

An assessment of the implementation of the philosophy of continuous improvement in company X – part 1¹

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Abstract: In this article the results of research regarding the assessment of the level of implementation of the concept of permanent improvement in company X, a large international transport company in Lower Silesia in Poland, are presented. The following areas were researched: the engagement of management, benefits from the application of the concept of continuous improvement in relation to the company and its employees, barriers to effective implementation of the concept and self-assessment by employees.

Keywords: continuous improvement, barriers, benefits, Kaizen
JEL: L10, L15, O31

1. Introduction

The concept of continuous improvement is a generally applied method in Poland for the optimization of, for example, management processes and production processes. It will be difficult to find a production company not having implemented the basic principles and instruments to its economic practices. The principles are basically so simple, that they can be relatively easily applied to daily operations of companies in the service sector. However, a question is to what extent the concept of continuous improvement is implemented in reality. This issue was

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researched by the author in one of the largest transport companies in Lower Silesia (Poland). A first step, which is the basis for future research, was making a thorough diagnosis of the state of the process of implementation of the idea of continuous improvement. This was done by way of a questionnaire. The general results of this questionnaire are presented in this article.

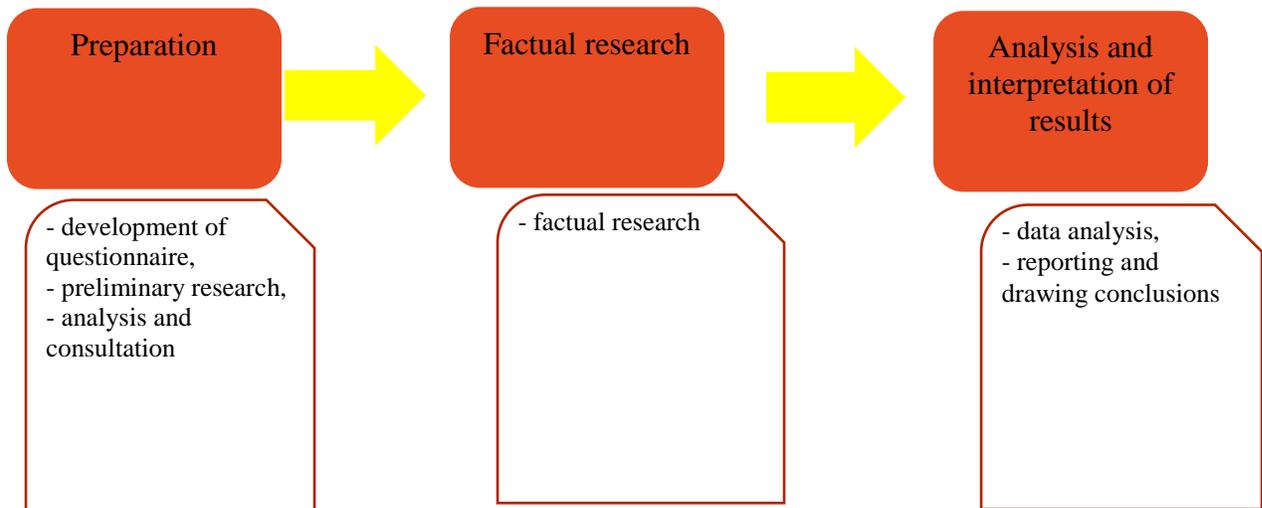
2. Characteristics of the company

Company X is the largest investor in international transport. The company employs more than 1500 people in its 4 production facilities in Poland, located in the Silesian, Lower Silesian, Mazowsze and Łódź voivodships. The factory in Lower Silesia possesses a long tradition in the production of vehicles. The body and the bogie frames are produced since 1833. After the year 1945, the company was one of the biggest in the country in terms of production volume and the number of employees. Since 2001 the company belongs to an international corporation with its headquarters in North America. Customers are transport companies from Germany, Sweden, Switzerland, the USA and Italy. The plant employs about 700 employees, including about 200 administrative workers.

3. Aim and scope of the research

The main aim of the research carried out in company X was the identification of the level of progress in the implementation of the culture of continuous improvement and obtaining information about learning experiences and opinions employees. Particular emphasis was on the benefits of implementing such a system and identification of barriers to the introduction and operation of the concept. An outline of the research methodology is presented in Figure 1.

Figure 1. The research process



Source: author's own elaboration

The research was carried out in November 2015 among white collar employees. According to information from the company, there were 219 white collar workers. The first step was establishing contact with the management of the different departments in the company where these people were employed, in order to establish the principles for carrying out the study. About 46% of the sample (101 employees) returned the questionnaire (see Table 1).

