

IMPORTANCE OF LEAN MANAGEMENT IN A CONTEMPORARY ENTERPRISE – RESEARCH RESULTS

Agnieszka Grzelczak* and Karolina Werner-Lewandowska**

Faculty of Engineering Management, Poznan University of Technology, Poznan, Strzelecka
11, 60-965, Poland,

*Email: agnieszka.grzelczak@put.poznan.pl

**Email: karolina.werner@put.poznan.pl

Abstract Lean Management is a management concept that creates a work culture at a company that makes all employees strive to continuously reduce costs, improve the quality and shorten delivery cycle to maximally meet customers' expectations and adapt to the environment by eliminating any waste identified and integrating the activities connected with the stream creating customer value. The article is aimed at presenting the results of research on the Lean Management concepts in a modern enterprise, conducted among the personnel of enterprises from Wielkopolska, Poland.

Paper type: Research Paper

Published online: 16 July 2016

Vol. 6, No. 3, pp. 195-206

DOI: 10.21008/j.2083-4950.2016.6.3.1

ISSN 2083-4942 (Print)

ISSN 2083-4950 (Online)

© 2016 Poznan University of Technology. All rights reserved.

Keywords: *Lean Management, principles of Lean Management, traditional and lean approaches to production*

1. INTRODUCTION

A characteristic feature of business management in recent years is the constant search for ways to improve the efficiency of operations (Michlowicz & Smolińska, 2015, p. 21). In the second hand, the enhancement of processes involves the continuous search for improvements in daily operations of a business and its processes as well as facilitating the relationships between such processes. Therefore, the result should be the improved quality of products, the productivity of processes, and the reduced operational costs. Finally, the efficiency of the whole organization should be increased as well. The concept of continuous improvement is called Lean Management. In numerous papers, the 'lean' concept is perceived as a path to achieving the level of organizational perfection through the gradual and continuous (i.e. characteristic for continual improvement) elimination of waste and losses in all aspects of a business and the integration of its operations around a stream that creates value for clients. When faced waste the most desired solution is its identification and elimination (Chomałowska & Żarczyńska-Dobiesz, 2014, p.160).

The word 'lean' implies adaptation and slenderness of one's figure. With regard to management systems (or production systems), the word 'lean' means the process of making it slimmer or streamlining the management (production) system in terms of procedures and the demand for material resources, the maintenance of finished product stocks and production in making as well as the use of production hall spaces (Wolniak, 2013, p. 524).

It is noteworthy that the available literature on 'Lean Management', 'Lean Production', 'Lean Logistics', and 'Lean Anything' fills up the whole libraries (Balzer, 2009, p. 11). The objective of this article is not to describe the lean concept as such, but rather to present the results of research on the concept of Lean Management in a contemporary enterprise, carried out among 1 050 employees of businesses from Wielkopolska, Poland, from various sectors (production firms, service providers, trading businesses, and local government authorities). The research was to show how the 'lean' concept is perceived today.

2. THE NATURE AND PRINCIPLES OF LEAN MANAGEMENT

The 'lean' concept is older than its name and dates back to the 1950s, when Taiichi Ohno working for Eijie Toyoda introduced the system called today 'Just in Time' concept in the automotive industry. However, the term 'Lean Production' was used for the first time only in 1988 by J. Krafcik, one of the researchers from the International Motor Vehicle Program. The idea was popularised in the book *The Machine that Changed the World* by J.P. Womack, D. Jones and D. Roos (1990) – scientists from the Massachusetts Institute of Technology, Boston. They compared the parameters of outlays and results in Japanese, American, and Euro-

pean businesses and concluded that Toyota Motor Production with its Toyota Production System was a leader in this respect. The authors acknowledged that system to be the first slimmed production system and called it 'lean'.

Therefore, Lean Management is a management concept that creates the work culture in a business that makes all personnel aim at the continuous reduction of costs, raising the quality, and shortening the supply cycle, to fulfil the expectations of clients to the maximum extent and to adapt to the conditions of the environment by eliminating all types of waste (Pawłowski, Pawłowski & Trzciliński, 2010, p. 13).

