Lean Service Implementation Success Factors in Polish District Heating Companies

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ABSTRACT

Purpose: The aim of this study was to assess the validity of the factors which have influence on the Lean Service (LS) principles implementation process that serves to improve the organization and economics of district heating companies operating on the Polish market.

Methodology: Diagnostic survey carried out in the selected trade industries.

Findings: Assessing the significance of the effective LS principles implementation factors, which serves to improve the functioning of district heating companies, has revealed the most important factor, which is – according to the respondents – a focus on minimizing waste in processes. Several waste groups were identified and distinguished. They are for example: waste resulting from the employees passive behaviors, unused creativity of employees, unnecessary motion. Answering the question asked in the title of the paper – according to the research - you can ascertain that the effective LS conception principles implementation success factors are, in particular: the involvement of management in process improvement, staff attitude to minimize waste in processes. The research resulted in the formulation of conclusions, one of which says that an effective remedy for the organization members passive behaviors can be Lean Behaviours.

Originality: This is a first unique study on the topic of the Lean Service implementation success factors in the heat engineering. The achieved results can be useful for district heating companies as a guidance to improve management systems in those organizations.

Category: Research paper

Keywords: factors; district heating; Lean Behaviours; Lean Service; waste

1 INTRODUCTION

The aim of the study was to present relevant, important Lean service (LS) implementation success factors and evaluation of their importance in the process of implementing this conception for improving the organization and the economics of district heating companies operating on the Polish market.

The authors have adopted the following research hypothesis: the greatest importance for improving the functioning of district heating companies to minimize wastage identified in the processes of heat transfer is the attitude and behaviour of management and employees.

In the study the diagnostic survey was applied, which is the data collection method to collect information about multiple objects research based on answers to the same questions given by specific group of people (Nachnias and Frankfotr-Nachmias, 2001). The study used purposeful sampling, one of the types of non-probability selection (Babbie, 2004). Purposeful selection of cases to study allows to choose the cases in terms of their usefulness. The criteria for selection of the sample to diagnostic survey was to possess a legal license for heat transmission and distribution (condition of doing business in the heat transmission and distribution) and membership to the Polish District Heating Chamber of Commerce (IGCP).

2 LEAN SERVICE AS A CONCEPTION OF MANAGEMENT IN SERVICE ORGANIZATIONS

In developed countries there has been a dynamic development of the service sector (Kawa, 2010). Here you can include for example: IT services, telecommunications, call centers, medical etc. These countries are in the third period of economic development, post-industrial, in which economic situation is still growing and the economic activity was moved to a post-industrial service sector, where employment was about 75% of the workers (Waters, 2001). In 2000, in Poland the share of services in employment exceeded 50% and since then it has been steadily increasing. In the first quarter of 2014 employment in services was 57.6% of total employment (Rynekpracy.org, 2015).

The modern level of proportions of products and services is 40/60 (Sobanska, 2010). Services are therefore development area, according to Bicheno (2008).

The basic assumptions of LS conception in service organizations, such as: determining the value, identifying value streams, flow, pulling and striving for perfection have similar applications to manufacturing organizations. Service organizations, like manufacturing, have in their processes certain repetitive tasks. The principles of the conception, as defined by Allway and Corbett (2002), have been stolen and appropriated by service organizations in the form of Lean Service.

Lean service organization is not just an application of LS conception, properly matched to the type of its activities, but also a set of behaviors conducive to minimizing waste. Graphical representation of the elements influencing the creation of a Lean organization is shown in Figure 1.

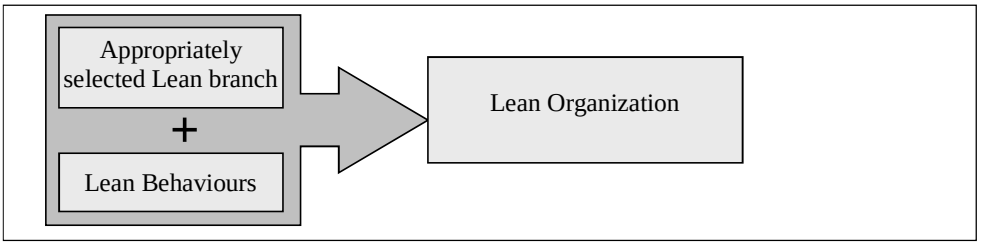

Figure 1 – Elements influencing the formation of a Lean organization
Source (Benjamin, 2013)

The conception of lean management in the organization focuses on waste reduction and removing or minimizing the variability in the processes too. Variability is inherent in the implementation of individual operations/activities. According to Gliatis, Minis and Lavasa (2008) variability is strongly linked with errors and failures; affects their level. Quoted authors described the effect of failures and errors on the functioning of lean service organization, concluding that it is important to implement appropriate setbacks management strategies.

