

EMPLOYEES MOTIVATION AND OPENNESS FOR CONTINUOUS IMPROVEMENT: COMPARATIVE STUDY IN POLISH AND JAPANESE COMPANIES

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ABSTRACT

Currently, companies must change and evolve to keep pace with the changing environment, customers' requirements and to be better than their competitors. The changes result from the need to adapt the products to new customers' requirements as well as to maintain competitive prices of their products. Therefore, companies should be flexible to guarantee short lead time and minimize their costs to offer a good price for the customers. At the same time, companies should create good work environment for their employees in order to get them involved in improvement processes. In order to survive and develop companies should motivate and involve their employees into a continuous improvement process in different areas of the company. Unfortunately, as based on the companies' practice and previous research, in many cases employees are not willing to engage in the company development. Continuous improvement is the basis of the philosophy of Quality Management and Lean Manufacturing, which come from Toyota Production System (TPS). The TPS eventually spread throughout the world, and it is held up as an example of the proper management of a production system. The assumptions of TPS system were used to build systems in other companies, but not always with the same success as it was in Toyota. For this reason, the authors of this paper seek to answer the question of whether there are differences in engagement in a continuous improvement process between employees in a Japanese company and a Polish company operating in the same industry and realizing the similar manufacturing. In order to verify this, the research was conducted in two manufacturing companies which operate in the automotive industry. The results of the study and their analysis are presented in the work.

KEYWORDS

continuous improvement, motivation, changes.

Introduction

Continuous improvement is the basis of company development. Companies have to make changes in products, technologies or work organization to adapt to the changing environmental conditions as well as to clients' requirements. It is important to engage all the company employees in the process of continuous improvement on their own work stands. This

is related to the work they perform because they know what problems exist there and they can propose some useful improvements appropriately. The proposed improvements can concern work organization (better work organization can save time), used tools (better adapted tools can improve performance), process (better process performance can improve products quality), hazard protection (better protection can decrease the number of accidents),

ways to avoid possible failures (better environmental protection), etc. It is only the matter of an adequate motivation system to encourage employees to propose improvements. However, first of all, companies expect their employees to perform their work properly, and only then they may propose improvements. In many cases, managers don't want employees to do anything apart from doing their tasks properly, because they think that development is a domain of engineers not workers. Therefore, in some cases, also managers have to be convinced to engage workers in continuous improvements.

Continuous improvement has been adopted in many companies, unfortunately not always with success. That is reported in publications [1–3]. Therefore, companies are looking for different possibilities to overcome the improvement failures [4] for example by implementation of Toyota Kata [5] (method proposed by Mike Rother), i.e. by “the systematic pursuit of desired conditions by utilizing human capabilities in a concerted way” [6].

Companies working under Toyota Production System have been successful in engaging their employees in discovering problems as well as in reporting mistakes what leads to the improvements implementation. Companies in Poland also try to develop similar motivation systems with different kinds of incentives but they are not so successful.

In the present study, the authors aim at discovering the differences in the engagement in a continuous improvement process between the employees working in Japan in a Japanese company and those in Poland in a Polish company. Both companies operate in an automotive sector and they are large companies. Both of them are production companies and they have implemented Lean Manufacturing system. What's more, both of them have an incentive system to encourage their employees to engage in continuous improvement.

The results of the conducted study are presented and discussed in this paper.

Background

In order to ensure the employees' involvement in continuous improvement the companies build different kinds of incentive systems based on the employees' needs and expectations. Maslow [7], in his theory of human motivation, says that a person can feel the following groups of needs which appear one by one just when the first one is met the next appears: the 'physiological' needs, the safety needs, the love needs, the esteem needs and the need for self-actualization. It depends on which level of needs an employee is,

then different motivators may have a bigger influence on his or her behavior. However, there are such motivators which motivate all employees in the same way, e.g. in the work [8] author indicates that if the employees have an opportunity to contribute in the development of safe work procedures they are more likely to follow these procedures after their implementation and, additionally, they encourage other employees to do the same. This creates the safety culture and the employee's engagement is related to the level of the employees' involvement in their work processes. The effectiveness of a safety management system depends on the levels of safety-focused cognitive and emotional worker's engagement [9].

In the works [10–12], the authors present enablers and inhibitors concerning continuous improvement. The following should be listed among others: management involvement, the management of the continuous improvement processes, motivation of the workers, setting the objective for continuous improvement and measuring the results, building the culture of continuous improvement in the company, resources for continuous improvement, cross-functional teams and methodology for sustaining continuous improvement similar to TPS.

On the basis of the experience of the highly successful in continuous improvement companies, the authors of the work [13] indicate the mechanisms behind an employee's motivation which concern, among others, respect for people. Employees need to be meaningful and trusted, seen as individuals, be trained and educated as well as to gain authority and responsibility.

In the work [14] the authors also indicate that enriching work and giving a person more responsibility can motivate people.

The survey results presented in the work [15] provide that the most influential on how a person is engaged in continuous improvement is management engagement and understanding of company's goals as well as engaging people in goals setting. It is also important to support, explain the employees' suggestion prioritizing and invest in such improvement suggestions.

