

PROBLEMS IN THE IMPLEMENTATION OF LEAN CONCEPT IN THE METAL INDUSTRY COMPANIES

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Abstract

The paper presents identification of problems during the implementation of lean concept in metal industry enterprises in Poland. Although the lean methodology is recognized all over the world as one of the best and most effective ways to improve the functioning of enterprises, in Polish conditions exist serious problems with its implementation. In today's turbulent environment, many companies want to increase the productivity and reduce costs. This is possible through implementation the lean concept, which eliminates all the actions do not bring added-value from the point of view of the customer, and on the other hand, implements standardized processes and procedures involving employees work in accordance with the idea of continuous improvement. The paper presents the problem of implementing lean concepts in steel mills, foundries, as well as small and medium-sized metal industry.

Keywords: Lean, management, metal industry

1. INTRODUCTION

In today's turbulent environment each company is trying to make the best to adjust to the prevailing conditions in order to take the best position on the market. In order to meet market demands, many companies have started to use Lean - management, in which the most important is among others the elimination of all waste: actions that from the point of view of the customer do not create value (muda), irregularities and unevenness in the processes course (mura) and the excessive workload of machines and people (muri). Lean is the involvement of all employees and acting in accordance with the spirit of continuous improvement, that is kaizen. In conditions of fierce competition and market changes the company should strive to unify certain actions in order to become more competitive and assertive in making decisions. This possibility gives Lean management and kaizen, within which the introduction of standardization and visualization will significantly influence the proper performance of certain actions, good quality and therefore customer satisfaction and the workers themselves, who gain employment security. Standardization, which is determination of the appropriate standards in the enterprise, determines the way of carrying out of individual activities, provides methods for measuring results and shows the relationship between cause and effect. Improvement of standards causes continuous improvement in business processes - kaizen. Standardization requires the involvement of all employees and its aim is to increase flexibility, liberation of human potential and boost of innovation in processes and organization. Lean methodology is recognized worldwide as one of the best and most effective ways to build, improve and maintain the companies and institutions. Lean is a proven, long-term approach to the management of the company, so that all processes implemented have served to increase value to the customer. This involves the commitment of people and adjustment of systems to the processes that result in a creation of a continuous values stream which is flowing to customers, and while eliminating losses and deficiencies in the process. Lean seeks to achieve the ideal state of perfect functioning of all processes. The practice of Lean, envisages the elimination of losses at source. The aim of the study is to determine the problems in implementing Lean concept in companies in the metal industry and determination of effectiveness of the Lean tools

2. PROBLEMS IN IMPLEMENTING LEAN CONCEPT

The concept of Lean comes down to the management of the organization by reducing the number of inputs to create the same number of outputs, through the elimination of waste in order to provide greater value for the manufacturer and the customer. Lean significantly improves the operational efficiency of companies with respect to costs, quality as well as deliveries mainly in the sector of large enterprises of automotive industry [1-6]. In specialist literature we can meet frequently with opinions that Lean concept can be applied in full form in an enterprise in which the specificity of its functioning is closer to the specifics of the operation of the automotive industry [7]. Large companies have greater incentive to implement Lean concept. They also have more resources that can be used in the implementation process of this concept. Small and medium enterprises have more difficult task with implementation. This is due, inter alia, insufficient resources, lack of knowledge, as well as the lack of support in the process of implementation by external companies for which often small and medium-sized enterprises are not attractive considering potential profits from the implementation [8,9]. Womack and Jones - those who first wrote about Lean in the book „The Machine that changed the world” - the effects of the implementation of Lean have identified with the following words: “Lean application allows reducing workload to a level of 1/2 of the initial state, inter-operational stocks to 1/10, the space of workshop to 1/2, the number of suppliers to 1/8, the time of start-up of production from 1/2 to 2/3 and the errors about 1/3.” Therefore, arises the question since Lean means same benefits why it does not function everywhere. Many companies their adventure with Lean ended at the stage of identification of realized processes and the division on the processes bringing added value and not bringing value. The results obtained often are not acceptable by management. This is one of the reasons for failure in implementing Lean concept, which resulted from the culture of the organization. Based on our own research and the research from the literature we have identified groups of mistakes made during implementation of Lean concept.

