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LEAN MANAGEMENT FUNDAMENTALS WITH REGARDS TO SERVICES

Abstract. Right now Lean Management is a pretty well known in manufacturing companies. But its application in the service industry reveals many doubts and gaps in knowledge. The aim of this study is the identification of the necessary adaptations of Lean principles when they are implemented in a service organization. The study is a conceptual work. The major findings of the study are the necessary adaptations when Lean principles are implemented in services: (1) the inclusion of the direct presence of the customer in the value stream, (2) the identification and elimination of waste on the customer’s side, (3) the Lean philosophy must coexist with the service-oriented organizational culture, and (4) standardisation needs to be more flexible and focused on organizational knowledge increase.

Keywords: Lean Management, Lean Service, Lean principles, service science, service co-production

PODSTAWOWE ZASADY ZARZĄDZANIA W LEAN MANAGEMENT W ODNIESIENIU DO USŁUG

Streszczenie. Obecnie Lean Management jest dobrze znany w firmach produkcyjnych, ale jego zastosowanie w sektorze usług ujawnia wiele wątpliwości i braków w sferze aplikacyjnej. Celem niniejszego opracowania jest identyfikacja niezbędnych dostosowań zasad Lean, gdy są one wdrażane w organizacji usługowej. Studium ma charakter pracy koncepcyjnej. Jego główne ustalenia wiążą się z niezbędnymi adaptacjami zasad Lean do realiów w usługach: (1) włączenie bezpośredniej obecności klienta do badania strumienia wartości, (2) identyfikację i eliminację marnotrawstwa po stronie klienta, (3) filozofia Lean musi współistnieć z kulturą organizacyjną zorientowaną na usługi oraz (4) standaryzacja musi być bardziej elastyczna i koncentrować się na zwiększaniu wiedzy organizacyjnej.

Słowa kluczowe: Lean Management, Lean Service, zasady Lean, usługi, współpraca usług
1. Introduction

Lean Management is a management methodology which is becoming more and more popular in many industries all over the world. Many companies have experienced outstanding productivity growth in recent decades thanks to this methodology. It was developed in Japanese companies over a period of several decades, and after the presentation of outstanding results it started to be desired by other companies from many industries, at first manufacturing ones. Successful implementations in the manufacturing sphere encouraged service companies to start implementation. But the literature reports the necessity to proceed prudently when introducing Lean methodology in a service organization. It also reports several gaps as well as fields of ignorance and confusion\(^1\). This is because the service industry is noticeably different from the production industry, and its delivery system has different characteristics compared to the manufacturing system\(^2\).

The study aims at the identification of the main adaptations regarding the fundamental Lean Management principles when they are going to be implemented in a service organization. The identification of the necessary adaptations goes along with the specification of questions important for practical Lean Service methodology development and further studies in this field.

The study is a conceptual work which is based on the wide literature on Lean Management/Production/Manufacturing, service science studies, and available research on the Lean methodology applied to service organizations, called Lean Service. The analysis is based on a fixed schema where at the beginning a fundamental principle is indicated, and afterwards it is confronted with the service system/product characteristic demonstrated by the service literature. This allows the formulation of a necessary adaptation in Lean methodology, as well as the definition of the field of ignorance, leading to the formulation of questions for future studies. This study will supplement existing research on the specificity of Lean Service and necessary replenishments.


2. Lean Management and Lean Service

Lean Management popularity started with the publication of “The machine that changed the world” by Womack et al., in which the authors presented the new approach to production management taken from Japanese automotive industry experience. Without doubt the most important attractiveness factor of Lean Management is the outstanding results achieved by companies practicing this methodology. Cusumano presents the productivity indicators of Japanese and American car manufacturers over a period of thirty years. According to this data, Toyota achieved a six-fold increase in productivity measured by the number of cars per employee yearly. At the same time American car manufacturers GM and Ford recorded only several dozen percent increases of the same statistic. These results strongly influence the imagination of managers and researchers. Authors also report a huge gap in quality between Toyota and Western car manufacturers. The ratio of defects found in the first inspection at the end of the production line between Toyota and Western manufacturers is 1:100.

