# THE APPLICATION OF INNOVATIVE TECHNOLOGIES IN PUBLIC ADMINISTRATION OF THE REPUBLIC OF KAZAKHSTAN

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**Abstract.** In the context of globalization, digitalization, and rapid changes in the socio-economic environment, innovative management technologies are becoming the most important tool for improving the efficiency of the public administration system.

Special attention is paid to the issue of the level of acceptance and involvement of civil servants in the process of changes from traditional to innovative decision-making methods by means of a sociological survey conducted by the authors. Modern challenges require state bodies to not only adapt to new technological trends but also to transform the mechanisms of interaction with citizens and optimize the internal work of state structures.

Innovative management technologies, such as digitalization, digital transformation, and project management can theoretically enhance the transparency, accessibility, and efficiency of public administration, however in practice, public authorities and civil servants are not fully such changes.

**Keywords:** *innovations, innovative management technologies, public administration, digitalization, public management, transformation.* 

**Reikšminiai žodžiai:** Inovacijos, inovatyvios valdymo technologijos, viešasis administravimas, skaitmenizavimas, viešasis valdymas, transformacijos.

## Introduction

Today, the public administration system around the world is undergoing changes due to the introduction of new management methods through the use of digital technologies, project management, artificial intelligence, and other technologies.

In Kazakhstan, new management methods are also being implemented. For example, the Concept for the Development of Public Administration in the Republic of Kazakhstan until 2030, approved by the Decree of the President of the Republic of Kazakhstan on February 26, 2021, No. 522, stipulates that the principle of a professional state includes the requirement for government agencies to seek new and innovative solutions to problems and to use modern methods of service delivery.

At the same time, the readiness of the public administration to change must become the key principle of the daily activities of all government bodies. This will ensure a continuous, systematic mechanism for improving the efficiency and competitiveness of the public apparatus.

Moreover, this document includes the concept of total digitalization of the public administration system, which will lead to progressive and sustainable development of the state.

When considering and analyzing the issue of implementing innovative management technologies in the public administration system based on foreign authors, in general, it is clear that the adoption of public sector innovation methodologies has many positive benefits, including increased awareness of social issues, better practices based on broad citizen experience, and increased trust between government and the public (Reddel and Woolcock 2004). However, the approaches of innovations implemented in the private sector depend on the context, and they are not so easy to implement in the public sector (Lui et al. 2011). Innovations in public administration are usually implemented within the political cycle. Managers instruct government agencies to expand, abandon, or create new technologies in public administration. On the basis of a political decision, state bodies respond to these instructions and implement the necessary changes in their work.

At the same time, as noted by some authors, such as Alexandra Collm and Kuno Schedler (2017), public administration is exposed to numerous stakeholders, whose requirements it must meet simultaneously. For the administration, each of these stakeholder groups is a reference point system with its own values, expectations, and logic of actions and reasoning. In the modern world, a completely differentiated society, these reference systems almost never agree with each other—they exist on their own. For public administration,

this means that it cannot rely on a single group (for example, politics as the main one), but in the end, it will be forced to meet partially contradictory requirements, which leads to certain difficulties.

Complexity in this context means that the situation is not predictable for the state administration, since it cannot be controlled like a machine, adjusting the screws and applying given rules. Usually, complexity arises when a large number of authors—that is, stakeholders who are unable or unwilling to reach a mutual understanding—influence the situation. From a systems theory perspective, an administration can respond to the increasing complexity of its orientation systems in a variety of ways. It can try to simplify complexity by ignoring individual needs and requirements. It can allow certain perspectives or logics to prevail over others. This makes it easier to deal with problems within the administration. However, if this approach is chosen, it does so at the expense of a limited perception of changes in those areas that are ignored. To solve such problems in public administration, it is proposed to apply innovative approaches, through which all interested parties will be properly satisfied.

The introduction and improvement of innovation means that the state apparatus is better able to cope with the unpredictable modern-day situations. It must be open to new things and be prepared for the risks involved.

