**Dragan Lončar***
dragan.loncar@ekof.bg.ac.rs

**Filip Stojanović***
filip.stojanovic@ekof.bg.ac.rs

**Marta Knežević***
martaknezevic99@gmail.com

# CONSEQUENCES OF THE COVID-19 PANDEMIC ON THE APPLICATION OF AGILE METHODOLOGY IN PROJECT MANAGEMENT IN IT ENTERPRISES IN SERBIA

**Abstract:** It is estimated that 70% of all projects in modern market conditions require an agile approach to project management, and only 20% refer to traditional project management, while the remaining 10% demand extreme project management models. Agile project management focuses on human resources instead of processes, striving for greater stakeholders' involvement and giving freedom to project team members to solve problems independently and make flexible decisions. In the post-pandemic period, the priority role of the project manager becomes communication and project risk management, rather than cost and time management within the set plan.

Following the previously explained phenomena, the objectives of the research are to present the importance of the agile approach in post-pandemic conditions, to define the desired set of characteristics of the project manager and project team members necessary for quality implementation of project tasks, to consider the intensity of agile approach and the level of project risks. The data for the realization of earlier mentioned goals will be collected through primary research via semi-structured questionnaires and interviews with project managers and members of project teams in the IT industry in Serbia. The principles of the semi-quantitative dynamic methodology of cognitive maps (Fuzzy Cognitive Mapping) are applied to define the initial parameters and variables that will be part of the questionnaire and interview. The results will be described through a unique cognitive map and the outcomes of simulations of the impact of changes in particular parameters on other model parameters.

**KEY WORDS:** AGILE PROJECT MANAGEMENT, FUZZY COGNITIVE MAPPING, PROJECT PERFORMANCE

**JEL CLASSIFICATION:** M15, G32

* Faculty of Economics and Business, University of Belgrade, Serbia

## INTRODUCTION

Companies face challenges from the environment on a day-to-day basis, from which arises the imperative of flexibility in the development of business processes. The organisations' response to the demands of the internal and external environment implies a suitable approach to project management. The pandemic of the COVID-19 virus has significantly changed the business conditions of organisations worldwide, putting pressure on managers to find adequate solutions for the smooth running of business. In the post-pandemic period, the priority role of the project manager becomes communication and project risk management, and in the described conditions, agile project management appears as a response to the changes prompted by the pandemic. Focusing on human resources, greater involvement of interest groups and the freedom of project team members to independently solve problems and make decisions flexibly, the agile approach in project management is an appropriate tool in the managers' hands to solve the post-pandemic environment problems.

Agile project management originated in the IT sphere, where its application is still most pronounced today. Companies operating in the IT industry face frequently-changing client requirements and changes from the wider external environment that also affect the level of project risk. In addition to the technical competencies necessary for the realization of the project, the project manager, as well as the members of the project team, must possess other soft skills to ensure client satisfaction.

It can be concluded that the success of a project in the IT industry is influenced by a large number of factors. Bearing in mind the changes that occurred in the world of project management with the outbreak of the pandemic, there is a need to identify the desirable character traits of the project manager and project team members, analyze the impact of the inclusion of interest groups on the success of the project and examine the relationship between the application of an agile approach in project management and the level of project risk. The described need comes to the fore even more if it is taken into account that there is still no research dealing with this issue in Serbia.

## AGILE MANAGEMENT AS THE BASIS OF THE POST-PANDEMIC PARADIGM IN PROJECT MANAGEMENT

Project management has undergone significant changes in recent decades, primarily due to the rapid development of technology that has enabled the use of different tools in project management. However, apart from the technological aspect, there have been changes in the paradigm of project management so that the so-called soft paradigm is strengthened - which is related to qualitative research techniques, interpretive epistemology and emphasizes learning and inclusion - in the relationship to the hard, where the focus is on the positivist theory of knowledge, deductive reasoning, objectivity, efficiency, and control.[1] As the modern business environment is characterized by growing uncertainty, project management had to adapt to new conditions. Traditional project management, which is based on mechanical, non-dynamic, linear structures[2] and is characterized by a focus on the end result and a top-down approach[3], over time, became replaced with a new method.[4] In such context, agile management was also developed, in response to the challenges arising from technological progress but also the complication of market demands while shortening the time for performing the process.

