

HOW KAIZEN PHILOSOPHY WORKS IN JAPANESE MANUFACTURING COMPANIES LOCATED IN POLAND. A CASE STUDY OF DAICEL SAFETY SYSTEMS EUROPE

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Abstract

The philosophy of kaizen is derived from the Toyota Production System (TPS). In Japanese kaizen means "continuous improvements" or "change for the betterment". During the economic crises in the 1980s and 1990s Japanese companies survived, mainly thanks to the adaptation of kaizen philosophy. The use of kaizen philosophy does not require large capital investment compared to other innovative solutions. After 1990s many Japanese companies started locating their manufacturing sites in Poland. Currently in Poland there are 254 companies with the participation of Japanese capital, including 72 manufacturing companies (according to JETRO - Japan External Trade Organization). The main purpose of the paper is to analyze how kaizen philosophy works in Japanese manufacturing company located in Poland on the basis of Daicel Safety Systems. In order to obtain the aim the authors have conducted a survey among employees and analyzed the ideas (projects) which were implemented on the basis of kaizen philosophy in the company.

Keywords: Kaizen, Toyota Production System, Japanese manufacturing company

1. INTRODUCTION

Kaizen philosophy originates from a Japanese management style and is one of many elements of which the Toyota Production System is composed. Its main assumption is a facilitation of processes by engaging employees at every management level. People are the pillar of this philosophy, which is based on Japanese culture. Nevertheless, although Kaizen philosophy originates from such a different culture, it has been adopted by many companies, not only Japanese, located in the whole world. At the end of 2013 approximately 300 Japanese companies, including around 80 in the production sector operated in Poland. These companies employed thousands of Polish workers had to adapt to new conditions of work in accordance with Kaizen philosophy.

The main purpose of the paper is an attempt to assess the implementation of Kaizen philosophy in a production company with Japanese capital located in Poland. The following research questions were asked in order to achieve the aim:

1. Has Kaizen philosophy fulfilled its tasks in Japanese production company located in Poland?
2. In what way does Kaizen philosophy influence everyday work in the surveyed company?
3. What are the benefits of the implementation of Kaizen philosophy in the surveyed company?
4. What difficulties does the implementation of Kaizen philosophy pose to Polish employees?

The paper presents the original results of a survey conducted by authors among workers of a production company Daicel Safety Systems Europe (DSSE). As a result of the conducted research the authors have developed an authorial decision-making pyramid in accordance with Kaizen philosophy.

The structure of the paper is the following: the first part contains the description of the objective and the scope of the paper. The second part presents the role of Kaizen philosophy in production companies. The following part describes the method of the conducted research and the fourth one contains the results of the survey. The final part of the paper is the conclusion.

2. KAIZEN PHILOSOPHY IN JAPANESE MANUFACTURING COMPANIES

Kaizen philosophy originates from Toyota Production System (TPS) [1]. The Japanese word kaizen means (KAI-change, ZEN-good, better) - „continuous improvements” [2, 3] or „change for the betterment” [4]. In the United States it is possible to find other kaizen expressions, such as “rapid improvement events”, „gemba kaizen” or „kaizen blitz” [5]. Kaizen philosophy is mainly implemented in big industrial companies in order to streamline production [6]. Its thrust is to motivate employees at every level of management [7] to solve problems immediately when they appear in gemba (Eng. workplace) in order to constantly streamline the processes in the company [8]. According to Masaaki Imai the kaizen strategy should be implemented by means of three principles: housekeeping, muda elimination and standardization [9]. Housekeeping is a necessary element of a company management and mainly involves development and testing of the principles governing the operations at a position and maintaining self-discipline in order to follow the principles. Pursuant to gemba kaizen housekeeping includes five stages [10]: Seiri (tidiness), Seiton (orderliness), Seiso (cleanliness), Seiketsu (standardization), and Shitsuke (discipline). Seiri refers to a division of matters at work into unnecessary and necessary. Unnecessary things should be eliminated from the workplace in an appropriate manner. The selection performed in this way may bring numerous benefits - firstly saving space at the workplace and improving the organization of performed actions. Seiton is the next step and involves the classification of necessary things and finding a right place for them to reduce the time needed for searching. In the following stage Seiso the workplace is tidied to maintain safety and eliminate the risk connected with acts of god. The previous three stages should happen repeatedly thus standards (Seiketsu) of performance of each stage need to be developed. The last stage concerns self-improvement (Shitsuke), which relies on developing self-discipline among employees to allow the performance of four earlier stages [9].

The next important kaizen principle is elimination of waste (muda) [11]. Muda in Japanese means „useless, futile” and refers to activities which do not generate any added value but exist in production. There are the following types of muda [12]:

- Overproduction
- Stock
- Waiting
- Transport
- Over-processing
- Movement
- Repair (resulting from mistakes and quality defects)

The above categories of wasting may appear in any area of a company's activity, therefore each of them should be analyzed periodically and the results of the analyses should be presented to all participants of an organization. As a result of common activities it is possible to eliminate such phenomena and improve the operation of a company.

