MILITARY UNIVERSITY OF LAND FORCES

Scientific Journal of the Military University of Land Forces
ISSN: 2544-7122 (print), 2545-0719 (online)
2021, Volume 53, Number 1(199), Pages 198-215
DOI: 10.5604/01.3001.0014.8120

Case study

Implementation of Japanese business management methods – the case study of a manufacturer of systems and installations for pneumatic, hydraulic, and electro-machinery controls

Krzysztof Rutkiewicz[1]*, Weronika Sobczak[2]

[1] Institute of Economic Sciences, Wrocław University of Environmental and Life Sciences, Poland, e-mail: krzysztof.rutkiewicz@upwr.edu.pl

[2] Rawibox S.A., Rawicz, Poland, e-mail: sobczak.weronika.pl@gmail.com

INFORMATION

Article history:

Submited: 10 May 2019

Accepted: 05 February 2020

Published: 15 March 2021

ABSTRACT

Japanese methods, concepts, and management tools enjoy rising popular in the world and in Poland, which is the consequence of the assumptions and practical results achieved thanks to the solutions applied by business entities and organizations. The aim of this study is a comprehensive assessment of conditions and internal determinants of competitiveness, enabling effective implementation of Japanese methods and techniques of production management, in the enterprise under consideration. The hypothesis to verify is the statement that the implementation of Japanese management methods in the examined enterprise increased the economic efficiency of individual production processes and improved its organizational culture. The triangulation method in the form of direct observation analysis of information taken from primary and secondary sources was applied. Also, there was conducted a questionnaire survey, completed with an individual in-depth interview with the company employees (leaders and coordinators) in the field of Japanese production management methods. The possibilities of using Japanese management methods in enterprises are huge. The effectiveness of the implementation of Japanese management methods, concepts, and tools in the studied organization is manifested, among others, in such results as improvement of employees' working conditions, organized production, increased safety on the premises, organizational culture focused on respect for others, the possibility of personal development, increased efficiency of individual production processes, and reduced waste. Achieving the best production and economic results is possible thanks to experienced and knowledgeable employee teams. Japanese concepts are very strongly oriented towards cooperation between management and employees. Unfortunately, not every employee has a chance to develop, as it is limited to selected senior units. Employees' knowledge of management methods, concepts, and tools is assessed as low by leaders and coordinators. The lack of participation in training and the lack of knowledge of some employees is the main reason for this claim. In the opinion of managers, young people are more open to change, see knowledge as an essential element in life, strive to learn and get the most out of work. The production plant under investigation should train employees in the methodology they apply. The training should be more practical, thought-provoking, voluntary, and offered with a specific frequency and with certain stages of

difficulty. Instead of defining Japanese management methods, concepts, and tools, their effects and their practical meaning should be shown.

KEYWORDS

Japanese management methods, production management, organizational culture, corporation

* Corresponding author

Introduction

Japanese methods, concepts, and management tools enjoy rising popular in the world and in Poland, which is the consequence of the assumptions and practical results achieved thanks to the solutions applied by business entities and organizations.

The aim of this study is a comprehensive assessment of conditions and internal determinants of competitiveness, enabling effective implementation of Japanese methods and techniques of production management [1, p. 8], in the enterprise under consideration [2, p. 47-60; 3, p. 47].

The hypothesis to verify is the statement that the implementation of Japanese management methods in the examined enterprise increased the economic efficiency of individual production processes and improved its organizational culture.

The triangulation method in the form of direct observation [4, p. 101], analysis of information taken from primary and secondary sources [5, p. 53-54] was applied. Also, there was conducted a questionnaire survey, completed with an individual in-depth interview [6, p. 28; 7, p. 735] with the company employees (leaders and coordinators) in the field of Japanese production management methods [8, p. 11-16].

1. Theoretical aspects of Japanese management methods and concepts

The fundamental premise of Japanese management methods, concepts, and tools is to provide customers with the expected value of products and services. It is based on the pursuit of complete standardization and ordering of all elements of production and administrative processes. That means that improvement activities focus on eliminating losses and unnecessary processes that consume too many resources, time, place, and employees' effort [9, p. 96; 10, p. 17].

The classification developed by H. Jagoda and J. Lichtarski can be used to clarify and prioritize the structure of solutions and management ideas. They distinguished three system levels in terms of the degree of detail of the proposal:

- Level I: Concept (philosophy, orientation, approach), e.g., *kaizen*, *lean management*,
- Level II: Method (general method), including *just-in-time*, *hoshin kanri* system,
- Level III: Technique (detailed methods, techniques, tools), including *kaizen*, *kan-ban*, *andon*, *poka-yoke*, quality circles, 5S [11, p. 3].

The fundamental principles of *kaizen* are aimed at teamwork, striving to eliminate the source of problems, using facts and data, and involving all employees. The concept applies the so-called visual management, which means depicting all tools, parts, production activities, and

performance indicators of production systems. That includes information boards, alarm signals, *kanban* cards, and instructions describing the process status.

Lean management is a concept assuming rationalization of the whole organization through organizational and functional adaptation together with "slimming" of all processes taking place in the company, which are conducive to the elimination of waste (*muda*), "strain" (*muri*), and irregularity (*mura*) [12, p. 249].

The *just-in-time* method involves the realization of production processes, thanks to the delivery of subassemblies at the right time, quantity and sequence (*just in sequence*) to reduce the execution time to the necessary minimum and generate savings related to inventory reduction [13, p. 722].

Hoshin kanri, in turn, reflects a systematic process of planning and achieving long-term objectives based on the development and implementation of an organizational strategy in all its departments and units. It should be interpreted as a set of principles, rules, values, and jointly set goals for the organization [14, p. 3-7; 15, p. 2].

The *kanban* system was developed by Taiichi Ohno to control raw materials and products between processes and to reduce inventory costs relative to batch size according to the "7 × none" principle: shortages, delays, inventory, queues, in-activity, unnecessary operations, and movements [16, p. 2; 17, p. 75].

Andon means a light alarm signal indicating a sudden problem, e.g., a process or production line stoppage, machine failure, or deviation. It allows for a quick and efficient reaction to improve and remove the problem.

Poka-yoke is a method to prevent human-induced errors and mistakes. *Poka* means wrong, and *yoke* means prevention. The philosophy of this method focuses on the phrase "to err is human". Employees are not infallible; they have the right to feel fatigued, lack of concentration, and general malaise [18, p. 54-55].

