Aalto University

The aim of the course is to give students a basic proficiency in production economic thinking, argumentation and analysis. Upon completing the course, the student masters the basic concepts and key dynamics of production as an economic activity, and is through these able to understand and evaluate business-opportunities, design and evaluate business-processes, and analyze the financial state of a business. Further, throughout the course, the student learns basic skills of engineering work, such as project planning, organizing and management.

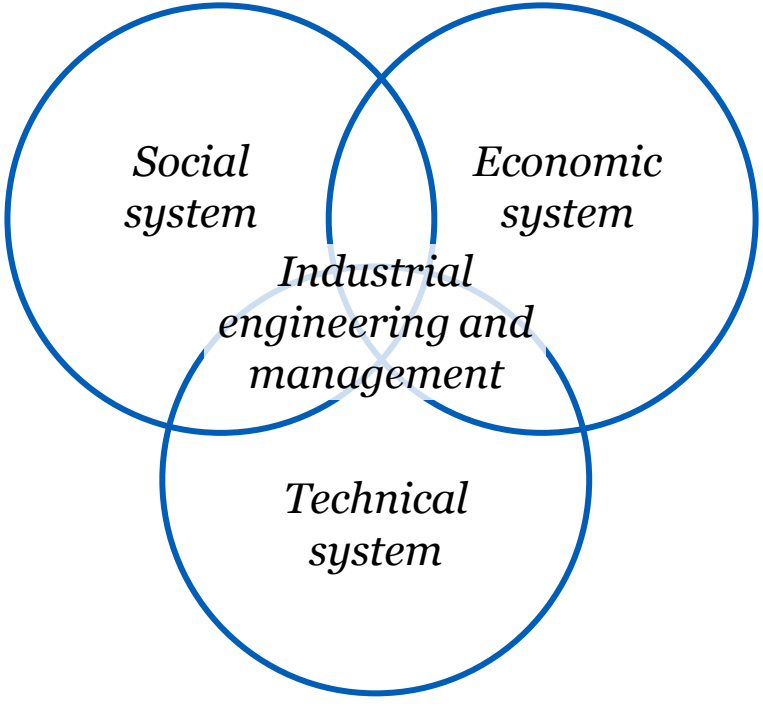
TU-A1300
Introduction to Industrial Engineering and Management

Recap and preparation for part exam I

Tero Haahtela

Industrial engineering and management as a science

- The necessary prerequisites for economic activity
- Production is about transforming an input to a more desirable output
- Technology as more than gadgets
- Industrial engineering and management is a science of the man-made or artificial between “hard” and “soft” sciences.



Value as the foundation of business

The main challenge of starting a business

The starting point of most tools for analyzing markets, industries and firms

Markets are also created around value

Segmenting – segmenting potential customers based on their perception of value

Targeting – choosing the segments which we are especially interested in creating value for.

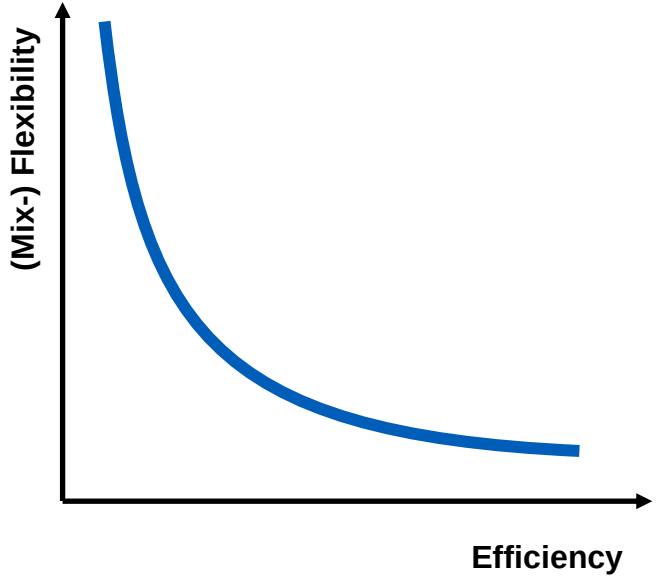
Positioning – Deciding how the value we create differs from the value that the competition creates