The last important kaizen principle is standardization of designed and implemented procedures. Standardization should be conducted in accordance with two cycles: SDCA (Standardize-Do-Check-Act) and PDCA (Plan-Do-Check-Act). The first one standardizes and stabilizes the current process whereas PDCA is aimed at the improvement thereof [9]. These two mechanisms enable managers and employees not only to solve problems arising in a company but also introduce innovative solutions allowing to meet the customers' needs in a better way [13].

The application of kaizen philosophy to streamline the processes within a production company does not require major investments in comparison with other innovative solutions. Owing to them a company may improve its competitive position, cut the costs, improve the efficiency of performed operations [14] as well as quickly and flexibly react to the changing needs of customers.

3. RESEARCH METHOD

In the paper four stages to implement the study have been developed:

- **Stage 1 Critical analysis of the literature.** In this stage the authors have analysed the domestic and foreign literature in the field of kaizen philosophy, especially in relation to Japanese companies.
- **Stage 2 Development of the research tool.** On the basis of an analysis of the literature the questionnaire has been developed. The questionnaire contained six questions related to application of kaizen philosophy in Japanese company located in Poland. The respondents were asked to assess KAIZEN influence on everyday work and to identify benefits and problems from its implementation at DSSE.
- **Stage 3 Gathering employees opinions.** The survey has been conducted among 51 employees representing different workplaces (labourers, managers and directors), in the form of interviews between the 3rd and the 20th of September 2015.
- **Stage 4 Analysing the results of the survey.** After receiving the employees' opinions on the application of kaizen philosophy in the studied company the data analysis has been made. The authors have also developed an authorial decision-making pyramid in accordance with Kaizen philosophy

4. STUDY RESULTS

4.1. Company background

Daicel Safety Systems Europe (DSSE) belongs to the Japanese concern Daicel Corporation founded in 1919, which specializes in celluloid products, based on organic chemical substances and plastic and in pyrotechnic devices. Since 2004 DSSE, having its seat in Żarów (Poland) in the Wałbrzych Special Economic Zone „Invest Park“, has been an element of a global production and supply chain including also facilities in Japan, the USA, China and Korea. All these facilities specialize in the production of airbag inflators. The facility employs approximately 300 people.

The main objective of the corporation is to improve the quality of life through developing and producing goods required and appreciated by society.

The DSSE vision is based on four fundamental rules:

1. Delivering goods of the best quality, improving the safety of drivers and passengers.
2. Offering the employees a possibility to develop while achieving the company's aims at the same time
3. Joint effort to achieve the company's aims increases the value of DSSE for DC corporation, business partners and local community.
4. Obligation to search for the best solutions and technical innovations constituting the power of the DSSE team.

4.2. Results of the survey

In the fulfilment of the DSSE vision, KAIZEN plays a very important role. The employees, regardless of the position, are continuously motivated to suggest innovations. Over a five year period, from 2010 to 2014, the amount of suggested innovations increased fourfold from 4000 to 1600. Among the most active professional groups in terms of suggesting innovations are directors and managers. The employees who suggest an innovations bringing notable financial benefits are rewarded financially. Additionally, the 1st day of each month a meeting for all DSSE employees called „MEMBERS MEETING“ takes place. In the meeting issues such as the sales results (in the form of sales figures and revenues) for the previous few months or sales plans are discussed. In addition awards for meaningful innovations KAIZEN are granted. One example of KAIZEN, suggested by a logistics specialist, was the idea to make a “milk run” - a planned transportation, which during one route collected material from Italy from two suppliers and delivered it to DSSE. As a result the cost of

transport was almost halved. Nevertheless, not all employees have suggested innovations regarding the organization of work. Among 51 surveyed employees 14 have not suggested any innovation, whereas twenty of them have suggested an improvement once every few months or less often, eight once a month, four every two-three weeks and seven once a week. The results of the research suggest that KAIZEN philosophy facilitates the work of 44 surveyed employees (see **Fig. 1**). Only one employee feels it makes their work more difficult, and the attitude to Kaizen philosophy of 6 employees is indifferent. The respondents included to the most common problems connected with working pursuant to KAIZEN philosophy: bureaucracy (12 people), excessive number of procedures (8 people) and slow implementation of streamlined activities (7 people).

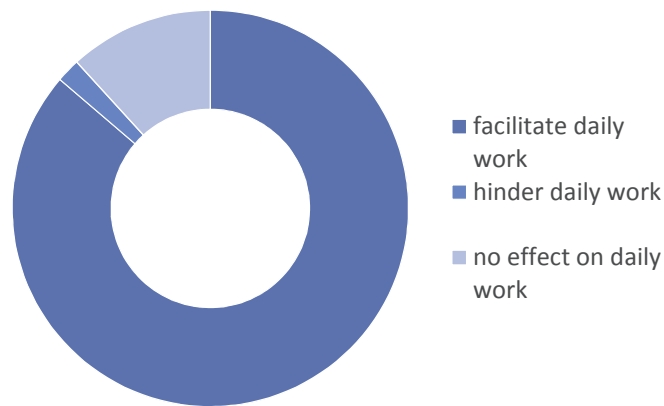


Fig. 1 The assessment of KAIZEN influence on everyday work at DSSE

According to the surveyed employees the benefits brought by the implementation of KAIZEN philosophy at DSSE company include: the facilitation of performed duties (40 responses), cost-cutting (39 responses) and quicker performance of activities (37 responses) (see **Fig. 2**).