The agile methodology arose from an evolutionary approach to software development, and according to the Project Management Institute (PMI), it is a new way of running an organisation based on iterative and incremental approaches.[5] Thus, agile methodology starts from the fact that the project process is not linear in successive phases, as is the assumption of the so-called "waterfall" methodology. Instead, the agile approach uses multiple iterations to achieve the desired result, thus enabling the project team to respond quickly to changing customer requirements.[6] Essentially, agile project management refers to managing the impact of complexity

[1] Pollack, J. (2007), The changing paradigms of project management. *International Journal of Project Management*, 25(3), 266–274.

[2] Saynisch, M. (2010), Mastering complexity and changes in projects, economy, and society via project management second order (PM-2). *Project Managegement Journal* 41, 4–20.

[3] PMI. (2012), *PMI: a guide to the project management body of knowledge (PMBOK guide).* Newtown Square, Pennsylvania: Project Management Institute, Inc.

[4] Bergmann, T., and Karwowski, W. (2018), Agile Project Management and Project Success: A Literature Review. *Advances in Human Factors, Business Management and Society*, 405–414.

[5] Fewell, J. (2009), *Growing PMI® Using Agile*. 2009 Agile Conference, 356-360. p:357

[6] Thesing, T., Feldmann, C., & Burchardt, M. (2021), Agile versus Waterfall Project Management: Decision Model for Selecting the Appropriate Approach to a Project. *Procedia Computer Science*, 181, 746–756, p. 747; Wysocki, R. (2014), Effective Project Management – Traditional, Agile, Extreme, 7. Auflage, Indianapolis 2014, p. 404

and uncertainty on a project, recognizing the need for a significantly shorter period between planning and execution, simplifying planning, and affirming creativity and continuous learning to understand the environment and client needs better.[7] It is estimated that in modern market conditions as much as 70% of all projects fall under the projects with characteristics that require the implementation of an agile approach to project management, and only 20% refer to traditional project management, while the remaining 10% require extreme project management models.[8]

The arrival of the agile approach marked the improvement of the traditional project management approach in terms of adaptation to the modern business environment. While traditional project management places customer feedback and testing in the last phase of the project life cycle, the agile approach implies the client involvement in all phases of the project with the argument of more effective recognition of product defects and a better understanding of the client's requirements.[9] Agile project management suggests the adoption of collaborative leadership by managers, as opposed to the command-and-control style that dominates the traditional approach.[10] Communication is another category where the agile approach has an advantage over the traditional one. Although conventional project management recognizes the importance of transparent and regular communication, it does not precisely define the activities and tools used to achieve it, while the agile approach suggests concrete ways to improve communication.[11] From the aforesaid, it can be understood why this approach is recognized as an adequate response to the challenges of project management in post-pandemic conditions. Namely, the agile approach implementation has enabled companies to be more resistant to crises such as the current pandemic.

[7] Dybå, T., Dingsøyr, T., & Moe, N. B. (2014), Agile Project Management. Software Project Management in a Changing World, 277–300, p. 281

[8] Wysocki, R. K. (2011), *Effective project management: traditional, agile, extreme*, John Wiley & Sons, p. 50

[9] Awad, M. A. (2005), A comparison between agile and traditional software development methodologies. *University of Western Australia*, *30*, 1-69, p. 23

[10] Salameh, H. (2014), What, when, why, and how? A comparison between agile project management and traditional project management methods, *International Journal of Business and Management Review*, *2*(5), 52-74, p. 68

[11] *Ibid*.

