

CHALLENGES OF APPLYING AGILE PROCESSES IN SMALL NON-IT ORGANIZATIONS

Mirjana Marić

Faculty of Economics in Subotica, University of Novi Sad, Subotica, Serbia
mirjana.maric@ef.uns.ac.rs
ORCID: 0000-0001-7150-4992

Olivera Grljević

Faculty of Economics in Subotica, University of Novi Sad, Subotica, Serbia
olivera.grljevic@ef.uns.ac.rs
ORCID: 0000-0002-6028-1153

Rade Božić

Faculty of Business Economics Bijeljina, University of East Sarajevo, Republic of Srpska, BiH
rade.bozic@fpe.ues.rs.ba
ORCID: 0000-0001-6956-8049

Abstract: *Modern digital technologies imply rapid market changes and growing competition, affecting the need for small organizations to become agile, flexible and innovative. Agile work processes represent an iterative and collaborative approach to organizing work, in which tasks are performed in short cycles, teams cooperate closely with stakeholders, and continuous feedback is used to adapt solutions to changing requirements. Agile work processes, which have been successfully applied in IT organizations for more than two decades, are increasingly being used in other types of small organizations. The aim of the work is to identify the challenges and barriers faced by small non-IT organizations when introducing an agile work process, as well as to propose ways to overcome them.*

Key words: *Agile processes, non-IT organizations, Project management, Agile transformation*

JEL classification: L23, M1, O32

1. INTRODUCTION

The information technology sector is characterized by rapid and continuous change, requiring software vendors to maintain a high level of flexibility and responsiveness. Software development is primarily driven by the evolving needs of users and requires ongoing adjustments to effectively address their requirements and fully leverage organizational capabilities. In traditional

software development, extensive paperwork and complex processes prompted development of a new, innovative software development approach called agile (Kent Beck et al., 2001). Agile software development approaches reduce complexities associated with traditional software development, enables faster responses to changes in the environment and user requirements, and reduces project delivery time (Erickson et al., 2005). With agile approach, team members and collaboration are preferred over processes and tools, functional software over documentation, customer collaboration over contractual agreements, and adaptation to changes over following a plan (Kent Beck et al., 2001). Some researchers argue that agile software development can be viewed as a cultural aspect, placing greater emphasis on team collaboration than on formal process modeling (Kuhrmann et al., 2022).

Among the most widely adopted and effective approaches in agile software development are scrum, extreme programming (XP, XP2), crystal methodologies, feature-driven development, lean software development, dynamic software development method (DSDM) among others (Dybå & Dingsøy, 2008; Edison et al., 2022). According to Suvvari (2023), 68% of the 382 interviewed software development professionals, project managers, and IT leaders surveyed across small, medium, and large enterprises indicated that their organizations employ some form of agile software development.

Agile approach outperform the traditional waterfall methodology in terms of project success, achieving success rates of around 40%, compared to approximately 15% for waterfall. At the same time, failure rates are significantly lower in agile projects (about 10%) than in traditional methodologies (around 30%) (Mishra & Alzoubi, 2023).

Based on the well-established success of agile methodologies within software development, their application has progressively expanded to non-IT domains (Žužek et al., 2020). Gustavsson (2016) indicates that agile methodology is applied across various sectors, including healthcare and pharmaceuticals, education, management, manufacturing, public relations, product design, supply chain management, and others. The benefits of its application include improved team collaboration, enhanced communication with consumers, increased productivity, faster workflows, greater transparency, better flexibility and adaptability to changes, improved understanding of goals and requirements, higher quality, and similar advantages (Gustavsson, 2016). However, despite these benefits, there are also challenges that make it difficult for small and medium-sized enterprises to implement agile methodologies in their operations. Therefore, the authors aim to address the following research question:

RQ: What challenges do small non-IT organizations face during the transition to an agile approach?

The objective of this paper is to identify and systematize the challenges encountered by small organizations during the transition to agile processes through a review of existing empirical studies in the literature. The purpose is to support the current trend of adopting agile ways of working and to facilitate more successful implementation within non-IT organizations.

The paper is structured as follows. The first chapter, Agile Processes, presents the values and principles of the agile way of working. The second chapter, Challenges of Applying Agile Processes in Small Non-IT Organizations, systematizes the challenges identified in practice that non-IT organizations encounter during agile transformation. Finally, in the Conclusion, the authors provide their reflections and recommendations to support more successful future transitions to agile practices.

