

THE APPLICATION OF AGILE METHODOLOGY AND CHALLENGES IN THE OPERATIONS OF PUBLIC SECTOR INSTITUTIONS

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Abstract

In this review-type article, the authors present project management in public sector institutions, with a particular focus on the application of Agile methodology. This review seeks to address the potential benefits of Agile methodology in addressing public sector challenges and the key obstacles to its successful implementation. Termed ‘Agile Government’, the approach aims to align public institutions with citizens’ needs, enhance efficiency, productivity, innovation and digital capabilities, improve decision-making processes, and foster collaboration between teams. Moreover, it serves as a response to global crises, such as the Covid-19 pandemic, refugee issues, climate change, and more, all while optimising the use of resources. Methods applied in the article are the following: systematic analysis, comparison, and synthesis.

KEY WORDS: Agile methodology, public sector, project management, systematic analysis.

Anotacija

Šiame apžvalginio pobūdžio straipsnyje pristatoma projektų valdymo viešojo sektoriaus institucijose raida, ypatingą dėmesį skiriant „Agile“ metodologijos taikymui. Nagrinėjama galima „Agile“ metodikos nauda sprendžiant viešojo sektoriaus problemas ir pagrindines sėkmingo jos įgyvendinimo kliūtis. Taikant šį metodą, kuris vadinamas „Agile Vyrtaisybė“, siekiama suderinti valstybės institucijų veiklos prioritetus su piliečių poreikiais, didinti efektyvumą, produktyvumą, diegti inovacijas, ugdyti skaitmeninius gebėjimus, tobulinti sprendimų priėmimo procesus ir skatinti komandų bendradarbiavimą. Be to, jis pasitarnauja kaip atsakas į pasaulines krizes, pavyzdžiui, COVID-19

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pandemiją, pabėgėlių problemas, klimato kaitą ir kt., optimizuojant išteklių naudojimą. Straipsnyje taikomi sisteminės analizės, palyginimo ir sintezės metodai.

PAGRINDINIAI ŽODŽIAI: „Agile“ metodologija, projektų valdymas, sisteminė analizė, viešasis sektorius.

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Introduction

In public sector institutions, we can observe continuous structural, political, managerial and technological changes aimed at modernising institutions and their processes. One of the directions of these institutional changes is the management of projects, especially the application of the principles of Agile methodology, including team formation and management, communication, organisational culture, stakeholder engagement, service development and improvement methods, and their implementation in various institutional and inter-institutional projects, and management systems. This phenomenon is receiving increasing attention in the scientific discourse (Ylinen, 2021; Dietel, Heine, 2020; Nuotilla et al., 2016; Bogdanova et al., 2020; Simonofski et al., 2018; Mergel et al., 2021; Montavani Fontana, Marczak, 2020; Hampel, Junginger, 2019). On the other hand, there is still a lack of research on the activities of public sector institutions in this regard (Nuotilla et al., 2016), and the phenomenon is not extensively examined and is not explored in canonical public sector literature (Mergel et al., 2021). This confirms the relevance and the novelty of the topic.

It is noteworthy that the application of the principles of Agile methodology in the public sector is oriented not only towards different public sector projects but also towards changes in the management philosophy itself. The goal is to better align with citizens' needs, increase institutional efficiency, productivity and effectiveness, enhance innovation and digital potential, improve decision-making processes, enhance interactions with various stakeholders, ensure feedback, create maximum public value, strengthen team collaboration, and facilitate processes of learning, knowledge sharing, and information dissemination. These management philosophy changes are often referred to as Agile Government. They aim to strengthen institutional networks, interaction and trust, increase citizen satisfaction with public services, and address global crises such as Covid-19, the refugee crisis, climate change, military conflicts, and many others that public sector institutions face, all while making more effective use of human, financial and technological resources (Mergel et al., 2021; Montavani Fontana, Marczak, 2020; DeSeve, 2020). However, implementing these changes in the activities of public sector institutions is complex.

Traditionally, the public sector paradigm, at least in continental Europe, has relied on traditional public administration and the Waterfall project management methodology (Wirick, 2009). This approach relies on clear documentation, hierarchical principles, detailed control and accountability procedures, and upfront planning (Crawford, Helm, 2009; Kassel, 2010; Zurga, 2018; Ekstedt, 2019). Agile methods in the public sector, which have a low tolerance of risk, can lead to various dysfunctions, such as increased project budgets due to experimentation and error, and the failure of civil servants to perform quality functions due to excessive decentralisation and trust. On the other hand, the highly dynamic environment of 21st-century public sector institutions creates a need for implementing these changes (Bogdanova et al., 2020; Hampel, Junginger, 2019).