The concept of Lean Management is based on certain premises, which are called principles by the Polish author Z. Martyniak (2002, p. 25) or components by German authors, F. Gendo and R. Korschak (1999, pp. 53-94). A short characteristic of the basic principles of these concepts is presented below (Zimmiewicz, 2003, pp. 70-72).

Team work stems from the conviction that the efficiency of a team is higher than the efficiency of its individual members (the synergy effect). Tasks, responsibilities, and, primarily, the decision-taking powers are delegated to a team. As a consequence, the direct control by a superior is reduced in favour of self-control. The above-mentioned premises are connected with actions aimed at the humanization of work and the autonomy of a group, because the more autonomy a group has, the greater its motivation and readiness of group members to work are.

Personal responsibility is visible mostly in the fact that the objective is to transfer the responsibility to the direct performers of tasks; as a result, the autonomy, responsibility for the team, and self-control increase. After this objective is fulfilled, decisions are taken on the lowest level of the organizational structure. The condition necessary for the implementation of this principle is to raise the qualifications of performers to a level that enables efficient and effective decisions to be taken. Owing to a flat organizational structure, it is easier to coordinate operations, the communication is smoother, and the interest in a client grows.

According to the feedback idea in the Lean Management concept it is assumed that even in a line system the creative potential of personnel can be unlocked. The starting point for such a transformation is to communicate various information to an executive level. Detailed information about performance of individual workers is achieved in a manner that is spectacular for the recipients, so that the perfect fulfilment of tasks can be obtained based on the feedback principle.

Customer-orientation should be the idea put into action by all the personnel of an enterprise, from its management down to line operators. To make a client bound with products of a business, it has to be sensitive to the clients' wishes and listen to their comments. Meeting the expectations of a client starts from a supplier; therefore, he should be aware of how important a client is as well.

The priority of value added is created not only by the time used to make a product, the know-how utilised during its production or the materials applied to produce its components but the requirements of the market that result from the needs of potential clients as well. The value of a product in general depends on a subjective assessment by a client and market conditions in which it is distributed.

Less importance is attached to the quality control of finished products or semi-products, while the cardinal importance is placed on their defect-free performance.

Work standardization is a tool that maintains productivity, quality, and work safety on a high level and includes three aspects: working time, work sequence, and the stock of work in progress. In Lean Management, the job rotation is characteristic: operators 'travel' among different positions related to manufacturing a product. To facilitate their transfer between positions, the operation performance standardization is used.

Continuous improvement involves the avoidance of extravagance and waste (Japanese muda). Any actions that bring no added value are considered to be waste. The Kaizen is the most often quoted concept out of all ideas and methods used in Lean Management. Kaizen means the process of continuous improvement. Every process can be improved by eliminating waste, which is often imperceptible.

Fast elimination of error causes (at a source) means that one should not be satisfied by looking for superficial causes of defects, low quality, shortages, etc. The detection and elimination of defects is least costly at the point of origin and is most expensive at a client. All personnel should be involved in detecting and eliminating errors. The '5 Why' tool is often used in this respect.

The anticipation in the Lean Management concept is visible in the importance attached to the involvement of executive personnel in the planning of future operations (decentralization of decisions). The preparation of a decision involves not only the use of knowledge included in written words and figures but the experiences of contractors and junior management as well, which often have the form of 'emotional arguments'.

Gradual (simultaneous) improvement means that the traditional product development process is replaced by the simultaneous process, so that the concept is developed, the product and production planned, and the manufacturing executed at the same time. Owing to this, time is saved, which is an important factor of competitiveness.

3. IMPORTANCE OF LEAN MANAGEMENT IN A CONTEMPORARY BUSINESS

3.1. Research description

To find out how the concept of Lean Management is perceived in practice, the research was carried out aimed at showing the importance of this management concept for enterprises. The research was carried out with a questionnaire method. The respondent population were the personnel of businesses from Wielkopolska, Poland. The sample included 1 200 persons and the results were received from

1 050 respondents. The sample was selected at random and the research was carried out in March and April 2015.

3.2. Lean Management research results by jobs

The first question concerned the importance of the above-mentioned principles of Lean Management for a contemporary business. The results have been presented in the figure 1.