#### Literature review

As practice shows, government organizations introduce innovations to solve changing problems or perform tasks. For this purpose, they develop and implement new procedures, services, and internal processes. In all countries, innovations in the public administration system are implemented in stages.

So, the introduction of an e-government in Kazakhstan in the early stages, from 2007 to 2010, which widely utilized information and communication technologies, allowed for a qualitatively new level of access for citizens and organizations to government information and facilitated the implementation of new innovative management technologies in government bodies (Junusbekova 2013). At the same time, for more effective innovation activities and digitalization of government bodies, many strategic documents of the Public Administration Planning System were updated to include targeted indicators related to the use of information technologies. To ensure successful implementation, a System for the Annual Assessment of the Effectiveness of Government Agencies was developed in the country, with one of the evaluation indicators being the assessment of the use of various innovations by government bodies, including digital technologies (Junusbekova 2013).

Thus, in the past decade, the pressure on government agencies to innovate has increased in order to be able to cope with the vast social, economic, and environmental challenges. This situation is complicated by the tendency of state apparatuses to provide their services of high quality, with maximum availability and maximum efficiency, with increasingly limited resources. Combined with the aforementioned complexity, the main task of public administrations within the emerging empty state is to solve complex problems. Increasing requirements, coupled with limited resources and increased complexity, indicate that public administrations are faced with the need to find new and innovative approaches.

In academic research, the concepts of "digital transformation" and "project management" are widely discussed in the context of introducing innovative management technologies in the field of public administration. The main focus is not so much on creating new business models, but on improving the efficiency and accessibility of public services for citizens. This is because the development of new business models is not a priority for the public sector (Meijer and Bekkers 2015).

Many researchers have been paying attention to digital transformation in the public sector for a long time and understand its importance. Some definitions focus more on the use of new technologies to make public information accessible to citizens, while other definitions focus more on the use of new technologies to make public services accessible. Some definitions emphasize interaction with citizens through the use of information and communication technologies.

The main advantage of digital transformation lies in the improvement and expansion of public services provided, which ultimately contributes to improving the efficiency of the public sector. Theoretical models aimed at the development of digital technologies and transformation within public organizations suggest that in the future, the development of e-government will increasingly focus on using the public sector as a strategic tool for business (McCarthy et al. 2024).

In addition to digital transformation, many researchers believe that one of the innovative management technologies is also the introduction of project management in the public administration system.

Project management is a systematic approach to implementing innovations based on the use of modern project management methods and tools. It includes defining project objectives, developing plans (and allocating resources to achieve them), and monitoring and controlling the completion of tasks. Project management helps to minimize risks, improve project efficiency, and ensure compliance with deadlines and budgets.

There are currently many scientific studies on the topic of innovative management technologies, including project management and digital transformation, and the definition of the concept should be considered in the table below (Table 1).

**Table 1.** Definitions of innovative management technologies, project management, and digital transformation

No.	Authors	Definition
1.	Anaphat and Supawadee International Journal of science and technology (2023)	Management innovation focuses on creating new things, changing results for the better, and improving efficiency, efficiency, and satisfaction.
2.	Cinar and Simms Public Management Review (2024)	Innovative management technologies are understood as the adoption, creation, or development of ideas, objects, and practices that are new units for making managerial decisions.
3.	Margetts Public policy and adminis- tration (2021)	Information systems form the basis of management tools, and innovative technologies open up new opportunities for public administration.
4.	Mazur and Shapiro Project management: handbook (2010)	Project management methodology is for organizing, planning, directing, and coordinating labor, financial, and other activities. It also encompasses material and technical resources during the project cycle.
5.	Stolterman and Croon Fors Information systems research: relevant theory and informed practice (2004)	In a broad sense, digital transformation refers to changes in all aspects of society associated with the use of digital technologies.
6.	Gray and Rumpe Software and Systems Modeling (2017)	Digital transformation is a key trend across various industries and sectors, as well as in the economy and social sphere.

