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**DIGITALIZATION OF PUBLIC ADMINISTRATION OF SOME SCO  
MEMBER STATES IN THE CONTEXT OF INNOVATION POLICY  
IMPLEMENTATION**

**ЦИФРОВІЗАЦІЯ ПУБЛІЧНОГО УПРАВЛІННЯ ОКРЕМИХ  
ДЕРЖАВ-ЧЛЕНІВ ШОС У КОНТЕКСТІ РЕАЛІЗАЦІЇ  
ІННОВАЦІЙНОЇ ПОЛІТИКИ**

**Summary.** *In the article, the authors consider the problem of the interconnection between digitalization of public administration and the implementation of innovation policy on the example of individual countries of the SCO. In particular, the experience and problems of countries of Central Asia were considered. Analysis of the problems of innovative development of the specified countries is important for Ukrainian researchers from the point of view of assessing the potential of these countries and their special position regarding the assessment of Russian aggression against Ukraine. To prove their hypotheses, the authors use the indicators of the Global Innovation Index, in particular, they pay special attention to the sub-indicators that characterize the development of the IT infrastructure. At the same time, the article examines the steps used by the governments of these countries to achieve a certain level of digitalization and implementation of innovative development policy. It was determined that there is a connection between the level of IT infrastructure development and achievements in the development of an innovative economy. In addition, for individual SCO countries, the value of the rating based on indicators of the development of e-governance was analyzed.*

*Special attention is paid to the educational factor in the context of the research topic. The authors believe that it is the educational factor that can become the connecting link between the formation of a digital state and the successful implementation of innovation policy. After all, high-quality human capital, which is the result of educational activities, can be a driver of sustainable innovative development of the state. The effective functioning of the triangle of knowledge should provide for the synergistic unity of education, science and innovation. After all, the implementation of the educational process should take place on the basis of the latest scientific research, scientific research should be carried out by highly qualified researchers, and the results of research should be implemented in high-tech business.*

*The authors conclude that one of the key problems characteristic of all countries is the lack of a full-fledged system of strategizing the processes of digital development of the sphere of public services, which in the future may lead to technical inconsistency of information systems, insufficient financial support for their proper implementation.*

**Key words:** *digitalization of public administration, innovation policy, SCO member countries.*

**Анотація.** *В статті автори розглядають проблему взаємозв'язку між цифровізацією публічного управління та імплементацією інноваційної політики на прикладі окремих країн Шанхайської організації співробітництва. Зокрема, розглянуто досвід і проблеми країн Центральної Азії. Аналіз проблем інноваційного розвитку вказаних країн є важливим для українських дослідників з точки зору оцінки потенціалу цих країн та їхньої особливої позиції щодо оцінки російської агресії проти України. Для доведення своїх гіпотез автори використовують показники Глобального інноваційного індексу, зокрема особливу увагу приділяють субпоказникам, які характеризують розвиток ІТ-інфраструктури. Водночас, в статті розглянуто кроки, які використовують уряди цих країн для досягнення певного рівня цифровізації та реалізації політики інноваційного розвитку. Визначено, що існує зв'язок між рівнем розвитку ІТ-інфраструктури та досягненнями при розбудові інноваційної економіки. Додатково для окремих країн ШОС проаналізовано значення рейтингу за показниками розвитку електронного урядування.*

*Окрему увагу в контексті тематики дослідження приділено освітньому фактору. Автори вважають, що саме освітній фактор може стати сполучною ланкою між формуванням цифрової держави та успішною реалізацією інноваційної політики. Адже якісний людський капітал, який є результатом освітньої діяльності, може бути драйвером сталого інноваційного розвитку держави. Ефективне функціонування*

*трикутника знань повинно передбачати синергійну єдність освіти, науки та інноваційної діяльності. Адже, здійснення освітнього процесу має відбуватися на основі найновіших наукових досліджень, проведення наукових пошуків здійснюватися висококваліфікованими дослідниками, а результати досліджень впроваджуватися у високотехнологічний бізнес.*

*Автори доходять висновку, що однією з ключових проблем, характерних для всіх країн є відсутність повноцінної системи стратегування процесів цифрового розвитку сфери державних послуг, що в майбутньому може призвести до технічної неузгодженості інформаційних систем, недостатньої фінансової підтримки їх належної реалізації.*

***Ключові слова:** цифровізація публічного управління, інноваційна політика, країни-учасниці ШОС.*

**Introduction.** Today, the operation of public administrative bodies under the dominance of the market paradigm in economic relations is characterized by the state's unique role as a distinct actor in implementing innovation policy. The need to study the models of public administration functioning in the context of innovation policy implementation becomes crucial due to the high dynamism of both national and global economic systems.