Table 1. Research sample

	No. of employees	%
Total sample population	219	100
Number of respondents	101	46

Source: author's own elaboration

4. Results

As one person did not identify gender, 100 questionnaires were used for analysis. A majority of the respondents is male (75%). As shown in Table 2, 27% is under 30 years old, 40% between 30 and 40, 20% between 41 and 55 and 13% between 56 and 67 years.

Table 2. Age of the respondents

Age	No. of respondents
≤ 29	27
30 - 40	40
41 - 55	20
56 - 67	13
Total	100

Source: author's own elaboration

The length of service on the company is distributed as follows: 43% of the respondents less than 5 years, 36% between 5 and 30 years, and 21% more than 20 years (Table 3).

Table 3. Length of service in the company (in years)

Answer	No. of respondents
≤ 2	26
2 – 5	17
6 – 10	22
11 – 20	14
≥ 20	21
Total	100

Source: author's own elaboration

The structure of company X exists of 8 departments employing white collar workers. The largest departments are the quality department employing 25 % of the employees, the department of engineering 23%, the production department 17% and the logistics department 13% (see Table 4).

Table 4. Distribution of employees according to department

Department	No. of respondents
Quality department	25
Department of engineering	23
Production department	17
Logistics department	13
Purchasing department	8
Administrative unit	5
Wealth management department	5
Planning department	4
Total	100

Source: author's own elaboration

The first question the respondents answered was an open question regarding the understanding of the idea of continuous improvement in company X. While 76 employees answered the question, 25 employees left this question unanswered. In general, the respondents perceive the concept of continuous improvement as a philosophy enabling the permanent development of the company, improvement across all areas of the company as well as the search for new, non-standard solutions (see Table 5).

Table 5. Perception of the meaning of the idea of continuous improvement

Characteristic	No. of respondents
Continuous improvement of the company – improvement across all areas	27
Improving the functioning of the entire company	24
Searching for new solutions	11
Monitoring and improvement of processes	9
Increased employee engagement	4
Development of the company and its employees	3
Improvement of security	3
Minor changes in order to achieve great success	3
Employee training	2
Cost reduction	2
Elimination of mistakes	2
The pursuit of an international level	1
Raising the employees' qualifications	1
Carrying out audits	1
Identification of problems	1
Plan of actions aiming at continuous improvement	1
Promotion of the kaizen system	1
Reduction of bottle necks	1
Limitation of informational noise	1
Increase in one's possibilities	1
This idea is unknown to me	1

Source: author's own elaboration

The next question concerned the examination of the level of awareness and knowledge of specific solutions and tools applied for the implementation of the concept of continuous improvement. Respondents were asked to identify with the symbol x their perception of 13 specific elements of the process of continuous improvement. This allows for assessing the level of knowledge, understanding, application and meaning of these concepts. The way of answering this question is presented in Table 6.

Table 6. The way of answering the question regarding awareness and knowledge of specific tools applied

	1	2	3	4	5
Answer:	I don't know	I know (I have heard about it)	I understand (I know the meaning of the notion / method)	I apply (I apply the method)	What does this term mean? (Open question)

Source: author's own elaboration

a) **Kaizen**

Regarding the notion *kaizen*, the respondents showed knowledge, understanding and application on a satisfactory level. Most of the respondents provided a proper meaning of the notion, identifying it as: continuous improvement, slow changes, changes for the better, method of small steps, etc. Almost half of the respondents applies *kaizen* in practice which implies that they should know and understand the sense of this notion. A proper definition of *kaizen* was given by 33 respondents, describing it as a Japanese philosophy of thinking and action focused on long-term effects. The particular answers are presented in Table 7.

Table 7. Respondents' answers regarding the notion: kaizen

Answer	No. of respondents
I don't know	2
I know	31
I understand	35
I apply	49
I understand	33

Source: author's own elaboration

b) **5S**

Like in the case of *kaizen*, the respondents showed knowledge, understanding and application of 5S on a satisfactory level. While 60 respondents apply this notion, 26 respondents defined 5S as an instrument aiming at maintaining order and cleanliness in the workplace. The particular answers are presented in Table 8.

Table 8. Respondents' answers regarding the notion: 5S

Answer	No. of respondents
I don't know	3
I know	25
I understand	28
I apply	60
Meaning	26

Source: author's own elaboration

c) Employee suggestion system

Only 17 respondents identified they apply the employee suggestion system, 30 did not know its meaning, while 35 indicated they know the notion as such. Only 6 respondents defined this notion as follows: ideas, advice to improve the management of the workplace. The particular answers are presented in Table 9.

