Critical success factors of lean thinking implementation in Estonian manufacturing companies¹

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The field of lean thinking is one that has been extensively studied in recent decades. Along with different aspects under the loupe, numerous studies have focused on the question of defining lean, another considerable part is trying to clarify which tools to employ and how should lean be implemented and used to achieve the status of a lean company. However, almost none of the research has attempted to create a clear lean implementation process path. In other words, a defined, step-by-step guideline for successful lean implementation is absent. The consequence is an unwillingness to start the lean journey and anxiety about the results.

Based on current research and statistics, the low productivity and efficiency of Estonian manufacturing companies should be improved and an appropriate way for that should be found. Along with the supply chain, many aspects and parts of that supply chain are contributing to productivity and efficiency, but the current thesis focuses on production. In production, lean thinking ideas are one of the ways used in the global economy for improving efficiency and productivity.

The objective and the main aim of this research was to develop a lean thinking implementation process model that could be adapted to manufacturing companies in order to secure the desired results of lean implementation. The gaps identified in the literature helped pose the following research questions: how should companies perform the process of lean thinking implementation? Why do companies fail with lean thinking implementation? Based on a review of available literature, the author constructed a process of lean thinking implementation which incorporates the important steps and which leads to successful lean implementation.

The steps regarded as critical are: process quality, lean knowledge acquisition, lean house development, lean house training, lean thinking implementation process planning, execution of the plan and, as a result, successful lean thinking implementation. The developed process of lean thinking implementation was used further in the study for assessing the lean implementation of companies in order to identify which step in the process influences successful lean thinking implementation more and could therefore be regarded as a critical success fac-

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tor in lean thinking implementation. For the empirical part of the research, the author chose twelve manufacturing companies that are implementing lean. All of them are from different industries but they represent the batch type of manufacturing process. The multiple case study method was used for selection of the companies due to the qualitative nature of this study. Companies from different industries were benchmarked against each other and the findings replicated.

Assessment of data was done based on the model proposed by Karlsson and Åhlström (1996) for the assessment of degree of adoption (DOA) of lean initiative. The DOA model consists of nine criteria of lean and they are assessed as 0 – not implemented, 1 – partly implemented and 2 – fully implemented. Those grades are given based on analysing the determinants of each criterion. The author developed the DOA model further and used it for assessing critical steps from the empirical model.

The main results that we can see from the assessment are:
- DOA (or success of lean initiative) depends on how well lean implementation process steps were performed – Result 1 (R1);
- DOA depends on the existence of a lean house (or own production system) – Result 2 (R2);
- Some criteria of DOA are not implemented in any company – Result 3 (R3).

These results represent the main outcome of the study and prove the proposal by the author, while introducing the empirical model of the lean thinking implementation process. In general, the results show that understanding of lean thinking should be inserted into a company’s own language as part of a company’s own production system (or lean house, or any other form of formalisation of lean thinking principles made especially for the company). This is possible if the company has a good starting point (high process quality) and effectively performs the steps of the lean thinking implementation process. Additionally, the study indicates that despite the fact that some companies have good results in both the lean thinking implementation process and DOA, they have not implemented some lean thinking principles. Newer field consultancy projects (started while finalising this thesis) show indications towards the same idea proposed and studied in this paper: if companies miss critical steps in lean implementation preparation, then with high probability they will miss the desired targets of lean implementation and the effect of their actions will be short term.

From a theoretical aspect, this thesis has begun to fill the gap in a vague lean implementation framework. Lean philosophy as such and its tools have been widely examined, but a clear process description for successful lean implementation has been missing. The results of this thesis contribute to the latter part of lean theory and create a basis for further development. The research conducted is only the tip of the iceberg. There are a lot of questions that should be answered in this area. To answer all of them, the ultimate goal has to be achieved – development of a general model for successful lean implementation. This model should incorporate Process, People and Culture aspects for all manufacturing process types with the possibility of assessing the financial feasibility of implementation.