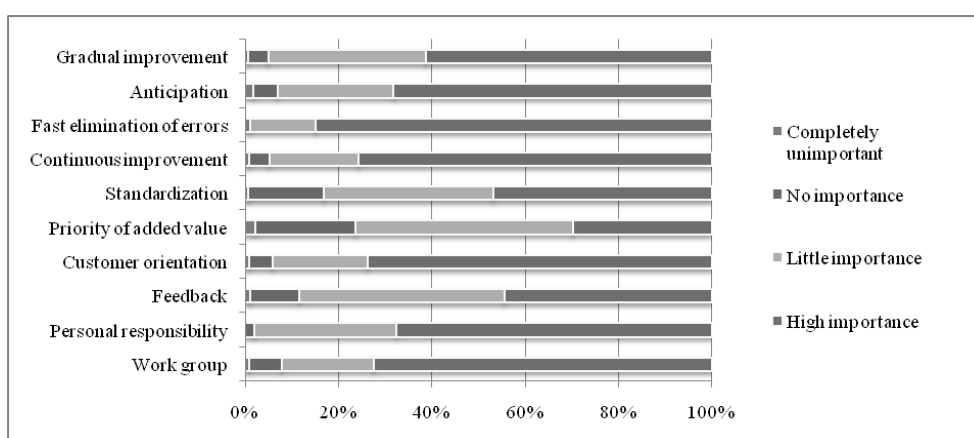


Fig. 1 The importance of Lean Management principles according to personnel (N=1 050); Source: own study based on research results

According to the results of the conducted research (Fig. 1), respondents ranked the principles of Lean Management by their importance for a contemporary enterprise as follows: error elimination (84.95% very important), continuous improvement (75.71%), customer-orientation (73.81%), and team work (72.38%). The research proves the major importance attached nowadays by companies to their relationships with clients on the one hand and to the improvement of internal business processes on the other hand. The application of the continuous improvement process (Kaizen) does not boil down to making a product or service of an enterprise meet specific requirements (the fast elimination of errors). According to this philosophy, the improvement is a never-ending process. Its underlying rule is the continued commitment and the readiness to raise the quality of both a product and the whole business non-stop. It means the involvement of all the personnel at every stage of production in the improvement process (often as team work); the advantage of the process is the focus on meeting the expectations of clients.

The analysis of the results (Fig. 1) leads to the question why the respondents indicated three principles of Lean Management as the ones that have little or no importance. Such principles include: priority of added value (46.57% respondents think it

is of little and 21.52% of no significance), standardization (36.19% and 16.19% respectively), and feed-back (43.90% and 10.57%). The reason for such responses may be the misunderstanding of the importance of such concepts for a contemporary enterprise.

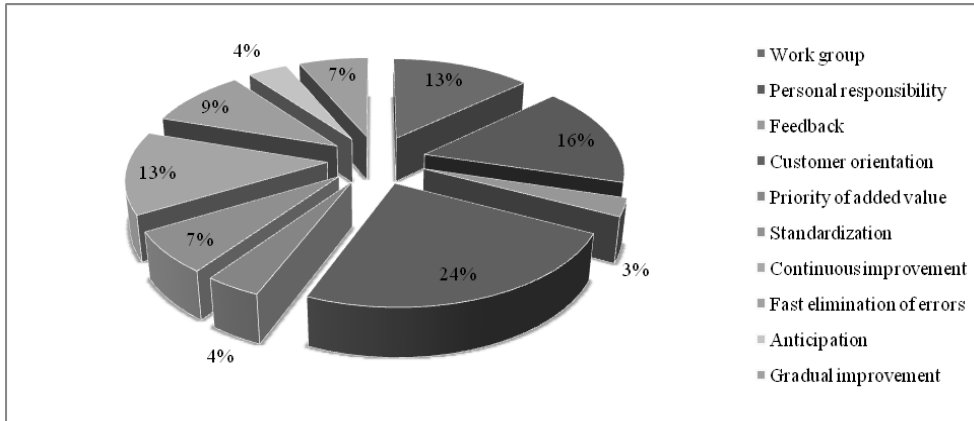


Fig. 2 The most important principles of Lean Management according to employees (N=1 050); Source: own study based on research results

The second question concerned the most important principles of Lean Management for the enterprise of a respondent. The responses have been presented in the diagram (Fig. 2).