In modern conditions, the public administration system serves as the architect of the key vectors or priorities for national economic system development. Strategically, this will enhance the nation's economic potential, ensuring stability and sustained growth through innovation in the long run.

It's worth noting that when executing innovation policies, countries are tasked with prioritizing strategic macro-environment development in light of current trends in the intellectualization of economic systems. These include expanding the share of the quaternary sector in the economy, forming an integrated system for generating, exchanging, and commercializing innovative

resources, and stimulating digitalization processes, among other things. The digitalization of the public administration sector is not only a result of innovation implementation but also a driving force for a nation's further innovative development.

The modern member states of the Shanghai Cooperation Organization have special foreign policy and economic ties, as well as a special experience of integrating into the global system of market relations. Therefore, given the polarization of the modern world system in terms of economic, political and ideological criteria, the study of the problems of digitalization of public administration of the member countries of the Shanghai Cooperation Organization in the context of the implementation of innovation policy deserves special attention.

**Review of literature.** The issue of public administration digitalization within SCO member states has been explored by numerous researchers, including but not limited to: Aubakirova G., Isataeva F. [14], Kazieva A., Kadyrova K. [17], Ochilova H. [20], Shalbaeva Sh., Shodiev B., Sultonov B., Rakhimov Sh. [25], Chiniyev D. [24], Karimova M. [5], Savinov L., Skorykh N. [22], Torogeldieva B., Umarova A. [13] and others.

Certain facets of innovation policy implementation within these countries have been discussed in publications by Akimova B., Borisova E., Nurpeisova A. [10], Dzhabarov A., Davlatov D., Imanbekova B., Sadyrova M., Yusupov K. [12], Ergasheva-Mamadievna F., Karimova M. [5], Kharchilava G., Kerimbayev A., Mukhtorov Z., Spankulova L., Mukhamediyev B. [8], Toshpulotov A. [23], Smailova L., Niyazbekova S., Zoidov K., Urunov A. [16] and others.

Despite various studies on different aspects of public administration digitalization and innovation policy, these processes have often been examined independently of each other. This highlights the need to fill a research gap, investigating the role of public administration digitalization in activating innovative processes.

**Objectives of the Study.** The research aims to study the challenges of public administration digitalization in the context of the innovation policy implementation in the SCO member countries.

**Results of the study.** Among all SCO member countries, post-Soviet nations such as Kazakhstan, Kyrgyzstan, Uzbekistan, and Tajikistan present the most interest for our study. We deliberately exclude countries like China and India from our analysis as the issues of public administration digitalization and innovation policy in these nations have already been extensively researched.

The connection between digitalization and innovative development isn't influenced by regional factors, as evidenced by the report "Digital Technologies for a New Future", prepared by the Economic Commission for Latin America and the Caribbean. The report states that "The digital transformation of the production sector is taking the form of new management, business and production models that are facilitating innovation and the introduction of new markets and disrupting traditional industries" [1]. Drawing upon this analogy, it's reasonable to assert that the digital transformation of public administration also contributes to the implementation of innovative policy. The authors further assert, "A similar process ought to take place in the public management models of State bodies, in order to meet citizens' demands and improve government action" [Ibid].

To support our assertions, we will compare the positions of the aforementioned countries based on the Global Innovation Index (Table 1).

*Table 1*

**Rating of some SCO member countries by Global Innovation Index**

Country	Overall Global Innovation Index, rank
Uzbekistan	82
Kazakhstan	83
Kyrgyzstan	94
Tajikistan	104

*Source:* compiled by the authors based on [4]

It's noteworthy that in 2022, according to the report [4], Uzbekistan joined the ranks of the leading innovative economies of Central and South Asia, alongside SCO member countries such as India and Iran.

Let's take a closer look at the "Infrastructure" indicator, specifically the ratings of our chosen countries for the sub-indicator "Information and communication technologies (ICTs)" (Table 2).

*Table 2*

**Rating of some SCO member countries by indicators of IT infrastructure development**

Country	Infrastructure	Information and communication technologies (ICTs)	ICT access*	ICT use*	Government's online service*	E-participation
Uzbekistan	74	55	78	66	46	46
Kazakhstan	58	25	43	51	11	26
Kyrgyzstan	86	77	72	80	79	66
Tajikistan	121	123	103	129	123	117

*Source:* compiled by the authors based on [4]

As we can see, a connection between digital technology development and innovative development exists. Despite having the best positions in IT infrastructure development, Kazakhstan lags just behind Uzbekistan in the overall Global Innovation Index due to superior ratings in "Market sophistication" and "Creative outputs".

Let's briefly consider the evolving mindset towards digitalization of state administration and the adoption of innovative development in these regions.

