

Volume 5 ■ Number 1 ■ June

2

0

1

4

FOUNDED IN 2010

# International Review of Applied Sciences and Engineering

Editor-in-Chief ■ Ferenc Kalmár



AKADÉMIAI KIADÓ

WWW.AKADEMIAI.COM

# International Review of Applied Sciences and Engineering

IRASE offers a comprehensive range of articles on all aspects of engineering and applied sciences. It provides an international and interdisciplinary platform for the exchange of ideas between engineers, researchers and scholars within the academy and industry. It covers a wide range of application areas including architecture, building services and energetics, civil engineering, electrical engineering and mechatronics, environmental engineering, mechanical engineering, material sciences, applied informatics and management sciences. The aim of the Journal is to provide a location for reporting original research results having international focus with multidisciplinary content. The published papers will provide solely new basic information for designers, scholars and developers working in the mentioned fields. The papers will reflect the broad categories of interest in: optimisation, simulation, modelling, control techniques, monitoring, and development of new analysis methods, equipment and system conceptions. It is published in yearly volumes of two issues by AKADÉMIAI KIADÓ, Budapest, Hungary.

■  
**Abstracted/indexed in** Google Scholar and Ulrich's.

■  
**Editorial correspondence**

FERENC KALMÁR

Phone: (+36 52) 415 155 / 77748, Fax: (+36 52) 418 643, Email: fkalmar@eng.unideb.hu

GYÖRGY CSOMÓS

Phone: (+36 52) 415 155 / 77741, Fax: (+36 52) 418 643, Email: csomos@eng.unideb.hu

■  
**Subscription price**

Volume 5 (2014) in 2 issues EUR 268 + VAT (for North America: USD 360)  
including online access and normal postage; airmail delivery EUR 20 (USD 28).

■  
**Publisher and distributor**

AKADÉMIAI KIADÓ

STM Business Unit

P.O. Box 245, H-1519 Budapest, Hungary

Phone: (+36 1) 464 8222; Fax: (+ 36 1) 464 8221

E-mail: journals@akkr.hu

www.akademiai.com

www.akademiaikiado.hu

© Akadémiai Kiadó, Budapest 2014

ISSN 2062-0810

IRASE 5 (2014) 1

Printed in Hungary

# INTERNATIONAL REVIEW OF APPLIED SCIENCES AND ENGINEERING

Vol. 5, No. 1, 2014

EDITOR-IN-CHIEF

**Ferenc Kalmár**

University of Debrecen

Ótemető u. 2-4, H-4028 Debrecen, Hungary

FOUNDING EDITORS

**György Csomós**

University of Debrecen

Ótemető u. 2-4, H-4028 Debrecen, Hungary

**Ferenc Kalmár**

University of Debrecen

Ótemető u. 2-4, H-4028 Debrecen, Hungary

ASSOCIATE EDITORS

**Dezső Beke**

University of Debrecen

Bem tér 18, H-4032 Debrecen, Hungary

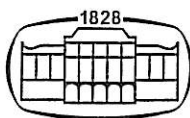
**Derek Clements Croome**

University of Reading

Reading, Berkshire, England

ENGLISH LANGUAGE EDITOR

**Éva Dudás**



AKADÉMIAI KIADÓ  
MEMBER OF WOLTERS KLUWER GROUP

## INTERNATIONAL EDITORIAL BOARD

- M. N. Ahmad, Universiti Teknologi Malaysia, Skudai, Malaysia  
M. Bakirov, Center for Materials and Lifetime Management Ltd., Moscow, Russia  
N. Balç, Technical University of Cluj-Napoca, Cluj-Napoca, Romania  
I. Bodnár, University of Debrecen, Debrecen, Hungary  
F. Botsali, Selçuk University, Konya, Turkey  
C. Bungau, University of Oradea, Oradea, Romania  
M. De Carli, University of Padua, Padua, Italy  
Gy. Csomós, University of Debrecen, Debrecen, Hungary  
T. Csoknyai, Budapest University of Technology and Economics, Budapest, Hungary  
G. Eugen, University of Oradea, Oradea, Romania  
J. Finta, University of Pécs, Pécs, Hungary  
A. Gacsadi, University of Oradea, Oradea, Romania  
E. A. Grulke, University of Kentucky, Lexington, United States  
J. Grum, University of Ljubljana, Ljubljana, Slovenia  
G. Husi, University of Debrecen, Debrecen, Hungary  
G. A. Hussein, American University of Sharjah, Sharjah, United Arab Emirates  
N. Ivanov, Saint Petersburg State Polytechnical University, St. Petersburg, Russia  
A. Járai, Eötvös Lóránd University, Budapest, Hungary  
G. Jóhannesson, The National Energy Authority of Iceland, Reykjavik, Iceland  
F. Kalmár, University of Debrecen, Debrecen, Hungary  
I. Kocsis, University of Debrecen, Debrecen, Hungary  
I. Kovács, University of Debrecen, Debrecen, Hungary  
A. Lakatos, University of Debrecen, Debrecen, Hungary  
P. Lenkei, University of Pécs, Pécs, Hungary  
H. Moravicka, Slovak Academy of Sciences, Bratislava, Slovakia  
P. Mukhopadhyaya, Institute for Research in Construction, Ottawa, Canada  
H. S. Najm, Rutgers University, New Brunswick, United States  
J. Novak-Marcincin, Technical University of Kosice, Kosice, Slovakia  
S. Oniga, North University of Baia Mare, Baia Mare, Romania  
J. N. Pires, Universidade de Coimbra, Coimbra, Portugal  
L. Pokorádi, University of Debrecen, Debrecen, Hungary  
A. Puhl, University of Debrecen, Debrecen, Hungary  
M. Salah, Hashemite University, Zarqua, Jordan  
D. Schmidt, Fraunhofer Institute of Building Physics, Kassel, Germany  
L. Szabó, Technical University of Cluj-Napoca, Cluj-Napoca, Romania  
Cs. Szász, Technical University of Cluj-Napoca, Cluj-Napoca, Romania  
J. Száva, Transylvania University of Brasov, Brasov, Romania  
S. Szokolay, University of Queensland, Brisbane, Australia  
E. Szűcs, University of Debrecen, Debrecen, Hungary  
R. Tarca, University of Oradea, Oradea, Romania  
Zs. Tiba, University of Debrecen, Debrecen, Hungary  
L. Tóth, University of Debrecen, Debrecen, Hungary  
I. Uzman, Erciyes University, Kayseri, Turkey  
T. Vesselényi, University of Oradea, Oradea, Romania  
N. S. Vyas, Indian Institute of Technology, Kanpur, India  
D. White, The University of Adelaide, Adelaide, Australia  
S. Yildirim, Erciyes University, Kayseri, Turkey