Most of the publications in the field of Lean refers to the mapping value streams in processes where activities are repeated. Due to the wide range of service processes it is difficult to believe that any of the types of service processes can be mapped in the same way; that one type of map can be applied to describe each process. In his book "The Lean Toolbox for Service Systems" J. Bicheno described other ways of mapping the value stream adequate to service processes. He distinguished four types of service processes, which depend on the following parameters (Bicheno, 2008): the involvement of the customer and the repetition of steps in the process (from the perspective of the service provider). Each of the types of service processes was assigned with the right kind of value streams map.

Implementations of Lean in service sectors generate a lot of effects. Service sectors in which there were numerous implementations of the Lean principles and have been described in the literature are, inter alia: the banking sector and the health service (Burgess and Radnor, 2012). Implementations meet favorable conditions: they help to improve the quality of its services, significantly shorten the time of the service (by reducing the steps in the process as well as unnecessary downtime and waiting), increase level of service quality by avoiding foreseeable errors, reduce costs of service (less consumption of resources and better design processes), increase employee motivation and job satisfaction, and increase customer satisfaction (Fillingham, 2007; Radnor and Boaden, 2008; Bowen and Youngdahl, 1998; Youngdahl, 1998; Hummer and Daccarett, 2009). In the LS approach the customer takes the first place. Teehan and Tucker (2010)

write about the need to listen to "the voice of the customer", an important process in defining the value of the product and its requirements. LS is the process of creating value in service organizations, which supports listening to the "voice of the customer". It is also an innovation process comprising both, evolution and revolution, which is connected to the distribution decision-making "down" of the processes. Womack and Jones (2010) formulated six indications inducing customers to think. These are: "Fix my problem as a whole. Do not waste my time. You give me exactly what I want. Deliver value where I want. Fix my problem when I want. Give me a solution, which I actually want."

LS is characterized by the versatility. Implementation in areas such as healthcare (Burgess and Radnor, 2013; Fillingham, 2007; Burgess and Radnor, 2012; Hummer and Daccarett, 2009), banking (Mojarana and Morelli; 2012), education (Emiliani, 2004), insurance (Hammer, 2004), consulting (Ball and Maleyeff, 2003), finance (Piercy and Rich, 2009), fast food restaurants (Womack and Jones, 2010), public administration (Suarez-Barraza, Smith and Dahlgaard-Park, 2009), legal services (Hines, Martins and Beale, 2008), information technology (Brandt, 2012; Womack and Jones, 2010), airline (Bowen and Youngdahl, 1998) or telephone information services – call centers (Piercy and Rich, 2009; Teehan and Tucker, 2010) show the universality of the conception, which, according to the processes in which it is implemented, is called different names. In Figure 2, an attempt was made to present fields of application of lean management concept and "pillars of the tree" (roots) where the roots are continuous improvement and common sense.

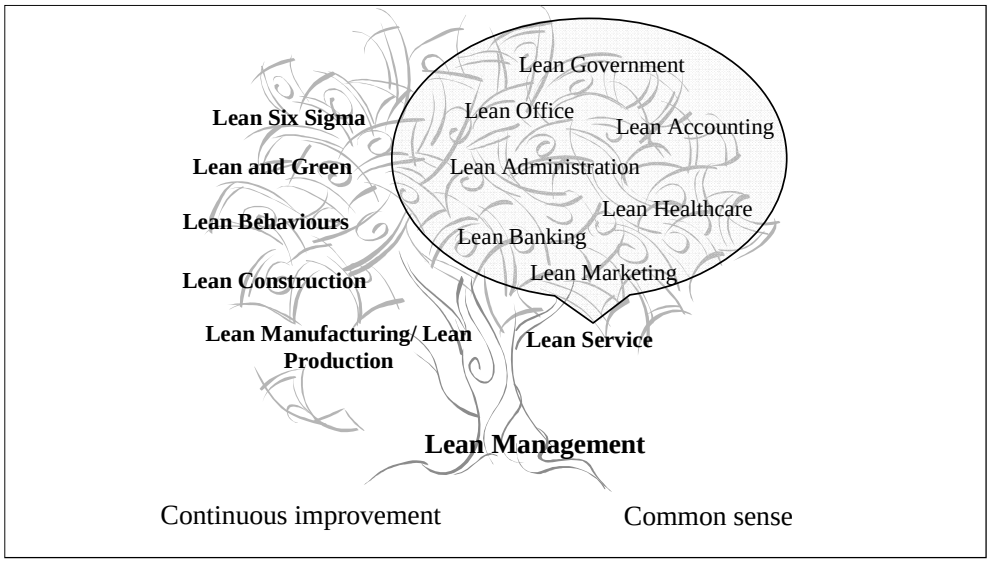

Figure 2 – Lean tree
Source: own study on the basic of (Lisiecka and Burka, 2011; Lisiecka and Burka, 2013)

Many service systems are systems in which subsequent processes are carried out on the basis of pull (Maleyeff, 2006). This is due to the fact that several tasks are initiated by the client.

