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## ► To cite this version:

Eirin Lodgaard, Maren Sogstad. Lean Translated from a Manufacturing Industry Context to Municipality Service Production: A Case Study. 7th European Lean Educator Conference (ELEC), Oct 2021, Trondheim, Norway. pp.373-380, 10.1007/978-3-030-92934-3\_39 . hal-03771951

**HAL Id: hal-03771951**

**<https://inria.hal.science/hal-03771951v1>**

Submitted on 8 Sep 2022

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# Lean Translated from a Manufacturing Industry Context to Municipality Service Production: A Case Study

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**Abstract.** The expectations of Norwegian citizens with respect to the quality, availability, and effectiveness of public healthcare and welfare service provided by municipalities, are rising. Public resources are at the same time limited. This increased pressure is, however, an encouragement to optimize organizations and improve productivity and on delivering high-quality service. It is well known from the manufacturing industry that lean as an approach has achieved outstanding results regard to this. Thus, the aim of this study is to explore the translation process of new organizational idea of lean into the municipality, enabling to meet future increasing demand. The translation is carried out through a collaboration between a private actor and the municipality, where the private actor contributes with knowledge and skills about lean in a manufacturing industry context. An in-depth, exploratory single case study was carried out with the aim of understanding how the collaboration process takes place and the factors that drive the translation process. From how lean is rendered to fit the specific context to its meet in the recipient organization. The data material is made up of semi-structured interviews with key personnel from both actors and the analysis of written documentation from the collaboration process. The main drivers identified were being part of the same municipality, competent translation, internal translator to prepare the final translation, and solid anchoring and motivated leadership.

**Keywords:** Lean Translation, Collaboration, Drivers, Municipality, Case Study.

## 1 Introduction

Citizens place increasing demands on governments to be responsive. Their expectations of the quality, availability and productivity of municipal services are also continually rising [1]. Resources are, however, limited. The motivation to close the gap between rising demands and constrained resources calls for improvement to manage forthcoming crisis in the municipality services sector.

Lean has been recently drawn from the manufacturing industry and adapted to sectors such as hospitals, healthcare and municipalities [2]. Lean is implemented in the municipality sector to create public value, increase quality and reduce waste in

organizations. It is primarily applied through the use of implementation tools such as value stream mapping, team board and kaizen [2].

Lean interventions have been shown to have a high degree of variation, both in content, application, and outcome [3]. Successful implementation is not achieved through the blind adoption of the manufacturing version of lean, but through adapting the selected principles and tools to specific needs [4]. Thus, the aim of this study is to examine the interplay between a municipality and a private actor in translating the new organizational idea of lean into the municipality. Upon the collaboration and learning process between these actors a smooth translation process is of high value. Trying to avoid pitfalls regards a smooth translation process, it is a need to explore factors that determine what drives this. The fundamentals of our research question therefore relate to drivers as follows: *What are the drivers of the translation process when translation lean from an industrial context to municipality service production?* This will give us valuable knowledge about how to succeed with translation of lean from a manufacturing industry context into a municipality service context.

## **2 Lean Manufacturing**

Lean's origin is an American interpretation of the Japanese approach to car manufacturing after the Second World War. Henry Ford's system of mass production had revolutionized the world of manufacturing. The Japanese engineer Eiji Toyoda however saw, when visiting the Ford factory in Detroit in 1950, the potential for improvements. This led to Eiji Toyoda and Taiichi Ohno developing the Toyota Production System, which is considered to be the most important innovation in manufacturing since Ford's mass production system [5]. Dr. James P Womac and colleagues defined, in a 1988 study from Massachusetts Institute of Technology, the Toyota organization as being "lean" and the phenomenon got its name.

Lean can be understood as being an organization trend, a management philosophy, a set of principles or a set of practices [6]. It is a systematic quality improvement approach that focuses on reducing non-value-adding activities in work processes. A lean organization uses less human capacity to conduct work, less material to produce a product, less time to develop it and less energy and space to produce it. Lean is simply the ability to do more with less [7].