---

## CONTENTS

|                                                                                                                                                                                                                                      |    |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----|
| <i>F. Mata Cabrera, J. Tejero Manzanares, I. Hanafi, A. B. Arenas, I. Garrido, V. Toledano, M. L. Rubio</i><br>Investigating the deformation and damage scenario under tensile loading of ductile specimens using thermography ..... | 1  |
| <i>I. Kovács</i><br>Structural performance of steel fibre reinforced concrete – Part I. Overview of the experimental program .....                                                                                                   | 9  |
| <i>I. Kovács</i><br>Structural performance of steel fibre reinforced concrete – Part II. Compressive behaviour and stress–strain relationship .....                                                                                  | 21 |
| <i>N. Boros, A. Petrányi, D. Kocsis, I. Bodnár</i><br>Characterization of greywater sources on the base of organic content and microbial quality .....                                                                               | 35 |
| <i>N. Mazsu, A. Szabolcsik, S. Fórián, N. Boros, I. Bodnár</i><br>Investigation of chemical parameters along the Nagy Brook .....                                                                                                    | 41 |
| <i>E. Kovács, P. Tóth, Cs. Juhász, J. Tamás</i><br>Biological agents in potable water .....                                                                                                                                          | 47 |
| <i>J. T. Kiss, I. Kocsis</i><br>General incentives for renewable energy investment and energy efficiency measures in Hungary ....                                                                                                    | 53 |
| <i>Cs. Szász</i><br>Air-source heat pump LabView-based model development for NZEB applications .....                                                                                                                                 | 59 |
| <i>A. Rózsa</i><br>Financial position of building industry in Hajdú-Bihar County (E Hungary) in the period of 2008–2012 – Regional sectoral analysis based on economic performance ratios .....                                      | 67 |
| <i>T. Takács, A. Matkó</i><br>Examination of roles, tasks and management competencies of moderators through a kaizen analysis .....                                                                                                  | 79 |

# EXAMINATION OF ROLES, TASKS AND MANAGEMENT COMPETENCIES OF MODERATORS THROUGH A KAIZEN ANALYSIS

T. TAKÁCS<sup>a</sup>, A. MATKÓ<sup>b</sup>

Faculty of Engineering, University of Debrecen, Debrecen, Hungary

<sup>a</sup> E-mail: takacstimo@freemail.hu

<sup>b</sup> E-mail: andim@eng.unideb.hu

This study presents the examination of the leadership in a multi-national company in Debrecen, in which we examine the relationship between lean and leadership. We identified the competitiveness within a kaizen implementation of the company's moderators with the help of a questionnaire. With help of the identified management competencies we determine the leadership style, which is necessary for the operation of a successful and effective lean management.

**Keywords:** lean, kaizen, leadership, moderators

## Introduction

Our study focuses on the Lean management system that is gaining popularity among companies. A multi-national was chosen for analysing Lean as it possesses many years of experience in the field of Lean implementation among the companies of Debrecen and can claim a number of developments and results as due to the application of this management system.

The Lean approach is required in the current economic conditions because companies have to satisfy current demands while also taking cost-efficiency aspects into account. Lean is such a company management system, which aims to produce goods or services in the most economical way, while always considering customer value, filtering out losses occurring during the process. Organisations applying Lean are able to transport their goods faster, more precisely, while keeping their costs low and as a result they can achieve enduring competitiveness.

At present, competitiveness has become an important indicator in the economy. Management is essential for maintaining market position. Suitable management is required for an organisation to react quickly to the changes of the economy, thus quick and firm actions enable it to adapt to changes in its environment. Consequently, competencies of leaders are especially important as well as assessing what competencies contribute to successful management.

Involvement of employees is essential for successful Lean operation, which is destined to fail without management support. Lean is the tool of continuous development, which is inseparable from the related management as personal competencies of the manager define the entire company.

Therefore, the objective of our study is to introduce Lean while analysing management competencies and skills, which are essential for successful and effective operation.

## The role of management in Lean organisation

Committed management is essential for introducing the Lean approach to employees within the organisation as it serves as a guide and example. Lean management cannot be implemented if this fundamental element is missing as commitment is the pillar in the application of this approach. Management must decide prior to the introduction of lean production that it is really necessary to reform and develop processes, in order to compete in a changing environment. Management, therefore, can be defined as an activity, which is aimed at influencing the behaviour of individuals or groups. Lean approach requires changes in the individual's mindset, which can be implemented through management.

A key role of management is expressed in how productivity is increased through the optimal coordi-

nation of resources, thus satisfying social needs. However, these customer needs are becoming more diverse, which makes coordination of needs and productivity essential, which can be changed through the Lean approach. Another important role of management is to preserve profit-orientation of the organisation, while also increasing efficiency and reducing expenditures as this is a method for remaining stable on the market.

A number of management theories have been born – the works of Taylor and Fayol – which also appear many times today. However, management has to be viewed from a new perspective in the case of Lean as it requires more from a manager than traditional management. Today's managers have to recognise that group work is essential while considering mutual aims and interests, which requires implementation of known and achievable objectives.

People working in the Lean organisation are key players who produce real value. However, this cannot be achieved if they are not aware of objectives and long-term plans. Employees have to understand and feel the importance of their work and Lean can achieve this through appraisal and motivation from the management. One of the most important aims of management is to define objectives precisely and to ensure tools for employees to achieve this as this enables the organisation as a whole to achieve success.

Another important tool of the Lean approach is implementation of team work, which has to be based on how the individual can contribute to team success. Reinforcing this phenomenon contributes significantly to successful operation. Managers as well as the values and competences represented by them are essential for stabilising this view [1].

Academic references have several management styles and methods and Lean primarily implements management by participation.

### Management by participation

According to this management style, the manager cooperates with the subordinates. Team work has a significant role in this method, which enables exploitation of skills and knowledge of all participants as the manager involves them in the decision making process.

Four work methods of management groups can be distinguished:

1. *Method based on procedural issues.* Regulations and rules are in the centre. An appointed manager leads the work of the team in order to ensure that regulations are followed. This person has a number of rights not shared with the members of the group.
2. *The creative method.* Team leaders only have a formal role opposed to the previous method.

Thus, all participants have a role in decision making. This means that all participants take responsibility for the joint work.