Cost of production < Exchange value < Value-in-use

Production systems and organizations

Production systems

- The connection between efficiency and standardization
- Different production systems for different products
- How to push the tradeoff between flexibility and efficiency
- Effect of customer interaction (OPP)



Organizations

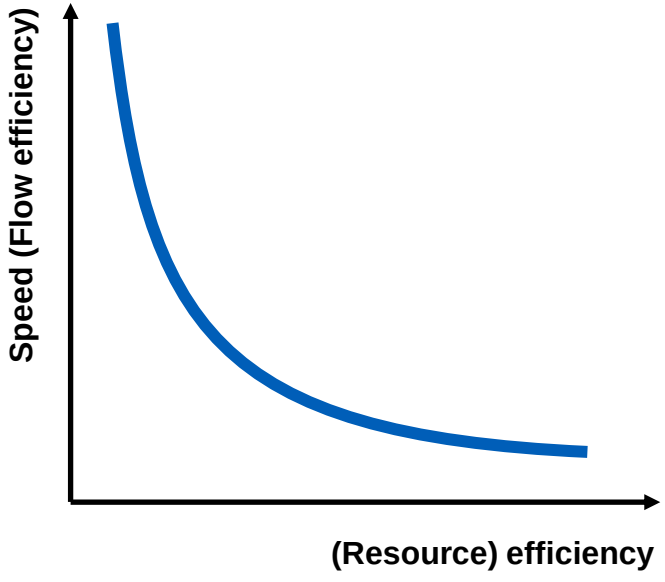
- Organizations are about people
- Organizations can be understood through structure and culture
- The difference between management and leadership

Volume, variety, variation, visibility

The production process and production control

Production process

- The connection between standardization and process
- Relationship between the speed/efficiency tradeoff and production layout
- Why are setups crucial
- The role of buffers in production



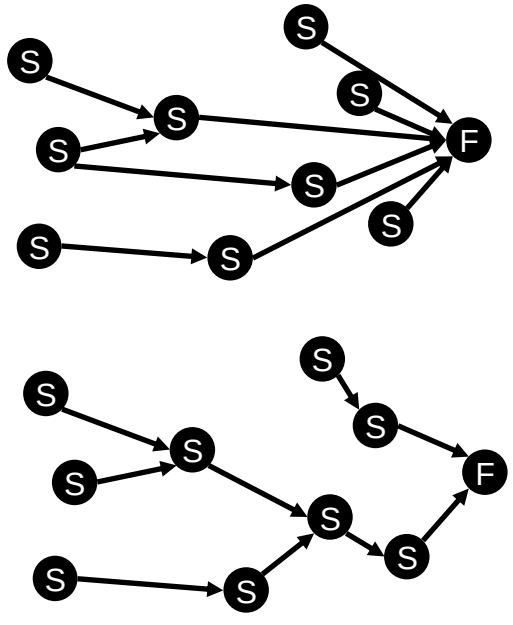
Production control

- Two basic logics, push and pull – and their relationship to the OPP
- Coping with variety: the relationship between batch size, WIP, lead time and setup time
- The role of quality control

Production as part of the supply-chain

Procurement

- What a core competence is
- Specialization drives the importance of procurement
- Procurement controls a lion's share of costs in today's firms
- Moving from price-focused procurement to total-cost-of-ownership thinking



Supply-chain management

- Downstream and upstream, tiers
- Supply-chain structure, and its management implications
- Tradeoff between responsiveness and effectiveness, and its relation to OPP
- Demand forecasting

Part exam I

When: Tuesday 18.10.2022, 13:00-16:00

Where: MyCourses

Aalto University

Part exam

- **The exam will be done in MyCourses 18.10.2022**
  - It opens at 13:00 and closes at 16:00 (no need to register).
- **Tentatively you can also take part exam 1 during a course exam 20.10.2022, 13:00-16:00**
  - ***You need to sign up for this by contacting the course e-mail by 16.10.***
  - ***Please DO NOT register to this in Sisu!***
- **You can use all the course materials, and any additional information sources**
  - We have taken this into account when formulating the exam questions.
  - You can and should refer to sources – but do it appropriately.
- **The exam consists of two essay questions**
  - One questions is more theory-oriented, the other is more practice-oriented
  - You will write your answer in a word file (or similar).
  - One file per question, two files in total.
  - The answer-files are submitted to corresponding Turnitin-boxes in MyCourses, before the exam closes.
  - Reserve time for making the submission.