Challenges in innovation processes have encouraged the development of agile methodologies for both project management and software development.[12] The application of the agile approach is supported by using specific methodologies, among which Scrum, Kanban and Extreme Programming are the most frequently used.[13] Some authors point out that Scrum is not a methodology but a working framework and can be understood as a series of rules and procedures based on agile principles of software development.[14] Scrum starts from the fact that changes are inevitable during the project and that the client's requirements and project goals change over time and work according to iterative and incremental development.[15] Another well-known methodology is Kanban, where the focus is on workflow visualization. The essence is prioritizing work in progress, and the main advantages are greater flexibility in planning, faster turnaround, clear goals and transparency, and it is not surprising that it is estimated that as many as 43% of companies use Kanban as one of the project management frameworks.[16] Finally, Extreme Programming (XP) can be explained as a methodology based on planning and iterative software development. It emphasizes teamwork; managers, customers and developers are all equal partners in a collaborative team,[17] and it is suitable for small teams of developers to achieve higher software quality and improve productivity.[18]

[12] Tura, N., Hannola, L., & Pynnönen, M. (2017), Agile methods for boosting the commercialization process of new technology, *International Journal of Innovation and Technology Management*, *14*(03), 1-23, p. 1

[13] Saleh, S. M., Huq, S. M., & Rahman, M. A. (2019), Comparative study within Scrum, Kanban, XP focused on their practices, In *2019 International Conference on Electrical, Computer and Communication Engineering (ECCE)*, 1-6, p.1

[14] Lastrić, I., Radić, G., & Avramović, Z. Ž. (2015), „Scrum" radni okvir u agilnoj metodologiji razvoja softvera. *VII Međunarodni naučno-stručni skup ITeO*, 77-83, p. 77

[15] Zayat, W., & Senvar, O. (2020), Framework study for agile software development via scrum and Kanban, *International journal of innovation and technology management*, *17*(04), 1-24, p. 2

[16] Đumić, M. (2021), Analiza primene agilnog pristupa projektnom menadžmentu u savremenom poslovanju, *Zbornik radova Fakulteta tehničkih nauka u Novom Sadu*, *36*(12), 2161-2164, p. 2164

[17] Tonin, G. S., Goldman, A., Seaman, C., & Pina, D. (2017, May). Effects of technical debt awareness: A classroom study. In *International Conference on Agile Software Development*, 84-100, p. 85

[18] Matharu, G. S., Mishra, A., Singh, H., & Upadhyay, P. (2015), Empirical study of agile software development methodologies: A comparative analysis, *ACM SIGSOFT Software Engineering Notes*, *40*(1), 1-6, p. 3

## LITERATURE REVIEW

The agile approach is recognized as suitable for project management in changing business conditions, both by practitioners and researchers. Highsmith and Cockburn point out that agile methods are a way to reduce the cost of change during a project.[19] The authors, together with fifteen other people, signed the Agile Manifesto in 2001. The Manifesto defines the basic principles of the agile methodology, and the four core values are: 1) people and interactions above processes and tools; 2) software that works above extensive documentation; 3) cooperation with the client above contractual arrangements, and 4) reaction to changes above adherence to the plan.[20]

In the context of the importance of involving stakeholders in the project, the relevant literature shows that the success of a project is interpreted significantly differently by different stakeholders. Nelson (2005) states that project managers tend to define success according to time, budget and scope, while top managers assess success more often according to the impact on business results.[21] Davis (2014) explains how senior management, the project team, and clients see project success, emphasizing that senior management primarily evaluates a project based on time invested, while the project team values the quality of communication and effectiveness in defining project goals, whereas the clients assess project success based on factors such as communication, time, the use of the final project product as well as the adherence to the budget framework.[22] Since the agile methodology stresses the client satisfaction, it is crucial to respect their perspective and understanding of project success. Client involvement and their satisfaction are the focus of agile methodology. In this context, the growing importance of the qualities and soft skills of the project manager and members of the project team is emphasized. El-Sabaa (2001) points out that a project manager should possess skills such as the ability to mobilize the intellectual and emotional energy of his subordinates, communication skills, adaptability skills, the ability to delegate the authority, the ability to understand the politics, and the ability

[19] Highsmith, J., & Cockburn, A. (2001), Agile software development: the business of innovation. Computer, 34(9), 120–127, p. 120

[20] AgileManifesto, Principi na kojima se zasniva Agilni Manifest, available at: https://agilemanifesto.org/iso/sr/principles.html, accessed: 16.06.2021.