3. *The productive method.* The authority of the manager and the members of the team differ in this method. The main objective of the team is to ensure efficiency. Consequently, suggestions that most of the team agrees with are taken into account.
4. *The problem solving method.* According to this method, all members of the team are equal, there is no dominant member. Everyone can have an equal share of the work, which is aimed at achieving team objectives. Objectives are set jointly and are modified until they are approved by all. If there is disagreement in certain issues, the method of persuasion is used [2].

### The Toyota triangle model

The Toyota triangle model includes all those elements that are essential for the success of the Lean management system (Fig. 1).

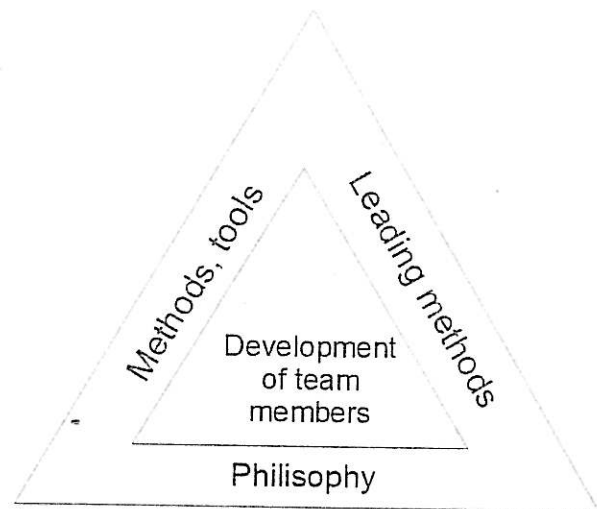


Fig. 1. The Toyota triangle model (Source: [3])

The figure clearly illustrates that three factors make up the frame of Lean. The philosophy of Lean is the foundation of the triangle with management principles, techniques and tools connected to it. The three elements are held together by the developments of the individuals. The frame defined by the triangle can be expanded continuously with the development of employees, which also contributes to the Lean maturity of the company.

The first pillar of the model is the Lean philosophy. Long term application of Lean principles results in increased productivity, high product quality, stable operation and customer as well staff satisfaction.

The second pillar of the model is management principles represented by the leaders of the organisation. Managers of companies that follow principles are characterised by continuous learning through experience and high level of technical knowledge and skills. They also demonstrate high commitment to Lean. They also make Lean philosophy accessible and applicable to their staff. Their assistance contributes to such an organisational culture that is stable and its objectives and values are represented by the entire company.

The third pillar of the model is the various techniques and tools. These include methods that are introduced, applied and continuously developed to enhance quality and efficiency and to develop Lean culture.

Central element of the model is individual development. Involving employees is of special significance in Lean philosophy. This means that the company bestows responsibility upon its employees. The role of management also increases in value, as the support of leaders is essential for employees to gain a larger role.

The success of Lean culture consists of four elements. As long as all pillars are progressive, the company can achieve long-term success [3].

### Kaizen activity in the company

The objective set by the organisation is the continuous development of organisational units and kaizen is

one of the tools of implementation. The development of this problem-solving tool is connected with Toyota. It was developed and is still applied by this company. The meaning of this Japanese expression is made up of two parts: "KAI" – Take part, create new! "ZEN" – Think, improve, act to help others!

People's work can be made easier with the help of kaizen through examining processes, then by improving them in small, gradual steps. Development happens in groups, which is characterised by having a leader (moderator), but all team members have an opinion and their ideas have equal value [4].

Tasks of moderators can be divided into 4 phases through kaizen (Fig. 2). The process is illustrated in a PDCA cycle. The four letters in the acronym refer to Plan, Do, Check, Act. The cycle is excellent for describing kaizen as this is a cycle which fits into the theory of continuous development [5].

### Materialisation of moderator management competencies – Examination of leadership competencies based on self-assessment

The research within the enterprise was carried out using a leadership competency questionnaire. The questionnaire was filled out by the moderators who had already taken part in a training. Self-completion questionnaires were used because self-criticism and the open admission of mistakes are also important in the

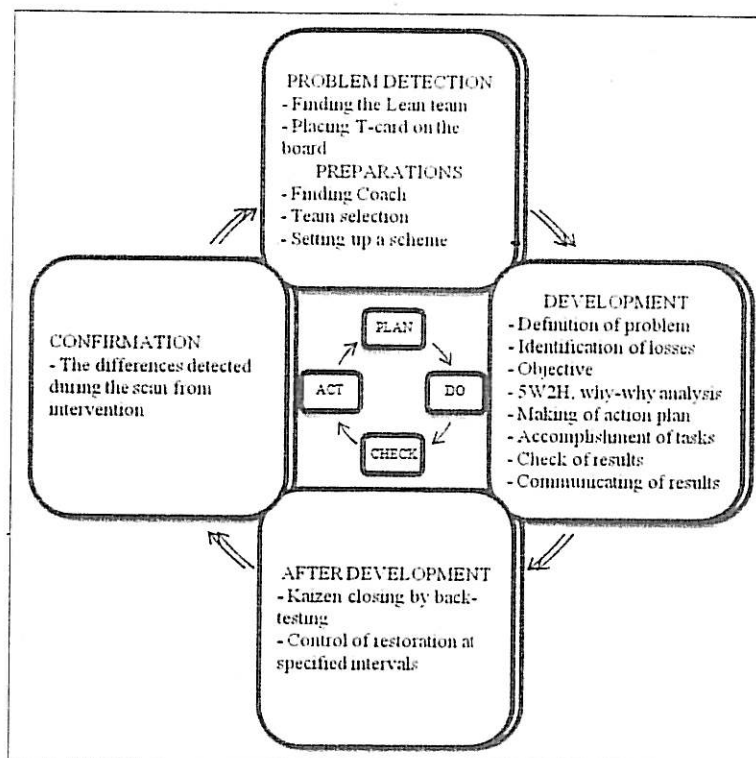


Fig. 2. The kaizen moderators' tasks in the course of the deduction of a kaizen (Source: based on own database)

