SILESIAN UNIVERSITY OF TECHNOLOGY PUBLISHING HOUSE

SCIENTIFIC PAPERS OF SILESIAN UNIVERSITY OF TECHNOLOGY 2023
ORGANIZATION AND MANAGEMENT SERIES NO. 176

AGILE PROJECT TEAM MANAGEMENT IN THE SMALL AND MEDIUM-SIZED ENTERPRISE SECTOR – EMPIRICAL RESEARCH

Katarzyna BRENDZEL

Politechnika Częstochowska; katarzyna.brendzel@pcz.pl, ORCID: 0000-0003-1654-7046

Purpose: The project approach is often used to implement projects in enterprises. Traditional project management becomes insufficient due to the changing environment and the need for flexible functioning of the organization. Hence, agility in management gains recognition. The article presents the results of the study, the purpose of which was to determine whether the assumptions of agile management are known and used in project management and to identify factors that sustain the involvement of project team members.
Design/methodology/approach: The presented empirical research was carried out using the quantitative and qualitative methods. Techniques of expert interviews were used, and in the case of quantitative research - a questionnaire. The use of two research techniques was aimed at obtaining a broad view of the project management methods used, with particular emphasis on the conditions of the working environment of agile project teams. Enterprises from the small and medium-sized enterprise sector were invited to the study, the main variable in the selection of entities for the research sample was the location by region, i.e. the northern subregion of the Silesian Voivodeship, and cooperation with the Częstochowa University of Technology for the commercialization of knowledge in the region. The latter condition made it possible to include enterprises that implement projects.
Findings: Research has shown knowledge of the assumptions of agile management among small and medium-sized enterprises, but less than half of the surveyed experts use this methodology in managing project teams. According to experts, the main condition for implementing agile management is a "good", i.e. primarily a self-organizing project team. Its members are required to have appropriate skills and competences, such as self-discipline or independence in making decisions. The research also identified work conditions that keep members of agile project teams engaged. They are strongly related to the intrinsic motivation of employees. On this basis, it can be concluded that the agile approach in shaping work conditions is stimulating to stimulate the expected behavior of employees.
Originality/value: The article draws attention to the rarely discussed issue of implementing project management in small and medium-sized enterprises. The conditions for implementing agility in project team management were emphasized, among which the most important is the right selection of employees. They should have appropriate skills and competences, as well as an internal motivation system, which agile management methodologies will stimulate the activity and involvement of project team members.

Keywords: project, project management, agile management, project team.

Category of the paper: research paper.

1. Introduction

Looking from the perspective of the entire enterprise, the definition of agility may be the ability to prosper in a competitive environment characterized by constant and unpredictable changes in customer expectations, or in other words, a way to "adaptively and flexibly manage the enterprise in a dynamic and constantly changing business environment" (Sherehiy, Karwowski, Layer, 2007). From the systemic perspective, agility defines the feature of a "production system with specific capabilities and capabilities (soft and hard techniques, people management, qualified management staff, information flow) that is able to meet the changing needs of the market (speed, flexibility, customers, competition, suppliers, infrastructure reactivity)" (Yusuf, Sarhadi, Gunaserkaran, 1999, p. 36).

The year 1991 is considered to be the moment when the concept of agile management was created. This is related to the establishment of the Lehigh Agility Forum by the Iacocca Institute and the publication of the report: 21st Century Manufacturing Enterprise Strategy (Ramesh, Devadasan, 2007, p. 183). The "agility" of management appeared as a response to the observation that changes in the environment precede adaptation changes in the organization (Hormozi, 2009, p. 13), and thus, the benefits from the use of opportunities are limited. An additional aspect is the fact that the concept of agile management is considered in opposition to Japanese companies using "lean" management. This involves the interpretation of key objectives. In the case of the Lean concept, the elimination of waste comes to the fore (Pichler, Schulze, 2005, pp. 371-373). "Agile" management focuses on flexibility in relation to the recipients' requirements and the use of opportunities (Krishnamurthy, Yauch, 2007, p. 588). Enterprises strive for effective use of knowledge and competences, treated as key resources. Thanks to this, it becomes possible to enter emerging markets or take a leading position in mature markets. Companies operating in accordance with the Agile concept are already successfully competing in many cases with traditional concerns (Yang, Liu, 2012a). We are even talking about a new paradigm of the enterprise (Trzcieliński, 2011, pp. 5-6).

