



Applying Lean Management Solutions in the Context of the Organisational Culture of Energy Sector Enterprises

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Abstract

Lean management has become a very popular trend in the area of work, production and management processes reorganisation. It has an impact on attitude to, and quality of, work, cost-effectiveness and the organisation itself. The traditional understanding of lean management originated in Japan (Toyota Motor Corporation).

An analysis of an organisation and its organisational culture clearly shows that energy sector enterprises in Poland are going through a transformation. It is increasingly common to observe organisational measures taken to improve external and internal corporate image. The major elements shaping organisational culture, and the applicable guidelines, are more and more often the basic work tool for managers.

In the energy industry, which functions in a very specific way, a mere introduction of lean management in its traditional form may prove ineffective. The article discusses differences between a traditional enterprise and an enterprise operating in the energy sector in terms of implementing lean management solutions. The directions and aspects to be considered when introducing lean management culture are also described.

Keywords: organisational culture, lean management, energy industry, energy company

Introduction

Energy industry enterprises are undergoing a transformation both in terms of their management practices and the creation and management of their culture. More about transformation process in publications [5], [6].

The development of organisational culture, or rather an attempt to transform it to a form which provides added value for the company, has begun to be noticed by managers. In the energy industry it is possible to observe more and more organisational measures being taken to improve external and internal corporate image.

Lean management is becoming a way to organise work and processes, and is currently present in every company, as it impacts on attitude to, and quality of, work, cost-effectiveness and the organisation itself.

Changes in organisational culture should therefore take into consideration these fundamental statements concerning work management and organisation. Managers making such changes should remember about the proper development and maintenance of the basic elements of organisational culture.

Culture in an enterprise

Organisational culture is an element of an enterprise which defines it in a distinctive way. Authors of this article have already discussed this subject in publications [2], [14], [15] and [16], however, the extensive nature of this concept makes it impossible to provide a single definition of organisational culture. Its con-

stituents have been described by a number of scientists and scholars, but one of the most popular models is the one developed by an American psychologist Edgar H. Schein, who divided culture into 3 levels: assumptions, norms and values, and artefacts [2], [10]. In each of the groups there are elements characteristic for a given enterprise which together create the company's culture. Artefacts are a relatively noticeable element, and can be divided into the following categories:

- Language artefacts include language characteristic for a given enterprise, and legends and myths referring to the organisation's history.
- Behavioural artefacts are types of behaviour characteristic of a specific company. These are, for instance, various ceremonies and rituals associated with the company's operations.
- Physical artefacts, which cover all material objects, make it possible to distinguish one organisation from another. Examples include corporate dress code. Physical artefacts may serve functional or symbolic purposes. [10]

Members of managerial staff place particular emphasis on organisational culture; it forms a basis for company strategy, but all employees must follow its guidelines. This helps maintain social order, as everyone knows what is expected of them and what rules to follow. It is also a tool which helps solve problems in an organisation. It should be remembered that organi-

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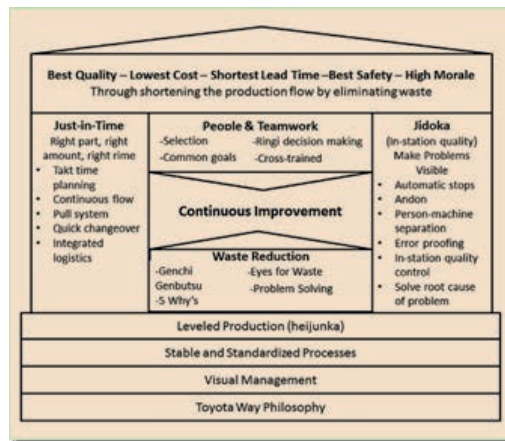


Fig. 1. Toyota House, Source [8]

Rys. 1. Dom Toyoty, Źródło: [8]

sational culture is created by all individuals associated with a corporation and impacted on by external factors so as to ensure its effective management. Culture must adjust to new trends in the economy, be flexible and prevent its values from becoming obsolete [2].

Lean management – basic assumptions

Lean management is currently very popular and generally applied and discussed in many areas of industry, including the energy and mining sectors [1], [11].

Toyota's production system, the TPS, is built on two primary principles: Just-in-Time production delivery and Jidoka or automation with a human touch. This holistic set of production principles may be visualised by the TPS House conceptual diagram (Figure 1).

The Jidoka and Just in Time concepts (creating the foundations of the Toyota House date back to before World War II. Sakichi Toyoda, founder of the Toyota Group, created the basis for Jidoka in early 20th century by installing in the automatic loom a mechanism stopping the device when the thread broke. The invention contributed significantly to quality improvement and made it no longer necessary to observe the machines in order to ensure their correct operation. This made it possible to shift the personnel to perform work with added value [10].

