

IMPLEMENTATION OF LEAN MANAGEMENT CULTURE ELEMENTS IN UNIVERSITY MANAGEMENT

Marcin JAKUBIEC

University of Bielsko-Biala; mjakubiec@ubb.edu.pl, ORCID: 0000-0003-1874-1272

Purpose: The aim of the article was to analyze the implementation of Lean Management culture elements and to assess the degree of this implementation by public academic universities in Poland.

Design/methodology/approach: The research results presented in this article cover the period 2021-2025. The study was conducted at public academic universities in Poland, and the analysis of Lean Management culture elements was one of many topics addressed in the study. The study was conducted using a survey method.

Findings: Twenty elements of Lean Management culture were examined, grouped into four areas: strategic perspective, eliminating waste, human capital management, problem identification and solving. The varying degrees of implementation of individual elements of Lean culture were indicated.

Research limitations/implications: Limitations in the empirical part of the article may result from the number and content of Lean Management culture elements used in the analysis, as well as the scale of assessing their implementation. Every scientific study is burdened with researcher subjectivity, which, despite limitations, leads to research results and conclusions.

Practical implications: The key findings of this study are the elements of Lean Management culture that achieved the highest and lowest levels of implementation. The highest-rated elements included: university's openness to organizational, social, and technical changes, the freedom within the university and the space for discussion and individual opinions, and the appreciation of the role of partners and collaborators, which should translate into their broader involvement in university processes. The lowest levels of implementation were related to: employees are not integrated (loyal) with the university's vision, mission, and strategy, poor internal communication system and employees are not committed to the continuous improvement of the university.

Originality/value: The topic of implementing Lean Management culture elements at universities is still rarely addressed in research and academic publications. This article is another scholarly publication the author has undertaken on this topic. Universities, as organizations, should be focused on implementing modern improvement concepts, including Lean Management.

Keywords: Lean Management, university, organizational culture.

Category of the paper: Research paper.

1. Introduction

Lean management is a business strategy and not a toolset. Lean is the willingness on each hierarchical level to question one's own behavior, to learn from mistakes and to continuously develop new solutions towards waste-free processes. Lean stands for permanent customer-focused and value-adding thinking and acting (Höfer, Naeve, 2017, p. 64; Balzer, 2010; Sunder, 2016, pp. 159-178; Teichler, 2016, pp. 13-51).

All lean activities require high lean awareness of all participants (in the case of institutions of higher education: students, staff, professors, companies, and partners) as well as lean leadership (Liker, Convis, 2012, p. 13). Based on this, five factors for an organization to apply lean thinking in this environment can be defined: leadership and vision, management commitment and resources, linking lean to universities strategy, customer focus and selecting the right people. This list can be supplemented by lean culture and lean instruments. Lean culture is one of the key messages of the lean strategy. But this requires that individuals are able to recognize their own failures, to admit them, and to identify them as a potential area for improvement. To facilitate this, an essential task of lean leadership is to convince staff members that problems and mistakes are not considered as threats or as bad in general. Mistakes are chances to improve if we analyze their causes without blaming anybody, search for solutions, and implement them together (Höfer, Naeve, 2017, p. 76; Altbach, 2002, pp. 153-168; Carvalho, 2020; Thomas, Antony, Francis, Fisher, 2015, pp. 982-996; Tight, 2012; Yorkstone, 2016). The catalog of Lean instruments is very broad and encompasses concepts, systems, methods, techniques, and tools for quality management and improvement. The vast majority of Lean instruments used in enterprises can be applied to university projects, such as auditing, brainstorming, flowcharts, FMEA and QFD methods, value stream mapping, benchmarking, SWOT analysis, and 5Why. The catalog of Lean instruments is open and flexible. Individual instruments can be modified and adapted to the specific needs of the university. It is important that the use of instruments brings specific benefits to the university, whether in the form of identified causes of problems or solutions to a given issue. An important issue that should be clearly emphasized is the knowledge of Lean instruments among university management staff. Education, training, and the transfer of relevant knowledge are crucial in this regard (Jakubiec, 2017, 2021, pp. 115-116; Klochkov, Gazizulina, Ostapenko, 2020, pp. 445-460).

