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Visual Management as the Support in Building the Concept of Continuous Improvement in the Enterprise

Abstract: The following article presents one of the selected tools of the Lean Management concept – visual management. This method enables enterprises to strengthen their process of continuous improvement. Due to the support of visual management, it is possible to manage information more effectively by the managerial board and to improve communication process within in the particular company. In the first part, the author describes the concept of Lean Management. Then the idea of continuous improvement is explained, which is the fundament of this Japanese management concept. In the third part, the author presents the visual management in its business environment. The last part of the paper tackles the tools, firmly based on the visual management, that function in the manufacturing enterprises surveyed by the author.
Key words: process management, process improvement, Japanese Management System, Lean Management, Continuous Improvement, Visual Management

Introduction

Nowadays both economy theories and practices demand a lot on the companies operating on the market. With high market dynamics, changeability of the business environment, political turmoil and the evolution of customer needs, the concept of change became a natural element of functioning for enterprises. Organizations, in order to develop,

need and eventually seek for development in both technical and organizational areas. To ensure such increase of the organization's efficiency, flexibility of operations and improvement of the quality of its products, new solutions are constantly being developed in the area of technology, IT and management.

The Lean Management concept, originating from Japanese entities, brought huge success to local manufacturing plants. It has indeed become the foundation of several management practices around the world. It combines of not only systems and practical tools, but also a philosophy aimed at continuous improvement of activities focused on both external and internal client. It primarily focuses on recognizing problems and provides tools for identifying them. What is important it refers primarily to people, the system and organization of work however not only to equipment and technology itself. Therefore, it requires the integration of activities in the implementation of the concept assumptions and human resources management in order to fill in the gap between the current capabilities of employees with the future objectives of the particular project. Closing the gap requires several investment spending in altering employees' qualifications, improving technology and information systems as well as adapting them to specific organizational procedures.

The aim of the following article is to present one of the Lean Management tools – visual management. Presentation of the theoretical definition together with its role in building a system of continuous improvement in the company was included. The methods used to prepare the article incorporate the study of scientific publications, materials from the surveyed enterprises together with taken observations.

Lean Management concept

The Lean Management concept was firstly formed in the 1990s as a settlement of experiences initiated and provided by Japanese engineers from the automotive Toyota company. The most accurate translation and definition of the Lean Management term is "economical/slim management". Researchers James P. Womack, Daniel T. Jones and Daniel Roos are responsible for introduction of such concept to the theory based on their personal experience while managing the 5-year research program in the years of 1985–1990, which mainly focused on the development of the automotive industry in the world [Womack, Jones, Roos 1990]. The assumptions were based principally on the methods of organization and management of production and the supply chain, described as the Toyota Production System. Such management model has gained greater popularity across the world not only in purely manufacturing plants of the automotive industry, but also in enterprises from other not related sectors. This concept is based primarily on minimizing the so-called wastage through rationalization and continuous improvement.

A crucial part of the process is the identification of activities that do not add any value to the product, i.e. the one for which the customer is not willing to pay. The next mark is the elimination of such activities from the whole product manufacturing process.

Enterprises that take advantage of Lean Management methods together with its tools are often called slim organizations. They are often characterized by such factors as lean supplier systems, slim production, slim office or slim design. Implementation of the Japanese management style includes identification of the process values flow, ensuring uninterrupted flow and continuous improvement of the entire enterprise system [Szymonik 2012, p. 120].

It is crucial to meticulously identify the waste that the Lean Manufacturing concept addresses against. In the literature, Japanese concept is defined within the types of waste that should be eliminated. These are MURI – unjustified standardization of work, MURA – incompatibility of activities or MUDA – production waste [Borecka 2012, p. 40].

Types of waste can also be divided according to a slightly different criterion – in its structural terms. Such refers to the waste results from generated by the company or when it is forced by specific procedures. In such division, the waste can be divided into [Womack, Jones 1996, p. 20]:

- Waste of the first kind – (non-value added but necessary) activities that do not bring value to the enterprise, but are necessary due to, e.g. the necessity for formal settlements with state institutions. This type of activity cannot be thus avoided, but the costs associated with it should be minimized,
- Second-order waste – (non-value added) activities that do not add value to the enterprise resulting from bad organization. This type of waste should be eliminated though.