Spear and Bowen (1999) proposed a framework for constructing a system based on the principles of Lean and identified four rules:

1) steps must be highly standardized (in terms of deadlines, timeout, sequences of actions, results and conditions for customer satisfaction),
2) each contact (communication) between the internal customers (in both directions) should be direct and unambiguous manner,
3) the flow of each product and service should be direct,
4) improving of the production processes structure must be perfectly designed and carefully thought over.

They are only conceptual framework. This means that you can not treat them as a guide for implementation, but they can be useful when building a lean management systems in service environment, including the internal services in the production organizations.

There are four categories of internal systems containing intra-organizational service processes (Maleyeff, 2006):

- systems that provide support for the functioning of human resources,
- systems that in the first place focus on serving external customers,
- systems that provide the technical support of the organization,
- systems that provide business support (mainly financial and reporting).

In the processes of their effective improvement you can be supported by the conception of LS.

3 LEAN SERVICE IMPLEMENTATION SUCCESS FACTORS IN LIGHT OF THE LITERATURE

Cultural and social implementation Japanese management conceptions factors are described in literature, in comparison with other cultures (Aluchna and Ploszajski, 2008; Liker and Hoseus, 2008; Womack, Jones and Roos, 1990; Mann, 2005; Shook, 2010; Bhasin, 2013; Vermaak, 2008; Jakonis, 2011). The authors drew a synthetic list of the factors placing them in defined groups as shown below (Table 1). The list included those factors that recurred in the analyzed sources and where their validity was raised by the authors.

Table 1 – Lean Service implementation success factors

Group of factors	Lean Service implementation success factors transmission in the Polish district heating companies
Financial	The need to minimize costs
	Focus on minimizing waste in the processes
	The introduction of close, long-term cooperation and partnership in relations with suppliers
Cultural	The desire to change the philosophy of the organization (targeting at the elimination of waste)
	The introduction of transparency within the organization
Connected with Human Resources	Employees discipline in implementing new solutions
	The employees' work involvement
	Teamwork
	Employee development – improving their competences
Managerial	Management commitment to the process improvement
	Changing the managers work orientation from overseeing to the continuous improvement process
	Changing the management way (from a task to process)
	Changing the mentality of managers (from the "governance" to the partnership and constructive workers support)
	Current problems analyzing, their sources and developing improvements
	The elimination of the so-called "Management from beyond the desk"
Organizational	Aiming at the development of a learning organization
	The introduction of competitions and awards system, motivating employees (promoting improvements and innovation proposals)
	Change and "flattening" of the organizational structure (from the most frequently used formal structure on the process one)
	Transfer of responsibility and decision-making to lower levels of the organization
	The introduction of visual management (use of visualization tables, graphs)
Process	The introduction of standardized work
	The need to simplify processes, reduce complexity
Environmental	Focus on minimizing waste (environmental) generation
	Focus on reducing the consumption of energy used for processes

Source: (Vermaak, 2008; Radnor *et al.*, 2006; Aluchna and Ploszajski, 2008; Liker and. Hoseus, 2008; Womack *et al.*, 1990; Mann, 2005; Shook, 2010; Walentynowicz, 2011)

The table distinguished groups of factors such as financial, cultural, organizational, managerial, process, environmental and the latter relating to the personnel management (HRM), process and environmental.

4 BARRIERS TO IMPLEMENTATION IN PRACTICE OF THE PRINCIPLES OF LS DISTRICT HEATING COMPANIES

To assess the level of implementation LS to practice one should be aware of the factors impeding its implementation. In literature the results of research on barriers related to the introduction of the LS to the organization were rarely made public. Suarez-Barraza and Ramis-Pujol (2010) made attempts to research the factors limiting the implementation of the principles of lean management in service processes of public organizations in Mexico. They are specified a few of them:

- classic bureaucratic system of organization, creating your own "farm",
- the impact of trade unions, which are not interested in change (or negligible),
- opposition of workers to the changes, especially if they are related to prohibit someone "power" gained on the approval of the trade unions,
- lack of professional training in Lean and Kaizen,
- lack of credibility – such implementations are often treated as transient whim of the chief executive officer or something imposed on the employees,
- additional regulations that may block workers thinking about improving provided services,
- opposition to the implementation of measurement processes,
- lack of strong Lean management connection with human resources.

The above-mentioned factors inhibiting the implementation of Lean in service environment are "universal", they are found in almost every country.

Having done the research in the heating sector enterprises in Poland, it turned out that the above-mentioned factors inhibiting the implementation of Lean in a service environment are also present in the surveyed organizations in Poland; this confirms their "universal" character.

Respondents representing the interests of district heating companies in Poland during the case study research, preceding the analyzed diagnosis of research, as factors possible to appear and impeding the successful implementation of Lean, pointed the following factors:

- lack of management commitment,
- opposition of workers to the changes,
- regulations,
- lack of understanding on the part of employees, associated with ignorance of the LS rules,
- trade unions,
- the reluctance of managers to delegate powers (empowerment),
- lack of interest on the part of chief executives in minimizing the costs (in connection with heat pricing regulations),
- concerns about the introduction of transparency within the organization,
- reluctance to teamwork among older, experienced workers,
- management "behind the desk".