This article is a theoretical and empirical study of the topic. The successful implementation and functioning of the Lean Management concept depends on the degree of implementation of Lean culture elements at a university. Generally, Lean Management culture refers to the concept's assumptions, such as waste elimination and continuous improvement. However, it is important to note the connection between organizational culture, university organizational culture, and Lean Management culture. Analysis of this connection and characterization of the

above issues complete the theoretical aspect of the article. The empirical section includes a presentation of selected results of a broader study conducted by the author between 2021 and 2025 at public academic universities in Poland. This presentation assesses the degree of implementation of Lean culture elements at the universities studied.

2. Organizational culture and Lean Management culture – theoretical background

The concept of organizational culture stems from two perspectives in organizational and management theory (currently management and quality sciences). The first refers to the organizational environment and stems from an analysis of the influence of the national culture of specific communities on management. National culture is one of the determinants of an organization's specificity. In this sense, it defines general expectations for employees, for example, regarding loyalty. The second perspective refers to the behavioral school, which focuses on interpersonal processes and group dynamics within an organization. Organizational culture is treated as an internal factor of the organization (Aniszewska, 2003, pp. 17-20; Mann, 2015, pp. 3-5).

The above definitions of organizational culture provide a basis for defining the organizational culture of universities. Ł. Sułkowski attempted such a definition in his monograph entitled "Fuzje uczelni: Czy w szaleństwie jest metoda?". The following can be identified as components of the university's organizational culture (Sułkowski, 2017; Emiliani, 2015):

1. Cultural values, such as assumptions and social and organizational norms, constitute the core of culture, defining the university's identity, individual roles, and relationships with the environment. These components largely underpin the social norms that guide the behavior of university members.
2. Communication constitutes a crucial element in creating a university's organizational culture. Examples include verbal, informal descriptions of real or imaginative events from the university's history shared by employees.
3. University symbols constitute crucial cultural values, such as the university's name, logo, brand, authority insignia, banners, etc.
4. Metaphors, as another element in creating a university's organizational culture, define the university's essence and demonstrate how it is perceived by stakeholders (employees, students, doctoral candidates, and external entities).
5. Rituals and routines refer to established ways of operating within the university.
6. Customs are recurring social practices at a university.

7. Artifacts are manifestations of the functioning of organizational culture. These include: physical artifacts (space, infrastructure), behavioral artifacts (gestures, greetings, nonverbal communication), and linguistic artifacts (linguistic conventions, addressing in statements).
8. Subcultures are found within organizational culture. These are social groups with values that emerge that are inconsistent with the culture of the entire organization (often serving to meet individual needs).
9. Stereotypes refer to knowledge derived from experience and its application in similar situations related to identity, employee relationships, relationships with students or relationships with the environment.
10. Heroes are defined as important figures who have had a significant impact on the university and its culture, such as founders, rectors, and distinguished employees.
11. Taboos are topics or social activities that are hidden and not discussed, but are important to the university and are time-honored by tradition.

A university's organizational culture defines its functioning in scientific, educational, and administrative-organizational aspects. The literature on the subject and the practical operation of universities allow for the identification of model approaches in this regard. It is worth noting the models of university organizational culture developed by I. McNay and further developed by J. Jameson (Lacatus, 2013, p. 424; McNay, 1995; Jameson, 2011; Krdžalicia, Brguljab, Duraković, 2020, pp. 567-577.). These models include:

- the collegial model, which assumes, among other things, freedom and consensus in action,
- the bureaucratic model based on equality and a formal-rational management style,
- the corporate model based on loyalty and a political-tactical management style and
- the entrepreneurial model based on competencies and decentralized leadership.

The development of these models was based on various criteria, such as the role of university authorities, decision-making centers, management styles, adaptation to the environment, student/doctoral student status, and administrative subservience. This definition of university organizational culture undoubtedly contributes to the research and development of a Lean Management culture within university structures.

The issue of examining Lean Management culture as an organizational culture is multidimensional. This stems, among other things, from the essence of the Lean Management concept and the shift in thinking about university management. Lean Management establishes organizational culture as a concept that can be implemented at universities, following the adoption of a process orientation in which university employees play a central role, and as a concept in which the primary goals are quality, efficiency, and flexibility. It should be added that the factors determining the success or failure of implementing the concept are the culture of the organization – the university – and the culture of the community in which the university

operates (Parkes, 2014, pp. 123-124; Meek, Teichler, Kearney, 2009; Puvanasvaran, Megat, Tang, Muhamad, Hamouda, 2009, pp. 930-943).