From the work [16] we conclude that continuous improvement is combined to form the Total Quality Management (TQM) practices. Hence, in a company all employees are responsible for the quality. Therefore, they should be involved in the quality improvement not only in assuring quality. In TQM, improvements mostly concern quality. In Lean Manufacturing concept improvements concern wastes. Poor quality is just one of the wastes [17]. Hence, employees should be motivated to identify also other kinds of

wastes. Therefore, continuous improvement can concern for example performance improvement [5].

In the work [18] the authors e.g. show that engineers are mostly motivated by variable customer requirements. When a customer changes his or her requirements it forces taking such actions which will retain a customer by meeting his or her requirements. The possibility of loss (losing a customer) motivates people to take actions.

In Toyota, the employees are seen as a source of knowledge who accumulate the wisdom of experience [19]. That is why, we should use the opportunities and engage the employees in the continuous improvement process.

Based on the paper [20] it can be concluded that employees will engage more in continuous improvement when they are satisfied with the job and when they feel the job security. Therefore, creating friendly working environment as well as the continuous improvement culture is extremely important.

Companies use Kaizen events to engage employees in continuous improvement as a part of a cross-functional team. Kaizen event is the basis for TPS [21]. The aim of Kaizen event is improving both processes and workers' efficiency [22, 23] and it can be implemented in any organization [24]. The research presented in the work [25] shows that to develop an employee's motivation in the engagement in continuous improvement by participating in events, strong management support during such events should be ensured.

In order to ensure the employees' engagement, the companies build different incentive systems and continuous improvement programs. Crucial areas of such a system are presented in the literature. The work [13] indicates communication, visualization and cross-functional and cross-professional improvement work as the most important areas. In the work [26] a structured approach to continual improvement is presented, and, as one of the main principles of the structured continual improvement, active participation of all organization staff in the continual process improvement is specified. A well-developed system can lead to sustainable development of the company. In the work [27] the authors propose a model for the sustainability assessment of the level of a work stand and of the whole company level. Such assessment can indicate possibilities for the further system development.

In the literature we can find the conclusion that to motivate people we have to use "a set of energetic forces that originate both within as well as beyond an individual's being, to initiate work-related behavior

and to determine its form, direction, intensity, and duration" [28].

In the work [29] the authors indicate that the three theories presented in the literature dominate the motivation: goal-setting, social cognitive and organizational justice.

According to [30] employees are more motivated by tasks than by reward or punishment.

Work motivation should come from extrinsic and intrinsic issues although according to [31] better performance is obtained because of the intrinsic component, when an employee takes personal responsibility for his or her work and its quality.

According to Job Characteristics Model (JCM) [32], an employee assesses his or her job according to five dimensions: skill variety, task identity, task significance, autonomy and feedback.

In the lean manufacturing system we want to continually seek a possibility for wastes reduction [17] and we try to motivate employees to participate in the process of continuous improvement.

The implementation of the lean manufacturing results in limiting the autonomy defined by [33] as "the degree to which the job provides substantial freedom, independence, and discretion to the individual in scheduling the work and in determining the procedures to be used in carrying it out" due to the implemented improvements which results in short cycle times, and due to the standardization which results in repeatable work procedures. It can be the reason why employees are not willing to propose any improvements. They just don't see personal advantages.

In the game theory, the Nash equilibrium is a John Nash's solution concept [34, 35], which we can use in the continuous improvement system treating an organization as one player and an employee as another. An employee does what is the best for him or her in the situation when an organization has a certain system. Besides, the organization establishes a system which is the best for the organization in the situation when employees do what they do. It happens when an organization has different goals from employees, and when employees are not engaged in goals setting.

Because the employees' involvement in continuous improvement may reduce their freedom on their work stands, the workers may not be willing to involve themselves in creating improvements and implementing them. That is because only the company will benefit and not the workers.

De Treville and Antonakis [14] discovered that the lean production literature suggests three natural configurations of lean production: (a) feedback and

task identity; (b) feedback, task identity, skill variety, and work facilitation; (c) feedback, task identity, skill variety, work facilitation, and responsible autonomy.

Lean Manufacturing in Polish and Japanese companies

The concept of Lean Manufacturing comes from Toyota Co. [36] which is a Japanese company, and which described the lean concept in TPS. That is why, the story of Lean Manufacturing in Japan is much longer than in Poland. First, lean manufacturing tools were implemented in Poland, in production companies which were branches of international or global enterprises operating in the automotive and aircraft industries (Table 1). After that, companies with Polish capital started the implementation of lean tools. Recently, more and more companies have been interested in Lean Manufacturing implementation.

Lean Manufacturing is based on continuous improvement and employees' engagement in the identification of opportunities in order to improve processes and products. The authors of this work were inter-

ested in the possible differences between the employees' motivation and openness for changes in Japanese and Polish companies. The presented research was conducted as an attempt to answer the question concerning these differences.

The differences between Japanese, American and European companies were already a subject of research and are presented in the work [17]. Japanese companies with Japanese employees, Japanese companies with American employees, American companies with American employees and companies operating in Europe were compared (Table 2).