The Japanese policy of *hoshin kanri* points out the need to create organized teams consisting of workers with experience and qualifications in many fields. Qualitative teams can act in the short term or permanent way, and their task is to define further actions in the organization, possibilities of improvement, and problem-solving. The meetings of the teams are organized in the form of quality circles, which deal, among other things, with the issues of safety, equipment, costs, efficiency, and process control [19, p. 87; 21, p. 20].

Another tool that defines the principles of organizing the workplace by maintaining order and eliminating waste is the 5S method. It comprises 1) selection (*seiri*) – removing unnecessary tools from the workplace, thereby allowing to regain working space, 2) systematics (*seiton*) – unifying the description and place of object storage, which shortens the time of searching for them, thus improving safety and quality of products, 3) cleaning (*seiso*) – keeping machines and workstations clean to increase the comfort of functioning, 4) standardization (*seiketsu*) – control of production procedures and methods, 5) self-discipline (*shitsuke*) – synthesis of all principles – reduces the number of mistakes and increases safety [21, p. 74].

The value stream mapping illustrates the individual stages of the product transition in the production process (Fig. 1). A value stream is activities both adding and not adding values. With mapping, these activities can be specified and characterized. The scheme starts with the customer's demand and illustrates the realization of the individual steps of the process from the raw materials to the transfer of the final product [23, p. 2-10].

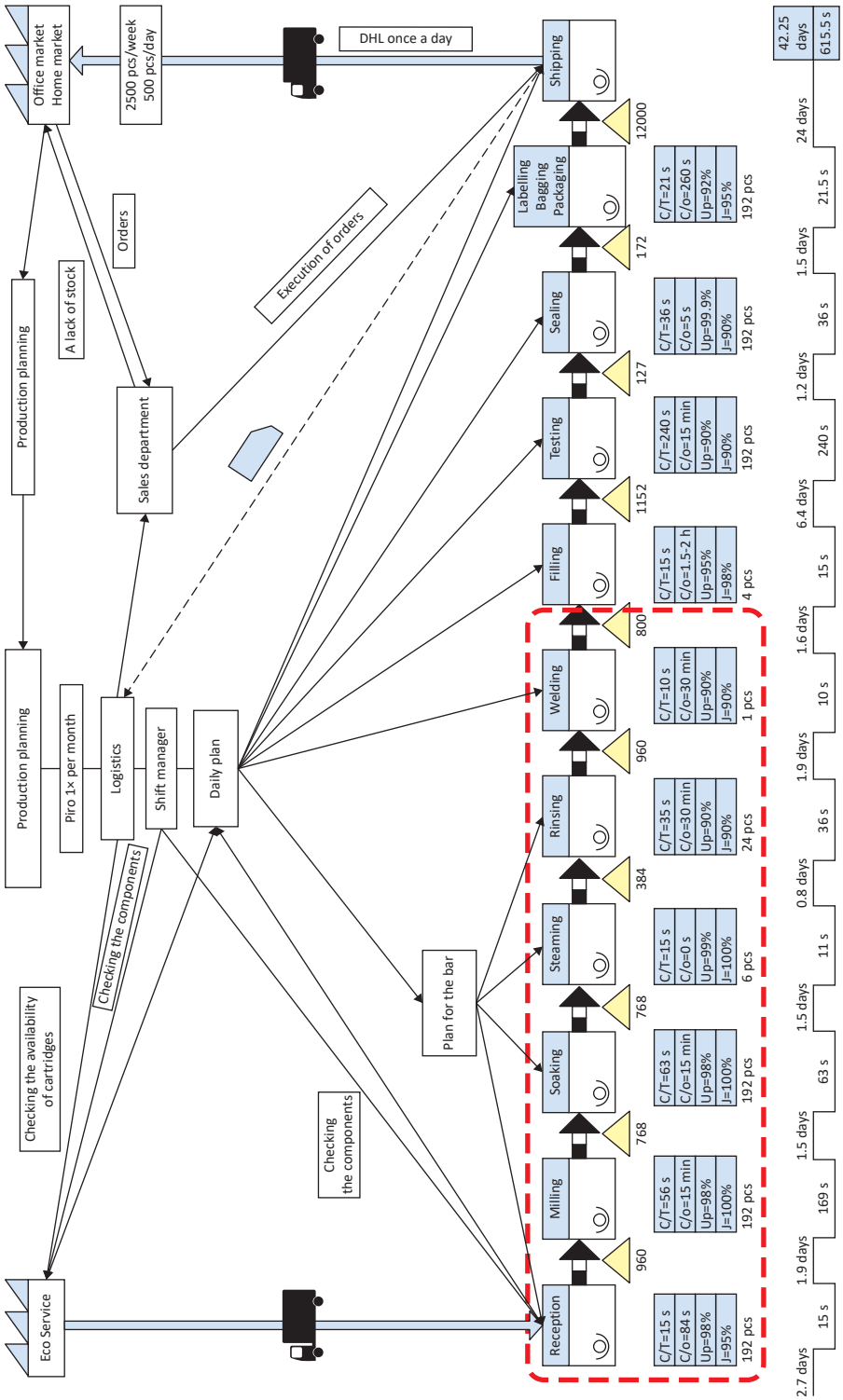

Fig. 1. The exemplary image of value stream mapping
Source: [22, p. 163].