[21] Nelson, R. (2005), Project retrospectives: Evaluating project success, failure, and everything in between. MIS Quarterly Executive, 4(3), 361–372. p. 362

[22] Davis, K. (2014), Different stakeholder groups and their perceptions of project success. International Journal of Project Management, 32(2), 189–201, pp. 198-199

to maintain high self-esteem and enthusiasm in front of his team members.[23] According to Rebeir et al. (2021), so-called soft skills can be classified according to the dimensions in which they are manifested in the skills of influence, communication, teamwork, emotional, contextual, managerial, and cognitive skills.[24] Indeed, hard skills, which are changing today in favor of knowledge, time, cost, quality, communication, and risk management, should not be overlooked. Also, Industry 4.0 projects require a comprehensive understanding of cyber-physical systems, as well as experience with innovative technologies and projects, big-data analysis, and predictive algorithms to help them manage projects properly and focus on the goals to be achieved.[25]

In addition to significant changes in the market, the COVID-19 pandemic surprised the world, forcing companies to change the way they work quickly. In the context of project management, Koch and Shermuli point out that team leaders faced the time of having to leave more time for team members to do their jobs, which led to communication having to be reorganised, including a more precise selection of agile tools and practices. The skills of project managers came to the fore again, especially in the form of leadership skills.[26] At the same time, it is imperative to further improve the agile methodology.

As a consequence of the pandemic, the practice and theory of agile project management are evolving simultaneously. In terms of practice, Miller and Klein point out that changes pervade all levels of project management - that they are present at the individual, project, portfolio, as well as organisation level, as a need for new ways of working, new leadership approaches, need for turning to a contingent approach, and as an increase in the importance of results that are tangible and can be implemented. On the other hand, when it comes to the development of theory, the focus is on management and leadership through technology respecting global risks, and on coordination and cooperation to create greater resilience, the conceptualization of global phenomena, and on new research processes to integrate

[23] El-Sabaa, S. (2001), The skills and career path of an effective project manager. International Journal of Project Management 19 (1) pp. 1–7; from: Awan, M.H., Ahmed, K., Zulqarnain, W. (2015), Impact of Project Manager's Soft Leadership Skills on Project Success. Journal of Poverty, Investment and Development; 8: 27-46, p. 31

[24] Ribeiro, A., Amaral, A., & Barros, T. (2021), Project Manager Competencies in the context of the Industry 4.0. *Procedia Computer Science*, 181, 803–810, p. 807

[25] *Ibid.*

[26] Koch, J., & Schermuly, C. C. (2021), Managing the Crisis: How COVID-19 Demands Interact with Agile Project Management in Predicting Employee Exhaustion. *British Journal of Management*. 1-19, p. 15

new techniques and methodologies.[27] According to data published by the Project Management Institute, the pandemic pushed people's knowledge and competencies to the fore and positively impacted development of business transformation projects.[28]

## METHODOLOGY

Besides the development of agile management, the pandemic has also accelerated the process of adopting digital technologies in companies for several years. This change reflects in the digitization of the company's relationship with customers, the supply chain, as well as internal procedures.[29] The number of companies operating in the information and communication technology sector and their turnover have significantly increased in Serbia during the past three years. In 2021, the export of services in information and communication amounted to nearly 1.5 billion euros, exceeding the value of exports in the agricultural sector. In addition, the IT services market in Serbia is growing at a rate higher than 10%.[30] Bearing the above in mind, it is clear that this is a rapidly developing area, and it is believed that this trend will continue in the future. Consequently, the sector of information and communication technologies deserves additional attention from the theoretical aspect. Moreover, the agile management has developed in IT sector, which explains why this sector was chosen for analysis.

In accordance with the above, the subject of the research will be the investigation of the consequences of the COVID-19 pandemic on the application of the agile methodology in project management in IT companies in Serbia. According to the stated research subject, the following goals can be distinguished:

- presenting the importance of an agile approach in post-pandemic conditions,
- defining a desirable set of character traits of the project manager and members of the project team that are necessary for the quality implementation of project tasks,

[27] Müller, R., & Klein, G. (2020), The COVID-19 Pandemic and Project Management Research. *Project Management Journal*, 51(6), pp: 579–581.

