Lisa Achleitner

Lean Production in Manufacturing Companies in China and Malaysia

Topic and Research Question

This research paper is dedicated to lean production in China and Malaysia. Both countries are emerging Asian economies with a strong industrial focus. Because manufacturing companies play an important role in the economies of both countries, improving the production systems can have a strong impact on the countries' global competitiveness. Lean production is a popular tool for the improvement of production systems.

The paper is built around three research questions:

1. Which tools and methods do authors of research papers on China and Malaysia regard as lean elements?
2. To what degree is lean production applied in China and Malaysia?
3. What are the benefits of lean production implementation on manufacturing companies in China and Malaysia?

These research questions are relevant for manufacturing companies in China and Malaysia, which can increase their competitiveness by adopting an adequate set of lean production practices.

State of the Art

Lean production is a topic which has been much discussed throughout literature. Japanese books on the Toyota Production System constitute the earliest contributions to the field of lean production. These books describe the philosophy and methods of the Toyota system without using the word "lean". The second group of publications consists of Western books on the Toyota Production System and lean manufacturing. The most prominent example of early Western authors in the field of lean manufacturing is Womack et al. (1992), who propagated the term *lean production.* Besides these descriptive books, a vast line of manuals and guidebooks have appeared. They are primarily addressed towards managers of manufacturing plants and provide advice and instructions on the implementation of lean manufacturing techniques. A large part of lean production books and studies deals with the impact of lean manufacturing. Most of these studies analyze the positive effects on different plant and firm performance indicators. At the same time, critical books have emerged. While most of these publications do not question the positive impact of lean production on plant performance, they claim that LP has negative effects on labor satisfaction and health.

In spite of the abundance of lean manufacturing literature, the number of books and studies comparing the status of lean manufacturing implementation and impact within specific countries is limited.

Methodology and Approach

The research method used in this MA thesis is a comparative analysis of 16 research papers on lean production: eight on China and eight on Malaysia. The 16 studies examined in this research paper are chosen according to their relevance. Only studies which discuss either lean production implementation or the benefits of lean production in China and Malaysia, or both, are considered; research papers which only focus on specific parts of lean production, such as just-in-time or total productive maintenance, do not form part of the analysis. The goal is to provide a picture which is as broad as possible and covers all publications available on the topic as of October 2013. Although the completeness of the list of publications cannot be proven, extensive database searches over the course of several weeks indicate that all major research papers on the topic of lean production in China and Malaysia are included in this MA thesis.

The analysis consists of three parts. First, the tools of lean production cited in the research papers on China and Malaysia are compared with those appearing in international publications on lean production. In a second step, the degree of lean production implementation is examined. Finally, the reported benefits of lean production are assessed.

Main Facts

The analysis of this thesis shows that just-in-time practices and quality and safety practices have the highest level of occurrence in literature, followed by efficiency practices and human resource practices. The focus of lean production literature is thus on just-in-time practices, whereas supply chain practices are given the least attention. Out of the 73 practices mentioned by international authors, 30 are not cited at all by the authors of research papers on China and Malaysia. The three most frequently cited practices were kanban, total preventive maintenance and just-in-time.

According to the examination, the most frequently implemented lean practices are kaizen, 5S and PDCA, followed by flexible work systems, standard operating procedures and performance-related pay systems (see figure 1). While some practices differ only slightly between China and Malaysia, others have a rather large gap; total quality management, total preventive maintenance, customer involvement, setup time reduction and continuous value stream are more commonly implemented in Malaysia than China, whereas the 15 most commonly used practices generally rank slightly higher in China.

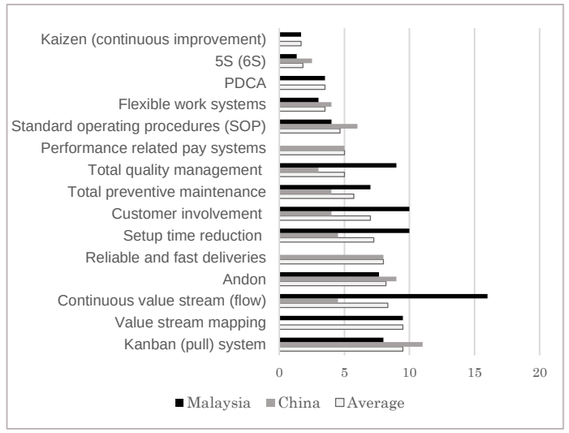

Figure 1 - Most frequently implemented lean practices (lower score = higher level of implementation)

Lean implementation in China appears to be higher than in the US when divided into single industries. The overall results, on the other hand, are lower than in the US. As far as Malaysia is concerned, the lean production implementation can be described as slightly above average.

All nine authors examining the effects of lean production come to the conclusion that lean production is beneficial for manufacturing firms. The most commonly reported benefits are improved quality, reduced inventory and shorter lead time. Generally, the group of non-financial benefits is most frequently mentioned, followed by financial benefits and improvements of quality.

Results

The analysis revealed that the most common lean practices among lean manufacturing companies in both China and Malaysia differ significantly from the lean practices which are most frequently cited throughout literature. Generally, the ease of implementation correlates with the frequency of use. Out of the 14 lean practices which are most commonly applied among Chinese and Malaysian manufacturing companies, not a single one requires major capital investments or fundamental changes to the production processes. They are thus relatively easy to implement. The most frequently cited lean practices in publications on lean production in China and Malaysia, on the other hand, often implicate major investments of financial capital and/or human resources prior to their implementation.

The gap between theory and praxis suggests that academics need to investigate the reasons for the low acceptance of certain lean practices (most prominently kanban, just-in-time and heijunka) in manufacturing companies. At the same time, practitioners may require more training on how to implement those lean tools and techniques. Finally, governmental support in the form of subsidies, loans or knowledge improvement programs could provide manufacturing companies with the resources required for the implementation of those lean practices which are popular in literature, but only rarely implemented in China and Malaysia.

References

All references can be found in the full version of the MA thesis available at http://othes.univie.ac.at

About the Author

Lisa Achleitner holds a BSc degree in International Business Administration from the Vienna University of Economics and Business (WU). This thesis is part of the Master Program East Asian Economy and Society at the University of Vienna.

Lisa is currently working as a consultant at Syngroup Management Consulting, where she participates in national and international projects concerning operational efficiency.

Contact information:

lisa.achleitner@outlook.com