J. Maciąg in the publication "Kultura Lean Management w polskich szkołach wyższych (wyniki badań pilotażowych)" attempted to define the Lean Management culture as a type of organizational culture, indicating the following approaches in this respect:

1. Philosophical approach. It is based on the essence of the concept that postulates lean operation, that is, improving operational efficiency by eliminating waste, minimizing it, and controlling the flow of added value. According to this approach, Lean Management culture can be defined as an applied philosophy of action, the essence of which is the quality of relationships between people, shared behaviors, and work culture.
2. Approach based on the components of Lean Management culture. According to this approach, the culture in question can be defined on several levels. These are: basic assumptions, values, and artifacts. Basic assumptions refer to the norms and principles as well as the methods, techniques, and tools for implementing Lean Management. Values derive from the Lean Management philosophy and include attitudes, beliefs, and thinking focused on value creation and waste elimination. Artifacts are defined as linguistic, behavioral, and physical artifacts, which may originate from national culture.
3. Normative approach. This approach constructs principles and norms of behavior of organization members, as well as techniques and tools for their implementation. An example are J.K. Liker's principles, presented in the work entitled "The Toyota Way: 14 Management Principles of the World's Leading Manufacturing Company" (Liker, 2005).
4. Psychological approach. In this approach, the central role is played by the individual – the university employee. The employee's attitude toward change and the need to eliminate/change employee habits and customs are emphasized. Motivation is also important.

The theoretical characterization and empirical analysis of the culture of this concept were based on the model of Lean Management culture dimensions described by J.K. Liker in his publication "The Toyota Way: 14 Management Principles of the World's Leading Manufacturing Company" (Liker, 2005). The dimensions of Lean Management culture include (Liker, 2005, pp. 29-34; Aguirre, Pérez-Domínguez, Luviano-Cruz, Noriega, Gómez, Callejas-Cuervo, 2020, pp. 2-12):

1. Overall concept (long-range thinking). Basing management decisions on a long-range concept, even at the expense of short-term financial results.
2. Process (eliminating waste). This dimension emphasizes the principles of:
 - creating a continuous and seamless problem-revealing system,
 - utilizing pull systems to avoid waste,

- balancing the workload,
 - stopping work when a quality issue occurs,
 - standardizing tasks to ensure continuous improvement,
 - using reliable, proven technology,
 - using visual control to ensure no problems remain hidden.
3. People and partners (respect, challenging, nurturing). In this dimension, the principles are:
- nurturing leaders,
 - respecting people, nurturing their development, and challenging them,
 - respecting partners, challenging them, and helping them.
4. Problem-solving (continuous improvement and learning), which is based on the principles of:
- continuous learning through Kaizen,
 - personal commitment to improvement,
 - decision-making through consensus and careful consideration of all options,
 - rapid implementation of decisions.

The above dimensions of Lean Management culture were described and expanded upon by the statements in question for the purposes of the empirical section. For the research process, 20 selected elements of Lean Management culture were distinguished, tailored to the specificity of the university.

3. Implementation of Lean Management culture elements – research results

From 2021 to 2025, the author conducted research on the use and implementation of Lean Management at public universities in Poland. The research included, among other things, an analysis of barriers, waste, and improvement in university management systems, an assessment of knowledge and use of Lean Management tools, and the subject of this article: the implementation of Lean Management culture elements. The article refers to a fragment of this research that has not been published to date.

Table 1 presents the most important assumptions of the presented study results.

Table 1.*Assumptions of the research*

Items	Description
Research goal	Assesses the degree of implementation of Lean culture elements at the universities studied
Research method	Quantitative research - survey study
The interviewees	The Rector and other managers of public academic universities in Poland. The survey questionnaire was received by 60 universities, the return rate was 80%
Date of realization	Period 2021-2025

Source: personal elaboration.

As part of the study, twenty elements constituting the Lean Management culture were analyzed based on the Lean Management culture dimensions model described by Liker (as previously mentioned). These elements include:

1. Strategic Perspective:
 - 1.1. Employees know and support a single, common vision for managing and improving the university.
 - 1.2. Employees participate in building the university's vision, mission, and strategy.
 - 1.3. Employees know the university's vision, mission, and strategy.
 - 1.4. Employees are integrated (loyal) with the university's vision, mission, and strategy.
 - 1.5. Employees feel responsible for their actions.
2. Eliminating waste:
 - 2.1. Sources of waste are identified on an ongoing basis and appropriate corrective actions are taken.
 - 2.2. Processes and their implementation are clearly described.
 - 2.3. Quality is a priority in all activities.
 - 2.4. Detected errors and irregularities result in the interruption of processes and activities.
 - 2.5. The communication system is informal, fast, and effective.
3. Human Capital Management:
 - 3.1. Superiors and leaders are role models through their commitment to managing and improving the university in line with the strategic concept.
 - 3.2. Relationships with superiors are partnership-based, informal, and based on trust and authority.
 - 3.3. The university is open to organizational, social, and technical changes, treating them as opportunities for development.
 - 3.4. The university provides space for discussion about changes and challenges.
 - 3.5. Partners and collaborators are treated as part of the university.
4. Problem Identification and Solving:
 - 4.1. Problems are identified on an ongoing basis by employees, and ways to solve them are indicated.
 - 4.2. Problem resolution is preceded by a thorough analysis.