From Table 2 we can see that number of proposed improvements per an employee is higher in companies with Japanese employees, and number of training hours for employees is higher in the companies run by Japanese managers.

The situation of American and European companies is significantly different from the Japanese companies where Japanese employees work. The comparison of the Polish company (with Polish employees and Polish managers) with the Japanese company (with Japanese employees and Japanese managers) can provide the answer if after 25 years the situation has changed.

Table 1
Comparison of lean manufacturing tools first implementations in Japan and Poland.

Country	Company	Year of first lean tool implementation	Capital	Source
Japan	Toyota Co.	1945	Japanese	(Ohno, 1988)
Poland	Delphi	1998	International	(Horbal et al., 2015)
Poland	Pratt & Whitney Rzeszów	2003	International	own research
Poland	Stomil Sanok	2007	Majority Polish capital	own research
Poland	Nowy Styl Group	2011	Entirely Polish capital	own research

Table 2
Comparison of Japanese, American and European companies for chosen indicators.

	Number of proposed improvements per an employee	Number of training hours for employees	% of employees in teams
Japanese companies with Japanese employees and Japanese managers	61.6	380.3	69.3
Japanese companies with American employees and Japanese managers	1.4	370.0	71.3
American companies with American employees and American managers	0.4	46.4	17.3
Europe	0.4	173.3	0.6

Methodology

This research was conducted in two manufacturing organizations which were non-randomly selected. What's more, several selection criteria (Table 3) were applied to increase the reliability and validity of the study results. The presented criteria were selected in order to eliminate the influence on the study results of the factors which, in the previous studies [37], were recognized as influencing the improvements implementation, forms of involvement in a continuous improvement process, employees engaged in problem solving or employees involved in a continuous improvement process. The characteristics of the companies are presented in Table 4.

The companies were initially identified by the contacts and partnerships, and they were asked whether they were willing to take a part in the re-

search. Then, two companies which met the selection criteria were chosen.

The research were done with the use of a questionnaire which consisted of five parts.

The first and second parts of the survey concern the satisfaction about the work and the salary. The questions are presented in Tables 5 and 6. For these questions Likert scale was applied as it is presented in Table 7.

The third part of the survey concerns the assessment of the employees' engagement in a development process. Multi choice questions are presented in Table 8.

Next part of the questionnaire identifies the areas of engagement. Employees were asked to answer the questions whether they proposed any improvements concerning a certain area and whether these improvements were implemented (Table 9).

Table 3
Criteria of selection the companies.

Criterion	Description	Purpose
Organization type	The organizations participating in the research should be manufacturers	To assess involvement in production improvement
Industry	The organizations should operate in the same industry	To avoid differences coming from different industries
Lean Manufacturing System	The organizations should have implemented Lean Manufacturing System	Because continuous improvement is the basis of Lean Manufacturing
Size	The organizations should be large organizations	Because in Poland it is easier to find a company with a Lean Manufacturing System implemented among large companies
Products	The organizations should produce the similar products	To have similar processes and products to improve
Continuous improvement program	The organizations should have implemented continuous improvement program	Because a program includes various ways of employees' motivation to continuous improvement

Table 4
Characteristics of studied organizations.

Description of the organization	Company PL	Company J
Public/private	Private	Private
Year founded	1991	1965
Capital	Entirely Polish capital	Majority Japanese capital
Number of employees	800	622
Cost of petrol	0.94 Euro*	0.91 Euro*
Monthly expenditure		
Cost of food		
Indicators costs of living		
Retirement age 2015	60 women 65 men	60 years old
Average salary in the company	804 EURO	4,284 EURO
Lean Manufacturing System	Yes	Yes
Continuous improvement program	Yes	Yes
Type of business	Production	Production
Size	Large company	Large company
Industry	Automotive	Automotive

* DEC 2015

Table 5
Questions concerning work satisfactions.

No	Question
Q1	I am satisfied with my work position
Q2	I am satisfied with the work I perform
Q3	I am able to work harder if I receive higher salary
Q4	The company give me a possibility to self-realization in the work
Q5	In the work I can show an initiative
Q6	My supervisor treats me well
Q7	I am satisfied with my job

Table 6
Questions concerning satisfaction from the salary.

No	Question
Q8	I am satisfied with my salary
Q9	Bonuses in my company are allocated equitably
Q10	I am satisfied with bonuses and rewards I receive
Q11	My work is appreciated by management
Q12	Praise and prizes are awarded equitably in my company

Table 7
Assessment scale.

Explanation	Value
Agree strongly	5
Agree moderately	4
Difficult to say	3
Disagree moderately	2
Disagree strongly	1

Table 8
Questions concerning assessment of employees' engagement.

No	Question
Q13	Have you noticed in your workplace or department something that makes your work difficult?
Q14	Have you wondered about how you can improve the work on your work stand?
Q15	Have you talked to someone about the problems you have noticed on your work stand? (you can choose a few answers)
Q16	Were your ideas accepted and implemented?

Table 9
Questions concerning assessment of employees' engagement.