- Lack of foundations to implement Lean concept. The organization does not have so-called culture of change and continuous improvement. Lack of teamwork skills. Employees do not show affiliation to the company and do not identify with the problems and needs of the company. Another problem is the lack of conditions (lack of implementation of soft Lean tools) to implement hard Lean tools such as standardization, TPM or 5S. Lack of support for employees in understanding the concept of Lean.
- Focusing on short-term projects without the introduction of long-term organizational changes. Implementation of individual short-term projects without long-term plan to implement Lean and without taking into account the essence of continuous improvement.
- Financial requirements. Department of Lean is settled from permanent reduction in operating costs, the result of such activities is the identification of Lean processes with a decrease in employment and a total lack of trust in employees introducing Lean.
- The division of the company into streams. Streams functioning as separate companies in the enterprise, rather than as centers of effects. Instead of cooperation we are dealing with a situation where streams compete with each other. In this case, there is also the problem of information exchange between process streams. This layout resembles the functional organization and not the process.
- Procedures. Within the company are functioning too complex and hindering the work procedures and instructions. Collection of data, which are not analyzed or are difficult to interpret.
- Training. Lack of specific materials to be used for training and the lack of enforcement of implementation of individual stages of Lean. Lack of indicators of implementing Lean concept in the enterprise.
- A lack of reliable data. A large part of Lean projects was carried out by the so-called desks without detailed observation and analysis based on data from technological documentation.

Additional problems often appearing during implementation is the lack of understanding of the concept of Lean through the entire management staff. Very often Lean implementation is limited to the area of production, perceiving it as an isolated element of the company. Production, however, actually coexists, and cooperates with other areas or departments. Lack of understanding and, consequently, support for the changes (or only

their acceptance) from all the managers is often a huge barrier to the development of the company in accordance with the concept of Lean. It should be understood that the management staff are decision makers who have the formal right to make decisions about changes. Their lack of conviction to these changes usually results in their blocking

3. THE RESULTS OF THE SURVEY

For research was used survey questionnaire consisting of 12 questions and metric identifying the respondent. Questions were selected in a manner enabling assessment of the impact of organization culture on the process of implementing lean, the use of process approach, the use of soft lean practices, as well as the techniques and tools of lean. A separate question concerned the identified areas of wastefulness and problems in implementing the lean concept. Questionnaire studies were conducted among the participants of the V Open Lean Conference in Poznan. Per 500 distributed questionnaires only 167 participants of the conference returned the survey. Of which 24 companies were directly connected with the metal industry. In order to broaden analyzed group of companies there was carried out direct research PAPI addressed to the companies in the metal industry including iron and aluminum foundries, and steel mill from the vicinity of Czestochowa. In this way, results were obtained from 12 plants. In studies was also used on-line survey. On 100 sent inquiries directed to factories in the metal industry, the questionnaire correctly filled out only 11 entities. In total test results were obtained from 47 companies in the metal industry. In this 11 % were large enterprises employing over 250 employees, small and medium-sized enterprises represented 80 % and micro-enterprises 9 % of generally surveyed enterprises in the metal industry.

To the question about the degree of involvement of companies in implementing lean concepts 15 % of companies replied that they do not intend to implement lean concept in the near future. This group includes all micro-enterprises, one company employing over 250 people and four companies from group of small and medium-sized. Obtained result was shown in **Figure 1**. From further studies was excluded this group of companies.

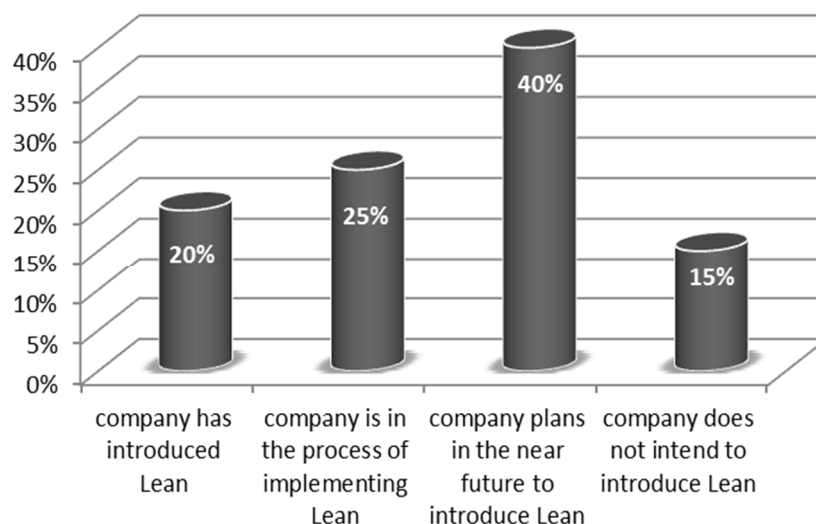


Figure 1 The percentage share of companies participating in the survey responding to the question about the level of involvement of companies in the implementation of lean concept