1. Research methodology

The scientific problem of the article is to establish what the difference is between traditional management and progressive up-to-date management for public sector institutions by applying Agile methodology in pursuing projects and conducting operations. The tasks of this review-type article are to answer to the question what public sector problems could be addressed by the application of Agile methodology and what are the key challenges in implementing this methodology. The authors use theoretical methods such as systematic analysis, comparison and synthesis. The methodological value of the article prevails in its cognitive (positivistic) and values' (axiological) orientation of implementation, if it is possible, so to speak, of the 'flexefficiency' approach (following the well-known 'flexsecurity' approach in social policy, the labour market and science). 'Flexefficiency' means seeking 'flexible efficiency' in the following processes during and after each stage of operations. It is essential to point out that in general simplified (for common understanding) form, Agile methodology means while following along the way to the final aim of the managerial activity (project implementation, etc), adjusting at each stage of the activity to the changing situation and environment. According to Agile, it is not possible to plan each step and each method beforehand for reaching the final aim.

2. The challenges of applying Agile methodology in public sector institutions

Looking back retrospectively, Agile project management methodology began to be used after 2001 when the Agile Manifesto was proclaimed. Initially, this methodology was primarily associated with the private sector's IT sphere. Agile is a broad concept that encompasses various project management methodologies, such

as Scrum, Extreme Programming, Crystal, and others. Interestingly, in the Agile context, a significant emphasis is placed on people, informal communication, collaboration, a quick response to changes, and cooperation with clients (Conforto et al., 2014). These Agile values are considered more important than comprehensive documentation, strict procedures, rules and available tools (Agile Manifesto, 2014; Ribeiro, Domingues, 2018; Nesheim, 2020). It seems that these ideas do not align with the traditional principles of operation of public sector institutions. On the other hand, since around 1980, public sector institutions have initiated significant modernisation and change processes associated with the ideas of New Public Management, within which attempts have been made to implement best practices and management methodologies proven in business (Bogdanova et al., 2020). It can be argued that these reforms have created favourable conditions for the implementation of Agile methodologies.

It is noteworthy that Agile principles were initially used for small projects, but over the past decades their application has expanded significantly beyond the IT sector. Therefore, the application of these methodology principles in complex intersectoral and interinstitutional projects requires significant changes that encompass legal, cultural, structural and technological environments. Otherwise, these processes can be slow and ineffective (Nuotilla et al., 2016). It should be emphasised that Agile methodology can be applied not only to projects but also to public sector programmes and institutions (DeSeve, 2020). Although Agile Government is inspired by specific Agile project management methods, it is a much broader concept that includes a management philosophy and principles oriented towards citizens' interests and increasing institutional efficiency (Mergel et al., 2021). On the other hand, due to the prevailing differences in the management of public sector institutions, historical experience, different models of civil service, and institutional cultures, these processes inevitably face challenges that need to be taken into account and overcome.

When examining the challenges of applying Agile methodology in various public sector institutions, different levels of challenges are identified. In a case study conducted in one of Finland's public sector agencies, Nuotilla et al. (2016) identified key challenges in a public sector institution. These challenges were related to documentation, staff education, experience and commitments, stakeholder communication and engagement, Agile roles, the legal environment, the location of Agile teams, technological system differences, and the complex integration of these systems. Public servants often lack managerial and technological competencies, because civil service models in continental Europe are more focused on administrative law. Competency development must be a continuous process, and implementing the philosophy of a learning organisation in the public sector is chal-

lenging in practice. It should be noted that the Agile concept itself is relatively new in the public sector. Public sector institutions involve very diverse stakeholders, often representing their own interests, so finding compromises, and ensuring effective communication and feedback with them, as required by Agile methodology, can be challenging.

A qualitative study conducted through focus groups in Belgium revealed similar challenges in this context. Within the scope of this research, internal competencies, participant engagement, hierarchical structures, challenges in resource management, the complexity of public sector institutional activities, legal constraints, and other factors were highlighted (Simonofski et al., 2018). Significant attention is also placed on the organisational culture of public sector institutions. To ensure the effective application of Agile principles, it is important to establish trust among different public sector institutions and departments, so that collaboration and open communication can occur without the parties perceiving each other as threats (Ylinen, 2021).

Similar conclusions were reached when analysing the results of another study. A quantitative study conducted in the Brazilian public sector revealed that key challenges related to the application of Agile methodology were linked to cultural resistance, collaboration with clients, and commitment from top-level management (Montavani Fontana, Marczak, 2020). In continental Europe, the lifespan of public sector institutions, the legal environment, mission, civil service career models and structure often imply a highly hierarchical culture that can promote institutional isolation or conflict, fostering hierarchical relationships between leaders and subordinates. This is particularly noticeable in institutions in East and Central European countries such as Lithuania. In such conditions, it is challenging to create a cultural environment dominated by collaboration, trust, knowledge sharing, and informal communication. Due to cultural specificities, public sector institutions tend to have a low tolerance of risk and limited experimentation, as they seek to avoid public relations crises and reputational damage. Therefore, the phenomenon of a blame culture is often observed, where stakeholders avoid direct responsibility. Communication problems and resistance to change are still relevant and highly inefficient (Mergel et al., 2021; Bogdanova et al., 2020).