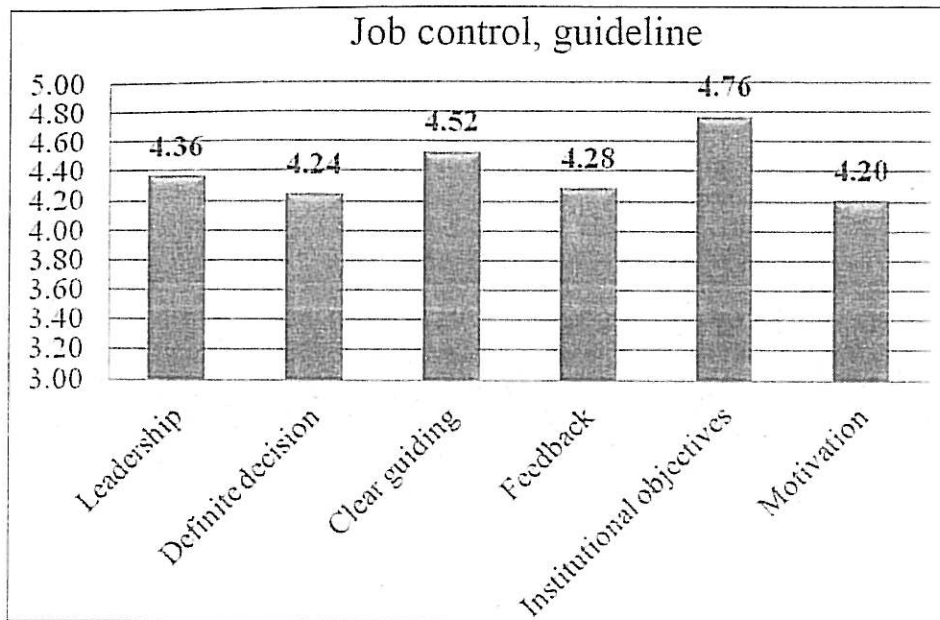


Fig. 3. In the questionnaire assessment of block 1 (Source: based on own database)

Lean culture. The fact that leadership principles represent one of the main constituents of Toyota's triangular model is a major argument in favour of the examination of leadership. The Lean philosophy and a stable enterprise organisation where employees are acquainted with the goals to be achieved can only be developed if this information is conveyed by the leaders. The enterprise lays great emphasis on training moderators also because they work within the enterprise; therefore, they comprehend the operation of the whole organisation. For this reason, it is easier for them to

carry out developments in the course of their leadership activities. This is also a reason why we consider it to be important to measure the leadership competencies of moderators.

The questionnaire consists of four blocks, which focus on task control, guiding, situation assessment, creativity, the development and motivation of workers, as well as human relations in the last block.

The questionnaire was filled out by 25 moderators, which is the number of active moderators within the organisation.

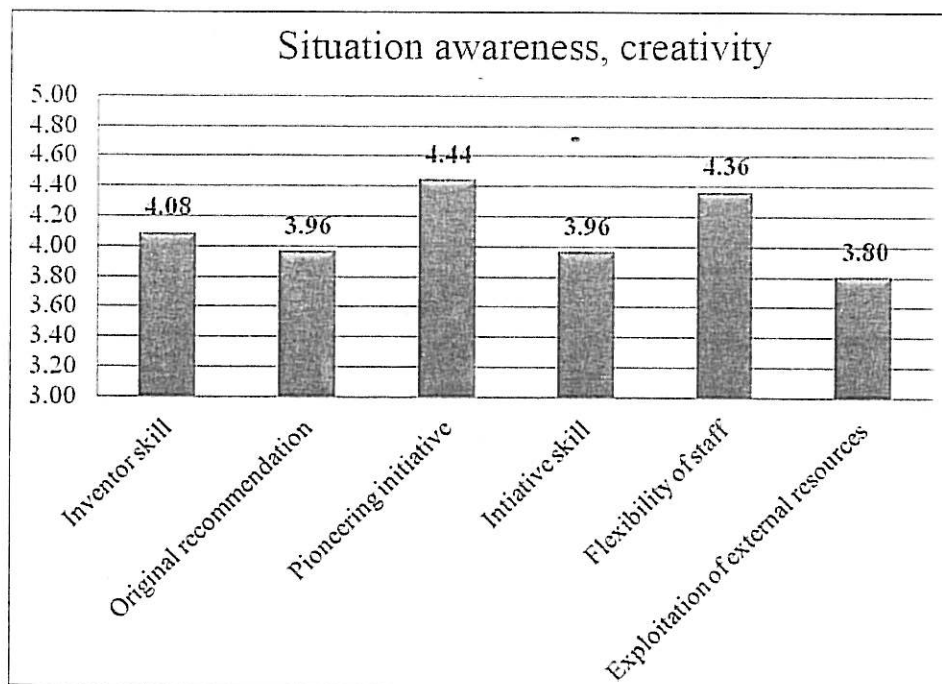


Fig. 4. In the questionnaire assessment of block 2 (Source: based on own database)

According to the self-completion questionnaire, moderators considered the focus on institutional objectives and clear guidance to be the most important (Fig. 3). It was assumed that objectives and guidance play an important role in achieving success and moderators also think that these are the key elements of successful work. Furthermore, guidance and feedback are also important in the leadership activities of moderators, as the tasks which are set have to be controlled constantly, while both the team members and the management have to be informed about each milestone. In our opinion, the reason why motivation is less preferred than other competencies is that the enterprise lays great emphasis on motivation even at the organisational level; therefore, they do not consider it to be necessary to motivate people separately during each partial task. Definite decisions were given the lowest value because the main basic decisions are made in the organisation's philosophy and objectives and the management (both the top management and the leadership by means of moderators) lays great emphasis on the clear communication of these decisions and on making them clear to employees. As a result, no strong enforcement of these decisions is necessary at a lower level.

According to the moderators who filled out the questionnaire, pioneer initiatives and invention skills are very important, which is not surprising, as the moderator training is also built on creativity, since the organisation represents continuous improvement in itself. Flexibility with workers is also very valuable in moderators' opinions. Flexibility is greatly dominant in the organisational structure and the division of la-

bour. Since workers practice flexibility at an organisational level during their daily work, moderators consider this skill on behalf of the leader to be an important ability with regard to the shaping and introduction of improvements (Fig. 4).

Moderators do not consider initiative skills at the institutional level to be really important, as it is beyond their competency. It follows from the operation of the organisation that suggestions, ideas and decisions related to the whole institution are made jointly with the American parent company. Moderators do not find it important to involve external resources into their improvements because their tasks focus exactly on exploiting the possible resources within the organisation and on reducing operational costs by means of improvements. The reason why moderators do not rate original decision-making to be important is that they grant everyone the chance to evolve their ideas during brainstorming sessions in addition to working in teams.

Of leadership competencies, moderators lay emphasis on the support of improvements, as the reason why they undertook moderator tasks was to make improvements happen. Consequently, moderators consider it to be very important to perform a realistic evaluation of their colleagues during improvement and also to acknowledge if they made a mistake and to take responsibility. This principle is present in a way that it influences the whole organisation (Fig. 5).