Table 9. Respondents' answers regarding the notion: employee suggestion system

Answer	No. of respondents
I don't know	30
I know	35
I understand	23
I apply	17
Meaning	6

Source: author's own elaboration

d) Red tags

Among the respondents, only 14 answered they apply red tags. This may imply that they also know and understand this idea. The other respondents answered: "I don't know" (32), "I understand" (31) and "I know" (14). A definition was given by 11 respondents. However, only a few of them provided a proper definition, relating to the selection of necessary and unnecessary objects. The other answers included: defective products, products and a sign stopping production. The particular answers are presented in Table 10.

Table 10. Respondents' answers regarding the notion: red tags

Answer	No. of respondents
I don't know	32
I know	27
I understand	31
I apply	14
Meaning	11

Source: author's own elaboration

e) Muda

Regarding the notion *muda*, more than half of the respondents indicated they do not know this concept. Among the remaining respondents, 22 indicated they know it, 20 report to understand it and 11 gave the proper definition, describing it as waste or loss. The particular answers are presented in Table 11.

Table 11. Respondents' answers regarding the notion: muda

Answer	No. of respondents
I don't know	58
I know	22
I understand	20
I apply	8
Meaning	11

Source: author's own elaboration

f) Gemba

Almost 60% of the respondents does not know the notion *gemba*. Understanding its meaning is was reported by 14 respondents, 9 indicate they apply it in practice, while 8 defined the notion as the place where work is carried out. One person argued that *gemba* means a meeting at the production line, while someone else defined it as researching a problem. The particular answers are presented in Table 12.

Table 12. Respondents' answers regarding the notion: gemba

Answer	No. of respondents
I don't know	58
I know	23
I understand	14
I apply	9
Meaning	8

Source: author's own elaboration

g) Andon

As presented in Table 13, a small majority of 51 respondents did not know the notion *andon*. Of the remaining, 20 report to know it, 14 to understand, 16 to apply while 9 provided a definition. Only 6 provided a proper definition (a visual way of communicating), while the other 3 defined *andon* as: a system of warehouse supply, a system of notification and rapid response to problems.

Table 13. Respondents' answers regarding the notion: andon

Answer	No. of respondents
I don't know	51
I know	20
I understand	14
I apply	16
Meaning	9

Source: author's own elaboration

h) Poka - yoke

As shown in Table 14, while 21 respondents reported not to know the notion of *poka - yoke*, 26 heard about it and 33 apply it in practice. The 19 who provided a meaning defined it as a system preventing the formation of defects.

Table 14. Respondents' answers regarding the notion: poka - yoke

Answer	No. of respondents
I don't know	21
I know	26
I understand	31
I apply	33
Meaning	19

Source: author's own elaboration

i) Muri

As presented in Table 15, 85 respondents does not know the notion *muri*, 7 respondents know, while 6 understand the meaning of the concept. However, no-one provided a definition of the meaning.

Table 15. Respondents' answers regarding the notion: muri

Answer	No. of respondents
I don't know	85
I know	7
I understand	6
I apply	3
Meaning	0

Source: author's own elaboration

j) Mura

As in the case with the former question, a large majority does not know the notion of *mura* (Table 16). While 5 respondents identify understanding of the concept, no-one provided a definition.

Table 16. Respondents' answers regarding the notion: mura

Answer	No. of respondents
I don't know	85
I know	8
I understand	5
I apply	3
Meaning	0

Source: author's own elaboration

k) Gembutsu

Also in the case of *gembutsu* a large majority does not know the notion (Table 17), 9 heard about it, while 4 report to apply the concept. However, also in this case no-one provided a definition.

Table 17. Respondents' answers regarding the notion: gembutsu

Answer	No. of respondents
I don't know	82
I know	9
I understand	7
I apply	4
Meaning	0

Source: author's own elaboration

l) PDCA cycle

As presented in Table 18, 26 respondents do not know the notion, while 30 argue they apply it as a tool for their work. All 12 respondents providing a definition give a proper one – the process of continuous improvement based on the planning, implementation, control and action. 2 persons stated that they associate the PDCA with PDCA arrays, which are located on-site at the work place.

Table 18. Respondents' answers regarding the notion: PDCA cycle

Answer	No. of respondents
I don't know	26
I know	30
I understand	22
I apply	30
Meaning	12

Source: author's own elaboration

m) Fishbone diagram – Ishikawa diagram

While 28 respondents apply the Ishikawa in their work, 21 report not to know the notion and 31 to know its meaning. However, only 16 provided the proper meaning of the notion (Table 19).

Table 19. Respondents' answers regarding the notion: fishbone diagram – Ishikawa diagram

Answer	No. of respondents
I don't know	21
I know	31
I understand	26
I apply	28
Meaning	16

Source: author's own elaboration

The next question concerns the commitment of the highest level management to the idea of the concept of continuous improvement. Respondents should assess this commitment in a closed question and provide eventual explanation in an open question. Almost 55% assessed the commitment as strong or very strong, 37% as average and 9% as not satisfactory (Table 20).