According to Womack and Jones, who were among the first Western explorers of Lean Management, Lean is based on the following principles: (1) the product value should be comprehensively understood, (2) the value stream needs to be identified, (3) the flow needs to be smooth, (4) the pull system should be introduced, and (5) all the employees should strive for perfection. Liker’s fourteen Toyota principles refer to: a long-term business philosophy, the stream of organizational processes, employees’ development, and continuous problem solving. He states that in Toyota they believe that in typical business processes only 10% add value, and the rest of the activities are just waste. Ohno underlines that at the basis of the production system in Toyota lies an assumption of aiming at increasing efficiency by the continuous and careful elimination of waste.

Suárez-Barraza et al. state that managers from the service industry are becoming more and more interested in how Lean Service methods can be applied. Lean methodology is studied by scholars mostly in several services: banks and financial institutions, the health sector, education, the airline industry, hotels and restaurants. Other authors argue that in financial services there is only moderate Lean Thinking. LaGanga at al. observed in the healthcare industry a 27% increase in service capacity to intake new patients and a 12% reduction in the

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10 Leyer M., Moormann J.: op.cit.
no-show rate as a result of the Lean project\textsuperscript{11}. Carlborg et al., in their study, conclude that Lean principles influence the service productivity of different service types differently\textsuperscript{12}.

Scholars suppose that the Lean principles, which have been developed in manufacturing companies, can be transferred to service organizations but it should be done carefully and taking into consideration some adjustments\textsuperscript{13}. According to Gupta et al. the Lean Management road to services is still in a nascent stage and needs much research, because of the service products’ immanent characteristics\textsuperscript{14}. Suárez-Barraza et al. and Gupta et al. point out the important need for Lean Service definitions and clarification of principles\textsuperscript{15}. Dos Reis Leite and Ernani Vieira, who studied the Lean Management tools, call for identifying best practices and standards with reference to which, when and where to use Lean tools in a service organization\textsuperscript{16}. Apart from the standardization of tools and definitions there is also an urgent need to develop guidelines for structured Lean Management implementation in the service industry\textsuperscript{17}. The voices from the literature encourage further exploration of Lean principles in a distinctive service industry context.

3. Value stream

The stream of value is the focal point of the Lean Management concept, and all the issues in a lean enterprise are subordinate to this stream. Womack and Jones understand the value stream as the set of all the specific actions required to bring a specific product (a good or a service) through the three critical management tasks, namely launching a product, handling orders, and physically transforming raw materials into products\textsuperscript{18}. The value stream is the cross-functional sequence of activities that is responsible for giving the customer what is required, when and where it is required, without hassle\textsuperscript{19}. The stream passes not only throughout the whole company, from “door to door”, but also covers suppliers and

\begin{thebibliography}{99}
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buyers/customers\textsuperscript{20}. The key for the stream value is that it brings what a customer is willing to spend money on\textsuperscript{21}, but it is crucial that the steam at the same time contains value-adding and non-value-adding activities\textsuperscript{22}. An idealistic target is to organize the stream without the latter, just to produce only the value, and to do it in the simplest and the fastest way.

Authors underline the fundamental meaning of the value stream when the Lean concept is adapted to a service organization\textsuperscript{23}. The target is still the same: a lean value stream. But the service value stream is noticeably different from the manufacturing one because of the active customer participation. Service co-production and value co-creation are perceived by scholars as an important hallmark of the service concept\textsuperscript{24}. Co-production thrives on direct customer participation in the service production process\textsuperscript{25}. The customer is an active participant and shares responsibility for the process’s outcome, in terms of quality and added value\textsuperscript{26}. Some authors state that the customer acts even like a temporary employee\textsuperscript{27} because their contribution to the service product is so important. Co-production implies consumers’ participation in the performance of various activities accruing in one or more service process stages\textsuperscript{28}. It is fundamentally different than in the manufacturing value stream. In the service value stream the customer is not only a recipient, but is also an active performer.

The co-production which is inherently connected with service products makes an important difference for Lean Management in services:

\textbf{The value stream in a service organization should be analysed and improved, always taking into consideration its integral parts handling by customers and with direct contact with them.}

Authors studying Lean Service mention that Lean principles can also be employed in the customer’s part of the service value stream, which would bring opportunities to increase efficiency for a service provider as well as in terms of value perceived by customers\textsuperscript{29}.

\textsuperscript{22} Womack J.P., Jones D.T.: op.cit.; Tapping D., Shuker T.: op.cit.
\textsuperscript{25} Grönroos C.: op.cit.
\textsuperscript{29} Carlborg P., Kindström D., Kowalowski C.: op.cit.
Several studies demonstrate improvements in the customer side of the service value stream\textsuperscript{30}. For example, Carlborg et al. state that in airline services flow speed through the stream can be increased by reducing waiting time at the gate and boarding time, which noticeably increase perceived customer value\textsuperscript{31}.