Agility identified with a certain feature of project teams, projects or even entire organizations has become a kind of fashion and operating philosophy in various types of design companies, both from the software development industry and from other areas of activity, such as production, logistics or services. The business environment of enterprises is subject to constant changes, which means that enterprises are constantly looking for new ways to increase their effectiveness and productivity, while striving to reduce waste. This pursuit, supplemented with a process of continuous observation, learning from mistakes, adaptations and focusing on people and the individual within project teams, has become an integral part of the agile approach - as a response to the needs, challenges and problems of modern project management caused by the above-mentioned changes in the environment (Beck et al., 2001). The above observations have become a reason to consider the use of agile project management in small and medium-

sized enterprises, which more and more often implement innovative, complex projects. The article presents the results of research aimed at determining whether the assumptions of agile management are used in project management and identifying the conditions of the project team's work that are related to the agile management methodology.

2. Agility in project management - literature review

The concept of agility is widely used in project management, where traditional paradigms are based on long-term planning, a high level of detail, including the description of the final effect (Highsmith, 2004). Critics challenge this approach due to the high level of standardization and the inflexibility of project management norms. The consequence is unsuccessful attempts to create detailed requirements or the project life cycle, which often differs from the real needs. At the testing stage, the plans turn out to be ineffective or fail to meet the expectations of the end customer.

The heterogeneity of defining the agility of the project management methodology and its assessment is forced by the variety of ways to implement the agile approach in project management and the constantly growing group of agile methodologies. E.C. Conforto et al. (2016) drew attention to the lack of consistency, completeness and clarity of the definition of agility, and at the same time pointed to key implications for the theory and practice of project management. Namely; agility should be understood in the context of team performance and results; agility as a performance may depend on a combination of factors related to the organization, the project team and the project itself; the level of agility performance can be measured in the context of two main factors of change in the speed of project planning and the degree of customer involvement (Sharp, Ryan, 2008).

Design responsibility may reflect the ability of a broadly understood project to respond effectively to a changing environment, manifested by the adaptability of the dynamics that exist in the needs of stakeholders, technological changes and other needs resulting from the specificity of a given project (Mafakheri, Nasiri, Mousavi et al., 2008). The response to continuous and unpredictable changes in the environment requires estimation of the scope of adaptability of projects to changes in the form of an assessment of certain parameters, such as: the dynamics of change, the size of the project team, communication, approach to testing, the level of expertise of project team members, organizational culture and many others (Dove, 2001; Mafakheri et al., 2008).

Project agility, and thus the success of the entire project, is influenced by factors present both in the project itself (e.g. team empowerment, team size, budget, size, duration and importance of the project) and in the project environment (e.g. organizational culture, form of contracts and contracts with the client, training), and to assess this impact, both objective

criteria (time, budget, scope, quality) and subjective criteria (product usability, customer satisfaction, project team satisfaction) can be used (Sheffield, Lemetayer, 2013). This is an interesting approach to the discussed issues, because it allows you to look at project agility and its complexity from the perspective of the entire project, and at the same time shows how important and how much influence the project team has on this agility. This is an important contribution to the creation of this article.

3. Project team agility

The project team is an organizational unit, established on the basis of subject specialization, implementing the project under the direct supervision of the project manager (Bosschers, Boutelegier, Dierick, 2003). J. Katzenbach and D. Smith define a project team as a small number of people with complementary skills, involved in the implementation of a common general goal and partial goals, whose approach is based on shared responsibility (2001, p. 260). In the paradigm of modern, agile project management, an agile team is "a temporary group of people willing to take risks, entrepreneurial, with clearly defined leadership, boundaries, empowerment, competencies, structure, manageability and motivation, people who have been matched together to create a new product or services with a high risk of complexity and critical importance" (Rico, 2018).