2. AGILE PROCESSES

The agile methodology represents an approach to organize and execute tasks based on flexibility, iteration, teamwork, and ability to adapt to change.

The agile approach originated in the software industry and is historically associated with the rise of e-business, which created a need for the development of small, internet-oriented software solutions.

During this period, the traditional software development processes were unable to respond efficiently to emerging market demands, as they required large budgets, long development timelines, and the involvement of a significant number of personnel, which reduced their economic efficiency. The dynamic market conditions driven by e-business also required organizations to accept and respond rapidly to change. This represented another challenge that traditional development processes were unable to address, as they are based on the opposite principle—resistance to change, since they are typically associated with additional costs and project delays (Tumbas, Matković & Marić, 2023).

Agile development processes include the following: Scrum, Extreme Programming (XP), Crystal methodologies, Feature-Driven Development, Lean Software Development, and the Dynamic Systems Development Method (DSDM), among others (Dybå & Dingsøyr, 2008; Edison et al., 2022). Among these, Scrum has the widest application in practice as a management framework. All agile processes represent a set of different techniques and practices, but they share the same values and fundamental operating principles. Most agile practices were not entirely new to the software industry; rather, the novelty lay in the way they were combined and structured into a coherent theoretical and practical framework. The key contribution of agility was the introduction of a different set of priorities and values that are prioritized (Tumbas, Matković & Marić, 2023).

The foundation for understanding agile work processes lies in the four values defined in the document known as the Agile Manifesto. The first value emphasizes that priority should always be given to individuals and their interactions over formal processes and tools. The second value highlights that the team's focus should be on delivering functional outcomes to the customer rather than producing extensive documentation. The third value highlights that continuous collaboration with the customer is more important than contractual formalities, while the fourth emphasizes that responding to change is more important than strictly following an initial plan (Beck et al., 2001). In practical terms, this means that agile work processes are not primarily organized around strictly prescribed sequences of activities, but rather around communication, collaborative problem-solving, and the gradual

improvement of work outcomes through shorter feedback cycles with the customer.

The Agile Manifesto also defines twelve principles that further specify the agile way of working. Among these, particularly important are the early and continuous delivery of value, the acceptance of changes even in later stages of development, the frequent delivery of results, daily collaboration among different stakeholders, reliance on motivated teams, direct and effective communication, the maintenance of technical and organizational simplicity, as well as the regular reflection on own personal work in order to improve future activities (Beck et al., 2001). From an organizational perspective, these principles indicate that agile processes are not a methodological framework, but rather a way of thinking in which learning, adaptation, and collaboration are embedded in the very structure of the work process.

Agile processes often rely on frequent and continuous evaluation and improvement of work outcomes, that is, the developed components of the software product, typically after every two to four weeks, in order to assess customer satisfaction without delay. The software development process itself is also reviewed, adjusted, and continuously improved at these intervals in order to increase its efficiency. In other words, delivering a high-quality product that satisfies the customer represents the primary focus of agile teams; accordingly, a proactive approach is applied to identifying and eliminating errors through the continuous testing of developed functionalities. Such an approach helps prevent the late discovery of errors, deficiencies, and customer dissatisfaction regarding the quality of the final product at the end of the project, which would otherwise result in additional costs and numerous challenges, along with the risk that some issues may no longer be possible to resolve.

Agile teams continuously learn empirically through the agile work process: through daily stand-up meetings, meetings in which users provide feedback on work outcomes, and team meetings aimed at the continuous analysis and improvement of the work process. Such an approach implies greater flexibility in responding to change, a higher level of decentralized decision-making, and a stronger focus on the value delivered to users or clients through work outcomes.

The study by Rigby, Sutherland, and Takeuchi (2016) shows that the agile way of working has expanded beyond software organizations, primarily because it enables organizations to place a stronger focus on the customer, adapt more

rapidly to change, and more effectively break down functional silos through more autonomous and interconnected teams. Similarly, Gustavsson (2016), analyzing non-IT contexts, points out that among the most frequently highlighted advantages of agile logic are improved communication, greater transparency, increased flexibility, and more productive collaboration among process participants. This suggests that agile work processes can be understood as an organizational response to the need to make work more responsive, more transparent, and more closely aligned with the actual needs of users and markets, which is essential in modern digital business environment.

