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EMPLOYEES' ASSESSMENT OF KAIZEN IMPLEMENTATION IN INDUSTRIAL ENTERPRISE – RESULTS OF EMPIRICAL RESEARCH

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Abstract: The aim of this article is to present the philosophy of kaizen, which may support the strategy for implementation of innovative changes, and thereby increase the innovativeness of Polish enterprises. The paper developed a theoretical and an empirical parts. The first part generally describes the core philosophy of kaizen and the second part shows the results of empirical studies conducted in the Polish enterprise which concern the state of employees' readiness and commitment to the implementation of kaizen.

Keywords: innovation, kaizen, employees, process of changes, polish enterprise

INTRODUCTION

Contemporary there are many concepts and management methods which allow the search for new and better direction for the development of enterprises and contribute to improve their competitiveness and innovation. The system solutions in the field of innovation become an important point, they are implemented in order to improve the functioning of the enterprise and its better adaptation to rapidly changing environmental conditions. The source of these changes are usually the natural human desire to improve the status quo and are the essence of streamlining the organization [12, 6]. This principle is the main message for Japanese management concepts such as Total Quality Management, Lean Management and kaizen. As part of these there are a number of methods and instruments to improve, used with varying results by enterprises around the world, including Poland.

This article describes the philosophy of kaizen in theory, and presents the results of empirical studies conducted in the Polish enterprise on the state of readiness of employees to the implementation of kaizen.

MATERIAL AND METHOD

The theoretical part of article was developed on a base of polish and foreign literature and Internet sites. The empirical part was developed from performed research. The study was conducted in 2014 in the Polish manufacturing plant operating in the metal industry in Lower Silesia. The study used a questionnaire, the fulfillment of which was supervised by a competent person dealing with the issues of

implementation of kaizen. The questionnaires were addressed to the production employees working on the assembly line. The results of research were analyzed and graphically presented in the second part of paper.

THEORETICAL APPROACH OF KAIZEN VS INNOVATIONS

The term “kaizen” is a combination of two Japanese words: kai - “change” and zen - “good.” The literal translation means “change for the better.” In the literature there are many definitions of the term. In the Polish publication: “Handbook of Quality” kaizen is interpreted as “gradual, ordered and continuous improvement, increasing the value, perfecting, advancement” [17]. According to another definition it is: “The concept of management based on the constant search for and application of even the smallest improvements in all areas of activity at each workplace. Its aim is to achieve significant success through small steps” [2]. However, the most important interpretation of this concept refers to the human factor and it is: “the desire of all employees and executive-level to the continuous improvement of all aspects of enterprise” [13]. Such an approach is consistent with the original meaning of the concept, which was promoted by Japanese scientists: “Kaizen means improvement. In addition, means continuous improvement in your personal life, your home, in social and work. In the enterprise kaizen is continuous improvement of all - managers and employees” [5, 6].

For the development of this philosophy the great importance have the extension of the concept of

TQM, which was originally part of kaizen improvement of Japanese quality management techniques, such as: zero defects, E. Deming cycle, quality circles, prevention system, just-in-time. This approach meant that you can do all better than before, that small steps can achieve the desired results. Perfecting everything, and the advancement should be done every day, by everyone, from small incremental improvements to major strategic changes [10, 12, 15]. Kaizen in its assumption should encourage employees to improve workplace, contribute to greater self-reliance and self-control. The basic objectives of kaizen is to improve the three parameters: quality, costs and delivery time. This means improving the quality of products and services, processes, striving to reduce costs at every stage of the business organization and shortening delivery times.

Table 1. Characteristics of kaizen and innovation [6]

Criteria	Kaizen	Innovation
Effect	The long-term effect, but not breakthrough	Short-term, breakthrough
Steps	Small steps	Big steps
Time frame	Continuous operation of gradually increasing effects	Action incidental effect of a sudden
Change	The gradual and continuous	Sudden and disposable
Involvement	Everybody	Selected leaders
Approach	Team effort, a systematic approach	Individual ideas and action
Method of work	Maintenance and improvement	“Fire fighting” and reconstruction
Ideas	Conventional know-how and traditional technology	The use of technological breakthroughs, new theories
Practical requirements	Requires a small investment, but a huge effort to maintain	Requires large investments, but little effort to maintain
Orientation	On the people	On technology
Criteria	Processes and commitment to achieving better results	Results directly affecting the profits
Utilization	Works well in a stable growing economy	Works better in a rapidly growing economy

In the world of business innovations are regarded as one of the key factors of the development of each enterprise [3, 19]. In the literature, innovation generally is interpreted as: “the first use of certain ideas or inventions with adequate economic criteria in order to profit” [1]. Some authors refer innovation to all areas of enterprise’s activities whilst others have in mind something new that works on the market [1, 4]. Thus, innovation is a significant improvement on the existing situation especially in the field of technology and management (this applies to: tools, techniques and processes). All these activities are expected to bring the enterprise changes in the form of

improvements, which in turn are translated into concrete benefits [18]. General comparison of innovation and kaizen are presented in Table 1.