An important element of the idea of Lean is the involvement of employees in building Lean environment in enterprise. Taking into account the teachings of Herzberg and comparing them with natural for Lean expectations of high commitment to work towards the employees and their superiors, it is easy to notice that

this is a system that turns toward natural motivators of human behavior. According to Cheryl Jekiel there are seven motivators. We can include to them [10]:

1. Giving the sense of work of the particular man.
2. Creation of the sense of fulfilment at work.
3. Commitment.
4. Removal of waste from performed operations.
5. Solving problems in a team.
6. Recognition of individual effort.
7. Granting ownership over the process or area.

Seven motivators are "must have" of Lean, without which no instrument or thin process will not work. Unfortunately, carried out studies show that in the metal industry the involvement of employees in Lean operation is not satisfactory. This causes that we do not have prepared suitable organizational culture for the implementation of the so-called hard Lean tools. **Figure 2** shows the involvement of employees of particular levels in Lean operations.

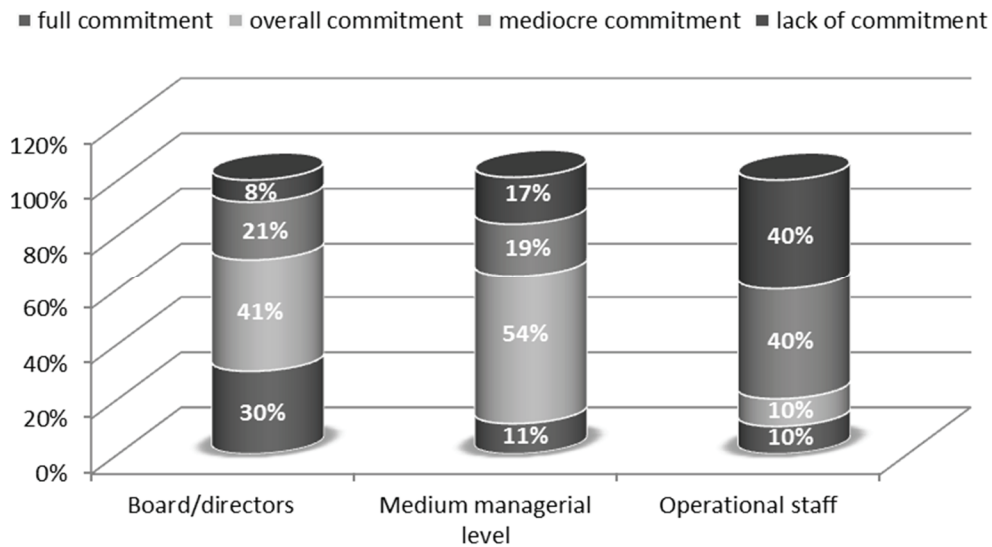


Figure 2 Percentage structure of employees' involvement in the process of implementing lean concept

When analyzing obtained results, we can conclude that the most involved in implementing Lean concept in companies in the metal industry are the employees occupying managerial positions, this concerns companies employing more than 100 employees, second group of employees with the greatest commitment are middle-level employees 65 % (about 20 % less involvement in case of other industries in the group of companies up to 250 employees [11]). With the smallest degree of commitment, we have to do in case of operational staff (80 % shows a mediocre or lack of commitment to implementing measures up to 30 % more than other industries). 35 % of surveyed workers answered to open-ended question - What problems your company encountered during the implementation of Lean concept? Apparently the biggest problem is the lack of management involvement and failure to obey established standards. Another important problem reported by the respondents is the lack of knowledge of Lean tools (24 % of responses) as a result of lack of training or improper training which was reported by 9 % of respondents. Respondents also pointed to a problem with feedback regarding the effects of the implemented activities and their impact on the condition of the company (11 % of responses). **Figure 3** shows the structure of received responses to the question on the problems in implementing Lean concept. The obtained results coincide with the problems occurring in the implementation of Lean in other industries in Poland.