[28] https://www.pmi.org/chapters/luxembourg/stay-current/newsletter/positive-impact-of-the-covid-19-crisis--on-project-management#

[29] https://www.mckinsey.com/business-functions/strategy-and-corporate-finance/our-insights/how-covid-19-has-pushed-companies-over-the-technology-tipping-point-and-transformed-business-forever

[30] Narodna banka Srbije (2022). *Makroekonomska kretanja u Srbiji*. Beograd: Narodna banka Srbije.

- assessing the intensity of the influence of the involvement of interest groups on the project results, and
- looking at the relationship between the application of the agile approach and the level of project risks.

Through the implementation of the stated goals, a better understanding of the changed business conditions in the post-pandemic period is achieved for IT companies that apply an agile approach. The research questions on which the work is based are:

- How does an agile approach help the business of IT companies in post-pandemic conditions?
- What are the character traits of the project manager and project team members necessary for the quality implementation of project tasks in post-pandemic business conditions?
- Does increasing the level of involvement of interest groups improve project results?
- Does the application of an agile approach reduce project risks?

Necessary data for the realization of the aforementioned goals is collected through primary research through semi-structured questionnaires and interviews with project managers and members of project teams in the IT industry in Serbia. Data were collected during the period February - June 2022. For the purposes of the research, a sample of 30 IT companies was used. The population is defined by the industry classification code 6201 - Computer programming, under which 15,751 active companies in the Republic of Serbia are registered. The listed companies are ranked according to their total revenue in the year 2021. From the mentioned population, 35 companies were selected using a random sample method, where the eliminative condition for the company to be included in the sample was the application of an agile approach in project management.

To define the initial parameters and variables, which are an integral part of the questionnaire and interview, the results of the previously mentioned research were used as a starting point. The set of initial variables was then expanded based on the results obtained from the processed surveys. A Likert scale ranging from -2 to +2 was used to finally define the intensity and direction of influence of the defined variables. The processing of the collected data was addressed through the principles of semi-quantitative dynamic methodology of cognitive maps. The results are defined

through a unique cognitive map and the results of simulations of the impact of changes in certain parameters on other parameters of the model.

The dynamic methodology of cognitive maps (Fuzzy Cognitive Mapping - FCM) is an extension of the cognitive maps, which enables solving real complex problems in decision-making. Combining neural networks and dynamic logic principles, these cognitive maps create hybrid intelligent systems.[31] This methodology can be used to discover areas of consensus between stakeholders and identify potential conflicts of interest among stakeholders early on.[32] By applying methods developed in the neural networks field, FCM can calculate the mutual influence of factors through multiple iterations. When the network is stabilized, the results show trends within the system, and there is also the possibility to run simulations and calculate the outcome of possible scenarios.[33] Software such as FCM Expert, Mental Modeler, JFCM and others are used today to create, learn and simulate through FCM. For the purposes of this paper, FCM Expert was used. [34]

[31] Case, D. M., Stylios, C. D., (2016), Fuzzy Cognitive Map to model project management problems, *2016 Annual Conference of the North American Fuzzy Information Processing Society* (NAFIPS), p. 2

[32] Gan, X.-L., Chang, R.-D., Langston, C., & Wen, T., (2019), Exploring the interactions among factors impeding the diffusion of prefabricated building technologies, *Engineering, Construction and Architectural Management*, 26(3), 535–553, p. 535