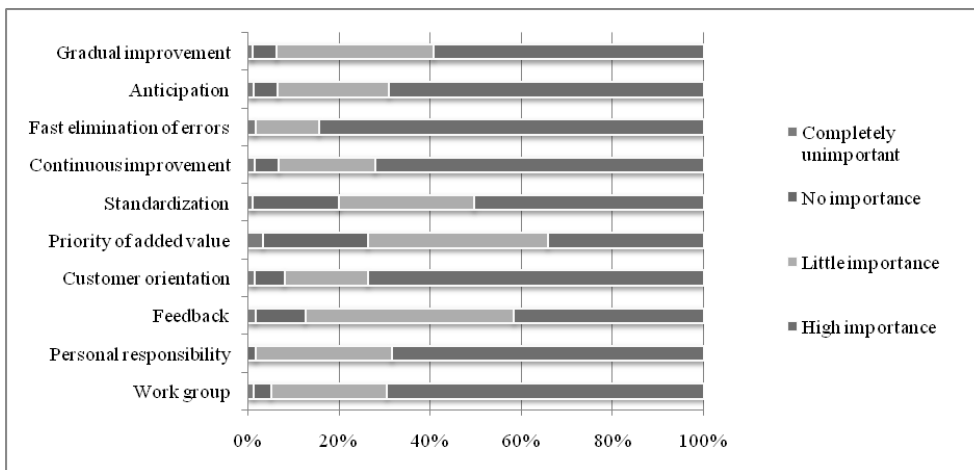


Fig. 3 The importance of Lean Management principles according to respondents in executive positions (N=640); Source: own study based on research results

The analysis of results (Fig. 2) gives an insight into the consequences of the opinions held by the respondents. The client-orientation has been presented as the most important principle of Lean Management for enterprises of employees (23.81% responses). This is very important today, because the success of an organization depends on the potential to fulfil the needs both of present and potential customers. Numerous enterprises do not realise that businesses depend on their clients, not the other way round. Employees indicated the following least important principles: feedback (2.83%), priority of added value (3.81%), and anticipation (3.81%).

During the analysis of data, results given by respondents who occupy management and executive positions were selected. The obtained results have been presented in the following two diagrams (Fig. 3 and Fig. 4).

The results achieved from respondents in executive positions (Fig. 3) confirm the earlier research. The substantial majority of employees consider the most important principle of Lean Management to be the fast elimination of errors (84.38% ‘very important’ answers), keeping in mind that the detection and elimination of errors is cheapest at the site of origin, and is most expensive at the customer’s site. Next, the respondents ranked customer orientation (73.59% ‘very important’ answers) and continuous improvement (72.03%). As regards two principles: feedback and priority of value added, the results of questionnaires were almost equal: 45.78% (and 39.38% respectively) respondents consider them to have major importance and 41.56% (34.22%) think that they are of little importance for today’s enterprises.