3. CHALLENGES OF APPLYING AGILE PROCESSES IN SMALL NON-IT ORGANIZATIONS

Although agile processes were invented for the software development industry needs, contemporary literature shows that agile principles and practices are increasingly being transferred to non-IT organizations, including healthcare and pharmaceuticals, education, management, manufacturing, public relations, product design, supply chain management, and others (Gustavsson, 2016). However, an analysis of the available studies indicates that the implementation of agile work processes in non-IT organizations is neither standardized nor straightforward, but rather followed by a number of challenges. These challenges have been systematized by the authors of this study into ten groups, which will be presented and explained in the following sections.

The first significant challenge relates to the lack of resources and the high costs associated with transitioning to an agile way of working. In non-IT organizations, particularly in small and medium-sized enterprises, the introduction of agile principles often requires investments in employee training, the engagement of external consultants, the redesign of business processes, the acquisition of additional equipment, and changes in the coordination of work. In addition to direct costs, the literature also points to the existence of indirect costs, such as temporary disruptions, workflow interruptions, delays, and increased employee workload—resulting from the need to perform ongoing tasks in established ways while simultaneously learning and adopting a new way of working. As a result, customer and client dissatisfaction may also occur during the transition period (Ali & Wasim, 2022; Žužek et al., 2020).

The second challenge relates to organizational structure, which in many non-IT organizations is not naturally aligned with the principles of agility. Traditional industrial and non-IT organizations

often rely on deeply hierarchical organizational structures characterized by formalized procedures and centralized decision-making, whereas agile ways of working require a process-oriented organizational structure that involves decentralized decision-making, a higher degree of team autonomy, and faster horizontal communication. In this regard, the transition to an agile way of working does not imply only a methodological change, but also a deeper organizational transformation that includes the redefinition of roles, responsibilities, and decision-making flows. The absence of such structural prerequisites represents a significant barrier to the successful adoption of agile processes in non-IT environments (Ali & Wasim, 2022; Conforto et al., 2014; Rigby et al., 2016).

The third important challenge is reflected in the difficulty of forming dedicated, multidisciplinary, and self-organizing teams. Agile work relies on the presence of teams that are sufficiently focused, functionally diverse, and well coordinated to respond quickly to change, make decisions, and iteratively improve work outcomes. However, in non-IT organizations, employees are often organized according to business functions that represent a form of isolated organizational silos, with limited cross-functional information flow. Employees are typically assigned to departments and narrowly specialized in their respective tasks, without a broader understanding of how the overall process functions or what the organizational objectives are. Such fragmentation of work reduces responsiveness, complicates day-to-day coordination, and weakens the effects of agile practices (Conforto et al., 2014; Totten, 2017).

The fourth challenge relates to the limited involvement of customers, users, suppliers, and other key stakeholders in work processes and decision-making. The agile approach requires frequent and direct user feedback, as well as closer collaboration with external actors who influence the shaping of products, services, or processes. However, in non-IT sectors, such collaboration is often insufficiently developed, either due to the nature of the industrial value chain, institutional constraints, regulatory requirements, or traditional understandings of relationships with external partners. When customers and suppliers are not deeply involved in iterative cycles of planning, evaluation, and adaptation, the organization's ability to respond promptly to changing needs is reduced, as is its capacity to fully realize the benefits of the agile way of working (Conforto et al., 2014; Vrečko et al., 2023).

The fifth challenge concerns the lack of knowledge, experience, and systematic training for the implementation of agile principles and practices. In many non-IT organizations, employees, managers, and even project leaders often lack prior experience with agile frameworks, which makes it more difficult to understand their fundamental principles, practices, and expected patterns of behavior. The introduction of agility therefore requires not only technical familiarity with tools and ceremonies, but also the development of new competencies in the areas of team collaboration, iterative planning, visual management, continuous learning, and adaptive decision-making. When such competencies are not sufficiently developed, organizations tend to face limited or partial implementation of agile elements, without a genuine transformation of the way of working (Ali & Wasim, 2022; Conforto et al., 2014; Totten, 2017).

The sixth challenge is related to resistance to change and the cultural clash between traditional and agile models of organizing and work control. Agile approaches imply moving away from command-and-control management toward collaboration, transparency, experimentation, learning through iterative cycles, and the acceptance of change as an integral part of the process. On the other hand, many non-IT organizations operate within bureaucratized and formally standardized systems of work, in which strict compliance with plans is traditionally valued more highly than flexibility and rapid adaptation. As a result, the introduction of agile processes may generate resistance at different organizational levels, from top management to operational employees, particularly if the change is not communicated clearly, legitimized, and adequately supported (Rigby et al., 2016; Smith & Oltmann, 2010).