A bureaucratic form of governance conditions the dominance of directives and highly developed control mechanisms in most institutions, with a clear functional distribution, limited flexibility, and centralisation, emphasising a process-oriented approach. In contrast, Agile projects are characterised by multifunctional teams oriented towards results. Agile implies new forms of leadership, tolerance of errors, and flexibility, which can be challenging to implement, especially at the middle management level. Agile is based on adaptive rather than static structures

(Mergel et al., 2021). Significant challenges are also posed by the procedures of the public procurement system (Nuotilla et al., 2016), and the activities and principles of institutions responsible for public procurement (Kaczorowska, 2015). As explained by Mergel et al. (2021), Agile implies a contract management approach that is flexible and not solely focused on a fixed price or a product/service with a stable vision. Agile relies on continuous improvement and feedback (see Table 1).

In order to better understand the emerging challenges and the potential applicability of Agile methodology ideas in public sector institutions, it is advisable to examine not only the bureaucratic form of governance but also the fundamental differences between traditional project management (Waterfall) and Agile methodology principles.

Table 1. Analytical framework for Agile project management (PM) methods and bureaucratic principles (BP)

	Traditional PM	Agile PM	Agile PM and BP (key conflicts)
Fundamental assumption and development model	Complete specifications and extensive planning (waterfall or spiral)	Continuous design and rapid feedback (evolutionary delivery)	Overstraining the hierarchical structure
Management style	Command and control	Leadership and collaboration	Interdisciplinary teams
Knowledge management	Explicit	Tacit	Written documentation
Communication	Mechanistic	Organic	Congruent to mechanistic base
Quality control	Heavy planning, strict control, late and heavy testing	Continuous control and testing	Overstraining the hierarchical structure

Source: Dietel, Heine, 2020.

As seen in the table, the existing differences are highly significant, encompassing many fundamental principles of institutional operation. Therefore, the implementation of Agile methodology and management philosophy should proceed incrementally. On the other hand, it is necessary to understand that these principles are normative in nature, and the practical situation in institutions can vary depending on leadership, institutional culture, administrative traditions, and other factors. As is revealed by a case study in Finland (Nuotilla et al., 2016), a significant challenge when applying Agile methodology can be finding a balance between formal documentation and informal communication in public sector institutions. The need for documentation in bureaucratic institutions has deep historical roots.

Thus, there is an apparent contradiction between these Agile principles and traditional bureaucratic theory.

The Agile Scrum system is based on the development of a two to four-week project increment (sprint), followed by gathering feedback, and the project development team can adjust the project vision. In this system, formal and informal roles in the project team are harmonised. The Product Owner performs the functions of a project manager, the development team is self-organising, and the Scrum Master facilitates team collaboration. Daily Scrum meetings last only up to 15 minutes (Agile Manifesto, 2014). This structure is highly effective in the IT context and the private sector, but when public servants begin to apply it, they face various challenges.

Certain conflicts with the fundamental principles of public sector institutions become apparent when analysing another Agile system, Crystal Clear, which is used for low-risk and small team projects, typically composed of six members. This system emphasises principles such as osmotic communication (where all team members, even those not directly involved in their functions, should be together), frequent delivery for early testing and error discovery, reflective improvement, where Crystal Clear teams constantly question successful and unsuccessful decisions, easy access to expert users who provide feedback to ensure maximum project quality, personal safety, where team members are not afraid to express their opinions, ideas and thoughts, even to managers, focus, where goals and tasks are clearly defined, and more (Cockburn, 2004). Similar principles are characteristic of other Agile methodologies. Thus, it can be argued that bureaucratic systems are highly hierarchical, with formal communication prevailing, numerous procedures and control mechanisms in place, often accompanied by an authoritarian leadership style and a hierarchical organisational culture, while these Agile principles and systems have evolved in different, more dynamic, and higher-risk tolerance conditions.

The successful implementation of Agile methodologies in public sector institutions requires proactively addressing the challenges mentioned. Strategies can include comprehensive training on Agile principles, fostering a culture of change, involving stakeholders early in the process, and developing tailored approaches that fit both the needs of the project and the culture of the organisation. By recognising and reducing these barriers, public sector organisations can strengthen their capacity to manage projects flexibly and improve service delivery outcomes.