The concept of value is crucial and fundamental in the Lean Management concept, as it is determined by the client and their needs. Determination of this value is necessary to focus on the customer-relevant functions that the product should accomplish. The Japanese management concept proposes the search for this value by creating the teams responsible for a particular product. Their main task is a continuous communication with the leading recipients. Due to this approach, the product is equipped with functions important for the customer, and at the same time the manufacturer does not include the costs associated with the development of product functionality, which the customer does not expect or want to change the decision because of lower price [Kosieradzka, Maciągowski 2005, p. 48].

The concept of continuous improvement

Since the emergence of the concept of the continuous improvement, its understanding by researchers has changed and evolved many times. Currently, most often the Japane-

se methodology, according to which continuous improvement is identified, relates to kaizen philosophy. This approach is based on Imai's attitude – experience and approach, which has been defined with his role and place in company management. Moreover, he created the basis for this concept, which means continuous improvement for both management and all company employees at all levels [Imai 2006, p. 39].

Table 1. Definitions of continuous development

Author	Defintion
Deming (1982)	Continuous and endless improvement in the production process and services that result in improved quality, productivity and finally reduced costs.
Imai (1989)	Progressive improvement of all involved within the company employees.
Bessant, Caffyn, Gilbert, Harding, Webb (1994)	The process implemented in the whole company, focused on continuous incremental innovations.
Bessant, Caffyn, Gallagher (2001)	A specific package of procedures that can enable an organization improve current manufacture.
Dahlgaard, Kristensen, Kanji (2002)	Small continuous changes for the better.
Brunet, New (2003)	Present and continuous set of activities, in addition to the standard roles of participants to identify and achieve results that contribute to the achievement of organizational goals.
Boer, Gertsen (2003)	Planned, structured and systematic process of permanent, incremental and company-wide changes to existing practices aimed at improving the company's operations.
Bhuiyan and Baghel (2005)	Improvement initiatives that increase success and reduce mistakes.
Chang (2005)	Continuous improvement in the setting customer requirements cycle, meeting these requirements, measuring achievements and continuing to check customer requirements to find areas for improvement.
Bhuiyan i in. (2006)	A culture of permanent improvement aimed at eliminating losses in all organizational systems and processes, including all participants.
Manos (2007)	Subtle and gradual improvements that are provided constantly.

Source: Kucińska-Landwójtowicz 2015.

A more detailed overview of definitions presented in tab. 1 leads to conclude that there are common elements indicated by particular researchers:

- the objectives of improvement should be clearly specified while losses should be eliminated,
- all employees of a particular company should participate in continuous improvement to optimize results,
- continuous improvement is not a one single activity but a long process that should be provided throughout the entire organization.

The idea of visual management

The Lean Management idea includes several tools to support organizational improvement. One of them is Visual Management. Its use responds to the need of efficient management of the production system within the enterprise, when it is necessary to quickly obtain information in such a form that it is as clear and valuable as it is possible in the context of the need to take business decisions [Greif 1991, p. 2]. Such tool enables to visually present information that is used to properly manage the organization. Generally visual management can be defined as a solution aimed at using visual forms of information about work management in the organization, consisting in visualizing the analyzed issues or the process of providing solutions to a particular problem [Rich, Bateman, Esain, Massey, Samuael 2006, p. 81]. More detailed definition indicates that visual management is any kind of visual support or device that allows to manage information more effectively, which eventually leads to the reduction of losses in the enterprise [Huber 2006, pp. 1–12]. In order to take advantage of all the possibilities offered by visual management, it should include its maximum range of the company's operation, in particular [Pawlak 2000, p. 55]:

- Work areas of employed in the organization people,
- Employees,
- The business process itself,
- Improvement elements.

One of the tools that support visual management is visual control or visual performance management (Performance Visual Management). The method provides the opportunity to senior management to obtain a more transparent and quicker view of the current situation in the organization [Shimokawa 2011, p. 150]. The use of visual elements, in combination with data presented in a suitable way, allows to obtain quick and, what is important, multifaceted analyzes of a specific situation [Shimbun 1995, pp. 4–5]. Visual management of presented results not only provides it easier for managers to define the priorities and optimize their working time as well as allows them to delegate tasks, but also initiates a real exchange of experiences and mobilizes the team to achieve goals and joint problem solving [Biziuk 2017, p. 46].