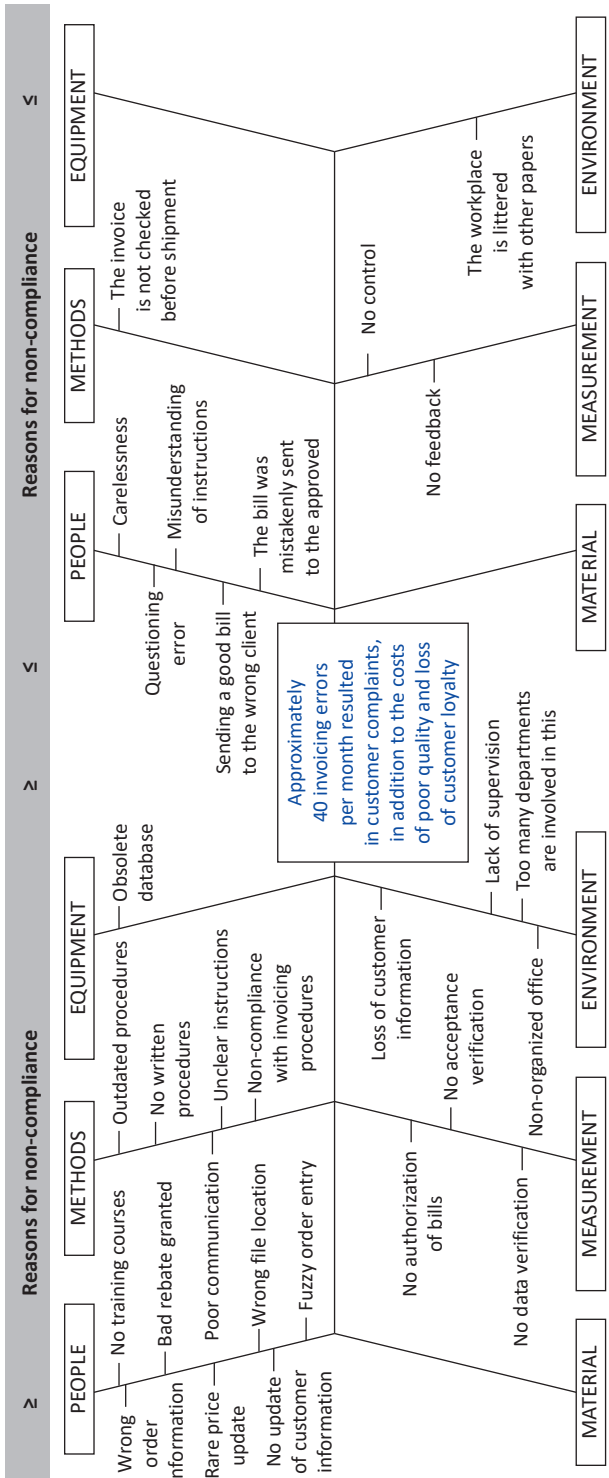

Fig. 2. The exemplary use of the Ishikawa diagram
Source: Study based on training materials from the studied company.

The *5why* method, based on the principle of continuous questioning: "Why?" is a useful tool for detecting the causes of a problem. Thanks to inquisitiveness and getting to the roots of the problem, it is easy to find the right solution [24, p. 70].

The Ishikawa diagram (*cause and effect diagram*) is also called the *fishbone diagram*. Its purpose is to separate effects from the causes of non-compliance and illustrate the complexity of the problem. The diagram shows the six components of problem generation: human, methods, management, materials, machine, and environment. Each component leads to a different cause of non-compliance. Consideration of these "paths" should be individual for each problem. Depending on the enterprise, fishbones may be more or less modified [25, p. 78].

2. Characteristics of the enterprise under investigation

The investigated organization was established in 1992 as a limited liability company. The company's head office is seated in Warsaw, while regional offices in Gdynia, Katowice, Poznań, and Wrocław. The production activity is carried out in the plants located in Siechnice (hydraulic couplings), Wrocław (radiators and batteries), and Gryfino (rubber components for the automotive industry).

The company's mission is to provide the global market with products and services of the highest quality. Experienced engineers deal with technology and air traffic control, air conditioning, electro-mechanics, filtration, hydraulics, pneumatics, and sealings and coverings for customers from all over the world.

The company's vision is to achieve economic and financial goals and create an image of a friendly workplace and an appropriate organizational culture in which products of the highest quality are manufactured, thereby meeting customers' expectations.

The company bases its activity on an international sales network. The products and services included in the special offer are connected to the areas of design, assembly, repair, service, and preparation of technical documentation. The sales network operates due to distributors located in 28 cities, including Białystok, Bielsko-Biała, Bydgoszcz, Częstochowa, Gdynia, Gorzów Wlkp., Katowice, Kielce, Kraków, Kwidzyn, Leszno, Lublin, Łódź, Mielec, Milanówek, Opole, Poznań, Radom, Rumia, Rzeszów, Słupsk, Szczecin, Toruń, Tychy, Wałbrzych, Warszawa, and Wrocław.

One should mention Semicon Sp. z o.o. (Warszawa), Stäubli Sp. z o.o. (Łódź), Beckhoff Automation Sp. z o.o. (Żabieniec), Ventor (Paczków), Aea Technique (Gliwice) among the manufacturers of couplings created using fasteners, drives, and controls, conducting business activity in Poland and constituting the most dangerous competitors of the examined company.

The production plant in Siechnice manufactures pipe couplings transferred to foreign warehouses located in Germany. Besides, the company offers training and services in the field of hydraulics, pneumatics, electro-mechanics, sealing, and flow control technology, which are dedicated to the industrial, maritime, military, aviation, and space sectors.

The Siechnice Branch has an organizational structure consisting of general sections responsible for specific activities and objectives (Fig. 3). The authority in the plant is decentralized. Each department has a manager responsible for the implementation of partial tasks and the adopted strategy of action. Depending on the department, the manager may be subordinate to coordinators, controllers, auditors, mechanics, logistics staff, specialists, and clerks. The management reports to the executive director. This type of organization structure is very beneficial for large companies.