The classic approach to innovation differs from kaizen in many aspects: the pace and scope of change, working methods and the essential - in the philosophy of kaizen human factor plays a key role in the improvement. Kaizen is a kind of innovation, in which improvement “is a state of mind inherently connected to maintaining and improving standards” [5, 6]. Important elements of the concept of kaizen are: ensuring standardization and creating system maintain the level of change. In practice, defining standards means their continuous raising, only that way you can aim to improve the status quo, as a result of continuous kaizen activities. However, should be aware that the application of this philosophy does not exclude the introduction of radical improvements, they can be supported and fixed by using kaizen. Such actions affect both the measurable economic effects, as well as the behavior of employees, their knowledge, skills and attitude of openness and commitment. Therefore, an additional value of the implementation of kaizen is increasing awareness of workers for further improvement of the organization [7, 8]. In this context, the combining of kaizen and innovation can be very rational, as: “kaizen is understood as maintaining and improving standards by means of small, incremental steps, and innovation is regarded as a radical change related to major investments in technology and/or equipment” [6].

The result of kaizen activities is usually new organizational culture, focused on process improvements, resulting primarily with a positive message among employees. They should take the initiative in submitting new ideas. Acquiring even the slightest improvement suggestions from employees becomes essential. The new approach requires the development of a motivation system that takes into account the training and evaluation of employees, the verification of improvements, the definition of rules for employee teams responsible for each task. New motivation system must be adequate to the changes associated with the implementation of kaizen. It becomes essential to evaluate employees not only because of the results obtained, but you should appreciate their attitude and effort they put in to achieve results. Regardless of the stage of implementation of kaizen the main aim should be to ensure for employees the share in the benefits of their better work and more efficiently, using appropriate incentives that encourage employees to become more involved in the process of permanent change. A major role is played by the motivation of the material through the proper and fair remuneration of workers and immaterial motivation, which in many cases may be even more effective. Immaterial instruments may

be to increase self-esteem and belonging, satisfaction with the work itself or participation in the success of the organization [4, 11]. The additional result of such activities in the area of management may be an increase of the knowledge and skills of employees, awareness of the requirement for improvement and problem solving using new techniques and methods. Those methods in consequence, not only allow for recognition and elimination of negative elements in the enterprise, but also develop the ability to learn from mistakes and creating favorable conditions for the implementation of innovations, exploring new opportunities. Appropriate use of these capabilities give the enterprise “the ability to dynamically integrate, build and reconfigure internal and external competencies to be able to adapt to a rapidly changing surrounding” [20]. Regardless of the state of preparation of participants and the conditions which induce the enterprise to make changes, kaizen is generally considered to be very cost effective and efficient.

EMPIRICAL APPROACH - THE RESULTS OF RESEARCH ON THE STATE OF READINESS OF EMPLOYEES FOR THE IMPLEMENTATION OF KAIZEN IN POLISH MANUFACTURING ENTERPRISE

In this part of the article are presented the results of research on the assessment of the attitudes of employees in the Polish enterprise, which is in the process of implementation of organizational changes. The key element is to implement kaizen program in order to minimize manufacturing costs while improving productivity. The study was conducted in 2014 in the Polish manufacturing plant operating in the metal industry in Lower Silesia. The study used a questionnaire, the fulfillment of which was supervised by a competent person dealing with the issues of implementation of kaizen. The questionnaires were addressed to the production employees working on the assembly line. The enterprise selected for testing has undergone restructuring in recent years and has some experience in implementing modern management methods and tools. Changes to improve the functioning of the enterprise concerned are currently applying to Lean Management with improvement based on the philosophy of kaizen. As part of the recovery program general principles of kaizen are used, and one of the recently implemented measures is employee suggestion system named as “I have an idea.” The aim of the study was to analyze the level of awareness and involvement of employees in the implementation of “I have an idea” kaizen program. Survey was anonymous and conducted on a group of 22 people (2 women and 20 men) working at various positions in the enterprise, they were: electricians, locksmiths, logisticians, warehouse, fitters, machine operators, and one quality controller.