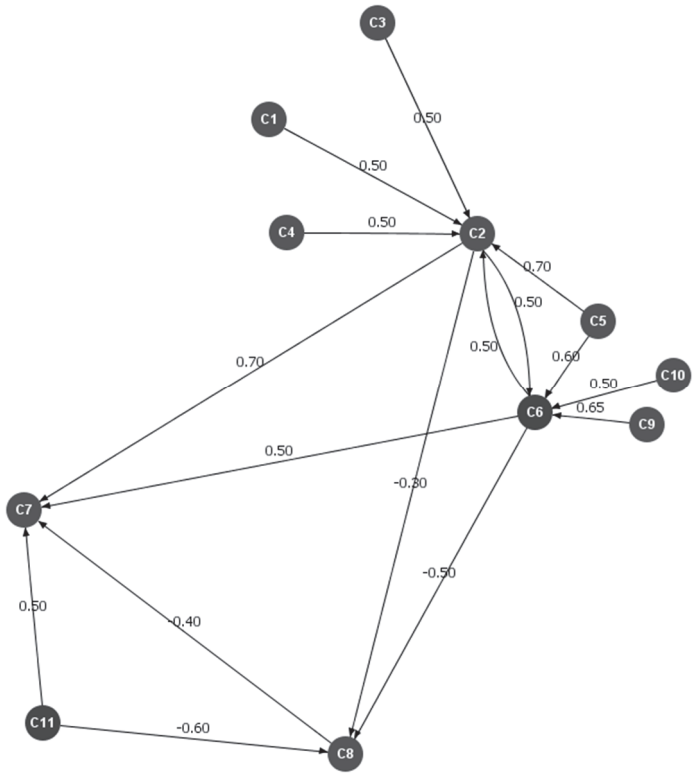
[33] Aguilar, J., (2005), A survey about fuzzy cognitive maps papers. *International journal of computational cognition*, 3(2), 27-33, p. 28

[34] For further information about software implementation, see: Nápoles, G., Espinosa, M. L., Grau, I., & Vanhoof, K. (2018), FCM Expert: Software Tool for Scenario Analysis and Pattern Classification Based on Fuzzy Cognitive Maps, *International Journal on Artificial Intelligence Tools*, 27(07), 1-25

## RESULTS AND DISCUSSION

Based on the collected results, the following fuzzy cognitive map was defined:

**Figure 1:** Fuzzy Cognitive Map describing the relationships between parameters

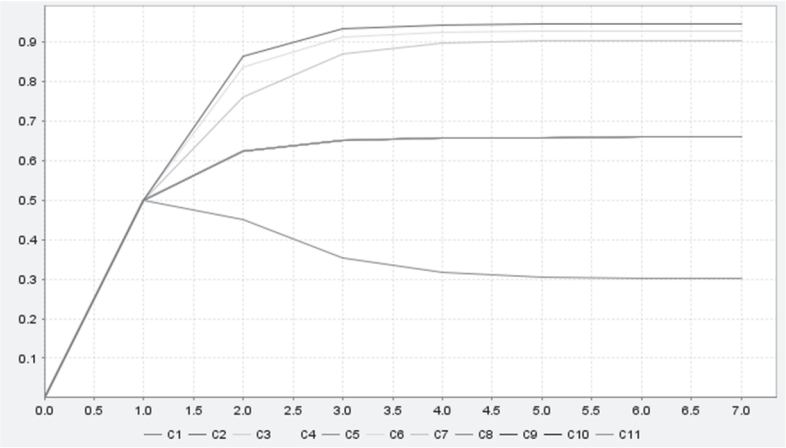



Where the parameters are:
C1 – knowledge exchange within the project team
C2 – effectiveness of the project team
C3 – quality of teamwork
C4 – understanding client requirements
C5 – communicativeness
C6 – effectiveness of the project manager (decision making variable)
C7 – quality of project results
C8 – level of estimated risk of project success
C9 – successful team building
C10 – analyticity
C11 – level of stakeholder involvement (decision-making variable)