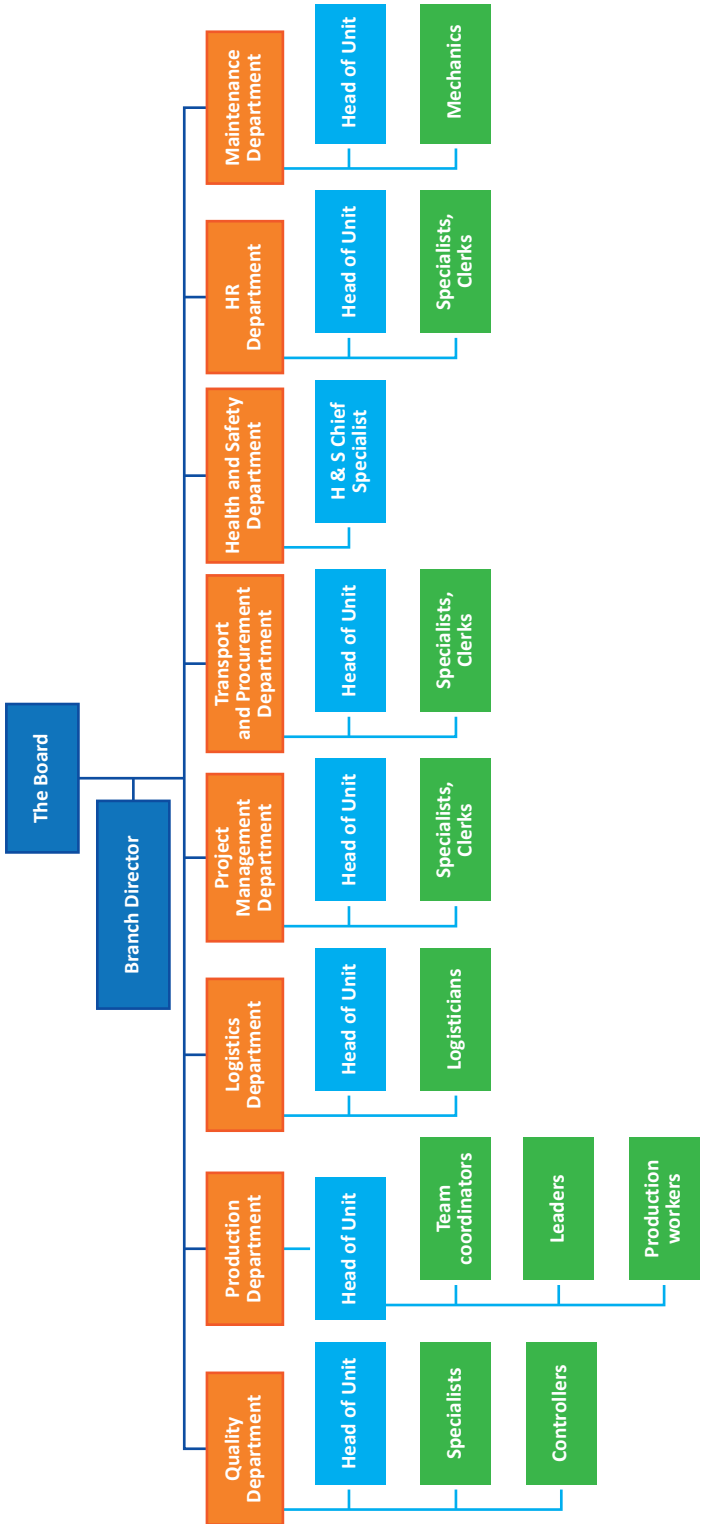

Fig. 3. Organizational structure of the studied company – the Siechnice Branch
Source: Own study.

3. The application of Japanese management methods, tools, and concepts in the investigated company

The Toyota production system is a unique collection of Japanese management methods that are used in the organization under investigation. It is based on the cultural principles that guide the company along with the way it sees the world and conducts business. The Toyota House, treated as a model, helps employees in the process of company improvement [26, p. 106].

Every employee can approach and receive information since the content of the House consists of descriptions and definitions of all management methods, tools, and concepts. The foundations of the Toyota House include the basics of the *lean* system, i.e., hourly production flow, 5s method, and value stream mapping. The pillars are process support, error prevention, and timely production. The canopy is a signal sent out in the form of credibility, reputation, and image of the highest quality products and services, quick delivery, and respect for the customer. The interior is the most important as people create it. The heart of the Toyota house comprises managers and leaders, and logistics and quality staff. The most crucial elements that make up the company are employees with knowledge, experience, passion, and commitment, who work together to achieve their goals.

A special touch panel (Fig. 5) placed in the production hall enables employees to directly describe the idea of work and send it to the system. The innovation program (Fig. 6) realizes the assumptions from the Kaizen concept – a suggestion system. The best ideas are rewarded with one star (☆), two stars (☆☆), or three stars (☆☆☆). The achievement of three stars results in an additional payment of up to 1800 PLN for the employee.

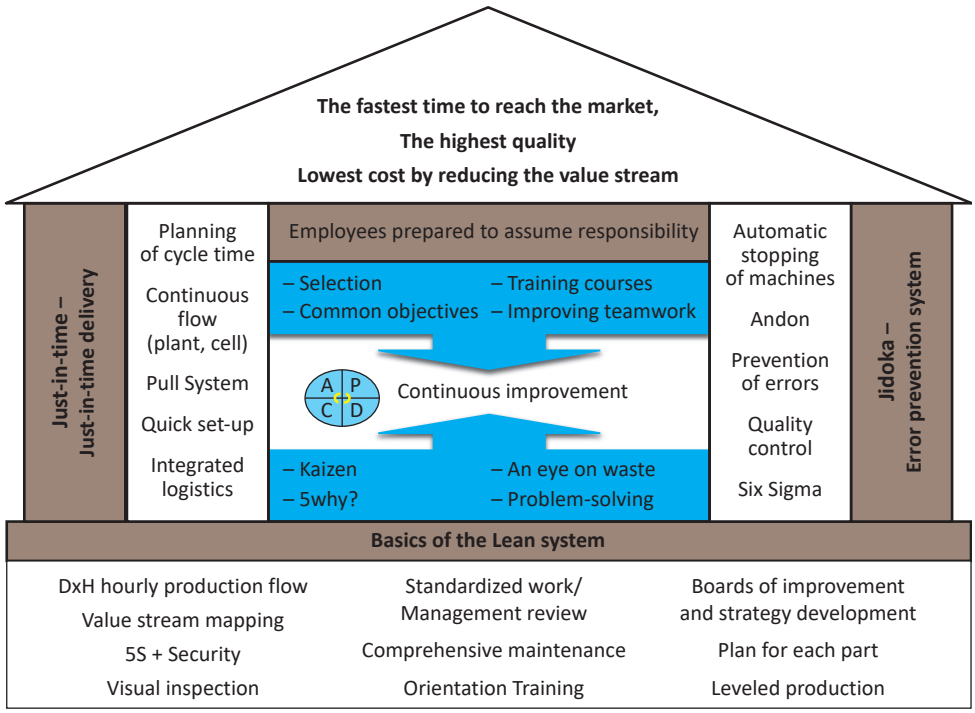

Fig. 4. Graphical representation of the Toyota House
Source: Training materials from the studied company.

On the company premises, buttons are used to stop the process when the operator detects a problem. It is reflected in the application of one of the pillars of the Toyota House – Jidoka and its derivative methods and techniques, or Andon. Figure 7 shows the installed warning light signals.

Boards placed at production cells allow the control of the hourly production rate both by the employee and by coordinators and leaders (Fig. 8). At the beginning of work, the employee receives a plan of hourly production capacity. In the case of having made a certain amount per hour, he/she puts on a green mug (Fig. 9), and in the case of not making it, a red mug (Fig. 10). The method is simple and understandable for everyone, enabling complete control of the process and quick reaction when problems blocking the correct flow occur.