The listed factors apply when implementing Lean principles in services environment. The above table shows the importance of management involvement in making changes in the organization, the need to change management philosophy, closely related to organizational culture in the researched enterprises and focus on building organizational learning.

5 EVALUATION OF IMPORTANCE OF THE LS CONCEPTION PRINCIPLES IMPLEMENTATION TO IMPROVE THE FUNCTIONING OF SERVICE DISTRICT HEATING COMPANIES

Implementation of a new management conception in organizations entails the need to meet specific, characteristic conditions of the conception and taking into consideration the circumstances affecting the success associated with its implementation.

In this paper purposeful sampling was used. The criteria for selection of the sample to diagnostic survey were to possess a legal license for heat transmission and distribution (condition for doing business in the heat transmission and distribution) and membership in the Polish District Heating Chamber of Commerce (IGCP).

At the beginning of the year 2013 four hundred and five organizations had a license for the transmission and distribution of heat and 258 organizations and individuals were actively participating in IGCP. The questionnaires were distributed to 225 district heating companies that met the conditions given. The study was conducted in the last quarter of 2013. Thirty nine questionnaires were

received back, which accounted for 17.33%. One questionnaire was filled in part, that is why the questions that had not been filled were excluded from the research.

At the survey authors asked for identifying the importance of individual lean management implementation factors. Respondents evaluated, on a scale of 1 to 5, the importance of conditions for improving the functioning of the organization, where 0 indicated that the condition did not apply. The results are presented in Table 2 and 3, and in Figure 3 and 4. The analysis classified thirty eight questionnaires. In one of the surveys the question about factors was not answered.

In terms of assessing the significance of individual factors for improving the functioning of the organization it was assumed that obtaining the following results indicated the following groups of meanings:

- 0 – factor does not matter,
- 0.01-1.99 – factor has little importance,
- 2-2.99 – importance of the factor rated as average,
- 3-5 – factor is important.

Table 2 – Lean Service conception successful implementation factors

The factor importance for improving the functioning of the organization	**LS conception successful implementation factors – number of replies**											
	The need to minimize costs	Focus on minimizing waste in the processes	The introduction of close, long-term cooperation and partnership in relations with suppliers	The desire to change the philosophy of the organization (targeting at the elimination of waste)	The introduction of transparency within the organization	Employees discipline in implementing new solutions	The employees' work involvement	Teamwork	Employee development – improving their competences	Management commitment to the process improvement	Changing the managers work orientation from overseeing to the continuous improvement process	Changing the management way (from a task to process)
Factor does not matter	0	0	0	0	0	0	0	0	0	0	0	4
Assessment of the factor importance: 1	1	0	0	0	4	0	0	0	0	0	0	4
Assessment of the factor importance: 2	3	4	8	0	0	4	4	0	4	4	0	8
Assessment of the factor importance: 3	4	1	9	17	0	4	0	9	4	4	13	4
Assessment of the factor importance: 4	9	9	9	5	26	14	26	13	14	10	21	14
Assessment of the factor importance: 5	21	24	12	16	8	16	8	16	16	20	4	4
Total	**38**	**38**	**38**	**38**	**38**	**38**	**38**	**38**	**38**	**38**	**38**	**38**

The factor importance for improving the functioning of the organization	LS conception successful implementation factors – number of replies											
	Changing the mentality of managers (from the "governance" to the partnership and constructive workers support)	The elimination of the so-called "Management from beyond the desk"	Aiming at the development of a learning organization	The introduction of competitions and awards system, motivating employees (promoting	Change and "flattening" of the organizational structure	Transfer of responsibility and decision-making to lower levels of the organization	The introduction of visual management (use of visualization tables, graphs)	The introduction of standardized work	Current problems analyzing, their sources and developing improvements	The need to simplify processes, reduce complexity	Focus on minimizing waste (environmental) generation	Focus on reducing the consumption of energy used for processes
Factor does not matter	0	0	0	0	0	0	0	4	0	0	0	0
Assessment of the factor importance: 1	0	0	0	0	8	4	4	8	0	8	0	0
Assessment of the factor importance: 2	4	5	4	5	5	4	4	1	4	0	4	4
Assessment of the factor importance: 3	13	11	9	12	4	13	5	8	4	5	4	4
Assessment of the factor importance: 4	5	14	9	5	13	9	9	13	14	9	15	6
Assessment of the factor importance: 5	16	8	16	16	8	8	16	4	16	16	15	24
Total	**38**	**38**	**38**	**38**	**38**	**38**	**38**	**38**	**38**	**38**	**38**	**38**