Project teams are looking for a creative way to solve problems that cannot be solved centrally (Schwaber, 2004). They are committed to delivering business value to the client, and when given the necessary resources, they achieve broadly understood success. Thanks to regular inspection and adaptation sessions, these teams undergo a process of continuous learning and improvement, leading them to become masters in their profession.

Team agility is its behavior or specific ability to flexibly, easily and quickly adapt to expected or unexpected changes, the shortest possible response time to market needs, the use of the most economical and simple quality assessment tools in a dynamically changing environment and the use of constantly updated knowledge and experiences from both the internal and external environment (Qumer, Henderson-Sellers, 2008a).

The agility of the project team is strongly related to psychological and behavioral aspects as well as to the development and maturity level of the group, which is often manifested by: increased job satisfaction, the need for situational leadership, the need for direct communication and a shared physical workplace, submission to the discipline of agile project management (the need to participate in regularly repeated activities such as team planning), overt aspects of group development and the personality of members of agile project teams (hiring people who fit such a work culture) (Gren, Torkar, Feldt, 2017). The above-mentioned aspects allow to better define the essence of an agile project team by assessing the condition, needs and behavior

of employees by: assessing the degree of maturity and implementation of various team cooperation practices, assessing the impact of direct and open communication on knowledge sharing mechanisms in the team, honest feedback addressed to managers and an assessment of other overt aspects affecting group development (Gren, Torkar, Feldt, 2017).

Values, principles and way of thinking that are important when implementing the agile approach in the organization of the project team's work can be indicated. According to the author, the key is: cooperation between business stakeholders and team members, which ensures the identification of customer needs and influences making effective decisions; customer satisfaction understood as frequent and early customer involvement in product development; communication - especially informal and related to gathering the team in one physical space. Agility is strongly correlated with self-discipline and self-organization of the team. Internally motivated, decision-makers, responsible for their own product, communicative, sharing ideas and knowledge, employees are ideal members of an agile project team. According to the author, agility in project management is conducive to maintaining the involvement of team members at a sufficiently high level. Therefore, the project team must be properly managed and, consequently, certain conditions must be ensured that will foster the development of agility in the team's operation.

4. Research methodology

A review of the literature on the subject indicates that agile management methodologies are a response to rapid economic growth, turbulence of the environment and an attempt to meet the expectations of customers and competition (Sajdak, 2014, pp. 138-152). Changes in the labor market and in the economy mean that the agile approach to project management is gaining popularity.

The aim of the study was to determine whether the assumptions of agile management are known and used in project management and to identify factors that sustain the involvement of project team members. The presented empirical research was carried out using the quantitative and qualitative methods in the period from November 2022 to February 2023. Techniques of expert interviews were used (Konecki, 2000, pp. 169-190), and in the case of quantitative research - a questionnaire. The use of two research techniques was aimed at obtaining a broad view of the project management methods used, with particular emphasis on the conditions of the working environment of agile project teams.

Enterprises from the small and medium-sized enterprise sector were invited to the study, the main variable in the selection of entities for the research sample was the location by region, i.e. the northern subregion of the Silesian Voivodeship, and cooperation with the Częstochowa University of Technology for the commercialization of knowledge in the region. The latter

condition made it possible to include enterprises that implement projects. The quantitative research involved 70 respondents working in project teams on a daily basis, including 24 in agile teams. The survey was conducted via the interankiety.pl platform. The questionnaire consisted of closed questions with a 5-point Likert scale for the assessment of individual phenomena, as well as explanations of key concepts and details. On the other hand, 11 experts took part in the qualitative research, which made it possible to separate the factors resulting directly from the agile methodology from those that are not related to it. They were specialists who manage projects on a daily basis, including 5 of them using agile methodologies in project management.