## **3 Translation Theory**

Transferring organizational ideas from one sector and organization to another has become widespread [8]. Translation is defined as being the process in which an organizational idea is transferred from one context and reinterpreted in a new context [9]. It is a relatively new perspective within organizational research [10]. The basis of this perspective is that ideas are constantly being processed and modified by the actors who receive them [10]. The carriers of the idea and the recipient organization collaborate to redefine or prioritize some practices and discard others. Røvik [10] claims that the translation theoretical perspective makes it possible to understand how organizational

ideas are transferred between organizations and materialize and become a part of daily practice [10].

Translators are not passive recipients of organizational ideas. They are actively involved in the conversion process. Rørvik [10] distinguishes three degrees of conversion modes based on work in classical translation theory. The modes are the reproduction mode, the adding and subtracting mode and the radical mode. Degree of translation ranges from no conversion to significantly converted. This shows how important the translator's competence is, as the transformation of abstract presentations of an organizational idea into a local practice will always require interpretation. The translator's competence is therefore of great importance in achieving the desired organizational effectivity and effectiveness, which normally is the motivation for organizational change[11].

The de-contextualization of an organizational idea from one context and contextualization in another is not a straightforward process [9]. One challenge in the de-contextualization process is ensuring that the presentation contains all the information that is required to explain and understand how practices function in the source context. Translatability, the degree to which a practice can be translated to an abstract representation and the degree to which this can be achieved without excluding the elements that are required to define how it should function in the source context, is equally crucial [11]. The more complex the idea is, the more difficult it is to capture all of the factors that affect the way the practice works. Success depends on the translator having the freedom to add, subtract and convert the idea that is to be transferred. Some argue that translator should be as invisible as possible. Others argue that the translator should be as visible as possible. It is, however, almost impossible to reproduce accurately without the translator's own brand being overlaid onto the translated organization idea. Translation usually leads to new and unique versions [9] [12].

## **4 Research Design**

Case research is a method that uses case studies as units of analysis. Case research is one of a number of ways of conducting social science and understanding complex social phenomena. It is used in many situations to contribute to our knowledge of groups, organizations and related phenomena within a real-life context [12].

A case study protocol was prepared to assure reliability. It included the research question, research methods, unit of analysis, procedure for data collection and data analysis guidelines. The unit of analysis was people from the municipality and the private actor that collaborated in the creation of an innovative solution for the municipality. We adopted a qualitative case-based enquiry because we wanted to understand how a non-public actor can become part of the municipal innovation system, what factors determine the successful transfer of an organizational idea.

The data collection process started with semi-structured interviews with key personnel involved in this collaboration process. Informants were recruited from both the municipality and the private actor. Informants from the municipality included the head of municipal administration, the head of lean implementation, three lean facilitators and

three healthcare managers. The project manager was recruited as an informant from the private actor. The semi-structured interviews were conducted face to face to provide greater understanding and knowledge. The interviews were open-ended and conducted through informal conversation. The questions covered experience with the collaboration process, including the development of the innovation, the implementation phase and how to maintain the new way of working. All of the semi-structured interviews were tape recorded and transcribed.

The use of data triangulation was considered to be important in the deeper examination of data from the semi-structured interviews and in ensuring validation [13]. Data collection was therefore supplemented through informal conversations and through the analysis of written documents. The written documents include progress reports and working documents that describe the work process and results.

The analysis of data is probably the most challenging step in a research process. There are few standard recipes to guide this process [13]. The collected data was analyzed with the aim of exploring the drivers that facilitate the translation process. The data was coded and categorized into main and subcategories, to allow patterns and recurring themes to be found. The coded categories were then merged into common categories. The collected data was assembled into an array, the categories and the evidence from qualitative data from the in-depth study in columns. A within case analysis was then carried out in an attempt to identify patterns among the data in the array and identify preliminary conclusions [13].