The casual relationships between parameters, which are represented by directed edges, can be interpreted as follows. Knowledge exchange within the project team has a positive effect on the effectiveness of the project team (+0.5 directed edge between C1 and C2), just like the quality of teamwork (C3) and understanding client requirements (C4), as well as communicativeness (+0.7 directed edge between C5 and C2) and effectiveness of the project manager (+0.5 directed edge between C6 and C2). Effectiveness of the project team positively impacts the quality of project results (+0.7 directed edge between C2 and C7) and effectiveness of the project manager (+0.5 directed edge between C2 and C6), while it also decreases the level of estimated risk of project success (-0.3 directed edge between C2 and C8). Communicativeness (C5) has a positive effect on the project manager's effectiveness (+0.5 to C6), as well as the effectiveness of the project team (+0.7 to C2). Besides communicativeness, analyticity (C10) and successful team building (C9) also show positive effects on effectiveness of the project manager (C6) with +0.5 and +0.65, respectively. Furthermore, the increase in effectiveness of the project manager leads to an increase in quality of project results (+0.5 directed edge between C6 and C7), and a decrease in the level of estimated risk of project success (-0.5 directed edge between C6 and C8). The increase in the level of stakeholder involvement also implies decrease in the level of estimated risk of project success (-0.6 directed edge between C11 and C8), but it leads to the increase in quality of project results (+0.5 directed edge between C11 and C7). The strength of the relationships was established experimentally and represents common perception of the strength of these relationships.

The evaluation of the variables of the mentioned model is shown through the following simulation:

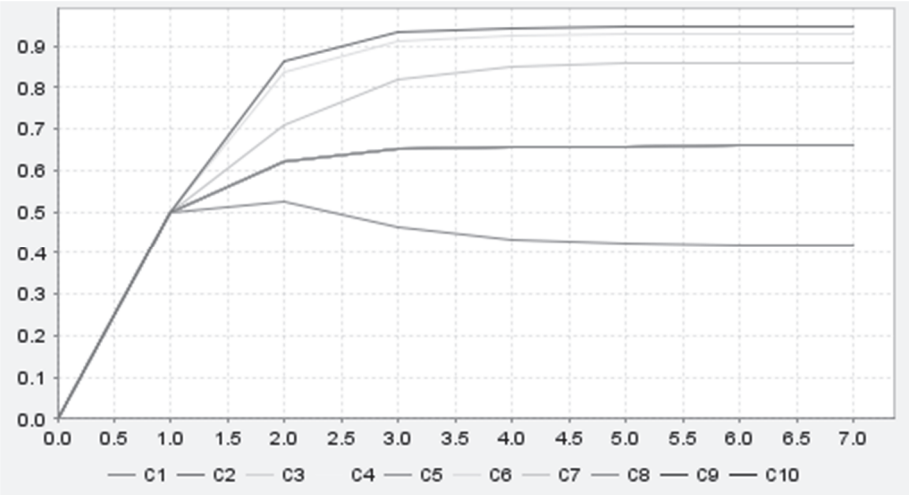
**Figure 2:** Results of the simulation (base model)



The simulation results show that by increasing the efficiency of the project team and the project manager, project risks are gradually reduced, as the main component that has a negative impact on project performance. It is evident that project risks do not have a sharp and continuous decline because it takes a certain amount of time for the project team to achieve an appropriate level of cohesion and a satisfactory level of teamwork. At the same time, project risks can be reduced to a certain acceptable level, but they cannot be completely eliminated regardless of the efficiency and expertise of the project team and managers. The previous conclusion can also be interpreted from an economic point of view. It is not profitable to completely eliminate project risks considering the extremely high costs of their mitigation, and the justification of such a decision can be questioned. At the same time, the previously mentioned variables significantly influence the gradual increase in project results, which is one of the main goals.

The previous simulation shows that the effectiveness of the project team and project manager is key to achieving the desired project goals. The key characteristics that have a direct impact on the project team and the project manager are communication skills, teamwork, analytical skills, knowledge exchange and understanding of the requirements of interest groups. If we exclude the influence of interest groups from the model, we will get somewhat different results, which are shown in the next simulation:

**Figure 3:** Results of the simulation (model without stakeholders' involvement)




It is evident that the exclusion of stakeholders is accompanied by the growth of project risks in the short term. Only with the passage of time and an increase in the

efficiency of the project team does a gradual, but smaller decrease in project risks occur compared to the base model. The previous conclusion is intuitive - with the continuous involvement of interested parties, it is possible to fully understand their requirements and define project results in accordance with them.

