

INDIVIDUAL EXAM

Date:
Place:
Time: 3 1/2 hour
Number of pages:
Lecturer: Prof.dr. Jan de Vries

Remarks

- This midterm exam is a *closed* book exam (It is allowed to use a dictionary however)
- **Please take care of your handwriting;** answers showing unreadable text won't be corrected!
- Please be very specific where the answers to all the questions asked below can be found
- It is noticed here that sometimes one question will exist of several subquestions. *Explain all your answers*
- write down your name on each sheet of paper!!
- Try to answer the questions in a well-structured way(!).
- It is allowed to answer the questions in Dutch.
- Please..... Think before start writing as a madman!!



WISHING YOU A LOT OF SUCCESS !!

"domme vragen bestaan niet, domme antwoorden wel" (Herbert Garrison)

Individual exam

- 1) In their book, Slack and Lewis take the concept of Operations Strategy as a starting point for their analysis of a company.
 - a) Clearly, performance objectives play an important role in the model of Slack and Lewis. Please explain the role and function of performance objectives by addressing in general, what Slack and Lewis mean by the internal and external effects of performance objectives. Explain your answer by giving examples of these internal and external effects for two performance objectives in a service setting. Additionally, please make clear how and what role performance objectives play in the model of Slack and Lewis (*10 points*)

- 2) Within the field of operations management, the product-process matrix is an important concept. Although developed by Hayes and Wheelwright, Slack and Lewis heavily rely on the concept of the product-process matrix when relating technology characteristics to market requirements.
 - a) Please explain the basic idea behind the product-process matrix. Address the main dimensions of the product-process matrix and explain why the concept of ‘natural fit’ is such a crucial element in the process-product matrix. Please illustrate your answer by means of an example. In doing so, please summarize the idea of the product-process by means of a detailed figure (*10 points*)
 - b) In literature, the product-process matrix is heavily criticised. Please give at least three fundamental different points of criticism with respect to the product-process matrix as addressed by Slack and Lewis (*5 points*).

- 3) In their book, Slack and Lewis put different ‘new approaches’ in the context of Operations strategy amongst which Lean Operations. In doing so, their key question is whether this approach is a substitute for strategy or not. Additionally, they address the question of how this approach fits into operations strategy.
 - a) Please discuss the concept of Lean by explaining the central features/elements of this approach. (*5 points*).
 - b) Please comment on the Lean philosophy by giving at least three fundamental points of criticism. Please explain your comments briefly (*4 points*).
 - c) Please discuss the question how Lean fits into operations strategy. In doing so, please use the central model of Slack and Lewis on operations strategy to explain your answer (*5 points*)

- 4) Below are four statements. Specify for each statement whether you agree with the statement or not (Yes/No). Underpin your choice with arguments based on theory! Please note that your (theoretically-based) arguments are crucial for assessing (beoordelen) the correctness of your answer!

Statement 1

Upstream of the customer order decoupling point there are no inventories located (3 points)

Statement 2

The structuring issues addressed during the lectures can be considered as independent variables (3 points)

Statement 3

The implementation of ERP Systems can be considered as an example of redesigning the organizational structure of a company (3 points)

Statement 4

A smoothing capacity strategy essentially is a mix of a capacity leading and a capacity lagging capacity strategy (3 points)

- 5) Please explain briefly, what Slack and Lewis mean by “Trade-offs and the efficient frontier“ Please explain your answer by using a schematic representation of this issue (5 points)

- 6) In their book, Slack and Lewis address three concepts related to the reconciliation process e.g. risk, sustainability and fit. Please explain briefly, how these three concepts are related to each other in the view of Slack and Lewis. Whenever considered necessary, please explain your answer by means of an example (5 points)

- 7) It is easy to become confused when trying to understand what MRP is. Originally, MRP refers to MRP-I (Materials Requirements planning). More recently MRP refers to MRP-II (Manufacturing Resource planning).