The research was of a pilot nature. They allowed to determine whether there is a need to modify the online questionnaire in terms of its transparency and comprehensibility. Thanks to this, it will be possible to continue the research in the group of small medium-sized enterprises in the Silesian Voivodeship. In order to determine whether the assumptions of agile management are known and used in project management in small and medium-sized enterprises in the Częstochowa region, the following research questions were formulated:

RQ 1. Do enterprises manage projects using the assumptions of agile management?

RQ 2. Are there conditions for working in agile project teams that keep team members engaged?

To determine the conditions for the work of agile project teams that maintain commitment, the concepts of motivating employees were used the "5P" model by M. Sroka (2017, p. 7) (Kopertyńska, 2008, pp. 21-64; Czarniawska, 1990, p. 139; Krzysztofek, Kumańska, 2011, p. 48; Minnullina, Abdrazakov, Graboviy, 2018, pp. 383-402). On this basis, a list of work conditions was created (Table 1). Respondents were asked to select the 20 most important factors in their opinion, and then to rank the 10 most important factors in order from highest to lowest.

Table 1.
Project team work conditions

Financial conditions	
Salary	Financial rewards
Financing of training by the company	Bonuses
Profit share	Raises
Non-financial conditions	
Training and development	Benefits (insurance, multisport cards, vouchers)
Social benefits	Offer of trainings and courses
Medical care	Proposal to gain other experiences
Privileges (company car, company phone, discounts on services, products of business partners)	International contacts

Cont. table 1.

Intangible conditions		
Setting team goals Supporting the achievement of team goals Mobilization and support of the manager Relationship with your immediate supervisor Relationships with team members Communication Team atmosphere Ability to make independent decisions Trust Opportunity to develop your own skills Self-realization	Distinction Promotion opportunity Praise Technical comfort of work Interesting/varied work content A job that requires creativity Cooperation with competent people Access to information Flexible working time The way of organizing work Ability to work remotely Clear requirements	Feedback provided on an ongoing basis Ability to use your skills and competencies Possibility to perform more and more responsible tasks Ethical company activities The feeling of creating something of value Work-life balance Coaching/mentoring Low stress level

Source: based on Sroka, M. (2017). Współczesne metody motywowania do pracy w zespole projektowym. *Journal of Modern Management Process, No. 2(2),* pp. 36-45; Kopertyńska, M.W. (2008). *Motywowanie pracowników – teoria i praktyka*. Warszawa: Placet; Czarniawska, B. (1990). *Motywacyjne problemy zarządzania*. Warszawa: PWN; Krzysztofek, A., Kumańska, W. (2011). Wpływ motywowania pracowników na efektywność pracy w przedsiębiorstwie. *Studia i materiały Miscellanea Oeconomicae, No. 2*, pp. 41-52; Minnullina, A., Abdrazakov, R., Graboviy, P. (2018). Evaluation of the coaching effective-ness as an instrument for motivating company's employees. *MATEC Web of Conferences, Vol. 170*, pp. 383-402.

5. Results and discussion

The survey was attended by 70 employees representing companies from the sector of small and medium-sized enterprises, who deal with the implementation of projects on a daily basis. 34% of respondents are members of agile project teams. The results of quantitative research, in the first stage at the level of selection of the 20 most important conditions in the implementation of projects, indicated the advantage of the commonly known - remuneration and bonuses. Other conditions include: training and development, possibility of learning and development, team atmosphere, possibility of balancing private and professional life, flexible working time, possibility of promotion, convenient forms of work organization, possibility of performing more and more responsible tasks, work requiring creativity cash prizes, mobilization of the team leader, privileges (e.g. a company car or telephone), distinction, benefits, the ability to make independent decisions, cooperation with competent people, feedback provided on an ongoing basis and a sense of creating something valuable. The obtained results indicate that there are conditions for the work of a project team that are particularly important for agile team management. The data presented in the chart below (Fig. 1) shows that these are primarily intangible conditions - the opportunity to learn and develop, flexible working hours, the ability to perform increasingly responsible tasks and work that requires creativity. These conditions were rated much higher by members of agile project

teams. They can be assessed as maintaining commitment to the implementation of project tasks and limiting the monotony of work. Equally important for both groups of respondents were convenient forms of work organization and the balance between private and professional life.