## **5 The case**

The municipality in focus had, for some years, been following the implementation of lean as an approach to increase efficiency and quality. The approach had been applied in other municipalities in Norway and in other Nordic countries. The municipality's level of understanding of lean had increased through this. The municipality hosts one of Norway's largest industrial clusters, one third of turnover being derived from the development and production of automotive parts for a highly competitive global market. Structural changes in this cluster in the last decade have led to more connections and more frequent communication between the private actors in the cluster and the public sector. The municipality has, through this, gained an understanding of lean and how it can be used to achieve an organizational change and increase organizational effectivity and efficiency.

The private actor is a private research and development institution located in the case study municipality. The vision of this company is to create innovative, sustainable and effective solutions that provide competitive advantages to both manufacturing industry in Norway and to services provided by private and public actors.

This in-depth single case study played out in six pilot units. The private actor was mainly involved in the startup phase, in mediating lean as an organizational idea and customizing the idea locally. Pilot departments were selected by the municipality, lean being implemented in these departments over a time period of one year. The pilot implementation was to be used to make the final decision on whether lean would be used

as a strategy for the entire organization. The municipality decided to start with their welfare departments where the potential impact was considered to be greatest and where the greatest organizational change and increases in organizational efficiency and effectivity could be achieved.

The pilot phase mainly involved choosing principals and tools and testing those in six pilot departments. The phase was also used to build lean competence in the organization. The selection of lean principals and tools for tailoring lean was, as outlined by the private actor, influenced by experience from the local industrial park and other manufacturing companies in Norway and published research on the implementation of lean in Scandinavian municipalities and welfare and health care.

Each pilot department entering the implementation process was followed closely for a period of time. Representatives of each pilot department received basic training in lean before the implementation process began. This knowledge building was one of the private actor's main tasks. The manager of the pilot department selected the employees who would be involved in training courses held by the private actor. The aim of the courses was to create knowledge of lean and the chosen customized concept. They simultaneously held workshops and tried out the selected tools and practices in these. A further task was facilitating the pilot department in the pilot startup phase. The municipality administration also hired lean facilitators to take over the role of facilitator when pilot projects were up and running. Their role was to act as facilitators in the implementation of lean in new departments. They therefore participated in the pilot projects to gain knowledge of lean and to prepare for taking over as facilitators.

## 6 Findings and discussion

A good starting point for the translation process was both actors realizing the need to translate the idea of lean from an industrial perspective into the municipal context [3, 10]. As one of the managers from the municipal management team stated "*Lean is a suitable approach and transferable into the public sector, but it has to be adjusted to the context, to the municipal service production. Production of municipal service at a nursing home is not the same as producing a component in the automotive industry*". Lean is therefore tailored to a local need but at the same time stays true to the origin of the concept [3, 8].

The impact of geographical, cognitive and social proximity between the public and the private actor has been shown by others to be an important influence for the start of collaboration [14]. Geographical proximity is where both actors are present in a municipality. The industry park that the private actor is part of is the largest workplace in the municipality, many of the actor's employees living in the municipality. The municipality's innovation was built on a long-term cooperation between the private actor and the municipality. This finding supports the study of Granovetter [15], who concludes that strong ties between actors are a powerful driver.

The private actor's high level of competence and experience in successful implementation of lean provided the motivation for the translation of the lean concept in municipal service production. The decision to start the pilot project by translating lean

into the municipality context was made by the municipality before the active innovation process began. There had been informal meetings and discussions at management levels on the possibility of introducing lean into the municipality's practices. As stated by the head of the administration: "*The private actor suggested to use lean, we need time to mature this possibility, but after a while, we started to describe and elaborate it into a plan to check out the possibilities to implement lean as an organizational idea in our municipality.*" The competence of the translators is a critical factor in the success of the transfer of an idea [11].