Despite these studies there is a strong need to adjust and clarify the Lean methodology to the value stream which is directly and actively influenced by customers. Probably several new rules referring, for example, to diagnosis, designing, and flexibility are needed. Some questions for further works on Lean Service are as follows:

\textbf{QV1:} Are the currently known value stream diagnosis and designing methodology (e.g. Value Stream Mapping techniques) sufficient for the service value stream?

\textbf{QV2:} What new tools and techniques are needed for dealing with leaning the customer side of the value stream?

\textbf{QV3:} How can we strive for a smooth and fast stream and ensure its flexibility and responsiveness to customers?

\section*{4. Waste identification}

The value stream is indeed a pillar of the Lean approach, but waste is the key for making the stream leaner. For waste, a particular Japanese word is used – muda. Muda means any human activity which absorbs resources but creates no value for customers\textsuperscript{32}. Dealing with muda is not only eliminating it, but first of all understanding it and recognizing it practically in an organization. Usually, at the beginning muda is not obvious to an organization, but it is everywhere. Ohno from Toyota formulated a list of seven muda in a company: (1) defects, (2) overproduction, (3) processing that is not needed at the moment, (4) inventories, (5) unnecessary movements of employees, (6) unnecessary transport of goods, and (7) waiting\textsuperscript{33}. These are still an inspiration for recognizing muda in Toyota, and this company cultivates the ability to recognize muda throughout the whole organization\textsuperscript{34}.

The literature mentions several characteristics of service products/operations which make them different from manufacturing. One is perishability, the consequence of which is that it is impossible to produce services on stock\textsuperscript{35}. Consequently, services cannot be stored, and therefore the use of service production capacity is a serious management challenge, providing


\textsuperscript{31} Carlborg P., Kindström D., Kowalkowski C.: op.cit.

\textsuperscript{32} Womack J.P., Jones D.T.: op.cit., p. 15.

\textsuperscript{33} Ohno T.: op.cit.


\textsuperscript{35} Fitzsimmons J.A., Fitzsimmons M.J.: op.cit.
that usually demand changes rapidly and inventories cannot be built\textsuperscript{36}. Therefore, many typical muda occurring in manufacturing flows should be seen differently. Service theory states that not only are customers involved in service co-production/value co-creation, but a company is involved in customer activities, and the customer is the entity who controls value creation\textsuperscript{37}. Therefore, muda recognition and elimination must take into account the customer’s actions in a wide perspective. Another vivid difference in the Lean Service is that:

\textbf{When Lean is applied to a service organization the typical muda need to be reconsidered and new kinds of them found. Also muda in customer activities should inevitably be traced and eliminated.}

One of the Ohno’s muda is overproduction. In manufacturing it means producing more items than can be sold at the moment\textsuperscript{38}. This muda in the service context can be interpreted as performing work not required by customers at this moment\textsuperscript{39}. But at the same time these pieces of waste also meet the idea of Toyota’s fifth muda\textsuperscript{40} – unnecessary movements of employees. Also, the terminology of muda is in some points inconsistent. Maleyeff states an example: the muda of defects mentioned by Ohno is typically referred to as “mistakes” or “errors” in a service context\textsuperscript{41}. Apart from reinterpretations of Ohno’s muda, authors identify new kinds of waste typical for service operations. Bicheno sees, besides Ohno’s seven types of muda, fourteen office muda\textsuperscript{42}. His approach determines waste in a very detailed practical manner. Typical nightmares of services are different kinds of delays. They cause wasting time and resources, and also lead to poor service quality. They are manifested directly in queues or in waiting for information to be transmitted\textsuperscript{43}. Another muda consists in overloaded or underloaded employees in particular sequences of a stream\textsuperscript{44}. The authors see many more possible muda in the service inner flow\textsuperscript{45}.