During their leadership activities, moderators think that they do not need to consider personal competencies when delegating tasks. It is assumed that they think like this because everyone works in the

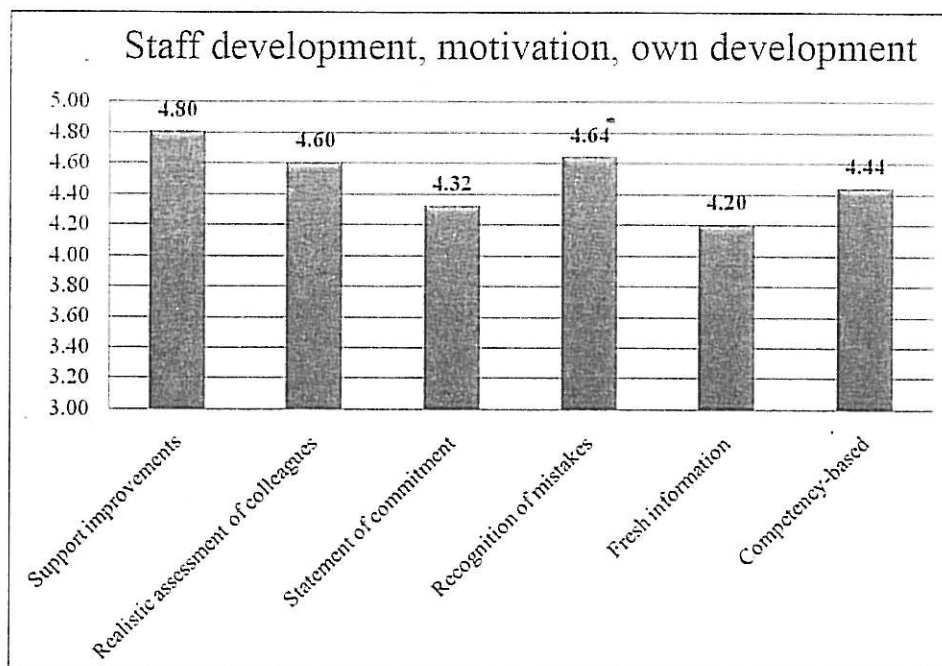


Fig. 5. In the questionnaire assessment of block 3 (Source: based on own database)

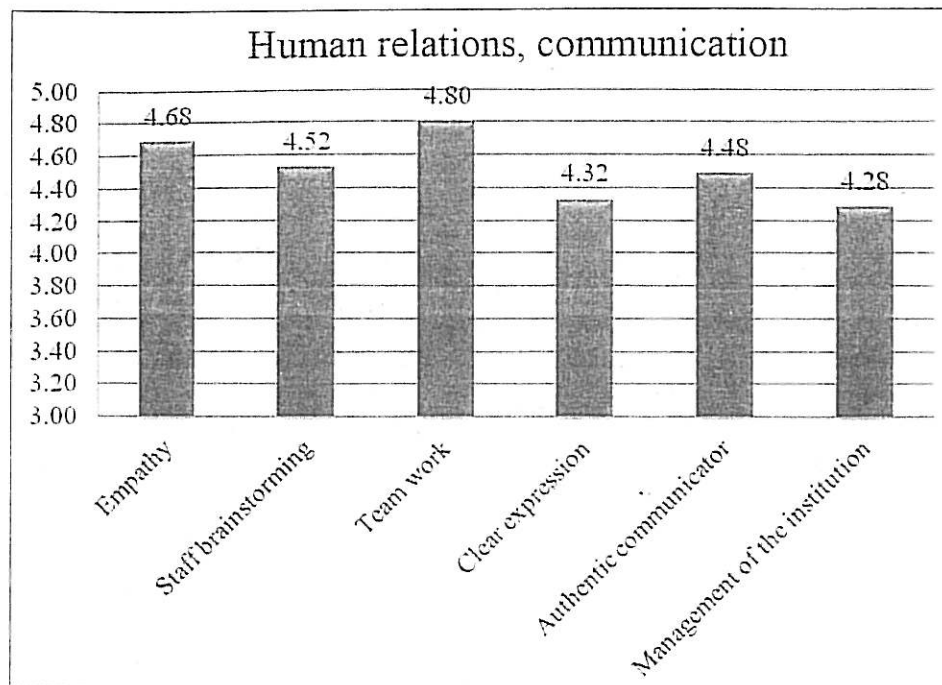


Fig. 6. In the questionnaire assessment of block 4 (Source: based on own database)

team in accordance with their own skills and they can provide opportunities and trust to the workers who need to improve certain competences.

Moderators gave low rating to acquiring fresh information regarding their work, because they are given all necessary information during the weekly kaizens. Furthermore, moderators delegate the task of gathering information among the team members and the obtained information is presented during the upcoming meeting. Moderators rated commitment and positive vibe to be the least important competency as

these are basic requirements on behalf of the enterprise; therefore, moderators do not attach high importance to them.

Of human relation competencies, moderators find teamwork to be the most important in moderator leadership, as it is the key element of implementing improvements. Empathy is also considered to be an important skill, since teamwork necessitates the ability of accepting other people (Fig. 6).

The reason why moderators rate the credible communicator role to be an important factor during their

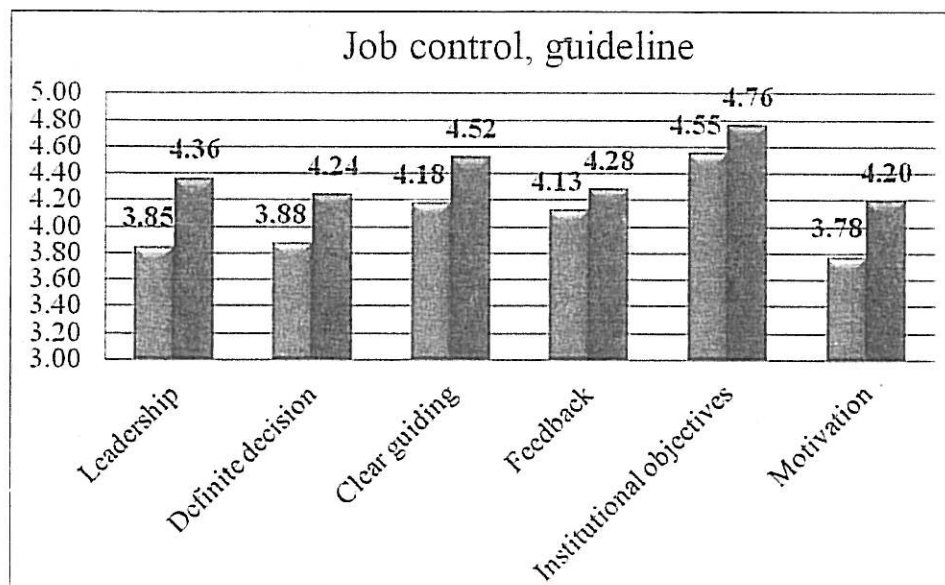


Fig. 7. In the questionnaire assessment of block 1 (Source: based on own database)