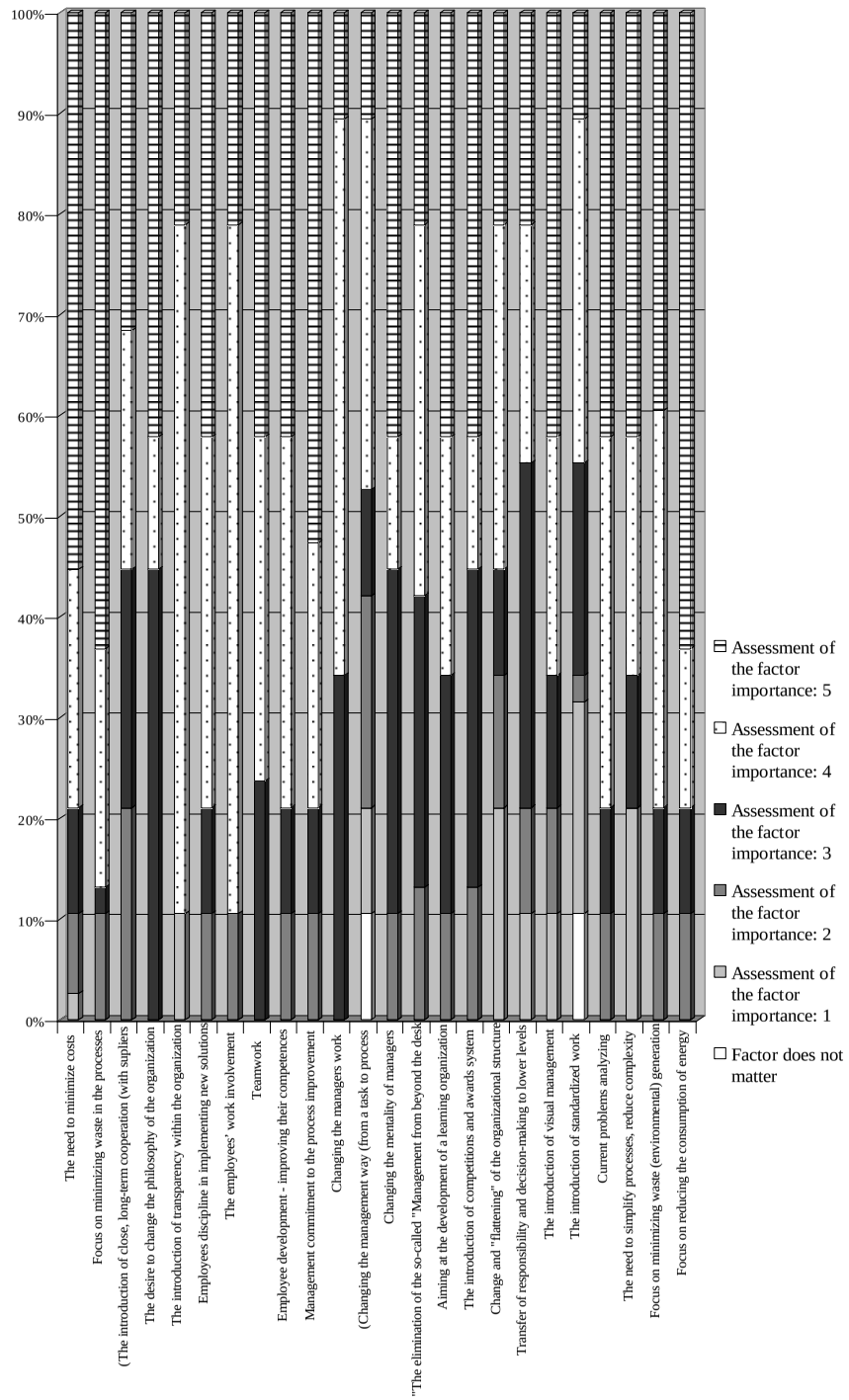

Figure 3 – LS conception successful implementation factors - the percentage of ratings (Source: own study based on the survey results)

Table 3 – LS conception successful implementation factors – the average assessment and evaluation of current significance of a given factor

The factor importance for improving the functioning of the organization	**LS conception successful implementation factors - number of replies**											
	The need to minimize costs	Focus on minimizing waste in the processes	The introduction of close, long-term cooperation and partnership in relations with suppliers	The desire to change the philosophy of the organization (targeting at the elimination of waste)	The introduction of transparency within the organization	Employees discipline in implementing new solutions	The employees' work involvement	Teamwork	Employee development - improving thei competences	Management commitment to the process improvement	Changing the managers work orientation from overseeing to the continuous improvement process	Changing the management way (from a task to process)
Average assessment of the factor relevance	**4.21**	**4.39**	**3.66**	**3.97**	**3.89**	**4.11**	**4.00**	**4.18**	**4.11**	**4.21**	**3.76**	**2.84**
Evaluation of current significance of a factor	factor is important	factor is important	factor is important	factor is important	factor is important	factor is important	factor is important	factor is important	factor is important	factor is important	factor is important	importance of the factor rated as average