No	Question	
Q17	Have you ever proposed any solution concerning:	
	IPQ	Improvement of product quality
	IWS	Improvement of work safety
	TSA	Time saving
	IPR	Improvement of productivity
	CRE	Costs reduction
	IER	Reduction of the negative influence on the environment
	IWO	Improvement of work organization
Q18	Have the solutions proposed by you been implemented?	

They could give the following answers: yes many times, yes a few times, yes once, no. The last part concerns employees' motivation (Table 10). In this part, for each question possible answers were provided.

The questionnaires were distributed among the company workers working in a production area.

The collected questionnaires were statistically analyzed with the use of descriptive statistics.

Table 10
Questions concerning motivation.

No	Question
Q19	How do often you propose improvements?
Q20	Do your supervisors encourage you to seek solutions that will facilitate and improve your work?
Q21	Do you accept proposals for changes in your workplace suggested by your superiors?
Q22	Do you want to participate in the implementation of the improvements?
Q23	What motivates you the most to make improvements on your work stand and around it? (choose max 3 options)
Q24	How many improvements did you propose last year?
Q25	How many of the improvements you proposed last year were implemented?
Q26	Has it been appreciated by the company?
Q27	The possibility of promotion in my company depends on (you can choose few answers)
Q28	Would you recommend working on this position to friend / colleague?

Then data were analyzed to find out if there were statistically justified differences between the answers of the Polish and Japanese employees. The analyses were conducted with the use of Chi-Square Tests in Minitab 16.

Results of the study

In total, 95 fulfilled questionnaires from the Japanese company (J-C) and 78 fulfilled questionnaires from the Polish companies (PL-C) were obtained. Tables 11–22 present the results. Not all questions were answered in all the questionnaires.

Tables 11–14 present answers concerning work satisfaction. It can be said that the employees in the Polish company are more satisfied with their work positions (PL-C: 69%, J-C: 46%) and with the work

they perform (PL-C: 59%, J-C: 43%). 19% of the Polish employees don't want to work harder even if they receive a higher salary. At the same time, 52% of Polish employees and 56% of Japanese employees admit that they could work harder for a higher salary.

In the Polish company 44% of the employees admit that the company gives them a possibility for self-realization at work. In the Japanese company, it is only 31% of the employees.

60% of the Polish employees and 30% of the Japanese employees are allowed to show initiative at work. In 82% cases in the Polish companies employees declare that they are treated well by a supervisor. In the Japanese companies it was 41% of employees. 77% of the Polish employees and 37% of the Japanese employees are satisfied with their jobs.

Table 11
Assessment of work satisfaction – PL-C.

Question number	Mean	Median	Mode	Range	Interquartile Range
Q1	4.01	4	5	4	2
Q2	3.75	4	4	4	2
Q3	3.43	4	4	4	1
Q4	3.11	3	3	4	1
Q5	3.70	4	4	4	2
Q6	4.33	5	5	4	1
Q7	4.03	4	4	4	1

Table 12
Assessment of work satisfaction – J-C.

Question number	Mean	Median	Mode	Range	Interquartile Range
Q1	3.45	3	3	4	1
Q2	3.37	3	3	4	1
Q3	3.64	4	4	4	1
Q4	3.10	3	3	4	1
Q5	3.19	3	3	4	1
Q6	3.31	3	3	4	1
Q7	3.28	3	3	4	1

Table 13
Assessment of work satisfaction – PL-C.

Question number	Value				
	5	4	3	2	1
Q1	30	24	20	3	1
	38%	31%	26%	4%	1%
Q2	23	24	23	7	2
	29%	30%	29%	9%	3%
Q3	16	24	22	7	8
	21%	31%	29%	9%	10%
Q4	16	18	27	6	10
	21%	23%	35%	8%	13%
Q5	21	24	19	6	4
	28%	32%	26%	8%	5%
Q6	42	22	13	0	1
	54%	28%	17%	0%	1%
Q7	27	33	12	5	1
	35%	42%	15%	6%	1%

Table 14
Assessment of work satisfaction – J-C.

Question number	Value				
	5	4	3	2	1
Q1	7	37	43	5	2
	7%	39%	46%	5%	2%
Q2	6	35	43	8	2
	6%	37%	46%	9%	2%
Q3	15	38	34	6	1
	16%	40%	36%	6%	1%
Q4	2	27	47	14	4
	2%	29%	50%	15%	4%
Q5	3	25	56	7	3
	3%	27%	60%	7%	3%
Q6	9	29	42	10	4
	10%	31%	45%	11%	4%
Q7	4	31	48	9	2
	4%	33%	51%	10%	2%

Tables 15–18 present answers concerning satisfaction with the salary. We can say that 45% of the Polish employees and 19% of the Japanese employees are not satisfied with a salary. 25% of the Polish employees and 17% of the Japanese employees think that bonuses in the company are not allocated equitably. Nevertheless, 36% of the Polish employees and

37% of the Japanese employees are satisfied with the bonuses and rewards they receive. In the Japanese company 77% of the employees don't know if their work is appreciated by the management. In the Polish company 48% think that their work is appreciated by the management.

Table 15
Assessment of satisfaction with the salary – PL-C.