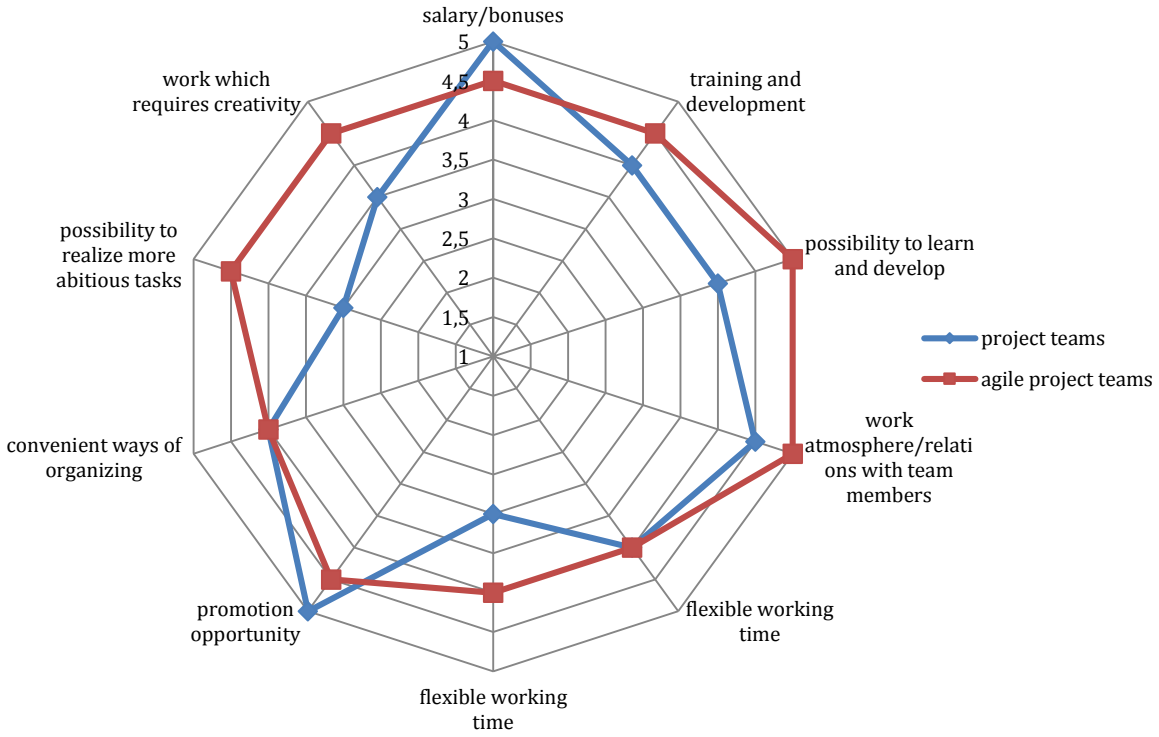

Figure 1. The most important conditions for the work of project teams.

Source: own research.

The results of the qualitative study showed that the agile project management methodology is widely known (nearly 91% of respondents), but only 5 out of 11 experts decided to implement it. The main reason was the resistance of project team members and the lack of appropriate skills and compeences of employees to work in an agile project team, including, above all, self-discipline. According to the respondents, the most important obstacle is the lack of employees' independence and developed methods of maintaining constant communication between team members.