A company manufactures scissors. One pair of scissors is made up of two legs and one pin. To make planning more easy, the company calculates in thousands. At this moment, the company has 150 legs, and 80 scissors in stock. It is required to make 120 scissors in week 1, 200 scissors in week 4, and 120 scissors in week 5. The lead time for scissors is one week, the lead time for legs is two weeks. Scissors are produced in series (lot-size) of 50, legs are produced in series of 20. In week 1, 200 scissors are scheduled to be finished by the production department. There are no legs scheduled to be finished by the production department.

- a) Construct a net materials requirements plan for scissors. Calculate, when orders for scissors have to be released (fill in the schedule below for scissors) (7 points)

- b) Construct a net materials requirements plan for legs. Calculate, when orders for legs have to be released (fill in the schedule below for legs) (7 points)

Week	VP	1	2	3	4	5
Gross requirements						
Scheduled receipts						
Inventory on hand						
Net requirements						
Planned order releases						

PLEASE DON'T FORGET TO SUBMIT THE TABLES

The Wineco Case

Wineco B.V. is a manufacturer of synthetic baths (including all the different colors, shapes and position of outlet piping holes –more than 1000). The main goal of Wineco B.V. is to achieve a substantial market share on the West-European market for synthetic baths. Key words for Wineco B.V. are flexibility, quality, and customer-orientation.

Baths are made from synthetic plates and delivered in several colours and shapes. The plates are supplied by a large chemical concern that uses a delivery time of two to three months. Plates are ordered in a specific size and in a specific colour. The purchase department of Wineco B.V. can make a choice between several (standard) plate sizes when ordering the plates. After arrival the plates are stored in a warehouse.

The planning department decides which baths ought to be made for the upcoming month. This is done by taking existing stock levels of the baths of a specific colour and shape as a starting point. From this it is estimated whether these stock levels are sufficient to fulfill customer demand during the coming month. When a specific serie of baths needs to be produced, the sawmill department receives a production order to saw a serie of plates of a specific size out of the standard plates. Any possible remainder of the material is stored in the warehouse again. The sawed plates are than moved to the shaping department where the shape of the bath is moulded. Wineco B.V. uses expensive moulds/templates to mould the plates. Set-up times in the moulding department exist of the changing of the moulds which is very time consuming and during which no production (moulding) can take place. During the moulding, only the shape of the bath is of importance: for producing a bath of another colour it is not necessary to change the moulds.

After the shaping of the plates, the 'baths' are stored on the shop floor to undergo a secondary operation. This operation exists of hardening, drying, drilling outlet pipe holes and packaging. In this department, small carts are used on which the baths are clasped. Each type of bath uses a different cart. In the drying-room more carts can be stored than there are available of a specific type of bath. As a consequence, the secondary operations department has several different types of baths in progress. Due to the stockpoint between the shaping department and the secondary operations department always a large number of different types of baths are in process. After packaging, the baths are moved to the warehouse waiting for delivery to individual (private) customers, wholesalers or fitters. Usually delivery of baths takes place in very small amounts.

Wineco B.V. strongly focuses on short delivery times and high delivery reliability. To achieve this, the company is prepared to interrupt production runs during the shaping of the baths for making baths that are running out of stock. Since a year Wineco B.V. is confronted with some capacity problems in the warehouse and in the shaping department. The company furthermore faces a large amount of unsalable baths that are in stock and an increasing number of rush orders for the shaping department.

Case questions 8

- a) Give a description and characterization of the production process of Wineco. Apply the literature you studied and explain your characterization. (*Hints: start with giving the basic form of Wineco, address the performance objectives mentioned by Slack and Lewis and explain how Wineco tries to achieve these performance objectives. Please note that probably not all performance objectives are of equal importance for Wineco B.V. (10 points)*)

As a result of some of the problems the managing director of Wineco B.V. proposes to store the shaped baths in the warehouse and to perform secondary and packaging operations only on actual customer orders.

- b) Discuss the plan of Wineco to move the decoupling point. Give an outline of both the advantages and disadvantages of this plan. What will be the possible consequences for the planning and control of the production process when the decoupling point is moved? (*Be as specific as possible for the situation of Wineco so please it's of no use to come with general remarks!*) Would you advice to move the decoupling point or not? (*please underpin your advice with arguments*) (15 points)