Source: [3, 5, 11, 16, 17, 21]

Table 1 shows definitions that, in our opinion, cover both innovative management technologies in general and project management, as well as digital transformation, including the methodology for organizing, planning, and coordinating the use of human and material resources in order to effectively achieve project goals.

The rapidly changing environment and expectations of society have a significant impact on the public service. In this regard, there is a need for continuous improvement of management methods and tools to effectively respond to current challenges and achieve strategic national development goals. In this context, project management includes modern methods and practices that contribute to the more effective achievement of goals and management of projects and programs.

Today, project management is a science-based concept of effective management with a wide range of tools, models, and methods applicable to the implementation of projects of

any scale. Unlike traditional management, project management is characterized by flexibility, consistency, and integrity. The project model is developed carefully, subjected to a comprehensive analysis, and only then implemented. Project management, as an innovative approach to management, is of considerable interest both for the scientific community and for practitioners—that is, managers of organizations of various levels and nature, including the private and public sectors.

Thus, decision-making on project management tools and the introduction of digital technologies in the field of public administration, as one of the types of innovative management technologies in the field of public administration, are key tools for improving the efficiency of the public administration system itself in many countries, including the Republic of Kazakhstan.

#### Materials and methods

The authors used content analysis based on a literature review of scientific research on the introduction of innovative technologies in the public administration system.

In addition, the authors conducted an empirical research method, in particular in the form of quantitative research by conducting a sociological survey among civil servants (at central and local levels) of the Republic of Kazakhstan.

In addition, the article used the following methods of scientific research: analysis and synthesis of information provided by scientific publications on the development of innovative management technologies implemented in the public administration system. The theoretical, methodological, and information base is based on the publications of scientists. Based on the analysis, we come to the conclusion that correctly developed approaches to the introduction of innovative management technologies will lead to effective interaction between state bodies and society.

The purpose of this study is to develop recommendations for improving the approaches introduced by innovative management technologies in the public administration system of the Republic of Kazakhstan, such as digital transformation and project management.

#### Research results

Experts estimate the level of implementation of innovative technologies in the public administration system in the Republic of Kazakhstan as average. At the same time, Kazakhstan is actively implementing various information and communication technologies in the public sector. However, there is still much room for improvement.

Today, Kazakhstan is developing a Digital Code that will form a single legal space for the development of the digital economy and digital transformation of public administration. In the Republic of Kazakhstan, special attention is currently being paid to the introduction of innovative technologies, in particular, one of the main national projects of the country is the national project "Technological Breakthrough through Digitalization, Science, and Innovation," approved by the Decree of the Government of the Republic of Kazakhstan dated October 12, 2021 No. 727, the purpose of which is to make Kazakhstan a modern country with management through digital transformation, making decisions based on reliable data, ensuring the efficient and secure use of infrastructure in the digital age, and increasing the contribution of science to the socio-economic development of the country.

In accordance with the Rules for project management, approved by the Decree of the Government of the Republic of Kazakhstan dated May 30, 2021 No. 358, project management is designed to ensure the effective implementation of the tasks of state bodies by introducing a new organizational culture and a project-network model of public administration based on modern technologies.

According to the National Information Technologies Joint-Stock Company the largest company in the information technology market of Kazakhstan, there are 28 electronic information platforms in the country that provide various types of services to both state bodies and the population.

From the conducted analysis, the authors revealed that out of 28 electronic information platforms, there are 11 information projects in the field of public administration, nine projects in the social sphere that provide public services, five projects in the field of business, and three projects in the field of legal relations.

At the same time, for a more comprehensive analysis of the public administration system, the authors conducted research to determine the level of implementation of innovative management technologies at the local and central levels of public administration.

This research was conducted using an electronic questionnaire sent to respondents. The survey was conducted using the Google Forms application. The questionnaire was sent to central and local executive bodies in all 20 administrative territorial units of Kazakhstan, including 17 regions and three cities of republican significance.