Question number	Mean	Median	Mode	Range	Interquartile Range
Q8	2.75	3	4	4	2
Q9	3.09	3	3	4	1.5
Q10	2.91	3	2	4	2
Q11	3.29	3	4	4	1
Q12	3.04	3	3	4	1

Table 16
 Assessment of satisfaction with the salary – J-C.

Question number	Mean	Median	Mode	Range	Interquartile Range
Q8	3.14	3	3	4	1
Q9	3.19	3	3	4	1
Q10	3.18	3	3	4	1
Q11	3.05	3	3	4	0
Q12	3.20	3	3	4	1

 Table 17
 Assessment of satisfaction with the salary – PL-C.

Question number	Value				
	5	4	3	2	1
Q8	4	22	16	19	15
	5%	29%	21%	25%	20%
Q9	11	13	34	10	9
	14%	17%	44%	13%	12%
Q10	9	18	18	19	12
	12%	24%	24%	25%	16%
Q11	11	26	22	8	9
	14%	34%	29%	11%	12%
Q12	4	25	31	6	12
	5%	32%	40%	8%	15%

 Table 18
 Assessment of satisfaction with the salary – J-C.

Question number	Value				
	5	4	3	2	1
Q8	2	33	41	12	6
	2%	35%	44%	13%	6%
Q9	3	32	43	12	4
	3%	34%	46%	13%	4%
Q10	3	32	42	13	4
	3%	34%	45%	14%	4%
Q11	1	14	72	3	4
	1%	15%	77%	3%	4%
Q12	1	29	55	6	3
	1%	31%	59%	6%	3%

In the Japanese company 9% of the employees think that praise and prizes are awarded not equitably. In the Polish company it is 23% of the employees.

Table 19 presents answers concerning the assessment of the employees' engagement. In 93% of the questionnaires Japanese employees answered that they notice there is something that makes their work difficult at their work place or department, and they think how they could improve their work place (97%). In about half of the cases Polish employees don't think about what bothers them at work, but in 79% of the cases they think what could be improved.

In the Japanese companies 94% employees talk about the noticed problems with colleagues, 47% with supervisors, while in the Polish companies it is correspondingly 39% and 42%.

76% of the Japanese employees and only 4% of the Polish employees said that their ideas were fully accepted and implemented.

Tables 20 and 21 present answers concerning the assessment of the areas of engagement. Most of the proposed improvements in the Polish companies concern the quality of products and work organization, the least proposed improvements concern the reduction of the negative influence on the environment and productivity.

Table 19
Assessment of employees' engagement.

	Answer	PL-C		J-C	
		Frequency	%	Frequency	%
Q13	Yes	40	51%	88	93%
	No	38	49%	7	7%
Q14	Yes	62	79%	92	97%
	No	16	21%	3	4%
Q15	Yes, I have talked to a colleague	35	39%	66	94%
	Yes, I have talked to my superior	37	42%	64	47%
	No, because I haven't noticed any problems	14	16%	4	3%
	No, because	3	3%	1	1%
Q16	No, it was impossible to implement	12	17%	5	5%
	No, my superior decided that the problem is not so important	13	19%	8	8%
	No, because it would require too large expenses	7	10%	0	0%
	No, we had no time to do it	10	14%	5	5%
	Yes, partially	24	35%	5	5%
	Yes, as a whole	3	4%	72	76%

Table 20
Assessment of areas of engagement – PL-C (Q17, Q18).

Area		Yes, many times	Yes, few times	Yes, once	No
IPQ	P	25	31	6	15
		32%	40%	8%	19%
IPQ	I	9	13	12	32
		14%	20%	18%	48%
IWS	P	16	14	18	29
		21%	18%	23%	38%
IWS	I	2	11	11	35
		3%	19%	19%	59%
TSA	P	16	19	13	28
		21%	25%	17%	37%
TSA	I	6	7	18	27
		10%	12%	31%	47%
IPR	P	12	15	13	35
		16%	20%	17%	47%
IPR	I	8	13	9	25
		15%	24%	16%	45%
CRE	P	10	19	21	23
		14%	26%	29%	32%
CRE	I	5	11	17	25
		9%	19%	29%	43%
IER	P	9	9	11	47
		12%	12%	14%	62%
IER	I	3	5	10	36
		6%	9%	19%	67%
IWO	P	18	18	17	22
		24%	24%	23%	29%
IWO	I	9	11	15	24
		15%	19%	25%	41%

P – proposed solutions, I – implemented solutions

Table 21
Assessment of areas of engagement – J-C (Q17, Q18).

Area		Yes, many times	Yes, few times	Yes, once	No
IPQ	P	17	62	9	7
		18%	65%	9%	7%
IPQ	I	10	63	11	11
		11%	66%	12%	12%
IWS	P	18	51	15	11
		19%	54%	16%	12%
IWS	I	11	48	17	19
		12%	51%	18%	20%
TSA	P	11	55	9	20
		12%	58%	9%	21%
TSA	I	6	55	12	22
		6%	58%	13%	23%
IPR	P	12	60	11	12
		13%	63%	12%	13%
IPR	I	8	51	18	18
		8%	54%	19%	19%
CRE	P	5	24	9	57
		5%	25%	9%	60%
CRE	I	3	18	10	64
		3%	19%	11%	67%
IER	P	4	21	13	57
		4%	22%	14%	60%
IER	I	2	17	15	61
		2%	18%	16%	64%
IWO	P	3	17	12	63
		3%	18%	13%	66%
IWO	I	1	13	12	69
		1%	14%	13%	73%

P – proposed solutions, I – implemented solutions

Table 22
Assessment of motivations.

