of time, cost and technical performance are difficult to predict), however, must be planned particularly well. Thus options (b), (d) and (e) are correct.

**Question 10**

Options (a), (b) and (c) are correct, therefore alternative 5 is correct. Option (d) is incorrect because the project was considered to be most successful even though it overshot its budget by 10 percent. The most important objectives of the Giotto project were meeting the launch date (time objective) and fulfilling its technical tasks (quality objective). The cost objective, though not completely ignored, was of secondary importance because studying the comet was a "once in a lifetime" opportunity. Option (e) is also incorrect because PERT network analysis (and not CPM) is better suited to projects with high uncertainty (the method recognises that activity durations and costs in projects are not deterministic [fixed] and applies the probability theory to estimates). The CPM method is, however, more popular and frequently used. The last part of the statement about which method of drawing networks CPM (AoN) and PERT (AoA) respectively follow, is correct.

**YOUR NUMBER OF CORRECT ANSWERS x 1 = MARK OUT OF 10**

**3 COMMENTS ON AND FORMAT OF THE EXAM PAPER**

Please note that the examination will cover the whole syllabus (all parts, topics and study units) for the module MNO3701. We therefore urge you not to leave out or ignore any part or portion of the study material while doing your final examination preparation. The format of the examination paper that you will be required to write for the module is similar to the format that you have encountered in the assignments during the semester (that is a combination of both multiple-choice and essay-type questions will be used).

The examination paper is, however, worth 70 marks and will consist of two sections. Section A contains the multiple-choice questions (10 questions will be asked which will count 1 mark each out of the examination total of 70 marks or 14%). Section B contains the essay questions. There will be three questions, each of which will count 30 marks, the questions will have SEVERAL subsections as in the assignments, and you will have to select two (for 60 marks out of the examination total of 70 marks or 85%). The duration of the examination will be two hours. The final mark will consist of your examination mark (90%) and your assignment mark (10%).

## **4 CONCLUSION**

We trust that you have enjoyed and found studying this module in Production and Operations Management valuable and that you are or will be able to apply most of the concepts, principles and techniques in your everyday work environment with great success. If this is the case, we encourage you to register for our honours paper in advanced production and operations management, namely, **AOM4801**. Good luck for the examinations!

Kind regards

**R Dirkse van Schalkwyk**

**Ms A Pillay**

**DEPARTMENT OF BUSINESS MANAGEMENT**