Characteristics of the study group are presented in Table 2.

Table 2. Characteristics of the study group

Age	No. of people	Seniority in the enterprise	No. of people	Education	No. of people
20-29	2	1-9	14	Vocational	6
30-39	12	10-19	4	Secondary	13
40-49	4	20-29	0	Higher	3
50+	4	30+	4		

RESULTS AND DISCUSSION

The study was conducted in 2014 in the Polish manufacturing enterprise. The results represent the opinion of employees on kaizen program implemented at the plant. In the opinion of the workers for the main objectives of the kaizen program were considered elements such as (Fig. 1):

- » Improving performance.
- » Improvement of the quality.
- » Improvement of working conditions.
- » Creation of a structured management system.
- » Reducing costs.
- » Improving employee motivation.

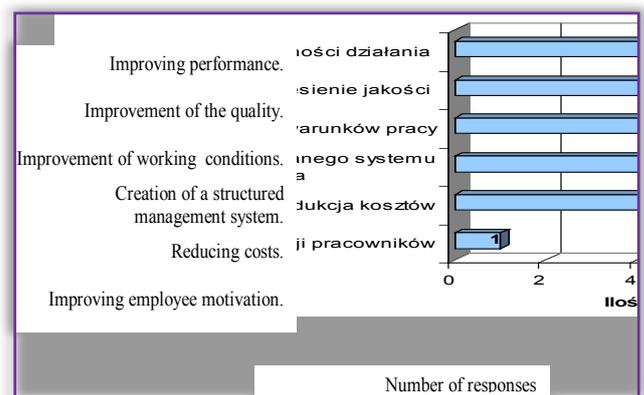


Figure 1 - The objectives of the program's implementation in the opinion of kaizen plant employees. Improving performance of the plant is the main goal resulting from the need to implement a new philosophy; it is a characteristic to the most of Polish companies. However, not all employees are properly motivated to implement process of kaizen activities. Generally, all employees are aware of the presence of organizational changes; however, only 8 respondents (36%) believe that the “I have an idea” program has significant impact on the functioning of the enterprise. Only 13 workers (60%) know the applicable rules and regulations of “I have an idea” program.

Most of workers report its improvements at least once a year, which are ideas involving not only the work they perform, but the overall operation of the enterprise. The structure of the responses is shown in Table 3.

Table 3. Number of reported improvements during the year by the employees of the plant

Number of reported improvements in the year	None	1	2-5	6-10	More than 10
In the operation of the plant	3	15	3	0	1
In terms of work	7	9	5	0	1

Workers report their improvements because they have the opportunity to win a prize or they expect to facility in their work. Unfortunately, most employees thinks that the reward system does not meet their expectations (55% of negative responses), and waiting for a response to proposed improvements is too long, in 70% of cases it ranges from 1 to 3 months. About the implementation of the proposed improvements workers are usually informed from their supervisor or at a meeting of the staff.

In the opinion of workers implementation of the kaizen program should be transferred into specific benefits. A list and order of priority of the benefits to be achieved following the introduction of kaizen as indicated by the workers is presented in Tab. 4.

The structure of Table 4 shows that in the opinion of workers the most important benefits of the implemented program were: better organization of work, improving quality, reducing losses and wastage, saving the enterprise's financial resources; as the second in the order important benefits were indicated: the involvement of the entire staff in problem solving, improving and maintaining new standards of work, the opportunity to ask questions about new ways to solve problems.

Table 4. The validity of the various benefits of kaizen program implemented by the number of employees indicated.

Advantage:	Very important	Important	Not important
Reduce losses and waste	11	11	0
Better organization of work	12	8	2
The involvement of the whole staff in troubleshooting	3	18	1
Changing the awareness of employees	6	12	4
Opportunity to ask questions	1	18	3
Better communication among workers	7	13	2
Improving of the quality	12	10	0
Improvement and maintenance of the new labor standards	4	18	0
Saving the enterprise's financial resources	10	10	2
Shorter lead-times	9	13	0

The survey also asked to identify the barriers that exist in the implementation of kaizen program. The

responses received in the form of a hierarchy of importance for individual barriers shows Table 5.