work is that professional experience and the ability of properly communicating this experience to members who, as a result, trust their leader are indispensable in leading a team. Employees' own ideas was also rated to be important, since teamwork is one of the fundamental tools which moderators also consider to be significant during self-assessment. The reason why moderators do not rate clear phraseology to be important is that this is a basic competency that is also a selection criterion when applying for a job in the organisation.

Moderators think that the management of the institution does not belong to their sphere of activity at all, neither does the arrangement of external relations, since these tasks are carried out by the top management of the organisation.

### Examination of leadership competencies based on the evaluation of team members taking part in kaizen

I repeated our research project in November 2012. The members of the teams led by the moderators also evaluated their leaders during a control survey. The survey was implemented by means of personal meetings. During the second survey, 50 questionnaires were filled out because there were team members who participated in more than one improvement.

We considered it to be important that the realisation of moderators' leadership competencies should not be examined only from the aspect of moderators. For this reason, by evaluating the opinions of the team members participating in kaizen, we could obtain more accurate and representative information on the necessary leadership competencies.

Task control and guidance were surveyed in the first block of the questionnaire (Fig. 7). Based on the questionnaire, team members rated institutional objectives and clear guidance to be the most important – similarly to the opinions of moderators. The focus on institutional objectives was given the highest rating due to the fact that the set objectives can be achieved by means of the improvements implemented during the Kaizens.

Clear guidance is indispensable during teamwork. Team members need to know the aim of Kaizen in which they participate, as well as the steps of improvement and their personal roles and tasks. A team can work coherently, successfully and accurately only if the guidance of the team leader is completely clear. In addition to everyone being aware of their tasks, efficient control is also important in order for moderators to make sure that members cooperate as a team. For this reason, team members rated the competency of control to be high.

Feedback was also given an especially high rating because team members need to be given information about meeting milestones. If they see that their work up to that point was successful, they remain motivated further on. Similarly to the opinions of the moderators, motivation was given the lowest rating in this block. Since motivation refers to the whole organisation, team members do not consider it necessary either.

In the block of situation awareness and creativity, team members evaluated pioneer engagement and initiation skills to be important leadership competencies (Fig. 8). These skills are necessary for team members because they want to contribute to improvements in which they can make initiatives and recommendations

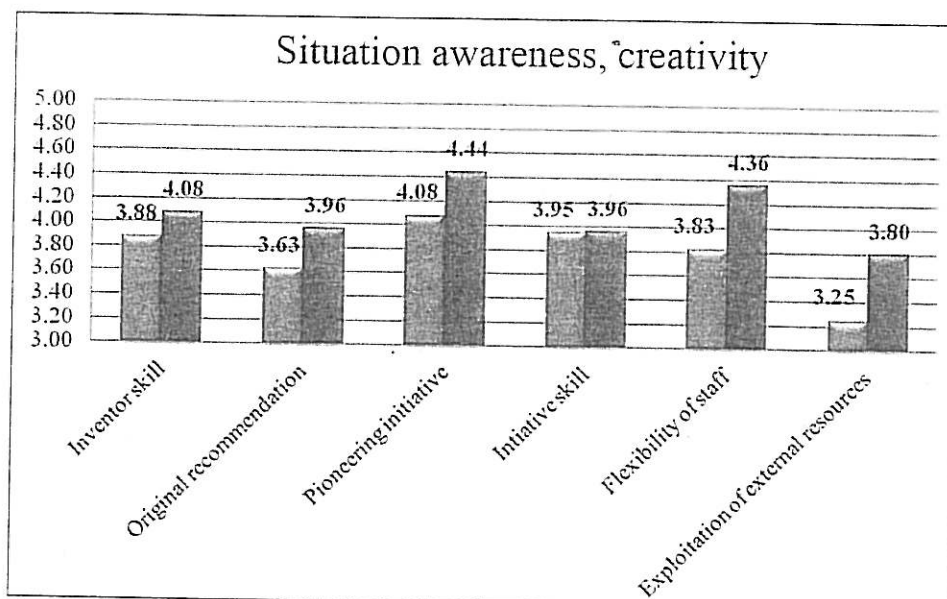


Fig. 8. In the questionnaire assessment of block 2 (Source: based on own database)

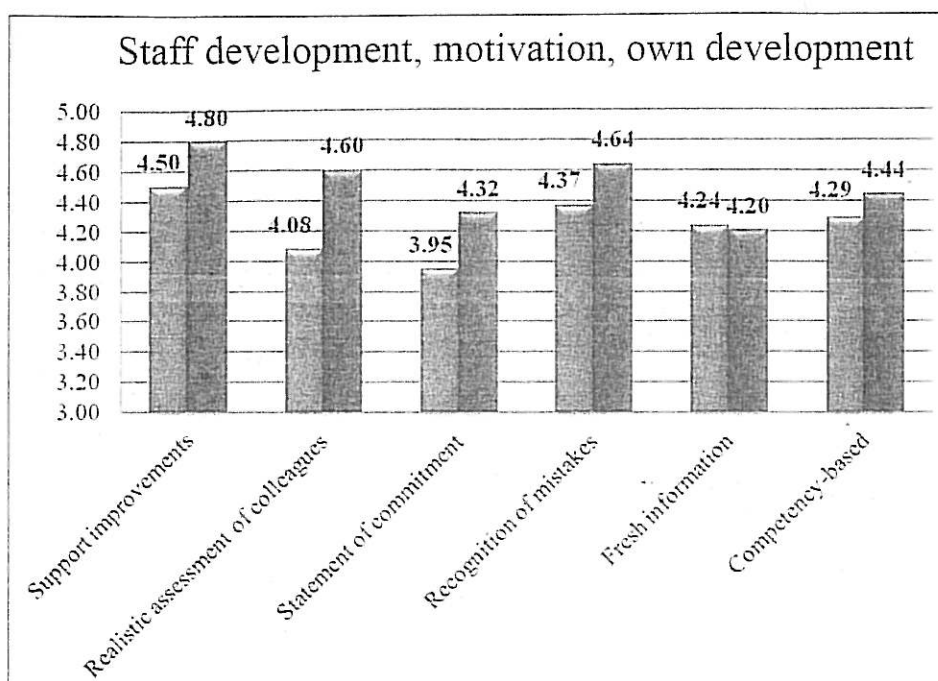


Fig. 9. In the questionnaire assessment of block 3 (Source: based on own database)

by re-thinking the processes, thereby imposing a positive impact on the whole institution.