As for the assessment of the working conditions of project teams, experts pointed out the differences between teams managed in a traditional and agile way. The respondents agreed that remuneration, bonuses and training are very important factors, but they do not result from agile methodologies. However, in terms of factors related to the methodology, experts pointed out that it is extremely important to show employees the goal, while constantly verifying where the team is today in relation to what it wants to achieve. That is why the agile methodology assumes frequent summarizing meetings, e.g. daily so-called Daily, as well as numerous meetings with the client, during which problems and needs are identified on an ongoing basis during the "life" of the project. According to experts, the opportunity to share your achievements, especially in the case of young employees, is valuable and encourages involvement. Regardless of the age of employees and experience, each team member has the right to express their own opinions

and ideas. Having the opportunity to present their opinion, all group members feel important. In addition, the methodology points to the joint responsibility of all project participants, which builds their commitment. Another important issue emphasized by experts is acting here and now, this applies to cooperation with the client, providing feedback, as well as planning. Cooperation with the client also causes a sense of creating things that are needed, which makes employees see the usefulness of the result of their actions. The list of factors indicated by the respondents during the expert interviews is presented in Table 2.

Table 2.
Conditions for the work of project teams related to the agile methodology - results of qualitative research

Conditions of work in agile project teams - experts' answers	
1	High frequency of presenting newly created project elements, and thus satisfaction with the achieved goal. Visible work result
2	Sense of purpose
3	Tasks that are challenging
4	Short-term Project
5	Supporting someone who will be the "good spirit" of the team
6	Independence - the team decides what tasks will be carried out
7	Managing your own area - the so-called empowerment
8	Opportunity to express one's own opinion - joint "ceremonies" (meetings) that make all team members feel important and have the opportunity to express themselves
9	Real feedback provided on an ongoing basis
10	Planning and acting on an ongoing basis - resulting from daily meetings
11	The usefulness of the final project/the feeling of creating things needed - the result of close and constant cooperation with the business

Source: own research.

6. Summary

In summary, the research showed knowledge of the assumptions of agile management, but less than half of the surveyed experts use this methodology and only 24% of respondents work in agile project teams. According to experts, the main condition for implementing agile management is a "good", i.e. primarily a self-organizing project team. Its members are required to have appropriate skills and competences, such as self-discipline or independence in making decisions. An important factor in working in an agile team is also constant communication between employees.

The research allowed to identify the key work conditions that sustain the involvement of members of agile project teams. They are strongly related to the intrinsic motivation of employees. On this basis, it can be concluded that the agile approach in shaping work conditions is stimulating to stimulate the expected behavior of employees. The obtained results indicate the need to continue research, taking into account the role of the project team leader. Requirements for members of an agile project team emphasize the importance of internal

motivation, and this entails its skillful shaping. It seems that the role of a manager boils down to eliminating barriers in the team's work, indicating ways of dealing with problems and focusing on business goals. The manager is supposed to be a support to effectively influence the behavior of people in the organization. The study was a pilot study, therefore its weakness is drawing conclusions based on a small sample, as well as examining opinions, not objective criteria. However, it gave hints and recommendations for further research in order to deepen the subject.

References

1. Beck, K., Cockburn, A., Jeffries, R., Highsmith, J. (2001). *Agile manifesto*. Retrieved from: http://www.agile manifesto.org, 15.04.2023.
2. Bosschers, E., Boutelegier, R., Dierick J. (2003). *Management Project*. Kraków: IFC Press.
3. Conforto, E.C., Salum, F., Amaral, D.C., da Silva, S.L., de Almeida, L.F.M. (2014). Can Agile Project Management Be Adopted by Industries Other than Software Development? *Project Management Journal, Vol. 45, No. 3,* pp. 21-34.
4. Czarniawska, B. (1990). *Motywacyjne problemy zarządzania*. Warszawa: PWN.
5. Dove, R. (2001). *Response Ability: The Language, Structure and Cultureof the Agile Enterprise.* Hoboken: Wiley.
6. Gren, L., Torkar, R., Feldt, R. (2017). Group development and group maturity when building agile teams; A qualitative and quantitative investigation at eight large companies. *The Journal of Systems and Software, Vol. 124, No. 2,* pp. 104-119.
7. Highsmith, J. (2004). *Agile project management: Creating innovative products.* Boston; Addison-Wesley.
8. Hormozi, A.M. (2009). Agile Manufacturing: the Next Logical Step. *Benchmarking, No. 8, 2.*
9. Katzenbach, J.R., Smith, D.L. (1993). *The Wisdom of Teams: Creating the High-performance Organization.* Brighton: Harvard Business School Press.
10. Konecki, K. (2000). *Studia z metodologii badań jakościowych. Teoria ugruntowana*. Warszawa: PWN.
11. Kopertyńska, M.W. (2008). *Motywowanie pracowników – teoria i praktyka*. Warszawa: Placet.
12. Krishnamurthy, R., Yauch, Ch.A. (2007). Leagile Manufacturing: a Proposed Corporate Infrastructure. *International Journal of Operations & Production Management, Vol. 27, No. 6.*
13. Krzysztofek, A., Kumańska, W. (2011). Wpływ motywowania pracowników na efektywność pracy w przedsiębiorstwie. *Studia i materiały Miscellanea Oeconomicae, No. 2*, pp. 41-52.