The factor importance for improving the functioning of the organization	LS conception successful implementation factors – number of replies										
	Changing the mentality of managers (from the "governance" to the partnership and constructive workers support)	The elimination of the so-called "Management from beyond the desk"	Aiming at the development of a learning organization	The introduction of competitions and awards system, motivating employees (promoting improvements and innovation proposals)	Change and "flattening" of the organizational structure (from the most frequently used formal structure on the process one)	Transfer of responsibility and decision-making to lower levels of the organization	The introduction of visual management (use of visualization tables, graphs)	The introduction of standardized work	Current problems analyzing, their sources and developing improvements	The need to simplify processes, reduce complexity	Focus on minimizing waste (environmental) generation	Focus on reducing the consumption of energy used for processes
Average assessment of the factor relevance	**3.87**	**3.66**	**3.97**	**3.84**	**3.21**	**3.34**	**3.76**	**2.79**	**4.00**	**3.66**	**4.08**	**4.32**
Evaluation of current significance of a factor	factor is important	factor is important	factor is important	factor is important	factor is important	factor is important	factor is important	importance of the factor rated as average	factor is important	factor is important	factor is important	factor is important

Source: own study based on the survey results

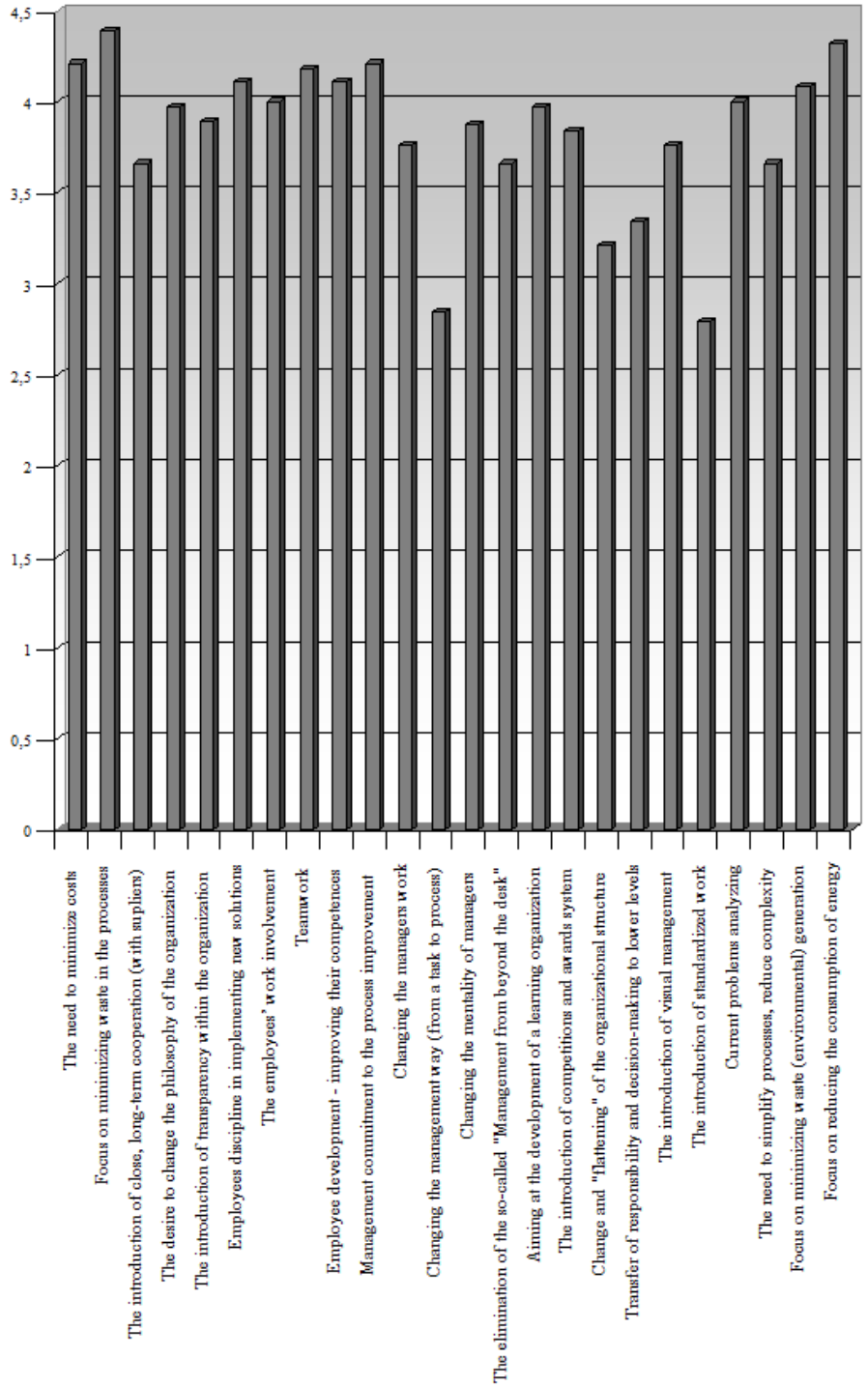

*Figure 4 – Lean Service conception successful implementation factors - the average assessment (*Source: own study based on the survey results)

The averaged results obtained from the survey were analyzed. The analysis found that:

- there were no cases in which the factor is not relevant to the organization,
- there were no cases of minor factor importance for the organization,
- there were only two cases in which a factor has an average importance to the organization (changing the management way from a task to process and the introduction of standardized work),
- other factors were rated by respondents as having great importance for the organization.