Here is the translation of the provided text into English: According to the results of the conducted analysis, out of the total number of respondents, which included 363 individuals aged 18 and older, 221 (60.9%) were women and 142 (39.1%) were men. Among the respondents working in local executive bodies, 304 (83.7%) were from local authorities, 15 (4.1%) were from central government bodies, 30 (8.2%) were from territorial subdivisions of central government bodies, and 14 (3.9%) were from other state bodies. In the study, 282 (80.7%) specialists, 56 (15.4%) managers, and approximately 25 people (4%) in other positions participated. The survey indicated how well government employees understood the definition of "innovative management technologies," and a number of response options were provided for this definition (Table 2). The survey indicated the extent to which civil servants understand the definition of "innovative management technologies," where a number of possible answers were given for this definition (Table 2).

No.	What are "innovative management technologies"?	Number of selected answer options (%)
1.	New technologies and ideas implemented in the public administration system	40.8%
2.	Application of new and modern tools and approaches in the process of organizing and managing state bodies and structures	36.1%
3.	Digital technologies and the transformation of digital systems	8.8%
4.	Various changes in the management system at the level of society or its parts, which set themselves the task of achieving certain goals or solving specific tasks related to the develop- ment and functioning of the system	8.3%
5.	Digitized public service delivery systems	6%

Table 2. Definition of the concept of "innovative management technologies"

Source: compiled by the authors on the basis of the conducted sociological survey

Based on this data, it should be concluded that respondents share this definition between new technologies and ideas introduced into the public administration system, as well as the use of new and modern tools and approaches in the process of organizing and managing state bodies and structures.

When asked whether the organization in which the respondents work has a strategy for introducing innovative management technologies, such as the use of project management in decision-making and digital technologies, the majority of respondents (46.8%) answered yes, 34.4% of respondents answered that their organization does not have any strategies for introducing new technologies, and 18.7% of respondents said that they do not have information about any changes in relation to the implementation of innovative technologies.

For the question about who in their organization contributes to the efficiency of using innovative technologies, a number of possible answers were given by the respondents. Respondents included first-line managers, information and communication technology specialists responsible for digitalization, and heads of structural divisions. Some respondents found it difficult to answer, and others provided a more open version of an answer at their own discretion.

For this question, the largest response (27%) was that the use of innovative technologies was attributed to the specialist responsible for digitalization. Among the open responses, 0.6% of respondents believed that the merit is shared—that is, the entire organization.

Further, to distinguish between innovative management technologies, such as the use of project management and digitalization, separate questions were compiled for each such technology.

When asked whether the organization uses a project-based approach for

decision-making, the majority (37.5%) of respondents said no, 32.2% found it difficult to answer, and only 30.3% of respondents answered positively (Figure 1).



*Figure 1*. Is project management used in your organization?

Source: compiled by the authors on the basis of the conducted sociological survey

The majority of respondents answered that they do not use the project approach and found it difficult to answer. For the next question regarding whether there are regulatory legal acts on project management adopted by the state body, the majority (43.5%) answered no, 33.9% of respondents found it difficult to answer, and only 22.6% of respondents answered yes. The results are visible in Figure 2.

**Figure 2.** Are there any regulatory legal acts on project management adopted by your state body?



Source: compiled by the authors on the basis of the conducted sociological survey

Regarding the assessment of the level of project management implementation in public administration systems, it was revealed that 125 respondents (34.4%) rated the level of project management implementation as 1 (1 point is the lowest and 10 points is the highest), which shows a low indicator of project approach implementation (Figure 3).



Figure 3. The level of project management implementation in public administration systems

Source: compiled by the authors on the basis of the conducted sociological survey

As for the introduction of digital technologies, the analysis of the results of the questionnaire showed that, in contrast to project management, the level of assessment of the use of digital technologies is significantly higher. According to the presented schedule, it was revealed that 70 people each rated the lowest and highest level (Figure 4).