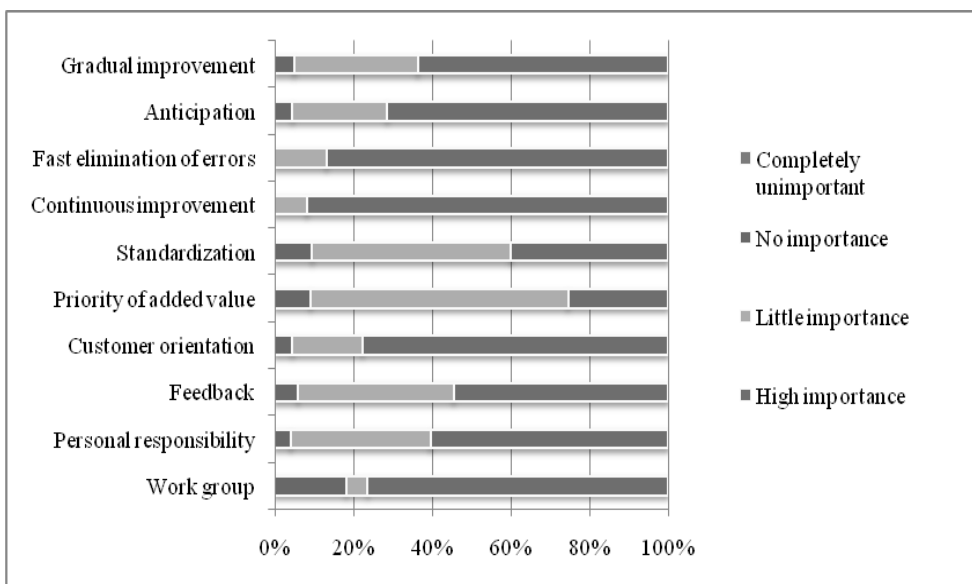


Fig. 4 The importance of Lean Management principles according to respondents in managerial positions (N=220); Source: own study based on research results

A much more interesting situation takes place with regard to the results of research obtained from persons in management positions (Fig. 4). In their opinion, the most important principles of Lean Management at present include: continuous improvement (91.82% respondents consider it to be very important) and the fast elimination of errors (86.82% respectively). Hence, the research confirms the awareness of managers that every process can be improved; it implies the elimination of, often unnoticeable, waste and errors at the source. It is noteworthy, on the other hand, that so many managers (65.45%) indicated that the priority of value added is of little importance. Value added means the addition of characteristics to products or services that gives them a competitive advantage. P. Kotler describes added value as 'the assessment by a client of a general capacity of a product to meet his needs'. What makes a client ready to pay much more for a product or service? This readiness stems from the fact that a client who chooses a specific product or service receives something exceptional with it, some unique value, i.e. added value. It is worth noticing one more thing here: none of the respondents indicated the principles of Lean Management that would be completely irrelevant, which may prove the awareness of managers of the value and importance of this concept in a modern firm.

3.3. Results of the Lean Management research depending on a type of business

Results obtained from respondents working for production, trading, service, and administration entities were selected in the analysis. The obtained results have been presented in the three consecutive diagrams (Fig. 5, Fig. 6, and Fig. 7).

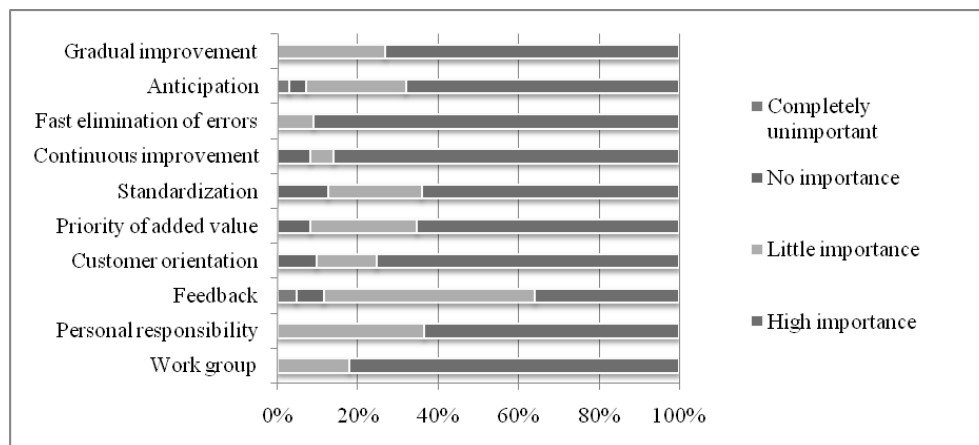


Fig. 5 The importance of Lean Management according to employees of production businesses (N=279); Source: own study based on research results

According to the results of conducted research, personnel of production firms (Fig. 5) indicate the fast elimination of errors (as many as 91.04% ‘very important’ responses, the remaining 9% ‘of little importance), the continuous improvement (86.02%) and work group (82.08%) as the most important principles of Lean Management for a contemporary business. It is noteworthy that for the above-mentioned three principles of Lean Management and for the principle of gradual improvement none of the respondents thought that it was of no importance or to be completely unimportant. It is also interesting that the ‘no importance’ and ‘completely unimportant’ answers do not exceed 10%. The research shows that personnel are aware of the significance of applying the lean concept in a contemporary production firm.