Fig. 5. A panel used for sending ideas
Source: Own study.

Fig. 6. Posters encouraging to take part in the program
Source: Own study.

Fig. 7. Light signaling and a button stopping the process
Source: Own study.

Fig. 8. The table of hourly production rate no. 1
Source: Own study.

Fig. 9. The table of hourly production rate no. 2
Source: Own study.

Fig. 10. The escalation plan of hourly production rate
Source: Own study.

An example of using Japanese management methods to solve a company's problem was the situation of 04 April 2018. There was a cracked collet on the CRIMP machine at production lines 6 and 7. The steps taken included 1) identifying potential causes using the Ishikawa diagram and method *5why*, 2) developing an action plan and appointing the persons responsible for creating the problem-solving sheet. It was necessary to rebuild and start the universal CRIMP machine to implement the action plan, 3) after the machine had passed positive tests, it was introduced into the process on line on 15 May 2018.

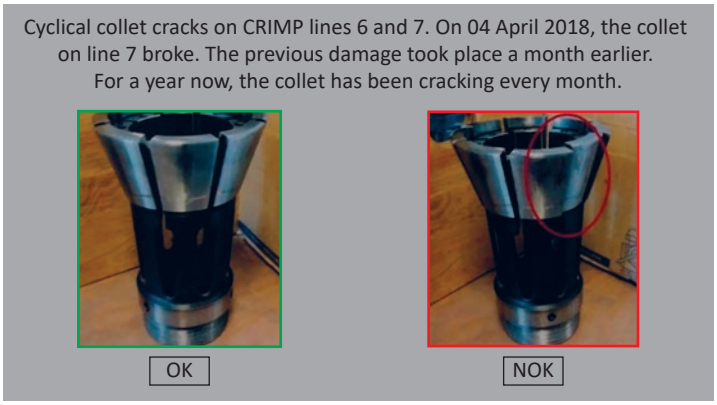

Fig. 11. Description of the problem of a cracked collet
Source: Internal materials from the studied company.

Table 1. Application of method 5 why

Uneven wear of the collet surface	No alignment between the seat of the cylinder collet and the contracting collet	No calibration of the collet with the cylinder	No repair plans	Need for cylinder reworking	**Non-compliance**
Why?	**Why?**	**Why?**	**Why?**	**Why?**	**Main reason**
The machine is not universal for all sizes	With large sizes, the collets have broken more often (shorter life)	Ordering a new universal machine	–	–	**Systemic**
Why?	**Why?**	**Why?**	**Why?**	**Why?**	–
Instruction: Use all paths to thoroughly investigate why a **non-compliance** occurred, why it remained **undetected** by process controls, and the general **systemic or process** deficiencies that led to that non-compliance.					

Source: Own study.

4. In-depth individual interview with human resources managers in the company investigated on Japanese management methods

The in-depth individual interview was conducted on 23 May 2018 with seven employees, four of whom were leaders and three of whom were hired as coordinators, to gain knowledge of the application of Japanese methods, tools, and management concepts in the surveyed company. The interview was anonymous and included nine questions. The respondents were selected deliberately, and the main factor in their selection was similar responsibilities, experience, and the relationship between the position of manager and human resources.

A correlation was noted between seniority and the size of the team under management. The respondent with ten years of experience managed a team of 40 people, while the person with two years of experience managed a team of 7 people.

Table 2. Application of the Ishikawa diagram

Potential causes			
Machine	**Human**	**System**	**Problem identification**
– the machine is not universal for all sizes, – uneven wear on the collet surface, – no alignment between the cylinder sleeve socket and the clamping sleeve	– no possibility to foresee the crack, – incorrect workpiece positioning	–	Frequent damage to contracting collets on the Line 6 of the CRIMP machine
Method	**Material**		
– possible inadequate placement of the workpiece in the jaws	– improperly tempered collet – material defect		

Source: Own study.

People in leadership positions were trained in human resources management. On the other hand, the coordinators did not receive training courses to help them manage their teams. Japanese management methods are not unfamiliar to the respondents as they participated in particular educational forms, e.g., in *Lean management*, *kaizen*, and in training on problem-solving tools. Four out of seven people (57%) considered that not all courses were interesting, which should be improved. It was stressed that trainers could pay attention to practical aspects instead of showing slides and exposing the theory. Additionally, there were mentioned the training courses, in which leaders and coordinators would be willing to take part, namely, production planning, soft skills, broadening knowledge from Excel, Six Sigma Black Belt, or process problem-solving.

The Japanese methods, concepts, and tools used in the surveyed company were assessed by the respondents as very helpful, in particular:

– the 5S method in the organization and maintenance of order and safety at work,
– ARP sheets and *problem-solving* meetings to solve existing probes,
– joint quality meetings and the TPM (*Total Productive Maintenance*) system aimed at total productive maintenance of machines and equipment.

Besides, employees expressed doubts about using the above methods in emergency and extreme situations that require immediate action. Here are examples of the respondents' answers:

1) "At such moments, the use of tools to solve the problem is forgotten. Then even all this unnecessary paperwork gets in the way. Forms and sheets of paper do not work, and problems are solved in a hurry based on experience and intuition",
2) "Tools are often transformed into our Polish thinking. They are, so to speak, polished. The Japanese methodology is applied to larger problems and here are these cultural differences. We don't focus on the details, so small problems are solved right away. We don't want to play with paperwork, and we don't often notice that the wrong or insufficient solution to a small problem causes a big one".

The leaders presented concrete examples of using methods to solve problems. Among other things, they referred to the situation in which the solution to the problem was based on the practical application of the *5why* method: "A complaint came to the company from Bosch, a very important customer. Our G10 workpiece had a lot of flaws and we didn't know where the roughness or misalignment came from. We used the problem solving and the *5why* method, and together we deciphered the problems that caused the defect at one point in the manufacturing process".

During the interview, leaders and managers were able to formulate their thoughts on the company culture. Among other things, it was stated that "the organizational culture depends primarily on ourselves. We would like to have it as it is on paper, but we are still learning it. We, managers, often must teach the culture to others since everyone comes here with their culture and does not necessarily want to follow the rules and principles that already exist, without understanding that it is all for better cooperation, safety, and comfort. We still lack openness to new solutions, we still lack respect for someone else's work and sometimes even for our own, so we must keep learning".

There is an application in the enterprise to submit ideas that contribute to improving working conditions or production processes. Every employee has access to a special touch panel in the production hall and can submit his or her idea. Managers, coordinators, and leaders encourage employees in their teams to propose improvements. In return for a good and implemented idea, the employee is entitled to a financial reward.