Just in Time is one of techniques used in total quality management referring to production. It involves a total elimination of waste by providing all the necessary elements for each production process in the required quantity and at the right time. The main benefit of JIT is reducing the completion time to a minimum, which provides substantial savings related to stocks reduction.

The success of the JIT method implementation depends primarily on finding a balance between suppliers' flexibility and users' stability, with a proper involvement of the managerial staff and employees, and taking advantage of the benefits of team work.

An essential value at the Toyota House is to eliminate waste which contributes to a lower efficiency of the enterprise's operations. Primary sources of waste are presented in Figure 2.

Considering sources of waste, several contradictions in the TPS can be perceived. These contradictions initially raised (and in some cases still arouse) doubts as to the application of the system. Here are some examples:

- stopping the line when there is a problem, forcing many people to stop working in order to solve a problem at one place only,
- stopping the work when a certain levelled quantity is achieved even when there is time and manpower to produce more,
- reducing stocks even when the lack of stock may lead to a stop in the production process.

This is also the reason why it is particularly interesting to model these principles in order to demonstrate why they make the system work better and guide those who need to implement them by convincing them that those principles are important to apply. The apparent contradictions that drive success at Toyota are well explained in Extreme Toyota [12], [13].

The TPS is maintained and improved as a result of standardised work and kaizen operations performed on the basis of the PDCA cycle. Therefore, it can be assumed that a harmonious combination of philosophy, methods and techniques, and lean management objectives (Figure 3) creates lean management culture in that enterprise.

How to introduce lean management into organisational culture in energy sector

The energy sector is unique in many respects. We have identified a number of aspects in which the energy industry differs from other typical sectors with regard to the introduction and implementation of lean management in an enterprise. These differences include:



Fig. 2. The main sources of waste, Source: own work
Rys. 2. Główne źródła marnotrawstwa, Źródło: Opracowanie własne

- the continuity of the technological process, which is required in the energy industry and not in typical companies,
- work conditions stability – in fact stable working conditions in the energy sector are non-existent,
- diversification of suppliers – in the energy industry it is virtually impossible,
- demand for specialised personnel in the energy sector occurs in many aspects of its operation, which makes it difficult to replace staff and contributes to problems in a situation when the demographic structure declines,
- in the energy industry, companies are closely connected with other entities, which is not the case for typical businesses,
- the necessity to maintain a specific level of production strongly determines the operation of energy companies.

In order to introduce the lean management culture in such an atypical sector, considerable attention should be paid to the basic steps for implementing the solution. A number of basic elements were identified which strongly determine the implementation of lean management, such as [3]

1. accurately determine the value of a given product
2. identify the value stream for a specific product
3. provide an uninterrupted flow of value
4. implement a pull system in relations between customers and suppliers (also internally)
5. strive for perfection

However, even the best implementation does not have to mean complete success, as there is a number of areas, and in each of them a number of factors, which may contribute to the so-called erosion of lean management culture. Figure 4 presents these areas and factors.

Experience shows that such erosion takes place, and lean culture introduction does not always end in suc-

cess. This is either because changes are not maintained or the company does not receive the expected benefits. The proportion of such cases can be estimated at up to 90%. [4]. For this reason, the basic lean management stages have been identified:

1. Interviews with the management and identification of the areas to be covered by changes,
2. Auditing the areas of changes,
3. Training for change leader groups,
4. Designing solutions,
5. Implementing optimisations,
6. Reinforcing culture change.

As a result, we can also determine the maturity level of lean organisational culture. Depending on the time that has passed from the decision to introduce lean and the implementation stages, the following can be identified (Figure 5).

In energy sector companies, the stages presented in Figure 5 have the following characteristics:

At the initial stage of implementing lean management in an enterprise, mainly managerial staff should be involved. At this stage it is necessary to select a strong leader representing the respective department of the company and to establish a group or a team responsible for introducing lean principles into the organisation's culture.

Another stage is the actual implementation, and it requires considerably more resources. There is, of course, the leader and the team selected during the first stage, but the employees of the respective operating and auxiliary departments in the company are now also involved. However, the responsibility for the implementation rests on the leader, but should gradually be moved to individuals appointed in the respective operating units. At this stage, there is also emphasis on improving what has already been implemented.