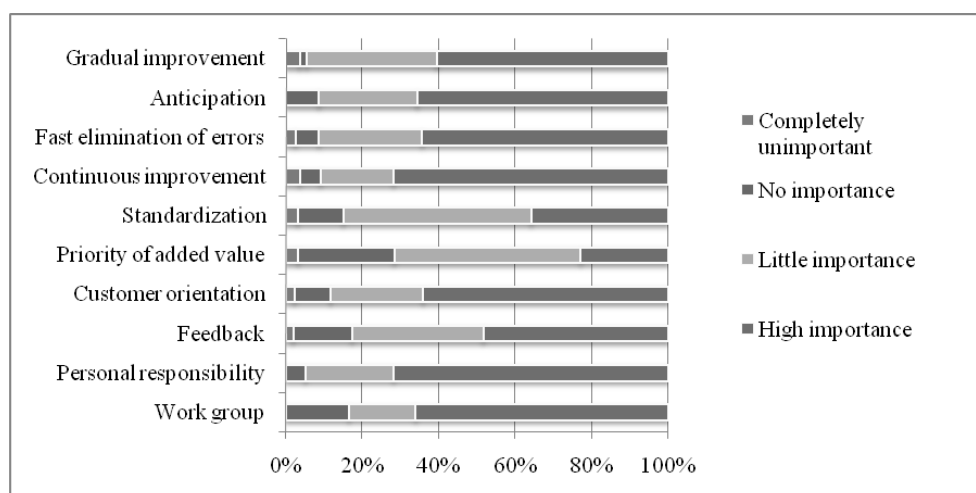


Fig. 6 The importance of Lean Management according to employees of trading and service businesses (N=533); Source: own study based on research results

Responses from trading and service firms are different (Fig. 6). Out of the principles of Lean Management, they indicate continuous improvement (71.86% responses) as the most important element and, not present before, the personal responsibility (71.86%); in their opinion, the least important are the priority of value added (22.89%) and standardization (35.83%). The results may stem from the specific nature of the businesses of researched firms. It is also noteworthy that many of the respondents (in total, 10-15% of all respondents, and for the most important criterion, the priority of added value, as many as 28.33%) indicate that the above-mentioned principles of Lean Management have no importance or are completely unimportant for trading and service firms.

The results of research carried out among officers of administration entities are interesting (Fig. 7).

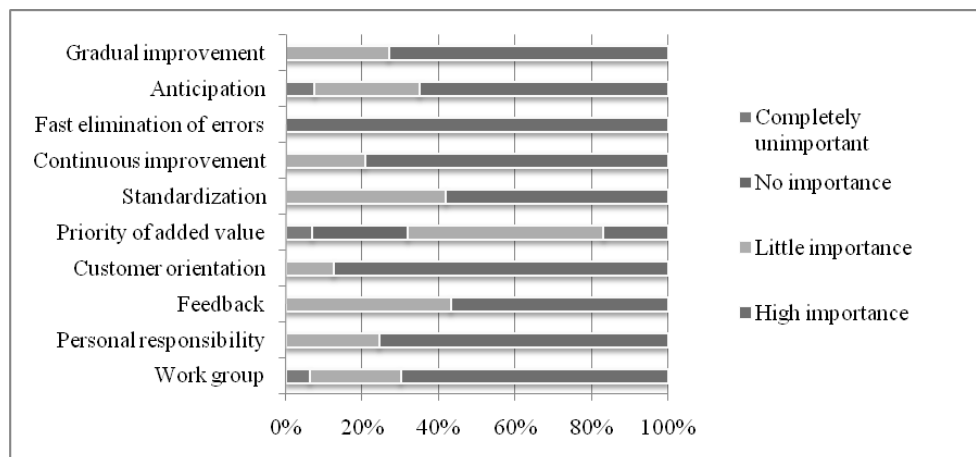


Fig. 7 The importance of Lean Management according to employees of administration entities (N=160); Source: own study based on research results

With regard to one principle of Lean Management, namely the fast elimination of errors, all the respondents (100%) considered it to be very important. This fact may be related to the characteristic of working in such organizations. It is also worth noting the lean principle of added value priority. More respondents (25%) indicated that it was of no importance (they amount to 31.88% responses together with the responses that it is completely unimportant) than that it was very important (16.87%). The responses concerning other principles of Lean Management given by personnel of administration entities are similar as in production, trading, and service businesses, in general with a lower percentage of answers 'very important' in favour of 'little importance'.