Leaders and coordinators assess employees' knowledge of management methods, concepts, and tools as low. They claim that human resources do not have sufficient training in this area. In their opinion, young people are more open to change, they see knowledge as an important element in life, they strive to learn and get the most out of work. Older, experienced workers, on the other hand, do not want to change their habits and sometimes get angry when faced with changes that greatly help and simplify work.

All interviewees say that training should be more practical, forcing workers to think, voluntary, and offered a particular frequency with specific stages of difficulty. Stages of difficulty could exhaust the subject matter of a given method and allow discussion about a given issue not only once but at strictly planned intervals. It was emphasized that information that is repeated more often is better remembered.

The respondents believe that the company may have encountered many difficulties related to the implementation of Japanese production management methods, concepts, and tools. They were caused by the lack of space for specific solutions, the lack of financial resources to cover costly ideas, and the employees' unfavorable attitude towards changes. It was emphasized that "our nation can ridicule foreign solutions. We sometimes approach strange things without enthusiasm. It happens that we implement something well, and it works for a while, but then we are not consistent, shorten individual steps, forget about systematics, or spoil ourselves and our employees, and the whole process must be started again".

5. The survey examining the attitude of employees towards Japanese management methods

The survey aimed to gather answers to questions about the knowledge of the functioning organizational culture and assess the individual attitude and application of Japanese management methods, tools, and concepts by the workers employed in the examined plant.

The anonymous questionnaire survey was conducted on 21 May 2018 at the production plant seated in Siechnice. The survey had 13 questions, of which 11 were closed single- or multiple-choice questions and two open ones. The group of respondents included 114 people. The candidates were selected randomly. After the survey was conducted, 96 questionnaires were received, of which 6 were rejected due to incorrect filling.

It should be emphasized that the enterprise's human resources policy gives every employee, regardless of age or gender, the same opportunities to participate in employee training courses, open access to information on the company's premises, and intended for employees. The respondents also have the same rights to express their opinions, including formulating expectations and reporting any needs towards the employer. The respondents' age and gender structure allows distinguishing between more experienced professionals who may have knowledge of the subject matter firsthand and is used to investigate the difference in employees' attitudes to-wards Japanese management methods in the organization.

Question no. 1 defines the gender of respondents. In the surveyed group 52% of the respondents (47 persons) were women and 48% (43 persons) were men.

Question no. 2 concerned the age of employees (Table 3). The highest percentage (40%) of respondents were employees over 45 years old. Next, people aged 36-45 (37%), between 26-35 (14%), and the least numerous group – those of 18-25 years of age (9%).

Men predominated in the 45+ age group, with a share of 53%, i.e., 26% more than women in this age category (27%). On the other hand, in the 36-45 age group, women were the most numerous group (47%), i.e., 21% more than men in this age category (26%). More equal proportions can be observed in the 26-35 age group, indicating 16% of men and 13% of women. Whereas in the youngest employees aged 18-25, women predominated (13%), and the proportion of men was only 5%.

Table 3. The structure of respondents by age

Age [years]	Total [%]	Men [%]	Women [%]
18-25	9	5	13
26-35	14	16	13
36-45	37	26	47
45 and more	40	53	27
In total	100	100	100

Source: Own study.

The most frequently indicated answer to question no. 3 concerning job tenure in the surveyed company was the option "over 5 years", which was indicated by 37% of the respondents (including 21 men and 12 women). Employees with seniority not exceeding 1 year took second place (29% of the surveyed). In turn, 19% of the employees represented internship in the range of 2-5 years, including 11 men and 6 women. The last position in terms of numbers (15%) was taken by employees with job tenure of 1-2 years. It can be concluded from the above list that men are the employees with the longest seniority in the company.

As many as half of the respondents (50%), including 29 women and 16 men, answered the next question no. 4, "Have you participated in training courses implemented by the company

on Japanese methods, concepts, and tools supporting management?". They were not sure if they had ever participated in internal training sessions in this field. The affirmative answer ("yes") was indicated by 30% of the respondents, including 20 men and 7 women. The lowest 20% share was obtained from the "no" statement, which was declared by 11 women and 7 men. Summarizing the responses to this question, one can conclude that the surveyed men participated in a training organized by the enterprise, and women did not rather participate or did not know whether they participated.

In question no. 5, the respondents specified whether they willingly took part in trainings organized by the company. Most of the answers (58%) indicate that employees (especially women – 40 persons) are generally interested in participating in trainings. Men, on the other hand, declared their participation on the condition that the subject of the training is specified in detail and its high substantive quality is guaranteed (25% of responses). The least numerous group (17%) of the respondents stated that they are reluctant to participate in trainings conducted in the surveyed company.

Question no. 6 concerned an individual assessing the degree of knowledge of Japanese methods, concepts, and tools supportive to management. It turned out that as much as 50% of the respondents did not have knowledge in this area. On the other hand, 30% of the employees considered that they had extensive knowledge of the subject. In the following places, medium (11%) or insufficient (9%) knowledge of Japanese management methods was declared.

Even though participation in training related to management methods was declared by 30%, only 15% of the respondents answered no. 7 "Can you name one or more management support methods, concepts, or tools used in the enterprise?". That means that only half of the surveyed employees who participated in training on Japanese management methods remembered some information from those training. The respondents' methods, concepts, and tools most frequently mentioned include *Lean management*, 5S method, Ishikawa diagram, *poka-yoke*, SMED, *Kaizen*, 8D Report.

The next question no. 8 concerned the respondents' opinions on Japanese management methods, concepts, and tools used in the enterprise. Regardless of age and gender, as many as 63% of the employees did not take a stance on this issue due to the lack of interest or absence from training in Japanese management methods used in the company. Only 21% of those surveyed consider such training necessary, and 16% think it is irrelevant.

Question no. 9 was to define knowledge of the concept of organizational culture. For 66% of the respondents, this concept is unfamiliar. Only 34% of the employees answered affirmatively, including 6 persons aged 18-25, 10 persons aged 26-35, and 15 persons over 36 years old. Younger employees more often identify themselves with the culture of the organization.