Table 20. Assessment of the commitment of the highest level management to the idea of continuous improvement

Answer	No. of respondents
Not satisfactory	9
average	37
strong	51
very strong	4
Total	101

Source: author's own elaboration

In total 45 respondents answered the open question, explaining their answer in the closed question. Positive remarks are presented in Table 21, while the negative remarks are presented in Table 22. A total of 17 respondents assesses that management attaches great importance to the support of the process of continuous improvement. According to 3 respondents the management reminds about principles of continuous improvement, 3 write that the management put much emphasis on the improvement of such processes, 3 argue that there is visible cooperation between management and the Department for Continuous improvement and 3 observe management commitment during crew meetings (Table 21).

Table 21. Assessment of the role and commitment of the highest level management to the organization and propagation of the idea of continuous improvement in Company X – positive assessments

Characteristic	No. of respondents
The management attaches great importance to the perfection of continuous improvement	13
The management shows a sincere willingness for continuous improvement	4
The management reminds about the principles of continuous improvement	3
There is much emphasis on the improvement of the functioning of the organization	3
Cooperation between management and the Department of Continuous Improvement is visible	3
Commitment can be observed during the quarterly crew meetings	3
The management monitors the number of proposals of so-called employee suggestions	1
A lot of activity can be observed on the site, in particular in the workplace – i.e. the gemba tour	1
The management is made accountable for the level of improvement	1

Source: author's own elaboration

While 2 respondents think the management increases engagement in the process of continuous improvement due to pressure of higher authorities, 2 other respondents think that

there is too much bureaucracy from the side of the management while 2 other respondents argue management does not pay attention to processes of continuous improvement due to time constraints (Table 22).

Table 22. Assessment of the role and commitment of the highest level management to the organization and propagation of the idea of continuous improvement in Company X – negative assessments

Characteristic	No. of respondents
Visit of higher authorities (foreign delegations from other branches or the headquarter) causes increased activity of the management in improving the implementation of the idea of continuous improvement	2
Too much bureaucracy from the side of the management	2
The management does not pay attention to continuous improvement due to time constraints or other constraints	2
Lack of visible actions	1
Lack regular improvement measures	1
Insufficient number of training courses organized by the management	1
Lack of commitment to solving problems	1
Management should give a higher rank to the importance of the Department of Continuous Improvement	1
Lack of proper motivation on the part of the management	1
The management expects immediate results by introducing a "temporary solutions" in the process of continuous improvement	1

Source: author's own elaboration

5. Disussion and conclusion

Based on the research, the following conclusions can be drawn:

- The majority of the respondents properly define the idea of continuous improvement realized in company X. Employees are aware of the existence of this management concept and identify themselves with its main assumptions at a general level. The research confirms that such a level of awareness is a sufficient condition allowing the continuation of the process of continuous improvement in order to achieve a higher level of quality.
- In the cases of Kaizen, 5 S and to a lesser extent employee suggestions (employees use the notions of Kaizen and employee suggestions interchangeably) the level of knowledge, understanding and application is at a satisfactory level. This confirms the first conclusion, that employees are aware of the meaning of notions applied in practice at a general level.

- More than half of the respondents did not report knowledge on the notions *muda*, *gemba* and *andon*. More than 75% of the employees does not know the notions *muri*, *mura* and *gembutsu*.
- Regarding the notions – *poka – yoke*, *PDCA cycle*, *fishbone diagram – Ishikawa diagram* an average but acceptable level of knowledge exists. For the fishbone diagram and the PDCA cycle the results should be better, as everywhere in the company information is provided on these notions. Furthermore, almost half of the respondents (48 people) are employees of the departments for quality and technology where both of these phrases are commonly used.
- The general level of awareness concerning the idea of continuous improvement and knowledge of the tools of this concept among white collar employees is basic – they possess knowledge of the general principles and a few basic tools,
- The commitment of the top management to the process of continuous improvement is considered to be strong.

Ocena wdrażania filozofii ciągłego doskonalenia w firmie X – część pierwsza

Streszczenie:

W artykule przedstawiono wybrane wyniki badań dotyczących oceny poziomu wdrażania koncepcji ciągłego doskonalenia w firmie X (wielkie przedsiębiorstwo transportowe na Dolnym Śląsku). Zbadano następujące obszary funkcjonowania: zaangażowanie kierownictwa, korzyści ze stosowania koncepcji ciągłego doskonalenia w stosunku do firmy jak i poszczególnych pracowników, barier uniemożliwiających skuteczne wdrażanie tej koncepcji oraz dokonano samooceny pracowników.

Słowa kluczowe: ciągłe doskonalenie, bariery, korzyści, Kaizen
JEL: L10, L15, O31