The following method can be a very important element of functioning, as well as initialling the period of construction of enterprise in which organizational culture focused on continuous improvement is of great importance. Such tool allows to a large extent on the day-to-day management of areas of the company's operations, due to its quick and effective detection of discrepancies with assumptions and improvement of production processes.

Application of visual management tools in production companies

Many several tools that allow to reduce losses in processes, improve quality or delivery time to the customer can be described. However, the implementation of these methods individually is not enough. An effective system of maintaining the implemented tools is also needed. The example of such is so-called Kamishibai, which is based mostly on visual management. The example given operates in one of the heavy industry enterprises in Poland.

It is a specially designed board with a set of colourful cards with written instructions on how the audit should be provided. The board consists of two parts. In the first one there are pockets for placing cards after subsequent audits. The second part of the array is organized in a way that allows to record the observed problems, causes and undertaken corrections. When designing a Kamishibai array for specific areas in the surveyed enterprise, several elements were noted:

- work system in the area (number of changes, number of work days),
- frequency of audits (depending on the leader's work standards and levels of organization involved in the audit),
- scope of audit (the whole area or specific positions, key issues).

The traditional audit is provided by measurements of an audit system, based on the basis of a team of trained auditors, a schedule and a list of questions defined on the audit form. What distinguishes Kamishibai from the traditional method is the fact that an auditor can be any person working in the factory. The simplicity used in this tool allows to control both the leader responsible for the area and the mechanic or logistician who are not directly related to the measured area. This is possible due to a very simple system of audit cards. The cards are two-sided as defined above, one side in green and the other in red. The same question is on both sides, but the visualization of the answers will be different, i.e. the correct standard will be presented on the green side, the non-compliance will be on the red side. The use of visualization on the cards helps all those who use Kamishibai in the process of learning the right standards of working. The audit begins with the card being drawn from the pile of cards placed in the container on the board. The use of the element of randomness allows employees to be ready since they are

not able to predict the audit questions. After the card is drawn, the person conducting the audit tests the particular standard on the spot according to the instructions on the card. Then the card is placed in a specific place on the board. Depending on the result of the audit, placing the card with the green side means that the audit ended with positive result. If the card is placed on the board with a red side, it means that a non-compliance was found during the audit. On the second part of the Kamishibai board, the auditor describes the problem [Nowak 2013, p. 15].

Another effective Lean Management tool based on the idea of visual management is the Kanban card system. The Kanban method was invented by Japanese managers in the 1950s. The main assumption of the method is to eliminate overproduction and production of products as well as components needed at a particular period of time. In this way, on the one hand, the reduction of inventory is achieved, on the other, it ensures the availability of materials and eliminates production delays caused by the lack of required parts [Patkowski, Kokot 2017].

One of the easiest ways to establish a kanban system is to use the so-called double-bin system. This method, due to its simplicity of implementation, was used in one of the light industry companies in Poland.

Only two containers with products circulate between the supplier and the recipient. When products from one container are consumed, the other makes the way to the supplier and returns filled. It is assumed that the transport and refill time of the second container is shorter than the time for emptying the first container. This method uses Visual Management, because the lack of one of the containers is visible to everyone and can be immediately indicated by e.g. a red sticker located under the container.

Other tools based on visual management can also be:

- Andon, i.e. a light board indicating the position on which the problem was found in the form of a product defect, machine failure or missing components for production,
- marking communication routes and storage areas for production materials i.e. so-called zoning,
- communication boards containing basic indicators related to a given area.

Conclusion

Nowadays, an effective management of a production or service process requires quick access to information on the status of its implementation. That is provided in order to quickly respond to emerging exceptions, since the cost of missing or ignoring it can lead to the very huge extend. Seemingly, due to the modern technologies, this access is easy as never before. However, the multitude of messages imported with numerous channels means that in this priority information is lost and does not reach the right recipient or is

simply unreadable. That is why companies need access to simple messages, understandable for serial employees and, what is important, allow their unambiguous and immediate interpretation.

Visual management is an important element of the Lean Management idea. The internal communication of the company and the monitoring of processes within the company are based on the following concept. The visual transmission of information between the management and the employee, despite the progressing automation has its significant role. Effective visual management can not only improve the relations between particular colleagues and the management department, but also positively influence the increase of internal motivation to act, and thus productivity to increase.

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