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## **Lean and work environment**

- A study of implementation in 10 Danish organizations

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### ***Abstract.***

#### **Purpose**

Investigate the impact of lean manufacturing on work environment in 10 Danish Organizations.

#### **Controversial Perspectives**

Lean manufacturing has been widely adopted and accepted as a system to reduce inventory, cut lead times and increase productivity. Lean started as the Toyota Production System used in manufacturing and has spread to service, administration and health care. However, such widespread adoption has naturally raised the question if the benefits of lean manufacturing have come at the expense of work environment. While the ethos of lean is “work smarter, not harder”, a basic principle of lean manufacturing is to reduce waste. Lean analyses a process or value stream and reduce waste as much as possible. From a work environment perspective lean reduces or removes pauses and can lead to work intensification. Lean, in other words, has ensured that workers are kept busy. This lead to the research hypothesis: “Lean will have a negative impact on work environment”.

We have conducted a mixed method longitudinal study of the implementation of lean in 10 organizations in Denmark. The organizations were selected from manufacturing, administration and healthcare. Prior to implementing lean a group interview was conducted and a baseline psychosocial questionnaire survey was performed. It was followed up one year after. In between the case organizations were visited by researchers and reflection seminars held with employees. Researchers also independently scored the level of lean implementation.

This research design has allowed us to quantitatively measure changes in work environment and relate these with a qualitative understanding of the lean process in the analysed organizations.

#### **Results**

Lean was implemented in different ways in the 10 cases. Some were confined to a single department and other companywide. Some focused on a single process while others focused on cross company processes. Never the less a common element exists across cases: All used value stream mapping and tools associated with lean.

The general result is that there are overall relation between lean and the work environment. Changes in the psychosocial work environment are generally small and not to the

negative side, and there does not seem to be a relation between the level of lean implementation and the work environment. The conclusion is the research hypothesis that lean would have overall negative implications for work environment *cannot be confirmed*.

**Keywords.** Lean management, work environment, multiple case study