- 4.3. Superiors and leaders are personally involved in resolving the problem at the point of origin.
- 4.4. All employees are committed to the continuous improvement of the university.
- 4.5. The results of audits and inspections form the basis for the continuous improvement of processes and activities at the university.

The graphs below (1 and 2) refer to the assessment of the degree of implementation of selected elements of Lean Management culture at the surveyed universities.

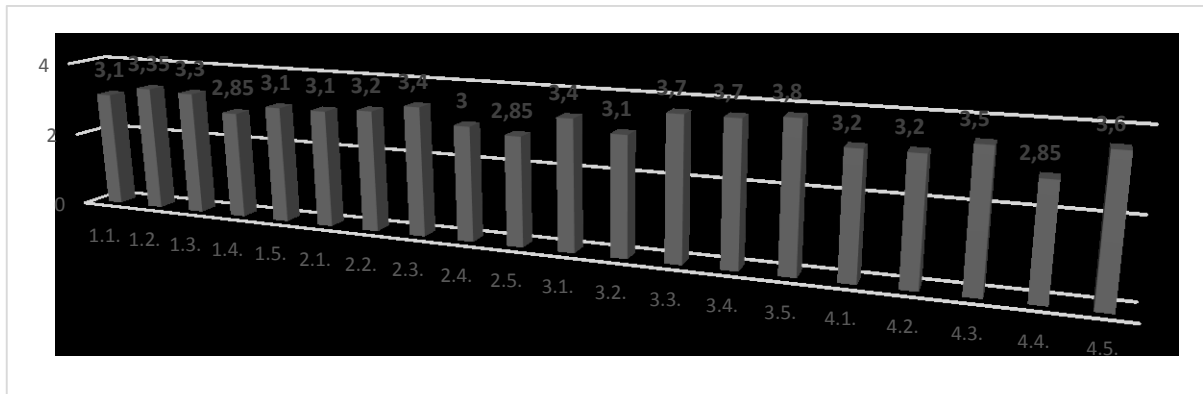


Figure 1. Implementation of selected elements of Lean culture – universities in total.

Source: personal elaboration.

The average degree of implementation for all Lean Management culture elements examined from all fully completed surveys was 3.27. Accepting a threshold of 3.0, which should be considered sufficient, shows that most of the assessed elements exceeded this level. From an empirical point of view, this is not a satisfactory situation. It would be if the score for Lean Management culture elements significantly exceeded 4.0. In such a case, a high degree of implementation of individual Lean Management culture elements would allow for its practical development at the university.