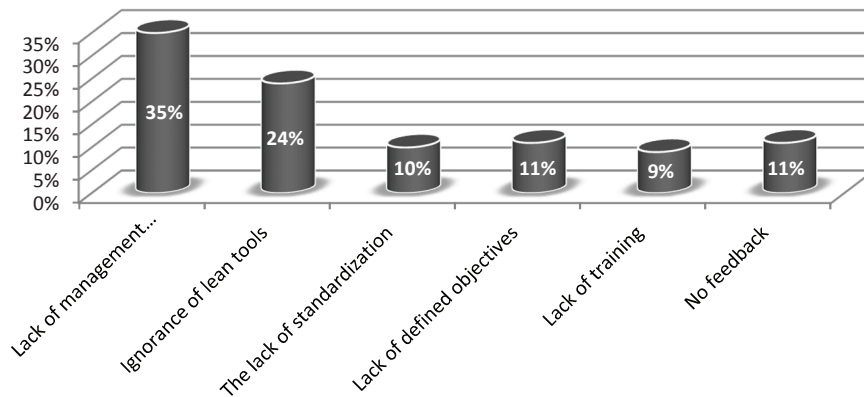


Figure 3 Percentage structure of answers to the question about the problems in the implementation of lean concept

4. CONCLUSION

Conducted researches indicate that companies in the metal industry come across the large barrier in the form of the culture of organization in the implementation of Lean concept. The most common problems include, among others: barrier in contacts between management and employees, the lack of standardization, short-term financial goals, lack of information about the effects of activities and identification of Lean with a decrease in employment. Here we are dealing with, previously diagnosed in small and medium-sized enterprises in Poland, so-called short-termism. A big obstacle is also a lack of knowledge of the techniques and tools used in Lean. As indicated by the respondents this is a result lack of training or inadequate training divorced from practice. For companies from metal industry from the vicinity of Czestochowa there was expanded research about the analysis of the factors adjusting the culture of the organization to the philosophy of Lean. The obtained results are shown in a radar chart in **Figure 4**.

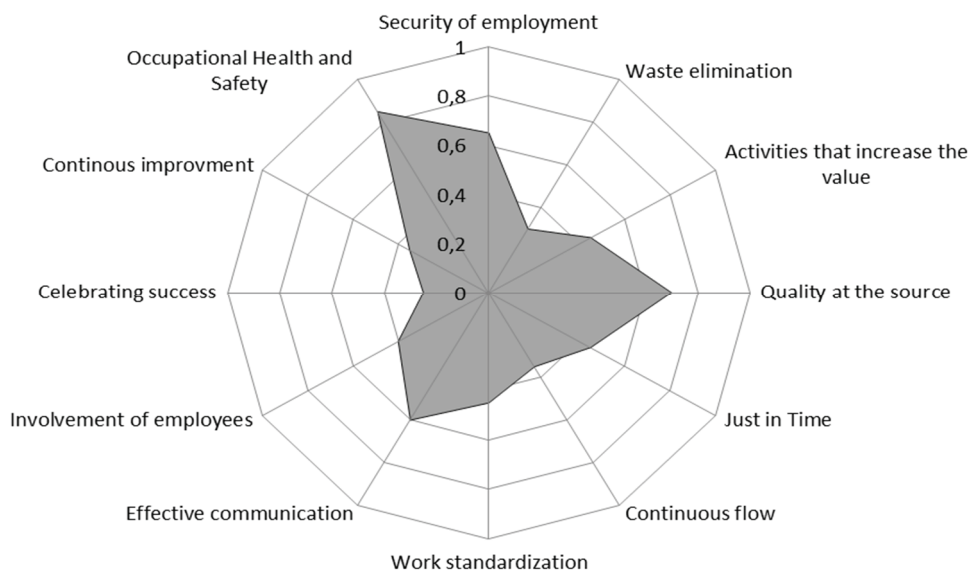


Figure 4 Progress in adapting the company culture to the philosophy of Lean

Presented results demonstrate large shortages in the areas of communication, development, standardization of work, and waste elimination and focusing on operations bring added value. Companies achieve the best

results in the area of Occupational Health and Safety, but according to the authors it is connected with the legal requirements in force in the country. Analysis of surveys and analysis of changes in the company culture showed that there is a great potential and demand for solutions from the range of Lean for the metal industry plants.

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