To the open question no. 10 "If you answered "yes" to question no. 9, can you describe the meaning of organizational culture?", only 14 out of 31 people who declared knowledge of the concept were asked. The respondents presented the organizational culture as a clear and transparent structure of the enterprise, common goals, self-discipline in the team, order, and order. One of the statements (a woman aged 18-25) is noteworthy compared to the others: "Every company must have its business card, and how it is created gives it a background, a color seen by future customers and employees. Common goals, rules, principles, respect, and cooperation form our culture. If we don't cultivate our corporate culture, what do we want to stand out and attract?".

Question 11 concerned the mobilization of workers to submit their ideas in order to improve work. The respondents in 53% of cases indicated that they were encouraged to be creative

in this area, or it occurred sporadically (30%). Only 6% of the employees denied it, and 11% of them did not have an opinion about it.

In question 12, the respondents indicated how management encourages employees to submit their ideas about work. They were most often provided the impetus by leaders and coordinators through direct verbal persuasion and at training sessions (87% of responses). A small group of 5 people stated that written application forms were used, and 7 people indicated that no one had ever encouraged them.

The last question (no. 13) was to summarize whether the questionnaire was formulated correctly and whether the respondents had problems understanding it. As many as 61% of the respondents assessed the survey as easy. A small group (13%) of the employees considered the questions from the questionnaire to be medium-difficult. On the other hand, for 26% of the respondents, there was a difficulty resulting from the lack of knowledge of methods, concepts, and tools supporting management. The lack of participation in training courses and not deepening knowledge on their own in this area was probably the main reason for such feeling.

Conclusion

The possibilities of using Japanese management methods in enterprises are huge. The effectiveness of the implementation of Japanese management methods, concepts, and tools in the studied organization is manifested, among others, in such results as improvement of employees' working conditions, organized production, increased safety on the premises, organizational culture focused on respect for others, the possibility of personal development, increased efficiency of individual production processes, and reduced waste.

Achieving the best production and economic results is possible thanks to experienced and knowledgeable employee teams. Japanese concepts are very strongly oriented towards cooperation between management and employees. Unfortunately, not every employee has a chance to develop, as it is limited to selected senior units. Employees' knowledge of management methods, concepts, and tools is assessed as low by leaders and coordinators. The lack of participation in training and the lack of knowledge of some employees is the main reason for this claim. In the opinion of managers, young people are more open to change, see knowledge as an essential element in life, strive to learn and get the most out of work.

The production plant under investigation should train employees in the methodology they apply. The training should be more practical, thought-provoking, voluntary, and offered with a specific frequency and with certain stages of difficulty. Instead of defining Japanese management methods, concepts, and tools, their effects and their practical meaning should be shown.

Acknowledgement

The article was financed from the statutory funds of the Institute of Economic Sciences, Faculty of Natural Sciences and Technology, Wrocław University of Environmental and Life Sciences, Pl. Grunwaldzki 24a, 50-363 Wrocław, Poland.

Conflict of interests

All authors declared no conflict of interests.

Author contributions

All authors contributed to the interpretation of results and writing of the paper. All authors read and approved the final manuscript.

Ethical statement

The research complies with all national and international ethical requirements.

ORCID

Krzysztof Rutkiewicz https://orcid.org/0000-0001-7675-4704

Weronika Sobczak https://orcid.org/0000-0002-4311-6500

References

1. Nosewicz K. *Japońskie metody i techniki zarządzania oraz ich zastosowanie w polskim przedsiębiorstwie*. Journal of Modern Management Process. 2016;1;2:8-23.
2. Rutkiewicz K, Herudzińska P. *Narzędzia kształtowania przewagi konkurencyjnej na rynku dystrybucji komponentów elektronicznych oraz zintegrowanych systemów automatyki przemysłowej*. In: Jabłoński M (ed.). *Zarządzanie wartością przedsiębiorstw w warunkach niepewności, zmienności i nieprzewidywalności. Strategie – finanse – kompetencje*. Dąbrowa Górnicza: Wyższa Szkoła Biznesu w Dąbrowie Górniczej; 2016.
3. Samul J, Matwiejczuk W. *Przewaga konkurencyjna w małych przedsiębiorstwach budowlanych*. Ekonomika i Organizacja Przedsiębiorstwa. 2011;1.
4. Kostera M. *Antropologia organizacji. Metodologia badań terenowych*. Warszawa: PWN; 2003.
5. Sosnowska K. *Opracowania dokumentacyjne*. Warszawa: Centrum Informacji Naukowej, Technicznej i Ekonomicznej; 1987.
6. Czapla T. *Metody analizy wnętrza organizacji*. In: Błaszczyk W (ed.). *Metody organizacji i zarządzania. Kształtowanie relacji organizacyjnych*. Warszawa: PWN; 2008.
7. Czarniawska B. *Interviews and organizational narratives*. In: Gubrium JF, Holstein J (eds.). *Handbook of interview research: Context and method*. Thousand Oaks: Sage Publications; 2002.
8. Krasiński M. *Kulturowe uwarunkowania wykorzystania japońskich koncepcji, metod i technik zarządzania*. Wrocław: Wydawnictwo Uniwersytetu Ekonomicznego we Wrocławiu; 2014.
9. Koch T. *XI międzynarodowa konferencja Lean Management*. Wrocław: Lean Enterprise Institute Polska, 2011.
10. Womack JP, Jones DT. *Lean thinking – szczupłe myślenie. Eliminowanie marnotrawstwa i tworzenie wartości w przedsiębiorstwie*. Wrocław: ProdPress.com; 2008.
11. Jagoda H, Lichtarski J. *O istocie i ewolucji współczesnych koncepcji i metod zarządzania*. Przegląd Organizacji. 2003;1.
12. Imai M. *Kaizen – klucz do konkurencyjnego sukcesu Japonii*. Warszawa: MT Biznes; 2007.
13. Morris J, Wilkinson B. *The transfer of Japanese management to alien institutional environments*. Journal of Management Studies. 1995;6.
14. Jacson T. *Hoshin Kanri w szczupłym przedsiębiorstwie. Budowanie przewagi konkurencyjnej i zarządzanie zyskami*. Wrocław: ProdPublishing; 2012.
15. Kubiak S. *Hoshin Kanri, czyli jak skutecznie zrealizować strategię i wykorzystać w pełni potencjał firmy*. Wrocław: Lean Enterprise Institute Polska; 2017.
16. Gross JM, McInnis KR. *Kanban made simple: Demystifying and applying Toyota's legendary manufacturing process*. New York: Amacom; 2003.
17. Ohno T. *Toyota production system: Beyond large-scale production*. Portland–Oregon: Productivity Press; 1988.
18. Mazur A, Gołaz H. *Zasady, metody i techniki wykorzystywane w zarządzaniu jakością*. Poznań: Wydawnictwo Politechniki Poznańskiej; 2010.
19. Mizuno S. *Management for quality improvement. The seven new QC tools.* Cambridge: Productivity Press; 1988.