Figure 4. The level of use of digital technologies in the public administration system

Source: compiled by the authors on the basis of the conducted sociological survey

After determining the assessment of satisfaction with the use of digital technologies in the public administration system, respondents had to answer the question of how the public administration system has changed in the use of digital technologies in recent years. The results of this question were very positive, as the majority of respondents answered that they had noticed a significant change (Figure 5). Figure 5. Changes in the public administration system when using digital technologies in recent years



Source: compiled by the authors on the basis of the conducted sociological survey

To determine the reasons for the unwillingness and inability to implement innovative management technologies in public administration bodies, a question was asked about what prevents the respondent's organization from effectively implementing innovative management technologies. Respondents were allowed to give their own specific reasons, and a number of main problems were identified.

The majority of respondents, 125 people (34.4%), pointed to the lack of qualified specialists in their field, and one person (0.3%) attributed issues to the lack of internet access (Figure 6).





Source: compiled by the authors on the basis of the conducted sociological survey

Based on this question, it was revealed that the lack of employees, the lack of management involvement, and the lack of competence of existing employees lead to the inefficient implementation of innovative management technologies.

To solve these problems, the research survey asked whether training and seminars on professional development are needed in terms of skills in implementing and using innovative management technologies (and how the degree of importance for improving competencies is assessed: 0 - I can't answer; 1 - low; 10 - high). The data on the question was optimal, meaning that employees, despite their workload and the transition to a new management, showed a desire to learn something new and embrace changes.

For example, 154 people (42.4%) scored 10 points, which is the highest indicator, while 47 people (12.9%) scored 1 point (Figure 7).

Figure 7. Conducting training and seminars on professional development services



Source: compiled by the authors on the basis of the conducted sociological survey

At the end of the research survey, the respondents were asked an open question regarding recommendations for improving competencies in the implementation of innovative management technologies in the public administration system of the Republic of Kazakhstan. One of the most popular responses was the suggestion to hold training and seminars (Table 3).  
 Table 3. Recommendations for improving the implementation of innovative management technologies in the public administration system

No.	Suggestions and recommendations	Quantity (%)
1.	Conduct seminars, courses, training, etc. on teaching innovative technologies.	5.5%
2.	Organize advanced training for employees.	1.4%
3.	Improve and modernize technical equipment.	0.6%
4.	Conduct a thorough analysis of the use and implementation of innovative management technologies.	0.6%
5.	Raise employee awareness.	0.6%
6.	Increase the number of employees responsible for digitalization.	1.2%
7.	Learn and use international experience.	0.6%
8.	Improve digital literacy not only of employees, but also of the country's population.	0.3%
9.	Conduct open discussions.	0.3%
10.	Send employees to an offline format abroad to gain knowledge and experience in the field of innovative technologies.	0.6%
11.	Conduct practical training from experts in this field.	0.99%
12.	Motivate employees to use and apply IT. Support from top managers. Often, managers are not interested because they are not used to working with technology. Also, optimize the routine work that leads to the increased workload of employees (bureaucracy, constant reports, and references).	1.2%
13	Create a modern and effective education system that meets the challenges of modern times, which would be a key factor in deve- loping and realizing the country's innovative potential. One of the directions of innovative development of education is the develop- ment of a digital educational environment that ensures high-quality accessibility of additional professional (pedagogical) education.	0.3%
14.	Foster team engagement and cohesion.	0.3%
15.	Increase the salary of employees.	0.3%
16.	Increase the internet speed.	1.2%

Source: compiled by the authors on the basis of the conducted sociological survey

### Discussion and conclusions

One of the first steps in implementing innovative management technologies in the Republic of Kazakhstan was the development of state information systems and expanding citizens' access to electronic services. In 2006, the "Electronic Government" law was adopted, which became the basis for the creation and implementation of the system of electronic public services. This allowed citizens and legal entities to receive various state services via the internet, significantly reducing waiting times and increasing service accessibility.