In other words, the project manager is expected to maintain team cohesion at a very high level and ensure the continuous involvement of stakeholders to ensure a low level of project implementation risk and achieve the desired project results. Given that one of the basic principles of the agile approach is the active involvement of stakeholders in the complete process of project realization, it is indirectly concluded that the agile approach enables a significant reduction of project risks and the effective realization of project goals.

The research confirmed the results of earlier studies. In terms of the impact of the agile approach on the development of business operations of IT companies in post-pandemic conditions, the results correspond to the conclusions of the research by Da Camara and associates.[35] Research from 2015[36] and 2020[37] indicated the importance of soft skills of project managers in achieving the desired performance of projects, but also their influence on the performance of project team members, which is also in accordance with the results of the subject research. Abolghasemi et al. (2017) confirmed that the involvement of interest groups in the project has a positive impact on the improvement of project results,[38] as this paper also showed. Research conducted by a group of authors from Guinea in 2019 confirms that the involvement of stakeholders in project identification, planning, implementation and monitoring increases the chances of project success and represents an appropriate way to achieve the organisation's goals.[39] The application of modern solutions from the field of machine learning is a way to manage risks in an adequate way, and Ghane

[35] Da Camara, R., Marinho, M., Sampaio, S., Cadete, S., (2020)., How do Agile Software Startups deal with uncertainties by Covid-19 pandemic?, *International Journal of Software Engineering & Applications*, 11(4), 15–34

[36] Awan, M.H., Ahmed, K., Zulqarnain, W., (2015), Impact of Project Manager's Soft Leadership Skills on Project Success. *Journal of Poverty, Investment and Development*, 27-46.

[37] Rogo, V., Rarasati, A. D., Gumuruh, H., (2020), The influence of transformational leadership and soft skills on project manager for project success factors. *IOP Conference Series: Materials Science and Engineering*, 830, 022057.

[38] Abolghasemi, M., Syuhaida, I., Kambiz, G., (2017), Project stakeholder management, stakeholder's satisfaction, and project performance in the Iranian residential construction project, *UTM Razak School of Engineering and Advanced Technology*, 20-24

[39] Magassouba, S. M., Tambi, A. M. B. A., Alkhlaifat, B., Abdullah, A. A., (2019), Influence of stakeholders involvement on development project performance in Guinea, *International journal of academic research in business and Social Sciences*, *9*(1), 1111-1120.

(2017) points out that in the future machine learning algorithms will be used to improve the prediction of possible scenarios.[40] Hamad et al. point out that most of the risk reduction strategies implemented include using tools to communicate with clients, tracking requirements and changes implemented in the project, as well as reducing the number of software errors, etc.[41]

## CONCLUSION

An agile approach in post-pandemic conditions enables the smooth development of business processes thanks to the exchange of knowledge and frequent communications through which doubts are solved as the team creates better solutions. It was found that communication skills of project managers and project team members, interpersonal skills, coordination skills and the ability to identify, analyze and solve problems, as well as teambuilding skills and delegation skills of project managers, have a positive impact on the project success. The results also indicate that the greater participation of interested parties in the identification, planning, implementation and monitoring of the project increases the chances of the project's success. Moreover, it has been shown that the application of an agile approach leads to a reduction of project risks due to better communication with the client and more frequent exchange of information. Finally, this was the answer to the last research question in this paper. As the research has demonstrated, tools such as FCM Expert can provide valuable helps in both understanding and modeling relationships between numerous factors affecting the business development of IT companies in post-pandemic conditions, respecting different aspects of agile methodology. The findings have implications for future research on better understanding of agile methodology not only in IT companies, but also in other industries. In addition to that, this study can help navigate the future research towards the ways FCM can be used by project managers.

[40] Ghane, K., (2017), Quantitative planning and risk management of Agile Software Development, *2017 IEEE Technology & Engineering Management Conference* (TEMSCON).

[41] Hammad, M., Inayat, I., Zahid, M., (2019), Risk Management in Agile Software Development: A Survey, *2019 International Conference on Frontiers of Information Technology* (FIT).

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