The seventh challenge is reflected in the difficulty of directly transferring pure agile models from the software domain to industrial and broader non-IT contexts. In manufacturing and other non-IT sectors, there are often physical constraints, longer development and production cycles, greater dependence on suppliers, technical and regulatory limitations, as well as less flexibility for rapid and frequent changes compared to software environments. For this reason, the literature increasingly emphasizes that the application of agility outside the IT sector typically does not involve the full adoption of pure agile frameworks, but rather the development of adapted and hybrid models that combine elements of traditional and agile management. The very need for such adaptation supports the view that contextual misalignment represents one of the central

challenges in the implementation of agile processes in non-IT organizations (Conforto et al., 2014; Huikkola & Kohtamäki, 2020; Jovanović & Lalić, 2015).

The eighth challenge relates to the insufficient digital and process readiness of organizations. Effective agile practice requires the timely availability of information, transparent communication flows, adequate knowledge sharing, the ability to monitor work in real time, decentralized decision-making, and supportive leadership—all of which are characteristics of a process-oriented organizational structure. In many non-IT organizations, particularly in small enterprises, these conditions are not sufficiently developed, which complicates coordination, slows response times, and reduces the organization's capacity to sustain agility over a longer period. Furthermore, insufficient digitalization of business processes and limited knowledge management systems may represent a serious obstacle to the sustainable implementation of agile principles (Conforto et al., 2014; Garzoni et al., 2024; Vrečko et al., 2023).

The ninth challenge concerns employee characteristics and the requirements associated with agile ways of working. Agile environments require employees who possess a team-oriented mindset and are willing to collaborate across functional boundaries, have broader competencies and are willing to share knowledge within teams, and are flexible, prepared to assume greater responsibility, and capable of making decisions independently. In practice, however, many non-IT organizations rely on a workforce shaped by conditions of strict division of labor, narrow specialization, and lower levels of autonomy. Such a starting point may hinder the development of agile teams, as it requires changes in employees' competency profiles, additional training, and the creation of a work culture that encourages initiative, collaboration, and continuous improvement (Ali & Wasim, 2022; Totten, 2017).

The tenth challenge relates to insufficient management support and the absence of a clear vision for change. The literature indicates that the success of agile initiatives in non-IT organizations largely depends on leadership commitment, management's willingness to support a new way of working, and the ability to articulate change as a long-term strategic orientation rather than as an isolated methodological intervention. When management does not provide consistent support, fails to create conditions for team autonomy, and does not build trust in the new model of work, agile transformation typically remains limited to partial or symbolic implementation, without deeper effects on organizational performance

(Conforto et al., 2014; Rigby et al., 2016; Totten, 2017).

CONCLUSION

Agile work processes are based on continuous business improvement, collaboration, and adaptability to changes in the environment. Unlike traditional approaches, their focus is on a different understanding of organization, particularly in terms of user needs, adapting to environmental changes, and supporting internal organizational development. For this reason, agile work processes represent an important theoretical and practical framework for contemporary organizations, both in the IT sector and in the broader non-IT environment.

Through a literature review, this paper identified the challenges faced by small and medium-sized non-IT organizations when implementing agile methodology in their processes. These challenges include limited resources and high transition costs, incompatibility between existing organizational structures and agile principles, lack of employee competencies and experience, as well as difficulties in forming multidisciplinary and self-organizing teams. Additional barriers relate to insufficient stakeholder involvement, resistance to change, cultural differences between traditional and agile models, and limited digital and process capability of organizations. Another important challenge is the difficulty of directly transferring "pure" agile models from the software sector to non-IT contexts, which requires the development of adapted and hybrid approaches. Finally, the success of agile transformation largely depends on management support and the existence of a clear strategic vision for change.

These findings indicate that agile methodology cannot be applied in a straightforward manner in every business environment, since each industry has its own specific characteristics that need to be considered when selecting an appropriate mix of agile practices to improve work processes, team performance, and customer satisfaction. In practice, only a small number of projects are purely agile, while most represent hybrid combinations of traditional and agile practices. This is particularly important for small and medium-sized non-IT enterprises, where agility is typically developed through the adaptation of existing procedures rather than through the direct adoption of models originating in the software environment.

Taken together, these challenges show that the implementation of agile processes in non-IT organizations represents a complex organizational transformation rather than simply the introduction of new tools and procedures. Future research will

be expanded with empirical data from a case study conducted by the authors of this paper, with the aim of comparing the obtained results with those from the literature.

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