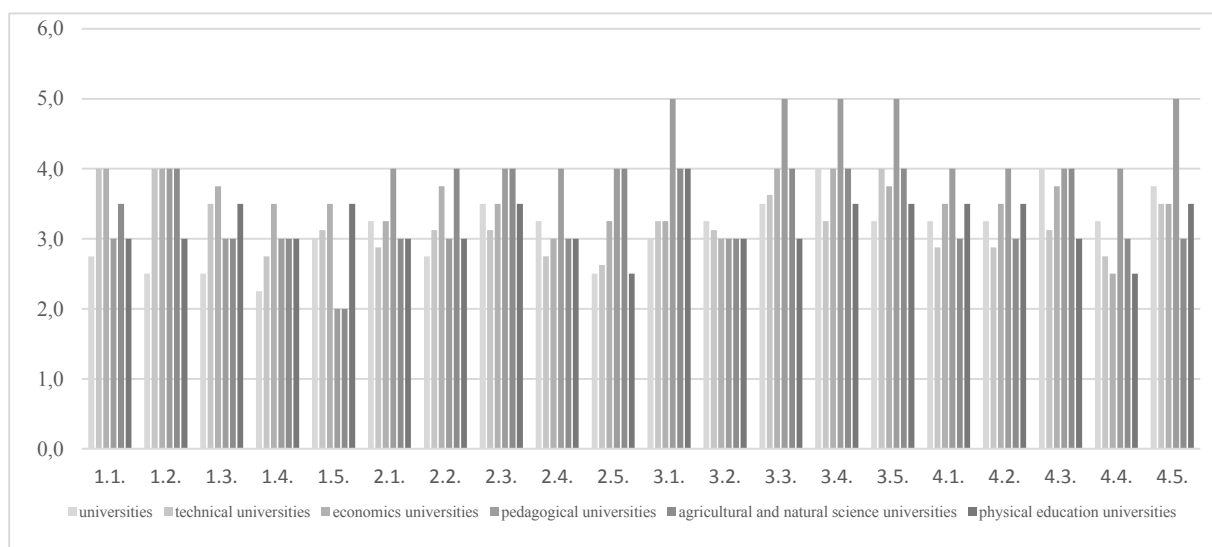


Figure 2. Implementation of selected elements of Lean culture – types of universities.

Source: personal elaboration.

The highest-rated elements of Lean Management culture included those related to the university's openness to organizational, social, and technical changes, the freedom within the university and the space for discussion and individual opinions, and the appreciation of the role of partners and collaborators, which should translate into their broader involvement in university processes. Elements related to improvement are also important, and here, the importance of internal audit as a tool for improving university processes and activities, quality as a priority in university operations, and the role of university management, personally engaging in problem-solving and establishing role models through involvement in university management and improvement, were highlighted. Building a Lean Management culture also involves active employee participation in developing the university's strategy, shaping its vision and mission, as well as engaging in problem-solving, identifying sources of waste, and taking improvement actions.

Analysis of the research results allowed us to identify elements of Lean Management culture that were rated below the accepted threshold. Although universities strive to actively involve employees in developing their strategy, vision, and mission, this is not entirely successful. This raises the issue of employee identification with the university and building a bond with it. Education and emphasizing the role and responsibility of each university employee are undoubtedly helpful in this regard. The communication system should also be improved, which should translate into better employee integration with the university and greater involvement in improving processes and services.

The possibilities for further and broader use of Lean Management principles and its instruments at the surveyed universities depend on the awareness and need for broadly understood improvement of the university management system, processes, and services. It is crucial to continuously assess emerging problems and barriers in university management that create waste, identify the waste itself, and develop improvement methods in response to these, using specific Lean Management instruments. Greater implementation of Lean Management culture elements stemming from its assumptions, such as the process approach and appreciation of the role of human capital, is also essential.

It is also recommended that university management staff receive more training in modern management and improvement concepts and systems, taking into account the different levels of education and the scientific disciplines represented. This will raise awareness among many people about the existence and potential use of concepts such as Lean Management.

4. Summary

The presented research results regarding the elements of a Lean Management culture suggest that human capital is a significant factor in its development. The elements assessed in the study, although they related to the degree of their implementation, also reflected a certain image of the university's internal organization.

The university's organizational culture is not directly focused on adopting concepts such as Lean Management. Therefore, the role of broadly understood education among all employees should be emphasized. Projects, integration, joint ventures, and teamwork create the foundation for creating a Lean Management culture at the university. Despite certain weaknesses that may result from the adopted method of presenting Lean Management culture elements, further research in this area should be undertaken, perhaps expanded upon to include additional cultural elements, learning paradigms, and approaches used at foreign universities. These are the issues that indicate further areas for the author's research.

To some extent, the characteristics of Lean Management culture elements are included in university strategic documents, such as development strategies. This includes elements related to the mission and vision, the implementation of certain processes, communication, the university's openness to change, discussion, and manifestations of improvement. Therefore, it can be concluded that elements of Lean Management culture are, in a sense, implemented by universities, although they are not fully aware that they draw on this very concept. As noted above, these contributions are a starting point for further research in this area. The study may be repeated in due course to compare results and assess potential progress in implementing the Lean concept at universities. Other higher education institutions, such as state vocational schools, could also be included in the study.

References

1. Aguirre, P.A.G., Pérez-Domínguez, L., Luviano-Cruz, D., Noriega, J.J.S., Gómez, E.M., Callejas-Cuervo, M. (2020). PFDA-FMEA, An Integrated Method Improving FMEA Assessment in Product Design. *Journal of Applied Sciences*, 11, 1406, 2-12.
2. Altbach, P.G. (2002). Research and training in higher education: The state of the art. *Higher Education in Europe*, 27(2), 153-168.
3. Aniszewska, G. (2003). Geneza pojęcia „kultura organizacyjna”. *Przegląd Organizacji*, 10, 17-20.
4. Balzer, W.K. (2010). *Lean Higher Education*. New York: CRP Press.