Table 5. The importance of different barriers that exist in the implementation of the program by the number of indications kaizen employees

Barrier:	Very important	Important	Less important	Not important	No opinion
Too high expectations of employees	1	7	2	11	1
Strained relations between employees	1	7	0	10	2
Competition for ideas	1	2	2	15	2
Inadequate reward for ideas submitted	2	5	1	12	2
Mutual criticism of ideas	3	12	4	2	1
General reluctance of workers to change	4	15	1	0	2
Fear of difficulties and additional responsibilities	3	8	2	8	1
Bureaucracy	11	3	3	2	3
Lack of time on implementation	10	8	2	0	2
The high cost of new system requirements	2	9	3	4	4

The employees recognized bureaucracy and lack of time for implementation for very important barriers, for the second in order of importance were listed barriers of: the general reluctance of workers to change and concerns about the mutual criticism of ideas.

In order to reduce barriers, resistance and reluctance towards the implementation of the "I have an idea" employees detailed the activities that they believe could assist in the process of innovative change in the plant (the order is given by the number of responses), they are:

- ≡ Regular rewarding of employees for reporting ideas (64%).
- ≡ Systematic training for employees (33%).
- ≡ Support from the kaizen team advisors (1%).
- ≡ Support from top management (1%).
- ≡ Support from co-workers (1%).

The worst assessed by the employees area was training, half of surveyed workers do not understand the reason for change and do not have complete

information on the planned kaizen activities. Among the respondents there were only 7 employees trained (31%), although workers themselves recognize the systematic training of employees as a very important factor facilitating the implementation of the kaizen (was listed as the second most important factor to minimize resistance and a reluctance of employees).

It is worrying that in surveyed enterprise none of the respondents were involved in the work of the kaizen team. For the question: “Are you a member of the »I have an idea« kaizen team?” nobody gave affirmative answer. Unfortunately, in the enterprise direct production workers are not involved in team. This is a serious fault of the management. Numerous publications emphasize that teamwork and group problem solving have great importance for achieving positive results in the implementation of any organizational changes. Teams of employees increased ease in the implementation of innovation through the creating the opportunity to learn new solutions, the use of integrated knowledge or information exchange. Unfortunately, this has not been taken into account by the enterprise and created a real threat that in the long term kaizen would not fulfill its role.

The final evaluation of workers indicates that the “I have an idea” kaizen program has been assessed generally positive, the results are presented in Fig. 2.

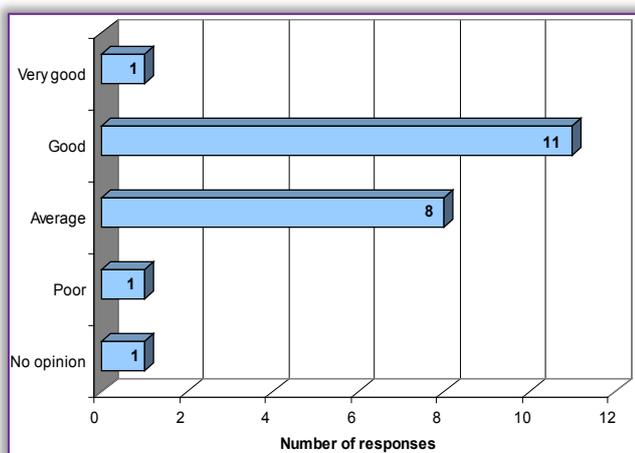


Figure 2 - Evaluation of the implementation of the kaizen program in the opinion of employees

The results, however, are not a complete success, in the study appeared a number of negative opinions, and this means that the enterprise’s management has yet to work out a strategy of change. There are basic faults in the implementation of the kaizen philosophy and not all employees understand the essence of the new approach and are not prepared to create improvements for the needs of the surveyed enterprise.

CONCLUSIONS

Based on the survey some basic irregularities and faults which may occur in the process of

implementing the philosophy of kaizen in Polish enterprises can be pointed out. Among them the most common causes of failures include: lack of training, ignorance and wrong approach of employees, lack of commitment, lack of teamwork in delivering results, too high or too poorly defined expectations of management. Improvement actions require a fundamental change in the functioning of the entire enterprise, especially for training in order to improve the skills and knowledge among employees and for appropriate communication. Effective implementation should be combined with an indication of the best ideas (publicizing and rewarding), and measurable results will be the basis for further action here. The employees are specifically required to have a broad knowledge of the variety of tasks and functions in enterprise and were able at any time to meet the demands of the changing situation.

Generally, the faster the enterprise has reached a sufficient level of employee involvement in the process of continuous improvement, the more effectively employees would realize it. The philosophy of kaizen is an appropriate way to increase innovation of enterprises and achieve their long-term competitiveness.

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