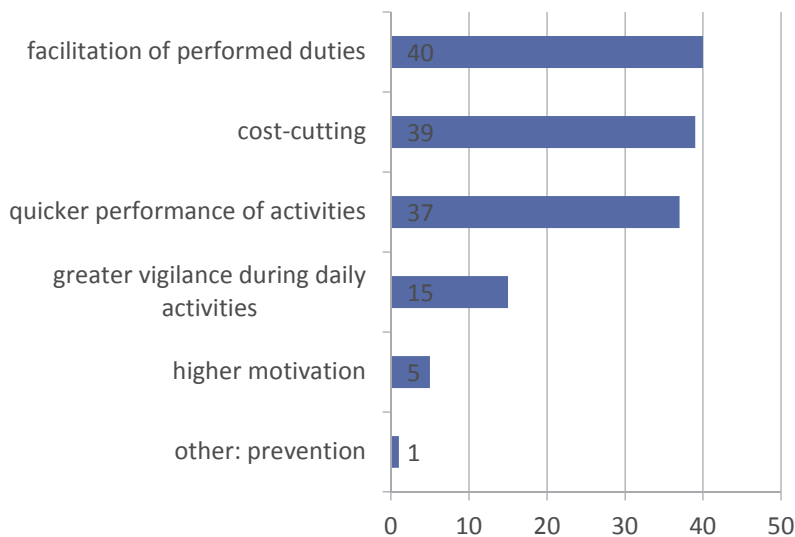


Fig. 2 The hierarchy of benefits from the implementation of KAIZEN

Having analyzed the dependencies between the survey results it is possible to observe that the reception of KAIZEN at particular positions is totally different. The senior employees much more often perceive KAIZEN as a motivation to work, whereas junior employees as a means to increase the alertness during performed tasks. It may suggest to view KAIZEN from the perspective of responsibility and decisiveness in a company (see **Fig. 3**).

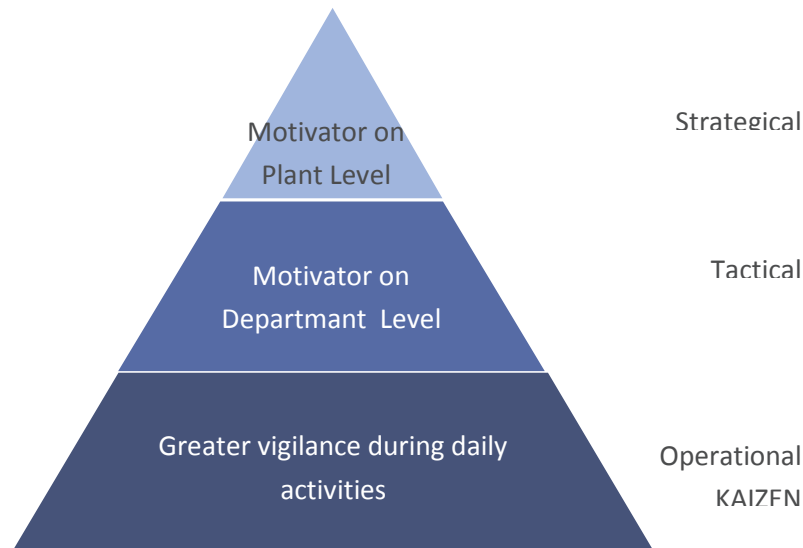


Fig. 3 The decision-making pyramid pursuant to Kaizen philosophy

5. CONCLUSIONS

The objective of the paper was to analyse the functioning of Kaizen in a Japanese company located in Poland. The research conducted by the authors show that the philosophy is successful among Polish employees. Over 70% of respondents have proposed an innovation to their workplaces in accordance with Kaizen philosophy. Over 80% of the surveyed employees believe that the philosophy facilitates their everyday work. Among the benefits resulting from the implementations of the philosophy the respondents indicated: cost-cutting and quicker performance of activities. Despite many advantages of Kaizen philosophy the respondents feel that the drawback of Kaizen is bureaucracy and slow implementation of suggested innovations.

The analysis of Kaizen philosophy implemented in a company with Japanese capital located in Poland and employing mainly Polish workers reveals that Kaizen has been introduced in a very successful and effective manner. The employees of the surveyed company quickly adapted to the procedures and requirements necessary to implement the philosophy in everyday work. However, one may observe differences in the implementation of Kaizen philosophy depending on the level of management (strategic, tactic and operational). Thus, it is possible to distinguish: strategic Kaizen, which comprises a motivator for the management and directors in the whole company; tactic Kaizen, which involves improvements undertaken by department managers and operational Kaizen, implemented by line (production) workers which predominately aim at alertness while performing duties. The awareness of different approaches to Kaizen philosophy may significantly streamline the management of human resources and their appropriate motivation to work at different management levels in a company.

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