Piercy & Rich have identified a number of troubles occurring in the customer side of the service stream in service centres\textsuperscript{46}. There are, for example, customers waiting for long periods in queues to speak. During conversations staff often do not resolve customer issues and put them back into long queues to speak to other operatives, or pass their files on for secondary handling at some point in the future. Chadha et al. present how the customer muda of queue lengths and long waiting time in hospitals can be reduced by Lean approach implementation,

\textsuperscript{36} Ibidem.
\textsuperscript{38} Ohno T.: op.cit.
\textsuperscript{40} Ohno T.: op.cit.
\textsuperscript{42} Bicheno J.: op.cit.
\textsuperscript{43} Maleyeff J.: op.cit.
\textsuperscript{44} Jylhä T., Junnila S.: op.cit.; Bicheno J.: op.cit.
\textsuperscript{46} Piercy N., Rich N.: op.cit.
particularly by bottleneck elimination and capacity management improvement\(^{47}\). The current state of research on the service muda provokes the formulation of a few additional unclear issues requiring further studies.

**QM1:** What is the collection of typical muda in a service front office system, including muda of customers?

**QM2:** What is the best practice methodology for muda recognition for Lean Service?

### 5. Service culture versus Lean philosophy

The fifth Lean principle by Womack and Jones states that the value stream should aim for perfection\(^{48}\). Authors also mention so called Lean philosophy as an inherent component of Lean Management\(^{49}\). According to Bhasin & Burcher, Lean philosophy means that Lean is not a kind of final state to be achieved, but a journey on which a company needs to go\(^{50}\). In a Lean enterprise the organizational culture sphere is steeped in kaizen. Miller et al. define kaizen as people-oriented problem solving, which implies the total engagement of the workforce and valuing small changes as much as larger ones\(^{51}\). In kaizen everyone has a role, from top management to shop floor employees\(^{52}\). Doolen et al. have shown that kaizen has a positive effect on personnel’s engagement in a company\(^{53}\). Based on Western experience with Lean methodology, Emiliani and Emiliani warn that the lack of “respect for people” by senior managers makes Lean implementation difficult or even impossible\(^{54}\). The selection of Lean tools implemented in an organization without respect for people means that in a company “fake Lean” eventually appears.

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\(^{48}\) Womack J.P., Jones D.T.: op.cit.


\(^{50}\) Bhasin S., Burcher P.: op.cit.


\(^{52}\) Bicheno J.: op.cit.


In the service-oriented interpretation of business, people are both at the centre and are active participants in the exchange process. Scholars mention the kind of organizational culture which is characteristic to service organizations. Beitelspacher et al. state that service culture is customer-centric, aims at exceeding customer expectations, and is strongly focused on providing superior customer value. Closely related to service culture is the concept of service orientation. According to Lytle et al., service orientation manifests itself in staff attitudes and behaviours which directly affect the quality of the service delivery process, and determine the state of all interactions between a service organization and its customers. The service culture has a positive impact on customer satisfaction and perception of service quality, as well as business performance. Thus, there is an important implication for Lean Service:

In a service organization, when following the Lean Management approach, the service culture and the Lean culture should support and supplement each other.

Leyer and Moormann’s research on the service industry reveals that if a service provider wants to become a Lean company, Lean Thinking has to be embedded in the minds of its employees. They state that employees’ everyday behaviour pattern is much more important than the exploitation of specific Lean tools and techniques. This demonstrates the importance of shared mind programming within an organization – organizational culture. Services are generally work-intensive, and most services are provided by people for other people. Kaizen is also a people-centred problem solving approach. It seems that Kaizen and the service system can be naturally symbiotic. Kaizen probably provides an extraordinary opportunity for the deep engagement of all service staff for improving the service stream. Gupta et al. advise service managers to commit to Lean treated as a tool for a strategic approach, towards cultural transformation. But there are some important questions.

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60 Leyer M., Moormann J.: op.cit.
**QK1:** If Lean philosophy and desirable service culture really are always symbiotic and synergic, are there some contradictions to be resolved?

**QK2:** How can Lean culture be practically introduced into a service sphere, gaining extraordinary customer service?

**QK3:** Considering that in services Lean tools have limited utilization, is it Kaizen that covers the vast potential of Lean benefits?

### 6. Service standardization

In the centre of Toyota’s gene transmission Hino sees the documented procedures, which he calls Toyota’s DNA. He also states that work standards are understood in Toyota as a management cornerstone and a fundamental part of step by step improvement\(^\text{64}\). Ohno mentions that standards ought to address people, machines and materials\(^\text{65}\). In the case of standardization, Ohno appreciates Henry Ford, who wrote that standardisation means nothing unless it means standardising upward\(^\text{66}\). Today in the Lean Management approach a standard is perceived as a documented expression of the best method known at a given point in time, and after the improvement it is changed into a new standard. Therefore, standards are a form of grasped human wisdom with the aim of continuous improvement\(^\text{67}\).