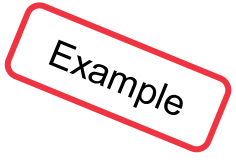
Example: Theoretical question

Production flow is an important concept – elaborate on the relationship between production flow and productivity in different types of production systems, while highlighting how production flow is manifested in how these systems are managed.

Evaluation

Factual content

- Understands the concept (+2,0p)
- Is able to elaborate on it in different contexts (+3,5p)
- Makes connections to management principles (+1,5p)
- Critical misunderstanding (max 2,0p)
- Display of other significant and relevant brilliance (+1,5p)



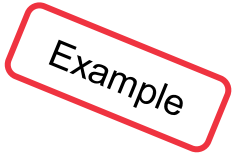
Answer quality

- The answer is well structured, the argumentation is coherent and credible, and the use of references is appropriate (+1,5p).
- The answer is messy and/or the argumentation is hard to follow (-1,0p).
- There are shortcomings in the use of references (-1,0p) or there is considerable plagiarism in the answer (points are deducted according to the extent and severity of the offence, so that in blatant cases the whole answer receives 0p).

The answer is awarded a maximum of 7,5 points (although it is possible to get 10,0 points).

Example: Practical question

You can look at your daily activities through industrial engineering and management concepts – During our lives we buy many products and services. Reflect on your own procurement activities through course concepts and management principles. If you think some course concept or management principle isn't relevant, explain why.



Evaluation

Factual content

- Is generally able to reflect on own procurement through course concepts, or argues for their irrelevance (+2,0p)
- Is able to reflect on own procurement through procurement management principles (max. +4.0p)
  - Core competence (1,0p), Kraljic (3,0p), RFX (1,0p), lifecycle cost (1,0p)
- Display of other significant and relevant brilliance (+1,0p)

Answer quality

- The answer is well structured, the argumentation is coherent and credible, and the use of references is appropriate (+3,0p).
- The answer is messy and/or the argumentation is hard to follow (-1,0p).
- There are shortcomings in the use of references (-1,0p) or there is considerable plagiarism in the answer (points are deducted according to the extent and severity of the offence, so that in blatant cases the whole answer receives 0p).

The answer is awarded a maximum of 7,5 points (although it is possible to get 10,0 points).

This is an individual exam!

- **Answers are submitted to Turnitin**
  - Plagiarism will be detected.
  - You can avoid being flagged
    - *write your answer yourself*
    - *do not share it with anyone*
    - *make appropriate references to all sources*
- **The essay questions will be drawn from a pool of questions**
  - It is not probable that you will have the same questions as your friend.
  - Question scores will be adjusted (up), in order to compensate for any differences in the difficulty of the questions.

How should you prepare for the exam?

- **Exactly as you would prepare for a normal exam**
  - The exam tests to what extent you've understood course concepts and to what extent you are able to relate them to each other.
  - You might want to map good additional sources of information beforehand
- **If you're not confident in your essay-writing skills, work on them**
  - Lack of structure and emphasis often reveal lack of understanding
  - This most important thing is to answer the question
- **If you are poorly prepared, you will most likely run out of time**
  - You do not have time to learn the course contents during the exam
- **If you have a certificate which grants you additional time, contact Toni for more information**
  - Toni.lauren@aalto.fi

How should you act during the exam?

- **Maximize your performance**
  - Be on time, submit on time
  - Take at least one break, get some air, reserve some snacks, coffee? etc.
- **Any problems and questions during the exam can be addressed to the exam supervisor(s) via email: tu-a1300@aalto.fi**
  - Any exam-related announcements and notifications will be delivered via email.
  - If sh*t hits the fan -> expect instructions via email.
- **This is not the first time we do this kind of exam**
  - We will prepare for all problems that we can realistically think of
  - If there are problems during the exam, be patient, we are on it…

Good luck with the part exam!

Perfection is achieved, not when there is nothing more to add, but when there is nothing left to take away.

Antoine de Saint-Exupéry