	Answer	PL-C		J-C	
		Frequency	%	Frequency	%
Q19	Always when I see the possibility for improvements	32	42%	10	11%
	Rather often	6	8%	10	11%
	Not so often	10	13%	44	46%
	Rarely	11	14%	19	20%
	Very rarely	12	16%	9	9%
	Never	5	7%	3	3%
Q20	Always	26	35%	6	6%
	Rather often	17	23%	17	18%
	Not so often	10	13%	44	46%
	Rarely	11	15%	19	20%
	Very rarely	6	8%	7	7%
	Never	5	7%	2	2%
Q21	I accept them	38	53%	49	52%
	I accept them, but I propose how to develop them	18	25%	22	23%
	I accept them, but they are usually wrong	6	8%	14	15%
	Sometimes, I don't accept them	7	10%	9	9%
	I don't accept them	3	4%	0	0%
Q22	Yes	56	75%	51	54%
	I don't know	19	25%	41	43%
	No	0	0%	2	2%
Q23	Prizes	14	20%	55	58%
	Cash Rewards	60	87%	29	31%
	Prizes from management	20	29%	18	19%
	Possibility to work overtime	7	10%	10	11%
	Promotion	20	29%	16	17%
	Possibility to participate in trainings	19	28%	6	6%
Other	1	1%	10	11%	
Q24	> 12	3	5%	5	5%
	6-12	5	8%	39	41%
	< 6	30	47%	43	45%
	I haven't propose anything	26	41%	8	8%
Q25	the all	1	2%	0	0%
	> 12	5	8%	1	1%
	6-12	0	0%	13	14%
	< 6	25	40%	65	68%
	None of these improvements was implemented	31	50%	16	17%
Q26	Yes	21	34%	43	45%
	No	41	66%	52	55%
Q27	Workload	2	3%	2	2%
	Work quality	24	31%	52	55%
	Professional experience	20	26%	53	56%
	There are no such possibilities	8	10%	11	12%
	Connections	24	31%	18	19%
	Other	0	0%	1	1%
Q28	Yes	28	39%	19	20%
	No	13	18%	19	20%
	Difficult to say	31	43%	57	60%

At the same time, in the Japanese companies, the most often proposed are the improvements concerning quality of products and work safety, while the improvements concerning work organization and costs reduction are the least likely proposed.

In the Polish companies the solution concerning work organization and cost reduction is the most often implemented, and the least common improvements concern reduction of the negative influence on the environment and work safety. At the same time, in Japanese companies the improvements concerning product quality, work safety and productivity are the most often implemented, and work organization and costs reduction are the least likely to be implemented solutions.

Table 22 presents the answers concerning the assessment of motivations. Assessing the employees' motivation it can be said that 42% Polish employees say they propose improvements always when they see the possibility, while 46% Japanese employees consider that they propose improvements not so often.

The Polish employees say (35%) that the supervisors encourage them to seek solutions that will facilitate and improve their work, while 46% of the Japanese employees say that it happens not so often. Similarly the Polish and Japanese employees admitted that they accept proposals for changes from their supervisors.

Higher percentage of the Polish employees (75%) wants to participate in the implementation of improvements comparing to the Japanese employees (54%).

For the Polish employees the biggest incentives are cash rewards (87%). For the Japanese employees they are prizes (58%).

Most Polish employees (88%) proposed during the last year less than 6 or didn't propose any improvements, while 86% of the Japanese employees proposed from 1 to 12 improvements. 66% Polish employees and 55% Japanese employees said that it was not appreciated by the company.

Mostly Japanese employees indicated professional experience (56%) and work quality (55%) as a main reason for promotion in the company, whereas in the Polish companies employees indicated mostly work quality (31%) and connections (31%), and then professional experience (26%).

Finally, 39% of the Polish employees and 20% of the Japanese employees would recommend working on his or her position to a friend/colleague.

Data analysis

The gathered data were additionally analyzed to find statistically justified differences between the Polish and Japanese employees' answers. The results of this analysis are presented in Tables 23 and 24.

Table 23
Chi-square analysis results.

Question number	Chi-Sq	DF	P-value
Q1	25.026	4	0.000
Q2	16.971	4	0.002
Q3	9.692	4	0.046
Q4	22.397	4	0.000
Q5	30.038	4	0.000
Q6	48.335	4	0.000
Q7	39.053	4	0.000
Q8	17.560	4	0.002
Q9	14.201	4	0.007
Q10	19.963	4	0.001
Q11	41.282	4	0.000
Q12	12.817	4	0.012
Q13	38.052	1	0.000
Q14	13.196	1	0.000
Q15	14.451	3	0.002
Q16	86.726	5	0.000
Q17	28.698	6	0.000
Q18	30.870	6	0.000
Q19	35.318	5	0.000
Q20	35.542	5	0.000
Q21	5.420	4	0.247
Q22	6.639	1	0.010
Q23	50.337	6	0.000
Q24	33.860	3	0.000
Q25	18.623	1	0.000
Q26	2.016	1	0.156
Q27	11.705	4	0.020
Q28	7.505	2	0.023

Table 24
Chi-square analysis results.