Both actors pointed out that humility and respect for each other's knowledge was an important driving factor. Inception was based on the municipality contributing their knowledge and experience within health and welfare service production and the private actor contributing, as consultants, their solid knowledge of lean and its application in industrial settings. Both actors realized that they were dependent on each other and on each other's knowledge and expertise for the successful translation of lean into the recipient organization. This is in line with the work performed by Rørvik [11], who stated that an important factor in the successful translation of ideas from one context to another is knowing the context from which the organizational idea is translated out of and the context into which it is to be translated into.

The private actor was an important player in the translation process in the trial pilot project period. The translator's main task is to make the new organization idea accessible and understandable. External translators can, however, impose their own influence on the process through their choice of translation. The private actor pointed out that there was a need to spend time together, particularly in the beginning, to gain knowledge of challenges and organizational opportunities in an unfamiliar sector. An important prerequisite is the acquisition of a thorough knowledge of the ideas and mechanisms of action of the organization which the idea is to be transferred from and that these conditions are replicated as closely as possible in the recipient organization [11]. The informants describe cooperation between actors as being good and built on trust, respect and sincere mutual interest. It can also be argued that showing humility for each other's knowledge combined with closed knitted relationships resulted in the development of the trust and confidence identified in previous research [16].

The public actor recognized the importance of being an active part of the translation of lean as opposed to just confining involvement to assigning this task to the private actor. The public actor highlighted the need for the lean model to be retranslated by the municipality. An external actor cannot gain sufficient knowledge of an organization as complex as a municipality to allow lean to be modified in the correct way. The public actor therefore took over as translator after the process of implementing in the pilot departments, adding some elements to the translation and rejecting others. A study by Andersen and Rørvik [3] concludes that a balance between tailoring lean to local needs and staying true to lean as an organizational idea for change is of importance.

A further observation was strong management commitment to the process and a well-anchored change process. This included the involvement of employees who adopt the innovation. The change process was strategically anchored at both the administrative and political top level in the municipality. The head of administration also had a strong positive reputation within the organization and played a central role both in and



during the translation process. Participants interestingly expressed that it was an advantage that the head of administration was seen as being well-educated and driven by professional values and ambition. This study has shown it would have been difficult to achieve lasting innovation without this.

## **7 Concluding remarks**

The organizational idea studied in this work is the transfer of lean from the manufacturing sector and its reinterpretation in a municipality service context. The lean idea was, on its way through the municipality, translated into multiple iterations as identified in other studies [8]. Translation of lean included the incorporation of lean principles, the selection of tools and practices and the development of a customized implementation model that can ensure systematic implementation throughout the organization.

The drivers identified in this study relate to structural conditions and “being part of the same municipality”, competence in “competent translation”, internal translator to prepare the final translation, process factors in “solid anchoring” and “motivated leadership”. These drivers may act as useful ideas for the practitioners.

The municipality’s awareness of lean through proximity and strong ties with the industrial hub and the private actor seems to have enhanced its absorbing capacity, facilitating the innovation process. Together with strong management commitment from the receiving organization this was an important driver to achieve a lasting innovation. The crux of this study seems to pivot on the balance between knowledge of the new organizational idea and knowledge of the recipient organization. This study indicates that knowledge of the organizational idea is mandatory and is essential if the process is to stay true to lean and that core elements of the organizational idea are not washed out when tailoring new contexts. Knowledge of how a municipality is organized and works in practice is also essential if lean is to be successfully adapted to local context and needs. A mutual humility among the partners and for each other’s differences in knowledge furthermore enabled a good collaboration process. This is reported by Dittmer et al. [17] as being an important driver. There are grounds for believing that organizations that need to collaborate with an external actor to obtain knowledge of new organizational ideas, will need to develop the final version due to the external translator not having the knowledge held by the recipient organization. This indicates that optimal success requires the internal translator to prepare the final translation, as external actors may miss recipient context essentials and consequently not fully adapt tailored lean-to local needs.

## **Acknowledge**

The authors would like to thank to all participants who took part of this study and the research project SFI Manufacturing, latter funded by the Research Council of Norway.

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