14. Mafakheri, F., Nasiri, F., Mousavi, M. (2008). Project agility assessment an integrated decision analysis approach. *Production Planning and Control, Vol. 19, No. 6,* pp. 567-576.
15. Minnullina, A., Abdrazakov, R., Graboviy, P. (2018). Evaluation of the coaching effectiveness as an instrument for motivating company's employees. *MATEC Web of Conferences, Vol. 170,* pp. 383-402.
16. Pichler, R., Schulze, S. (2005). Book Reviews: Agile Project Management: Creating Innovative Products by Jim Highsmith, and Agile Project Management with Scrum by Ken Schwaber. *Journal of Product Innovation Management, Vol. 22, Iss. 4,* pp. 369-376.
17. Qumer, A., Henderson-Sellers, B. (2008). An evaluation of the degree of agility in six agile methods and its applicability for method engineering. *Information and Software Technology, Vol. 50, No. 4,* pp. 280-295.
18. Ramesh, G., Devadasan, S.R. (2007), Literature Review on the Agile Manufacturing Criteria. *Journal of Manufacturing Technology Management, Vol. 18, No. 2*.
19. Rico, D.F. (2018). *Dave's Lean and Agile Webpage.* Retrieved from: http://davidfrico.com, 8.04.2023.
20. Sajdak, M. (2014). Zwinność w odpowiedzi współczesnych przedsiębiorstw na nowe wyzwania otoczenia. *Studia Oeconomica Posnaniensia, Vol. 2, No. 11(272),* pp. 138-152.
21. Schwaber, K. (2004). *Agile Project Management with Scrum.* Redmond: Microsoft Press.
22. Sharp, J.H., Ryan, S.D. (2008). *A Preliminary Conceptual Model for Exploring Global Agile Teams.* Lecture Notes in Business Information Processing: Proceedings of 9th International Conference Agile Processes in Software Engineering and Extreme Programming. London: Springer-Verlag, pp. 147-160.
23. Sheffield, J., Lemetayer, J. (2013). Factors associated with the software development agility of successful projects. *International Journal of Project Management, Vol. 31, No. 3,* pp. 459-472.
24. Sherehiy, B., Karwowski, W, Layer, J.K. (2007). A review of enterprise agility. Concepts, frameworks and attributes. *International Journal of Industrial Ergonomics, Vol. 37, No. 5,* pp. 445-460.
25. Sroka, M. (2017). Współczesne metody motywowania do pracy w zespole projektowym. *Journal of Modern Management Process, No. 2(2),* pp. 36-45.
26. Trzcieliński, S. (2011). *Przedsiębiorstwo zwinne*. Poznań: Wydawnictwo Politechniki Poznańskiej.
27. Yang, Ch., Liu, H.M. (2012). *Organizational Agility*, PMI's Pulse of the Profession In Debth Report. Retrieved from: http://www.pmi.org//media/pmi/documents/public/pdf/white-papers/org-agility-where-speed-meets-strategy.pdf, 26.02.2023.
28. Yusuf, Y., Sarhadi, M., Gunaserkaran, A. (1999). Agile manufacturing: the drives, concepts and attributes. *International Journal of Industrial Ergonomics, Vol. 62, No. 1-2,* pp. 33-43.