Question number	Chi-Sq	DF	P-value
IPQ	13.632	3	0.003
IWS	27.975	3	0.000
TSA	18.619	3	0.000
IPR	36.575	3	0.000
CRE	18.942	3	0.000
IER	5.812	3	0.121
TWO	29.436	3	0.000

On the basis of the calculated P-value it can be said that there are no significant differences, only in some cases, when we consider the acceptance of proposals for changes made by supervisors (Q21) and when the appreciation of the employees' efforts is considered (Q26).

There are also no significant differences in the number of proposed improvements concerning the reduction of the negative influence on the environment (Table 24).

In the Polish company 62% of the employees and in the Japanese company 60% of the employees admitted that during the last year they hadn't proposed any improvement concerning the reduction of a negative influence on the environment.

Other answers show significant differences in work satisfaction, satisfaction with salary, employees' engagement and the areas of this engagement.

Continuous improvement program in Polish company

In the studied Polish company a Continuous Improvement Program (CIP) was established. According to the program each employee can submit an idea using a special form which is freely accessible in a paper and in an electronic version in each department. An individual employee or a group of employees (max 5 people) can submit a proposal. The proposal should be thrown into a suggestion box. Each week all the proposals are removed from the box and, if at least two ideas were in the box, a coordinator of CIP in the department can organize a meeting of the Committee to evaluate the proposals. The Committee assesses the ideas according to the assessment criteria. An employee who submitted an idea is informed about the committee decision no later than one month.

The committee consists of a lean manager, director of the department, quality management system representative, process engineer, head of quality control, head of maintenance services and Health and Safety specialist. The coordinator can ask other people to attend the meeting depending on the assessed proposals.

The Committee uses the following assessment criteria to assess the proposals which should:

- be in accordance with the company policy,
- be possible to implement in practice,
- possibly give financial benefits,
- involve costs which are possible to be incurred,
- not worsen the safety of workers.

A proposal can be rejected if:

- improving one activity it simultaneously aggravates other,
- it is assessed by a specialist as impossible to implement,
- it concerns a new machine,
- it concerns a reported failure,
- it has been proposed as a corrective action for a reported nonconformity or client's claim.

A proposal can obtain max 10 points which can be multiplied by a coefficient depending on the real financial benefits. The coefficient equals 1 if it is impossible to calculate financial benefits. If the benefits are less than 120 EURO, the coefficient equals 2. If the benefits are more than 11,900 EURO, the coefficient equals 10. For other amounts the coefficients are as it is presented in Table 25.

Table 25
Coefficients for financial benefits.

Financial benefits EURO	Coefficient
No countable	1
< 120	2
< 240	3
< 590	4
< 1.190	5
< 1.790	6
< 2.380	7
< 5.950	8
< 11.900	9
> 11.900	10

If a proposal was submitted by a few employees, the number of points which one employee obtains is multiplied by another coefficient, e.g. if two employees submitted a proposal and this proposal was assessed for 6 points each of them gets 5 points (see Table 26).

Table 26
Coefficients depending on number of employees in a team.

Number of employees	Coefficient
1	1
2	0.8
3	0.7
4	0.6
5	0.5

Each employee who submitted a proposal is informed about the results of the assessment. The proposals get a certain number of points depending on the assessment results and, simultaneously, each employee who submitted an idea gets a certain number of points.

After an employee collects at least 25 points, he or she receives a financial reward. Rules for receiving a reward are presented in Table 27.

Table 27
Values of rewards.

Number of points	Value of reward [EURO]
25	50
50	60
75	70
100	80

Every 6 months the Committee can also award a prize for two best proposals. Therefore, an employee can additionally get 240 EURO.

Rewards are given after the implementation and positive verification of ideas.

The average salary of an employee in the region is about 830 EURO [38]. Therefore, the award which is 80 EURO equals to about 10% of the employee's salary.

Financial awards are the main motivators in the company.

Continuous improvement program in Japanese company and employees' situation

Continuous improvement program realized in the Japanese company is directly connected with Hoshin Kari (policy deployment). Every year each employee has to declare a target. At the beginning of the year, each person has to present the results of his or her work. During the year the progress is also monitored and at the end of the year the target achievement is checked. If the target is achieved, an employee gets an annual bonus. The kind of effect the activities undertaken by an employee caused is also analyzed even if the goal hasn't been achieved. The performance is reflected by the bonus. What's more, an employee obtains a small reward. It is about 100–500 JPY. Employees get summer and winter bonuses which can be 1–2 mln JPY. The amount is decided according to seniority and performance.

There are periodical meetings and presentation in the company, especially for new employees. They have to prepare a presentation on a problem and propose a solution for the problem. The use of the statistical quality control (SQC) is emphasized in the company to be applied in the problems analysis.