Invention skills were also given a significantly high rating by team members. Several unexpected situations can occur during a Kaizen. It is an indispensable competency of the moderator or the team that they find the solution to these unexpected events by reacting as quickly as possible.

The team members also realised that flexibility during a Kaizen is an important leadership competency. Due to the previously described unexpected situations, it is indispensable for the moderator and, there-

fore, the whole team to be able to flexibly adapt to the circumstances, including new situations and teams.

Similarly to the opinions of the moderators, team members do not consider it to be important to use external resources, since the aim of Kaizens is to reduce operational costs by identifying resources within an organisation.

In the third block dealing with the competencies related to the improvement and motivation of workers, as well as workers' own improvement, team members rated the support of improvements to be the highest, as this was the reason why they engaged in the Kaizen

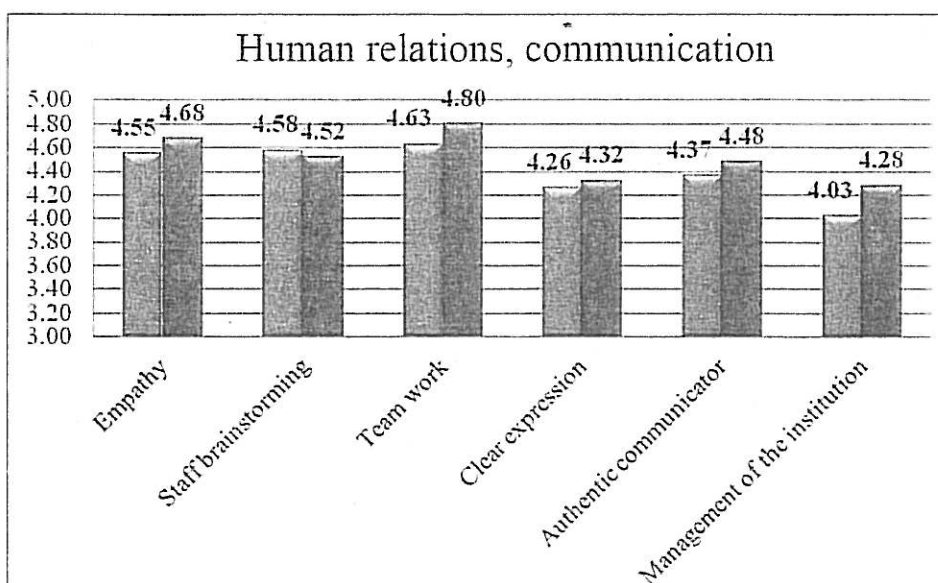


Fig. 10. In the questionnaire assessment of block 4 (Source: based on own database)

process in the first place (Fig. 9). They also consider it to be important to admit mistakes during teamwork, as it is the principle of the whole organisation that it is better if workers admit their mistakes, so that it can be corrected on time than to cause an even bigger damage.

Team members also considered competency-based tasking important, since they can only do their jobs successfully if the moderator considers their personal competencies during the delegation of tasks. They also find it necessary that the moderator pays utmost attention to obtaining fresh information related to their work, so that they can perform their tasks with success. This way they can be prepared and up-to-date which contributes to carrying out the improvement smoothly.

Team members rated realistic evaluation and expressing commitment to be the least important competencies, as these two characteristics are basic requirements on behalf of the enterprise. Therefore, they do not think that these competencies need to be emphasised during improvements.

In the human relations block, team members consider teamwork to be the most significant, since enterprises that follow the Lean philosophy implement their improvements with the help of their teams (Fig. 10). In addition, they also found it to be important that the moderator asks for their opinions, ideas and suggestions before making each decision, as it would make them an active part of the group.

From the aspect of team members, empathy is one of the indispensable competencies of the moderator. The reason why this skill is considered to be an important leadership competency is that if the modera-

tor is aware of the life situations of the team members, they can work together much more efficiently.

During improvements, team members consider it to be important that the moderator be a credible communicator and that they should convey their professional skills and experiences, thereby building trust in team members and help the progression of improvement. In addition, team members find it necessary that moderators express themselves logically and clearly either in words or in writing, so that misunderstandings can be avoided.

Similarly to moderators, team members rated the management of the institution to be of the lowest significance, since they also attach the related tasks to the top management.

## Conclusions, suggestions

### Conclusions

The outcome of these two surveys was presented in a figure in which the two leadership competencies that were given the highest rating were shown for each block (Fig. 11). It can be seen in the figure that even though the obtained results are different, moderators and team members consider the same leadership competencies to be important for a moderator.

Based on the obtained results, the conclusion to be drawn is that the leadership of moderators is built on participation in accordance with the preliminary surveys, as this leadership greatly focuses on the increasing of the productivity of workers, while they aim to achieve workers' individual and team objec-