5. Carvalho, J.D. (2020). The Role of Lean Training in Lean Implementation. *Production Planning and Control*, 3, <https://doi.org/10.1080/09537287.2020.1742376>
6. Emiliani, B. (2015). *Lean University: A Guide to Renewal and Prosperity*. Wethersfield, Conn.: The CLBM, LLC.
7. Höfer, S., Naeve, J. (2017). The application of Lean Management in higher education. *International Journal of Contemporary Management*, 4(16), 63-80.
8. Jakubiec, M. (2017). *Projakościowe zarządzanie przedsiębiorstwem*. Warszawa: Difin.
9. Jakubiec, M. (2021). *Lean Management na publicznych uczelniach akademickich*. Warszawa: PWE.
10. Jameson, J. (2011). *Changing Leadership Identities: The Role of Trust and Organizational Cultures in a Recessionary UK Higher Education Policy Context*. London: SRHE Higher Educational Policy Network.
11. Klochkov, Y.S., Gazizulina, A., Ostapenko, M. (2020). Improving the QFD Methodology. In: P.K. Kapur, O. Singh, S.K. Khatri, A.K. Verma (eds.), *Strategic System Assurance and Business Analytics. Asset Analytics Performance and Safety Management* (pp. 445-460). Singapore: Springer.
12. Krdžalicia, A., Brguljab, A., Duraković, B. (2020). Implementation of Lean Practices in a Higher Education Institution's Student Affairs Office: A Case Study from a Bosnian University. *International Journal on Advanced Science, Engineering and Information Technology*, 10(2), 567-577.
13. Lacatus, M.L. (2013). Organizational Culture in Contemporary University. *Procedia – Social and Behavioral Sciences*, no. 76, p. 424.
14. Liker, J.K. (2005). *Droga Toyoty. 14 zasad zarządzania wiodącej firmy produkcyjnej świata*. Warszawa: MT Biznes.
15. Liker, J.K., Convis, G.L. (2012). *The Toyota Way to Lean Leadership*. New York: McGraw-Hill.
16. Maciąg, J. (2018). Kultura Lean Management w polskich szkołach wyższych (wyniki badań pilotażowych). *Nauka i Szkolnictwo Wyższe*, 1(51), 69-95.
17. Mann, D. (2015). *Creating a Lean Culture. Tools to Sustain Lean Conversion*. Boca Raton: CRC Press.
18. McNay, I. (1995). Universities Going International: Choices, Cautions and Conditions. In: P. Blok (ed.), *Policy and Policy Implementation in Internationalization of Higher Education*. Amsterdam: EAIE.
19. Meek, V.L., Teichler, U., Kearney, M.L. (eds.) (2009). *Higher Education, Research, Innovation: Changing Dynamics*. Kassel: International Centre for Higher Education Research.
20. Parkes, A. (2014). Systemowe podejście do organizacji. *Przedsiębiorczość i Zarządzanie*, no. 6, pp. 119-130.

21. Puvanasvaran, P., Megat, M.H., Tang, S.H., Muhamad, M.R., Hamouda, A.M. (2009). Lean Behavior in Implementing Lean Process Management. *Journal of Applied Sciences Research*, 5(8), 930-943.
22. Sułkowski, Ł. (2017). *Fuzje uczelni: Czy w szaleństwie jest metoda?* Warszawa: PWN.
23. Sunder, V.M. (2016). Lean Six Sigma in Higher Education Institutions. *International Journal of Quality and Service Sciences*, vol. 8, iss. 2, 159-178.
24. Teichler, U. (2016). Badania szkolnictwa wyższego w Europie. *Nauka i Szkolnictwo Wyższe*, 1(47), 13-51.
25. Thomas, A.J., Antony, J., Francis, M., Fisher, R. (2015). A Comparative Study of Lean Implementation in Higher and Further Education Institutions in the UK. *International Journal of Quality & Reliability Management*, 32(9), 982-996.
26. Tight, M. (2012). *Researching higher education*. Maidenhead: Open University Press – McGraw-Hill Education.
27. Yorkstone, S. (2016). Lean Universities. In: T. Netland, D. Powell (eds.), *The Routledge Companion to Lean Management*. Abingdon: Routledge.