During this period, document management automation systems in government agencies were actively developed, which ensured increased efficiency of government employees' work and reduced bureaucratic barriers. In the following decades, Kazakhstan continued the active implementation of innovative technologies in management practices. In 2013, the "Digital Kazakhstan" strategy was adopted, aimed at developing the digital economy and improving the quality of public services. As part of this strategy, areas such as the use of cloud technologies, big data, and analytics for improving the quality of public administration were actively developed. In 2018, a new government services portal was launched, significantly improving the accessibility and convenience of service delivery for citizens. Blockchain technologies are also actively being implemented to ensure transparency and data security. In recent years, areas such as the use of artificial intelligence for forecasting and improving the performance of government agencies, as well as the development of systems for monitoring and analyzing the activities of state bodies based on big data, have been actively developing.

Today, the innovative technologies being implemented in the system of government agencies directly affect the Government Effectiveness Index, created by the World Bank.

The obtained analysis of the results of a sociological survey and the policy pursued in the country through the development of regulatory legal acts shows a contradictory situation. The conducted sociological survey indicates that the level of implementation of innovative management technologies is low, especially noticeable at the local state level. As the analysis of the survey results shows, the main problems are as follows:

- 1) A lack of qualified specialists in this industry
- 2) Employees who do not understand why changes are necessary and how important such changes are
- A lack of involvement of heads of state bodies in the implementation of innovative management technologies
- A focus on employees prioritizing main tasks in their work over the introduction of new technologies
- 5) A lack of motivation and unwillingness to embrace changes
- Insufficient funding from the Government for the necessary industry-specific equipment and specialists

Nevertheless, as the results of the study show, despite the existing problems, civil servants are still ready to study and adopt new management technologies in the public

administration system. Respondents suggest that they should train and attract as many specialists as possible in their industry, and learn and be prepared for changes that will lead to large-scale changes and changes in the quality of public services. This will increase the efficiency of public administration in the country as a whole. To achieve this result, respondents offered their ideas and positions on this issue. Many felt that to fill the gap in the lack of qualified specialists, it is necessary to conduct high-quality theoretical and practical training from key experts, including international ones in their field, motivate employees from the first heads of state bodies, work as a team, and provide employees with all the necessary equipment, including improving the quality and speed of the internet in all regions of the country.

The above shows that the regulatory framework and policy in the field of public administration are fully ready for changes and the use of innovative management technologies in the public administration system of the Republic of Kazakhstan.

An important aspect of improving the application of innovative technologies by government employees is the creation of educational programs, seminars, and training aimed at preparing specialists in digital technologies, information systems, and project management.

At the same time, special attention must be given to the employees of government structures at the local level, ensuring the integration and necessary infrastructure for innovative technologies.

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# INOVATYVIŲ TECHNOLOGIJŲ TAIKYMAS KAZACHSTANO RESPUBLIKOS VALDYME

Anotacija. Globalizacijos, skaitmeninimo ir sparčių pokyčių socio-ekonominėje aplinkos kontekste inovatyvios valdymo technologijos tampa svarbiausiu įrankiu gerinant viešojo administravimo sistemos efektyvumą.

Ypatingas dėmesys skiriamas klausimui apie valstybės tarnautojų priėmimo ir įsitraukimo lygį pereinant nuo tradicinių sprendimų priėmimo metodų prie inovatyvių, naudojant šios straipsnio autorių atliktą sociologinį tyrimą. Šiuolaikiniai iššūkiai reikalauja, kad valstybės institucijos ne tik prisitaikytų prie naujų technologinių tendencijų, bet ir transformuotų sąveikos su piliečiais mechanizmus bei optimizuotų vidaus valstybės struktūrų darbą.

Inovatyvios valdymo technologijos, tokios kaip skaitmeninimas, skaitmeninė transformacija ir projektų valdymas teoriniu požiūriu gali reikšmingai padidinti viešojo administravimo skaidrumą, prieinamumą ir efektyvumą, tačiau reikia nustatyti kiek praktikoje viešosios valdžios institucijos ir valstybės tarnautojai yra pasirengę tokiems pokyčiams.

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