Generally, a standard in the service literature is understand as a routine process with well-defined tasks and an orderly flow of customers; hence standardisation helps to provide uniformity in service quality because the process is easier to control\(^\text{68}\). But Haksever et al. highlight that most services defy standardization because of their variability and unpredictability\(^\text{69}\). Service co-production implies that a service is produced and consumed simultaneously with a customer\(^\text{70}\). According to the research conducted by Jylhä and Junnila, service employees, during the co-creation process, do not always know what the customers really require\(^\text{71}\). The service product is determined by the person who actually provides the service\(^\text{72}\). This specificity requires adequate understanding and use of standardization in services:

\(^{64}\) Hino S.: op.cit.
\(^{65}\) Ohno T.: op.cit.
\(^{67}\) Hino S.: op.cit., p. 35.
\(^{69}\) Haksever C., Render B., Russell R.S., Murdick R.G.: op.cit.
\(^{70}\) Grönroos C.: op.cit.
\(^{71}\) Jylhä T., Junnila S.: op.cit.
\(^{72}\) Haksever C., Render B., Russell R.S., Murdick R.G.: op.cit.
Lean Service implies, for standardization, capturing the best knowledge on methods and formulating them in a way that leaves an appropriate space for flexibility in individual customer treatment.

Sarkar mentions two standardization techniques in Lean Service: the service standard process as a method of doing work in a constant cycle time, and the standard operations display as a visualised sequence of process steps. In the service industry the blueprints methodology is also perceived as a powerful management tool. It is probably the most widespread service approach to standardization. But there are also voices that say blue prints are not sufficient because service standards need narratives which capture the tone and texture of the desired performance. Hunter’s research reveals that service frontline staff are willing to go above and beyond their job descriptions to ensure total customer satisfaction. Other voices from the literature suggest that service providers need to change their mindset, and to a higher degree consider customers in the customers’ own context, and that their tools and approaches should be revised. Some questions emerge from a look at standardisation in Lean Service.

QS1: How can service standardization be carried out to ensure an adequate balance between structuration and flexibility?

QS2: What techniques of standardization are the most appropriate for the service system?

QS3: Considering that the learning function of service standardization is still poorly exploited, how can a system be formed which takes enough advantage of standards as a source of the best knowledge and a basis for building pieces of new knowledge?

7. Conclusions

Some authors warn managers that Lean Service cannot address service operations challenges appropriately because of its specific characteristics. Others postulate the need for intense work on the standardisation and clarification of some critical issues for Lean Service, namely definitions, Lean principles, tools and guidelines on how to operate this

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methodology. The study is trying to contribute to the discussion on Lean Service challenges and necessary adaptations. It is focused on four fundamental issues for Lean Management which in the service organization environment need particular consideration and should be reinterpreted or be determined in a new way.

First of all, the value stream is different than in typical manufacturing organizations because of the direct influence of the customer engaged in the service process. This independent actor in the stream needs special treatment, engagement and consideration at the design/analytical level. The muda must be identified and eliminated on the customer’s side of the stream with the same determination and commitment as in the organizational side. Another issue regards the sphere of values in an organization. Lean philosophy must be cleverly combined with a service-oriented organizational culture. Standardisation is inherently associated with the Lean approach. It must enable responsiveness to the customer’s needs and be a way of organizational knowledge accumulation. These challenges imply a series of detailed questions for further studies.

The issue of Lean tools is not in particular the interest of this study. But in the light of what is presented here, it has become obvious that Lean tools also need to be redesigned in terms of particular types of services or areas of a service organization. Some authors present valuable practical guidance, with numerous examples, on how to utilise the Lean tools in a service organization. But this issue needs more systematic scientific investigations. Another important issue is associated with the effects achieved thanks to Lean in services. There is no doubt that manufacturing companies are attracted to Lean because of the extraordinary business effects achieved in Toyota and other companies advanced in Lean methodology. Some authors have investigated this issue in service companies, but still this is not as obvious as it should ideally be. The simple question asked by service managers inevitably is: would my company achieve a similar increase in productivity like Toyota did?

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80 Bicheno J.: op.cit.