The last stage completing the process is the mature culture of continuous improvement. An enterprise in this form engages human resources in the aspect of lean

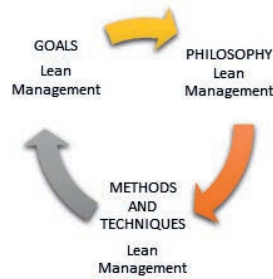


Fig. 3. The operating principle of lean management culture in an enterprise, Source: Self-designed
 Rys. 3. Zasada działania kultury Lean w przedsiębiorstwie, Źródło: Opracowanie własne

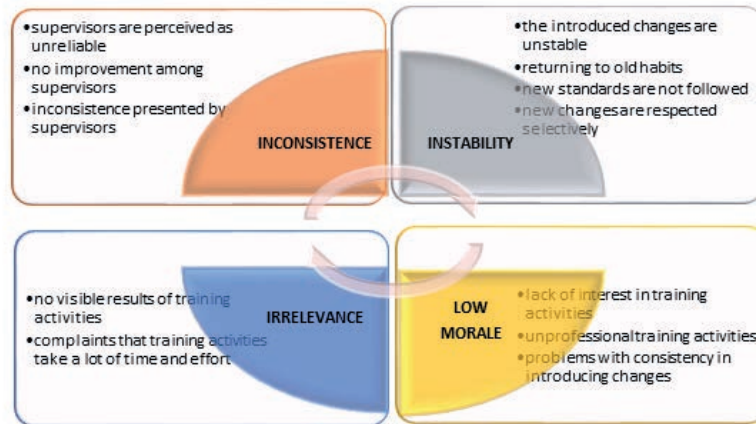
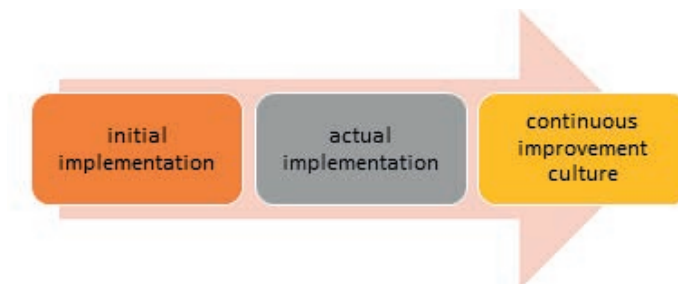


Fig. 4. Erosion of lean management culture Self-designed on the basis of [7]
 Rys. 4. Erozja kultury Lean Managementu Źródło: Opracowanie własne na podstawie [7]



Rys. 5. Etapy implementacji Leanu, Źródło: Opracowanie własne
 Rys. 5. Etapy implementacji Leanu, Źródło: Opracowanie własne

management implementation mainly across operating departments, with a close cooperation, supervision and observance of lean management principles by the management staff. Experts in departments are appointed to maintain and improve lean management culture.

Conclusions

Implementing lean management tools and methodologies is not easy. This is demonstrated by the percentage of incomplete or unsuccessful implementations. Introducing lean management elements in the organisational culture of an enterprise is even more difficult. It requires a number of changes and measures, starting from the managerial staff to regular employees and cor-

porate environment. This results from the fact that corporate organisational culture is a very broad term and, consequently, each change in its characteristics and structure requires a holistic approach in each sphere of the company's operation. The article identifies the differences which energy sector companies must take into consideration when transforming their structures, and the implementation stages which should be completed for the implementation to be successful.

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Wdrażanie rozwiązań Lean Management w świetle kultury organizacyjnej w przedsiębiorstwach branży energetycznej

W dzisiejszych czasach aspekt Lean Management jest bardzo modnym trendem reorganizacji pracy procesów produkcyjnych, ale także procesów zarządzania. Wpływa na podejście do pracy, jej jakość, efektywność kosztową i samą organizację. Klasyczne rozumienie Lean Management pochodzi z Japonii (Toyota Motor Corporation).

Analizując organizację i jej kulturę organizacyjną widać wyraźnie, że przedsiębiorstwa sektora energetycznego w Polsce przechodzą transformację. Coraz częściej obserwuje się zachowania organizacyjne poprawiające zewnętrzny i wewnętrzny wizerunek firmy. Wytyczne i podstawowe elementy kształtujące kulturę organizacyjną coraz częściej dla kadry kierowniczej są podstawowym narzędziem pracy

W branży energetycznej, która jest bardzo specyficzna w swoim funkcjonowaniu, proste wdrożenie zasad i klasyczne rozumienie Lean może okazać się nieskuteczne. W artykule pokazano różnice pomiędzy klasycznym przedsiębiorstwem a przedsiębiorstwem działającym w branży energetycznej w aspekcie wdrażania rozwiązań w zakresie Leanu. Przybliżono także kierunki i aspekty, które we wdrażaniu tzw. kultury Lean Managementu należy uwzględnić.

Słowa kluczowe: kultura organizacyjna, lean management, przemysł energetyczny, przedsiębiorstwo energetyczne