

Market Driven Systems (FRTN20)

Exercise 4

Manufacturing Operation Systems (MOS) and Key Performance Indicators (KPI)

Last updated: 2016-04

1. In many of today's production companies, the board desires an increased insight into production details. This is confirmed for example by the survey presented in Table 1, assembled by the market analysis company Forrester Research.

Poor visibility into plant operations	38%
Inaccurate demand forecasting	36%
Poor communications	24%
Supply shortfalls	18%
Poor customer satisfaction	8%

Table 1 What are the biggest problems with global manufacturing? Percentage of 50 global manufacturing companies responding.

- a. In order to improve this insight, you propose to a CEO (Chief Executive Officer) that certain production related Key Performance Indicators (KPI) should be tracked. The CEO likes the initiative and asks you to choose KPIs to start with. Describe your strategy for determining the KPIs, and present five reasonable KPIs.
 - b. In order to put yourself and the CEO on the same page, regarding the KPIs you have chosen, you write down a short description/definition of the KPI concept.
 - c. Describe how your five KPIs affect the production strategical concepts time, cost, quality and flexibility.
2. Commonly used KPIs for process improvements are:
 1. Higher output
 2. Lower utility cost
 3. Better yield
 4. Fewer unwanted byproducts
 5. Less labor
 6. Better quality
 - a. Explain each of them.
 - b. Are these KPIs listed in the ISO 22400-Part2 (draft1) standard? If yes – good. If no, are there other equivalent KPIs listed instead?
 - c. What is the objective of the ISO 22400-Part2 standard?

3. Imagine that you are the CEO of a mid size enterprise within the biomedical industry. Production is carried out at several sites in Sweden and new facilities are planned within other Nordic countries. You have just made a large investment in buying, installing and adapting your new ERP (Enterprise Resource Planning) system.

Your hope is that the ERP will provide information on how much money different parts of the production consume/yield. The effort has been costly and the board is not entirely pleased with your initiative and the IT Manager's implementation of it. It has turned out difficult to merge the MES systems of the production sites with the new systems, leading to a number of special fixes. The currently asked question is whether you should harmonize the ERP-MES interface. The IT manager has heard of a standard called ISA 95.

Tomorrow there is a board meeting, and you have to acquire some background. Write down a short resumé of the ISA 95 standard. Focus on key concepts of the standard and reflect over how the company should act.

4. What is the definition of Manufacturing operations management? How does it relate to Business logistics and Process Control systems?
5. Briefly describe the 4 manufacturing operations categories.
6. The Activity model for Manufacturing operations category Production is shown in Figure 1. Give one example of a task for each of the eight activities.

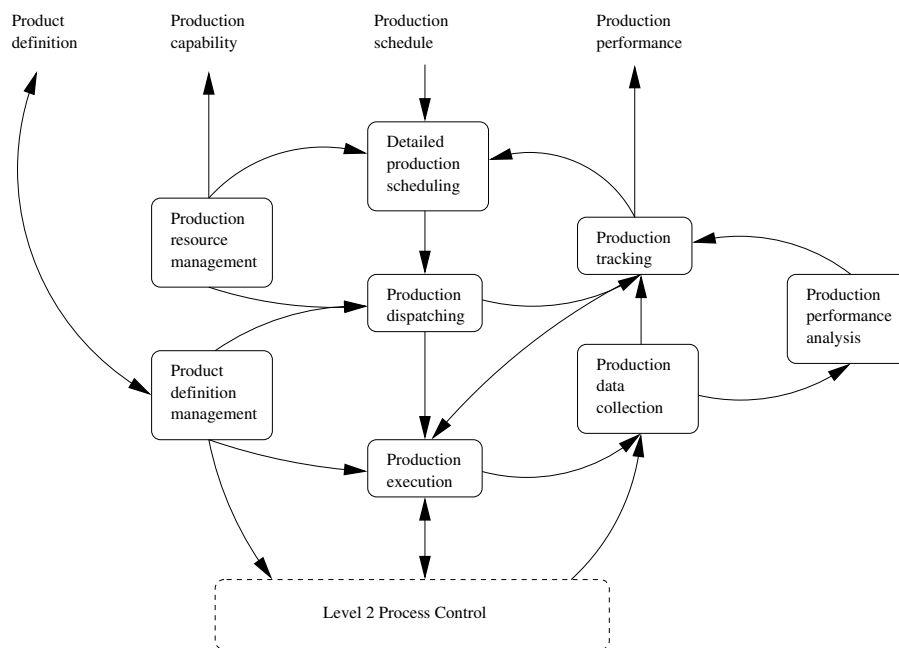


Figure 1

7. One activity in the Activity Model is Production Performance management. This activity uses the data collected by the Data collection activity to calculate control, process, and economical improvement
 - a. Characterize the concepts of control, process, and economical improvements. Give one example of each.
 - b. Give an example (imaginary or real) of when a control improvement leads to a process improvement, which in terms leads to an economical improvement.