20. Załęski W. *Koła jakości. Powoływanie – organizacja – funkcjonowanie*. Bydgoszcz: Oficyna Wydawnicza Ośrodka Postępu Organizacyjnego; 1993.
21. Grycuk A. *Metoda 5S w praktyce lean management*. Zarządzanie Jakością. 2012;2.
22. Rutkiewicz K, Domagała M. *Praktyczne zastosowanie koncepcji benchmarkingu na rynku alternatywnych materiałów eksploatacyjnych do drukarek*. In: Dacko-Pikiewicz Z, Marakova V, Lis M (eds.). *Determinanty oraz instrumenty podnoszenia innowacyjności przedsiębiorstw*. Dąbrowa Górnicza: Wyższa Szkoła Biznesu; 2016.
23. Rother M, Shook J. *Naucz się widzieć. Eliminacja marnotrawstwa poprzez mapowanie strumienia wartości*. Wrocław: The Lean Enterprise Institute Polska; 2009.
24. Masaaki I. *Gemba Kaizen. Zdroworozsądkowe, niskokosztowe podejście do zarządzania*. Warszawa: MT Biznes; 2006.
25. Szczepańska K. *Techniki menedżerskie w TQM*. Warszawa: Wydawnictwa Normalizacyjne ALFA-WERO; 1999.
26. Ingaldi M, Klimecka-Tatar D. *Analiza elementów Domu Toyoty*. Zeszyty Naukowe. Quality – Production – Improvement. 2015;1(2).

Biographical note

Krzysztof Rutkiewicz – Dr.Eng., Deputy Director of the Institute of Economic Sciences. A graduate of the University of Economics in Wrocław and the University of Wrocław. Scientific interests: strategic management, international economic relations, EU competition policy. Author of 48 scientific articles. Contractor of the grant entitled *State Aid in Sensitive Sectors in the Light of EU Competition Policy* financed by the Ministry of Science and Higher Education (2011-2015). Research fellow at the University of South Bohemia – the Department of Regional Policy of the EU and Rural Development (Czech Republic, 2012). Teaching activities conducted: Organization and management, Economics of European integration, Market analysis, Investment policy in the renewable energy sources.

Weronika Sobczak – M.Eng., graduate of the Faculty of Management and Production Engineering at Wrocław University of Environmental and Life Sciences. Scientific interests: production management, Japanese management methods and concepts, organizational culture of the company.

Implementacja japońskich metod zarządzania w przedsiębiorstwie – studium przypadku producenta układów i instalacji do sterowania pneumatycznego, hydraulicznego i elektromaszynowego

STRESZCZENIE

Japońskie metody, koncepcje i narzędzia zarządzania cieszą się rosnącą popularnością na świecie i w Polsce, co wynika z założeń i praktycznych rezultatów osiąganych dzięki rozwiązaniom stosowanym przez podmioty i organizacje gospodarcze. Celem opracowania jest kompleksowa ocena warunków i wewnętrznych determinant konkurencyjności badanego przedsiębiorstwa, umożliwiających skuteczną implementację japońskich metod i technik zarządzania produkcją. Weryfikowaną hipotezą jest twierdzenie, że wdrożenie japońskich metod zarządzania w badanym przedsiębiorstwie spowodowało wzrost efektywności ekonomicznej poszczególnych procesów produkcyjnych i poprawę kultury organizacyjnej spółki. Zastosowano metodę triangulacji w postaci obserwacji bezpośredniej, analizy informacji zaczerpniętych ze źródeł pierwotnych i wtórnych oraz przeprowadzono badania ankietowe, uzupełnione indywidualnym wywiadem pogłębionym z pracownikami (liderami i koordynatorami) przedsiębiorstwa w zakresie problematyki japońskich metod zarządzania produkcją. Możliwości wykorzystania japońskich metod zarządzania w przedsiębiorstwach są bardzo duże.

Efektywność implementacji japońskich metod, koncepcji i narzędzi zarządzania w badanej organizacji przejawia się m.in. w takich rezultatach, jak: poprawa warunków pracy zatrudnionych, zorganizowana produkcja, zwiększenie bezpieczeństwa na terenie zakładu, kultura organizacyjna nastawiona na szacunek wobec drugiego człowieka, możliwość osobistego rozwoju, zwiększenie efektywności poszczególnych procesów produkcyjnych, ograniczenie marnotrawstwa. Osiąganie najlepszych wyników produkcyjno-ekonomicznych jest możliwe dzięki posiadającym doświadczenie i wiedzę zespołom pracowniczym. Koncepcje japońskie są bardzo silnie nastawione na współpracę kierownictwa z pracownikami. Niestety nie każdy pracownik ma szansę rozwoju, ponieważ ogranicza się ona do wybranych jednostek wyższego szczebla. Wiedza pracowników dotycząca metod, koncepcji i narzędzi zarządzania jest oceniana przez liderów i koordynatorów jako niska. Brak uczestnictwa w szkoleniach i samodzielne niepogłębianie wiedzy przez niektórych pracowników stanowi zasadniczą przyczynę tego twierdzenia. W opinii kierowników osoby młode są bardziej otwarte na zmiany, postrzegają wiedzę jako ważny element w życiu, dążą do tego, aby nauczyć się i wynieść z pracy jak najwięcej. Badany zakład produkcyjny powinien szkolić pracowników z metodologii, z jakiej korzystają. Szkolenia powinny być bardziej praktyczne, zmuszające pracowników do myślenia, dobrowolne i oferowane z pewną częstotliwością i o określonych etapach trudności. Zamiast definiowania japońskich metod, koncepcji i narzędzi zarządzania, powinno pokazywać się ich skutki i sens wykorzystania w praktyce.

SŁOWA KLUCZOWE japońskie metody zarządzania, zarządzanie produkcją, kultura organizacyjna, korporacja

How to cite this paper

Rutkiewicz K, Sobczak W. *Implementation of Japanese business management methods – the case study of a manufacturer of systems and installations for pneumatic, hydraulic, and electro-machinery controls*. Scientific Journal of the Military University of Land Forces. 2021;53;1(199):198-215.

DOI: http://dx.doi.org/10.5604/01.3001.0014.8120