Meetings concerning each workstation are organized. Kaizen is the key. There are also morning meetings. If there is a problem they gather and iden-

tify the cause of a problem, then countermeasures and proposals for improvements are suggested.

When a defective product appears a brain storming is done. Workers are involved in the problems analysis.

Therefore, it can be said that financial awards are not an incentive for employees in the Japanese company. That is a system and culture which motivate employees to continuous improvement. Proposing improvements is a duty of each employee. They propose improvements not to obtain financial awards but to perform their duties well.

The employees have many privileges. They obtain subsidy to transportation, gas, lunch, etc. Each year an employee obtains 500 points, which he or she can use for food in a cafeteria, gas, travelling, etc. 500 points equals 50,000 JPY (about 400 EURO). The employees can also get accommodation for a single or married person. Besides, the company offers houses for employees. The company has also a recreation facility in the mountains and at the seaside as well as a gym for the employees to use.

Employees have 10 days off for the New Year and, additionally, 20 days of paid holiday leave called a golden week. When an employee wants to buy a car or a house he or she can borrow money from the company. The company also offers education for employees, mostly technical and language education.

Discussion

On the basis of the performed studies it can be concluded that there are certainly many differences between the results of the survey obtained from the Polish and Japanese companies. The authors have analyzed the possible reasons of these differences. First, an overall situation in each country was analyzed on the basis of basic indicators. Next, the cultural differences were discussed.

In 2014 the population of Poland was 38,011,735 while in Japan it was 127,131,800 [39]. There is an important difference in the level of growth rate of GDP in Poland (3.6 percent change) and Japan (0.5 percent change) (data for 2015) [39]. In 2015 the level of GDP per capita in Poland was 12 495 USD and in Japan it was 32 486 USD [39]. The unemployment level in 2015 in Poland was 7.5% and in Japan 3.4% [39], even when manufacturing production increased by 6.2% in Poland and decreased 2.1% in Japan in December of 2015 against the same corresponding month in the previous year. Figure 1 presents data comparison for Polish and Japan manufacturing production for the period of March–December 2015. Generally, manufacturing production in Poland was

increasing while in Japan it was decreasing over the analyzed period of time [40].



Fig. 1. Manufacturing production changes in Poland and Japan [40].

Average monthly per capita expenditures of the households in Poland equal to 1,079 PLN [41] that is about 245 EURO, and in Japan they are 623,439 JPY, that is about 5,050 EURO [42]. An average salary in a Polish company is 804 Euro while in Japanese companies it is 4,284 Euro. On the basis of the presented economic analysis it can be said that for the employees implementing improvements in a Japanese company it can be a way of sustaining manufacturing companies in the country because workforce is expensive. There, the employees earn much more than the employees of a Polish company, however the average amount is not so impressive when compared to average expenditures of households.

With regard to the culture of both countries it may be concluded that Japanese employees are attached to their company very much. In Japan, there is no respect for people who change work often. Therefore, an employee has to work for the respect of managers and supervisors performing work in the best way and performing the duties almost perfectly. While in Poland it is not odd when a person wants to change an employer. Polish employees have no problem with looking for work abroad, while a very few Japanese employees work outside the country. Therefore, the employees' mobility in Poland is much higher than in Japan. In Poland the continuous improvement systems, such as the one analyzed in this study, are something new and it needs much attention from managers and supervisors to motivate people to engage in continuous improvement. However, in the Japanese company continuous improvement is a part of work. The only question is how they should propose improvement but this derives from the company policy. The targets which are established for each

employee derive from the policy deployment (Hoshin Kanri). Therefore, achieving a target is a main reason for all proposed improvements. At the same time, in the Polish company a continuous improvement system is still something existing besides the company targets. Employees still learn that the proposed improvement can help in achieving the targets.

Conclusions

The presented studies show the comparison between Polish and Japanese companies operating in the same industry. In the paper, the details about a continuous improvement system in the Polish company, which motivates employees to make suggestions for improvements, are presented. In the Japanese company the system of rewarding employees concerns the whole work performance and the proposals of improvement are just a small part of what is taken into consideration when deciding on the amount of bonuses.

Continuous improvement is a part of organizational culture in the Japanese company while in the Polish company it is still hard work to motivate people to engage in the processes development.

In general, employees in the Polish company are more satisfied with work and less satisfied with the salary than the Japanese company employee. It is difficult to be justified because taking into consideration the salaries and average expenditures of households in both countries, Japanese employees should rather be the dissatisfied ones.

Much higher engagement in a continuous process can be noticed in the Japanese company. However, supervisors in the Polish companies motivate workers more than the supervisors in the Japanese company. Additionally, it is worth emphasizing that most Polish employees are motivated by cash rewards while the Japanese employees are motivated by prizes.

Limitations and future research

In the present study the authors investigated only the companies in the automotive industry. Therefore, the results may not be true about other industries. Moreover, in other companies operating in the automotive industry in Japan as well as in Poland, the situation can be different. Therefore, the conclusions cannot be applied to all companies operating in the automotive industry neither in Poland nor in Japan.

It would be interesting to perform further research in other European countries as well as in developing countries.

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