4. CONCLUSION

To sum up the results of the research on the importance of Lean Management in a contemporary enterprise, the authors propose the following generalizations:

- for persons in executive positions, the most important principle of Lean Management today is the fast elimination of errors;
- for persons in managerial positions, the most important principles of Lean Management at present are the continuous improvement and the fast elimination of errors;
- for personnel of production businesses, the principle of Lean Management that provides for the fast elimination of errors is most important;

- for the staff of trading and service firms, the Lean Management principles of continuous improvement and the personal responsibility are most important;
- for administration staff, the fast elimination of errors as the Lean Management principle is very important.

It can be concluded based on the above considerations that in a modern enterprise the most important principle of Lean Management is the fast elimination of errors. This principle has been indicated by most personnel (in managerial and executive positions), both in production firms and in administration entities. On the other hand, the principle of continuous improvement dominates as the most important principle of the lean concept among the personnel of trading and service firms as well as among the management, regardless of the type of a business activity.

The results of research on the importance of Lean Management in a contemporary business have demonstrated no clear dominance of 'lean' thinking compared to the traditional approach to production in companies. There is no correlation between a position of an employee (managerial or executive) and a change of approach to production from a traditional to lean mode of thinking.

REFERENCES

- Balzer H., (2009), *Mehr als Lean. Exzellenz und Krisenmanagement im Mittelstand*, LOG_X, Stuttgart.
- Chomałowska B. & Żarczyńska-Dobiesz A., (2014), Elimination of waste in production enterprises – case study, *Research in Logistics & Production*, Vol. 4, No. 2, pp. 157-166.
- Gendo F. & Korschak R., (1999), *Mythos Lean Production. Die wahren Erfolgskonzepte japanischer Unternehmen*, Essen.
- Martyniak Z., (2002), *Nowe metody i koncepcje zarządzania*, Wyd. Akademii Ekonomicznej w Krakowie, Kraków.
- Michłowicz E. & Smolińska K., (2015), Research on the flow of material in production logistics, *Research in Logistics & Production*, Vol. 5, No. 1, pp.21-31.
- Pająk E., Klimkiewicz M. & Kosieradzka A., (2014), *Zarządzanie produkcją i usługami*, PWE, Warszawa.
- Pawłowski E., Pawłowski K. & Trzcieliński S., (2010), *Metody i narzędzia Lean Manufacturing*, Wyd. Politechniki Poznańskiej, Poznań.
- Womack J., Jones D. & Ross D., (1990), *The Machine that Changed the World: Based on the Massachusetts Institute of Technology 5-Million-Dollar 5-Year Study on the Future of the Automobile*, Rawson Associates, New York, USA.
- Wolniak R., (2013), *Metody i narzędzia lean production i ich rola w kształtowaniu innowacji w przemyśle*, Knosala R. (ed.), *Innowacje w zarządzaniu i inżynierii produkcji*, Oficyna Wydawnicza Polskiego Towarzystwa Zarządzania Produkcją, Opole.
- Zimmiewicz K., (2003), *Współczesne koncepcje i metody zarządzania*, PWE, Warszawa.

BIOGRAPHICAL NOTES

Agnieszka Grzelczak is a Assistant at the research assistant at the Chair of Production Engineering and Logistics at the Faculty of Engineering Management at the Poznan University of Technology. She teaches production managemnet and working time study. His research interests are lean managemnet and working time study. He is the author and co-author many science publications, also in journals, which are indexed in Scopus and Web of Knowledge databases.

Karolina Werner-Lewandowska is a Asisstant at the research assistant at the Chair of Production Engineering and Logistics at the Faculty of Engineering Management at the Poznan University of Technology. She teaches production managemnet and purchasing logistic. His research interests are lean managemnet and simulation and optimization logistics process. He is the author and co-author many science publications, also in journals, which are indexed in Scopus and Web of Knowledge databases.