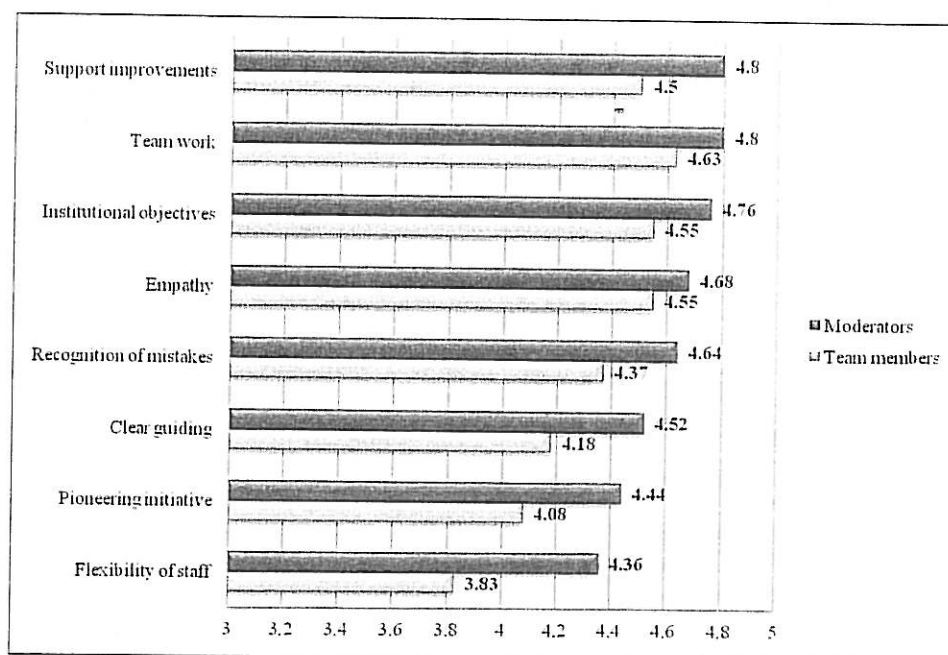


Fig. 11. Summary of results obtained in the research (Source: based on own database)

tives. The managers (or moderators in this case) who implement the form of participation-based leadership think the same way about the fact that employees and team members are able to adapt to different conditions and new situations better and more flexibly. Creativity and innovation are important elements of participation-based leadership as they provide several opportunities to implement ideas.

Teamwork has a significant role in this method as team members strive to achieve the set aim. This form of leadership focuses on conceptual difficulties. It follows from the theoretical overview of this study that moderators need to have conceptual skills. The role of moderators is the evaluation and diagnosis of complex situations; therefore, it is important that their conceptual skills are advanced.

It can be concluded that the theoretically assumed part and the existence of conceptual skills were realised by means of my research results. The most significant competencies obtained from the self-assessment of moderators are objectives, pioneer initiatives, guidance, flexibility, the support of improvements and teamwork. All of these skills form the basis or part of participation-based leadership. I concluded that participation-based leadership is one of the tools of Lean approach in expanding within the enterprise. One of the constituents of the Toyota model is the use of leadership principles which contribute to the successful introduction and operation of Lean which is presented in the roles of moderators in this case. Moderators represent constant improvement within the organisation which the organisation lays great emphasis on. The basis of the Kaizen activity is formed by moderators themselves, as it is their duty to study and improve the ongoing processes.

#### *Making suggestions*

Based on the obtained results, there are several opportunities to make improvements. Of these, workshops, manager trainings, educational programs and A-Z guide to Lean are successful solutions.

Workshops are suitable to shape culture and they make it possible to acquire new skills and methods. The concept of workshops is used in communication by means of meetings and also during events which conform to the content of its form. Workshops are conducted in workgroups established for the given topic and their activity refers to the interactive analysis of the problem, as well as working out recommended solutions mostly with the help of creative techniques.

Furthermore, workshops could provide leadership help, thereby contributing to the improvement of leadership competencies, conflict management, time management, as well as the development and improvement of leadership styles.

Freshly employed workers in the institution are provided basic Lean training. However, organised and continuous training would be needed in order to be able to work in a team and to get them know more than only the Lean tools and principles that they use during their job. This organised training program could help them get acquainted with the whole Lean approach and philosophy.

The A-Z guide to Lean would serve the purpose of making the workers of the organisation understand the main basic concepts, definitions and methods related to Lean in an easily understandable and descriptive way. I would suggest the introduction of a "Lean day" during which workers can further extend their Lean skills in a playful way and participants would also be presented more detailed descriptions of the improvement results achieved by the Kaizens.

#### **Summary**

The Lean philosophy in enterprises has been spreading at an increasing rate. The management plays an important role in introducing this philosophy and carrying out efficient operation. The management plays a key role in keeping and maintaining competitiveness in the economic crisis which became more severe in the 21st century. This is coupled with the fact that the management not only has a major influence, but it is also a part of the relation based on which customer demands and the requirements of the organisation are harmonised in a way that both parties achieve their goals. Both the leader and the organisation changes, develops and transforms while achieving these goals. These processes make it possible to quickly react to the changes of the environment, i.e., the maintenance of their competitiveness.

The Lean approach is not only a tool, but also a way of thinking and a type of behaviour in the life of an enterprise. This was another reason why we considered it to be important to examine how the elements of the Lean approach are realised in leadership activities and also how they acted on each other.

In addition to present Kaizen, the aim of our study was to examine the leadership competencies of moderators, as well as to find out which are the skills that are indispensable for successful operation. We wanted to find a link between leadership and the Lean approach that is clearly shown in the competency of moderators.

Our first conclusion was that the development of the Lean approach calls for participation-based leadership on behalf of moderators, as the outcome of the questionnaire survey showed that they prefer teamwork, the support of improvements, flexibility, guidance and objectives – all of which are also parts of participation-based leadership. This is the link between a

successful Lean approach and leadership, as the main task of leaders is to integrate the change into the Lean approach into the enterprise strategy, to communicate this change, to provide the resources needed for introduction, to support this change and also to perform regular supervisions. Lean is not only a simple set of tools, but a new way of thinking.

Our second conclusion was that participation-based leadership is implemented in Kaizen, where the goal of the organisation is to perform constant improvement with teams, which are led by moderators. The principle of the constant improvement of Lean is realised with Kaizens whose aim is to achieve excellence by developing an organisation where every worker believes that "good" is not good enough. For this reason, Kaizen focuses on constant development in terms of quality, costs and service.

## References

- [1] Egyed I. (2010), Az ideális lean szervezet legfontosabb ismérvei [The most important criterions of ideal lean organization]. <http://www.hrportal.hu/hr/az-idealis-lean-szervezet-legfontosabb-ismervei-20100519.html> (downloaded: 9 November 2012, 12:29)
- [2] Zeller Gy. (2001), Bevezetés a menedzsmentbe [Introduction to management]. Janus Pannonius Tudományegyetem, MH Humán Főcsoportfőnökség, Pécs, ISBN 963-482-127-8
- [3] Imre N. (2011), A szervezeti kultúra jelentősége a lean menedzsment bevezetésekor az egészségügy példáján [The importance of organizational culture of lean management introduction]. <http://lean.logisztika.hu/wp-content/uploads/ImreNoemi.pdf> (downloaded: 9 November 2012, 12:28)
- [4] Kaizen (2012–2014), <http://leaszotar.hu/page.php?92> (downloaded: 5 May 2014, 11:00)
- [5] Szűcs E. (2005), Minőségmenedzsment [Quality management]. Campus, Debrecen, ISBN963-86424-9-1