The analysis of the LS implementation success factors importance in district heating companies also showed that:

- the analyzed issues are important to district heating companies,
- important LS implementation success factors for the organizations are: focus on minimizing waste in processes, attitudes to reduce energy consumption used for processes, the need to minimize costs and teamwork.

District heating companies highly value the importance of each factor. Awareness of the importance of each factor is a good symptom of organizational maturity level. These organizations therefore have a good chance of successful implementation of Lean principles. It was assumed that, if 80% of the factors for the studied organizations are of great importance, it means that the surveyed companies meet the conditions for effective lean conception principles implementation. 83% score was obtained.

For the tested organizations the most important factor of effective LS conception principles implementation is the attitude of staff and management to minimize waste in the processes.

Representatives of the organizations, including line employees and middle management, were also asked to estimate the intensity of types of waste appearing in their organizations. Rating 0 applies to cases where the type of waste does not occur. If, in the respondent opinion, the type of waste occurs, it was assessed according to a scale from 1 to 5, where 1 refers to the lowest intensity of incidence, and 5 to maximum (relatively to other types of waste).

In the assessment of the intensity of the occurrence of particular groups of waste it was accepted that obtaining the following results means degrees of intensity as follows:

- 0 - waste is not present,
- 0.01-1.99 - waste presents in small quantities,
- 2-2.99 - the average amount of waste is presented,
- 3-5 - there is a large amount of waste (remedial action is needed).

The results of the study are presented in Table 4 and Figure 5.

Table 4 – Waste in the surveyed organizations

The intensity of the waste occurrence	**Waste in the surveyed organizations**														
	Overproduction	Expectation	Unnecessary transportation	Excessive or incorrect processing	Excessive inventories	Unnecessary movement	Defects	Unused creativity of employees	Loss of quality	Waste in accounting processes	Data waste	Waste in the office processes	Waste of managers' time	Waste resulting from employees passive behaviors	Waste associated with "backwardness" of technology
Waste is not present	8	4	4	12	0	0	0	0	8	4	4	0	12	0	12
Assessment of occurrence - 1	4	9	17	4	13	16	4	12	13	9	8	8	4	16	9
Assessment of occurrence - 2	10	5	9	10	17	6	13	5	13	25	13	17	6	2	5
Assessment of occurrence - 3	12	16	4	12	8	8	13	13	4	0	5	13	12	8	12
Assessment of occurrence - 4	4	4	4	0	0	4	8	8	0	0	8	0	4	8	0
Assessment of occurrence - 5	0	0	0	0	0	4	0	0	0	0	0	0	0	4	0
Total	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38
The average rate of occurrence waste ratings	**2.00**	**2.18**	**1.66**	**1.58**	**1.87**	**2.32**	**1.66**	**2.45**	**1.34**	**1.55**	**2.13**	**2.13**	**1.79**	**2.53**	**1.45**
Evaluation of the intensity of waste occurrence	the average amount of waste is presented	the average amount of waste is presented	waste presents in small quantities	waste presents in small quantities	waste presents in small quantities	the average amount of waste is presented	waste presents in small quantities	the average amount of waste is presented	waste presents in small quantities	waste presents in small quantities	the average amount of waste is presented	the average amount of waste is presented	waste presents in small quantities	the average amount of waste is presented	waste presents in small quantities

Source: own study based on the survey results

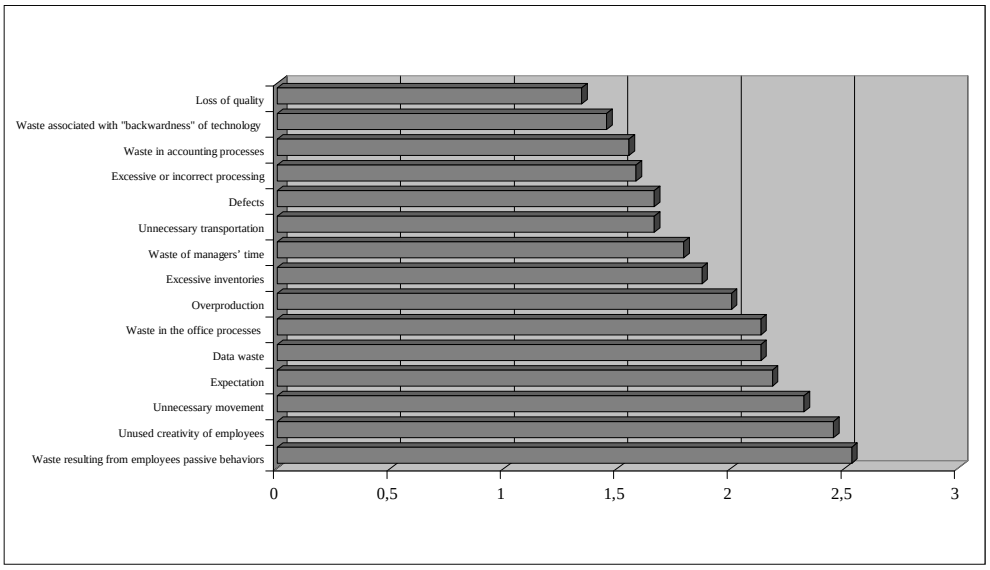

Figure 5 – Waste in the surveyed organizations - the average ratings Source: own study based on the survey results