3. Analysis of the possibilities and best practices of Agile implementation

Existing challenges do not necessarily imply that when public sector institutions begin to apply Agile methodology in project management, these projects will automatically fail. A study conducted in Spain in the context of two public sector projects showed that Agile can be successfully applied in institutional activities. Project success can be closely related to the direction of public policy implementation and the context of methodology application. In these cases, the projects were carried out in the context of the Web Engineering of the Ministry of Sport and Agriculture (Torrecilla-Salinas et al., 2013). A study in public sector institutions in Germany and Estonia revealed that Agile methods contribute to more effective communication with stakeholders, promote changes in organisational culture where errors are tolerated, and improve the processes of detecting and resolving them. Agile also encourages changes in the quality of the services provided, increasing innovation and creative potential at various levels of institutions (Hampel, Junginger, 2019). Agile management philosophy is particularly significant in terms of a continuous learning and reflection approach (Mergel et al., 2021). However, senior-level civil servants must also significantly participate in these processes, in order to adapt rules and procedures that do not align with the goals and philosophy of Agile (Ylinen, 2021).

The need for a philosophy of continuous adaptation and improvement could be crucial in the public sector when facing significant global crises, particularly in the context of the Covid-19 pandemic, Russia's invasion of Ukraine, climate change, and refugee crises. As was revealed by a study in the Polish public sector (Kaczorowska, 2015), the application of Agile methodology in project management is associated with positive factors such as the effectiveness of risk and quality management. The dynamic structure of Agile systems allows for a proactive response to various types of risk. The author also notes that the effectiveness of applying these methodologies is closely linked to the project team and the project manager. However, it is natural that the roles of Agile, as a methodology coming from the private sector, may not always be instrumentally applicable in the activities of public sector institutions. Bogdanova et al. (2020) formulated specific positions for the more effective application of Agile methodology in the activities of public sector institutions. According to the authors, these teams should consist of three to nine members. The same individuals can assume these positions in different phases of project implementation (Table 2).

Table 2. Agile positions for public sector institutions

Position	Functions
Public proprietor of project outcomes	The head of a public sector organisation within which the project is implemented and managed
Team leader/project proprietor	This is the person who is usually performing leadership functions in the organisation and providing the necessary organisational conditions for the successful implementation of a project
Task proprietor	The person who is responsible for the outcomes of the task assigned, carrying out internal monitoring of the task, and making decisions on changes after discussing them with the team
Person responsible for iteration/s	The team member who is responsible for executing the iteration assigned, working independently or in a team, maintaining a close relationship with the task proprietor who is responsible for the iteration currently performed
Ordinary team members	The team members who are performing iterations but are not responsible for them
Agile management master/specialist	An administrative official who has experience and knowledge in the field of Agile project management. His/her involvement in the team is solely devoted to the implementation of the Agile methodology and assisting the team in the emergence of different issues with regard to Agile project management
A member who is external to the organisation	Representative/s of the stakeholders involved in the project team, they may perform any of the above roles, except for the roles of project proprietor and public proprietor of project outcomes

Source: Bogdanova et al., 2020.

The successful application of Agile methodology in public sector institutions is not guaranteed, but the current challenges do not mean failure. By addressing cultural resistance, bureaucratic barriers, resource constraints and stakeholder engagement, public organisations can take advantage of the benefits of Agile and increase the efficiency of project management. Ultimately, despite the obstacles that may be encountered, the potential for improved responsiveness, stakeholder satisfaction and project delivery benefits make Agile a compelling alternative for government projects.

Conclusions

The essential challenges of applying Agile methodology in the activities of public sector institutions are closely linked to the principles of traditional bureau-

ocratic paradigms. These challenges include hierarchical structures and cultures, slow decision-making, resistance to change, authoritarian leadership styles, and a lack of effective leadership. Additionally, inadequate communication, a lack of stakeholder management skills, and an excessive focus on procedures and process orientation with highly developed control mechanisms, are notable impediments. Public servants often lack management competencies, cooperation, trust, and efficient information and knowledge-sharing processes.

Public sector institutions tend to avoid risk, and operate as systems that value stability, often characterised by closedness. They frequently lack opportunities for experimentation and creativity, as well as tolerance of mistakes, factors that are crucial to Agile methodology and its management philosophy. These institutions strive to prevent public relations crises, often shying away from accepting responsibility. The projects and activities of public sector institutions are intertwined with various constraints related to public procurement.

As is indicated by a review of various international case studies, Agile methodology has been applied in various technological and other projects in public sector institutions. Positive outcomes are associated with improved communication and interaction with stakeholders, institutional learning, reflection, increased service quality, and the growth of innovation potential. The attractiveness of the Agile methodology and philosophy is further enhanced by the various crises of the 21st century, and the need for effective and rapid responses to changing citizens' and stakeholder needs. Effective Agile projects contribute to broader possibilities and discussions about the potential benefits of Agile Government. However, it should be acknowledged that the adoption of Agile philosophy and management methods is not yet systematic, and is mainly limited to isolated cases.

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