Authors analyzed the averaged results obtained from the survey. The analysis found that:

- there were no cases where a particular type of waste did not occur at all,
- there were no cases of large amounts of waste,
- the occurrence of waste in the average amount was indicated by the respondents for the following groups: overproduction, waiting, unnecessary motion, unused employee creativity, data waste, waste office processes and waste resulting from employees passive behaviours.

Above analysis also shows that:

- in the surveyed organizations the potential for certain types of waste was assessed as low, which may indicate poor awareness of employees in defining the types, sources and seeking ways to minimize waste,
- the most troublesome type of waste, according to the respondents (the highest intensity of appearance) is a waste resulting from passive behaviours of employees and unused employee creativity,
- according to respondents in organizations they represent the least it is the waste associated with loss of quality; interesting enough is the fact that the possibility of waste associated with technological “backwardness” is also assessed as low; that contradicts the claim, widely accepted and propagated by the industries, that in the heating, both heat sources and heating networks are largely obsolete.

During the study the respondents were also asked to answer the open question about another kind of waste that may occur in the tested organization. None of the companies respond to this question.

6 CONCLUSIONS FROM THE STUDY. SUGGESTIONS FOR FURTHER RESEARCH

As a result of the study authors evaluated the intensity of particular groups of waste in the surveyed organizations. They identified and distinguished several groups of waste. They are: waste resulting from passive employees behaviors, the unused creativity of employees, unnecessary motion, waiting, waste in the office processes, data and information waste, overproduction, excessive inventories, a waste of managers' time, defects (including errors in the processes of heat transfer), unnecessary transportation, excessive or incorrect processing, waste in accounting processes, waste associated with technological "backwardness" and losses caused by poor quality.

The conducted survey shows that the greatest importance for improving the functioning of district heating companies, according to respondents, is the attitude of employees and the management to minimize the waste identified in the processes of heat transfer. It is the passive attitude of staff, lack of commitment in the implementation process which can be one of the biggest sources of waste. It should therefore lead to further research projects on the implementation of Lean Behaviours in organizations (see Figure 6).

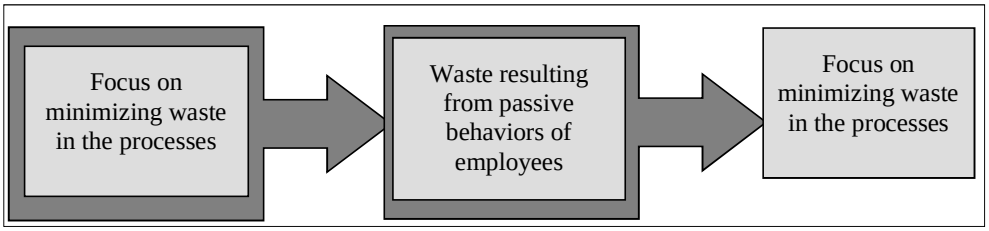

Figure 6 – Lean Behaviours in district heating company (Source: own study based on the survey results)

The term Lean Behaviours was first introduced by M.L. Emiliani. He compiled a list of forty-one anti-Lean or "Fat" conducive to the formation of wasteful behaviors stakeholders. They included, among others: irritation of shareholders, blind obedience, broken promises, unanswered talks, conflict, embarrassment, crisis management, delay in operation, destructive politics, disappointment employees, fluctuation of employees, elitism, intolerance of failure, favoritism, fear, low remuneration, secrets or too many procedures. He drew attention to combining tasks and behavioral work items, to build "healthy" work environments that influence the growth of productivity of the organization.

The study also helped define the barriers that have arisen in connection with the implementation of the principles of this conception in this type of enterprises. These barriers are largely related to the passive attitude of the members of the surveyed organizations, and mostly to the lack of management commitment. The evaluation of importance to the effective LS principles implementation to improve the functioning and service of district heating companies has allowed the emergence of the quintessential factor, which - according to the respondents - is the attitude to minimize waste in the processes.

7 SUMMARY

Human behavior can have positive and negative impact on value creation in the organization. It is important to choose not only employees with appropriate qualifications and experience, but also the ability to influence the elimination of waste in the processes.

In the light of the study can be concluded that the success factors of effective LS implementation principles are in particular: management' commitment to process improvement, the attitude of staff to minimize waste in processes to reduce energy consumption used for processes implementation, as well as to the need to minimize costs, teamwork and raising awareness of employees by investing in their competences.

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