We'll begin with Kazakhstan's experience. The relevance of studying the problems of Kazakhstan's innovative development can be summed up as follows: "Despite certain potential in human capital and research, Kazakhstan's innovative development is low. Enterprises' innovative development and patent activity are weak, and science continues to operate within the traditional (industrial) model, disconnected from business and education. It's necessary to

develop competitive mechanisms that stimulate not only the supply but also the demand for innovations" [10, p. 1777].

In our view, total digitalization, particularly in the public administration sector, should be one of the main factors.

One of the fundamental components of the public administration system structure is the approach to innovation policy implementation. This is particularly important when studying the Kazakh experience, as the national economy of Kazakhstan was characterized for a long time by high levels of overregulation and a lack of mechanisms ensuring transparency and public control. This eventually led to numerous problems when implementing measures to adapt the public administration system to market reform.

Experts assert that Kazakhstan's innovative system, in its latest iteration, is just starting to develop. Presently, researchers have identified key challenges in the formation and implementation of state innovation policy in the country, including:

- A lackluster business environment, reflected in underdeveloped conditions for fair competition and for receiving state support;
- Significant obstacles to the spread of new technologies in the economy, due to the absence of a state policy on innovation and ineffective industry regulation;
- Insufficient efforts by regional and local authorities to create conducive conditions for innovation;
- Infrequent collaboration between business and the state in the development and execution of innovation policy, which fails to ensure a balance of interests among diverse innovation-driven enterprises;
- The ineffectiveness of state tools supporting innovation due to limited flexibility, underdeveloped mechanisms for risk distribution between the state and businesses, and inadequate emphasis on promoting ties between



various participants in innovation processes, and the development of scientific, industrial, and technological partnerships [12].

One promising area for enhancing the public administration system, considering the increasing humanization of economic relations and the robust development of the information society, involves providing public administrative services and progressively digitalizing relevant procedures. Notably, Kazakhstan's state institutions have made significant strides in digitalization, executing the "National Development Plan of the Republic of Kazakhstan until 2025," approved by Presidential Decree in 2018 [19].

Since 2006, Kazakhstan has been implementing a proactive policy towards developing a digital government (e-government). This is evident in the continuous digitalization of primary functional areas for providing services (administrative services for civilians and the business sector, medicine, labor market, educational services, etc.) and promoting transparency in the public sector [2; 14; 17].

Specifically, a dedicated eGov digital platform has been developed for civilians and businesses, providing access to 580 public services online. In 2022, 80% of Kazakhstan's population used the platform's services. For the business sector, this platform has reduced the average number of required documents by 30% and trimmed the necessary time costs by threefold. Altogether, the platform provided 54 million public services, creating conditions conducive to the growth of the innovation sector.

Furthermore, a digital labor exchange, [enbek.kz](http://enbek.kz), was developed to simplify employment procedures through government agencies and to minimize the corresponding costs for relevant government departments and the business sector. During its existence, about 1.57 million job seekers and 479 thousand potential employers have used its services.

The digitalization of the education sector will be a crucial factor for the future development of innovation policy. According to researchers, it has

reduced the disparity in education quality between urban and rural populations by 30%.

The effectiveness of the policy for digitalization of public services in Kazakhstan is corroborated by international e-government development ratings [3], where Kazakhstan ranks 28th among 193 countries. Evaluating the regional profile of this study (Central Asia), Kazakhstan takes the first position. It should be noted that one of the most challenging aspects of effective public administration digitalization in Kazakhstan is the level of technical infrastructure needed for relevant activities. Nevertheless, from 2018 to 2020, Kazakhstan increased the number of Internet-connected subscribers in rural areas from 100 thousand people (55 villages) to 800 thousand people (741 villages).

Within the digitalization of public services in Kazakhstan, special emphasis is placed on innovative tools. Blockchain technology, one such tool, holds two crucial benefits for public institutions. First, it can streamline administrative procedures, and second, it can provide security and mitigate corruption risks owing to its inherent reliability.

Notable examples of digital platforms within Kazakhstan's public administration system, based on blockchain technology, include the Blockchain VAT system, Invest Online, and the Register of Administrative Proceedings [21].

However, despite concerted organizational and managerial efforts to implement digital technologies and innovative tools in crucial public service sectors, modernization processes in Kazakhstan's public administration system encounter a range of problems. These issues significantly limit the system's full potential in utilizing the functionality of digital tools. Problems include a mismatch between the development of digital public administration tools and the institutional and legal framework, the existence of a digital divide, technical

flaws in digital products regarding cybersecurity, and incompatibility between information systems.

Exploring the experience of public administration digitalization in Uzbekistan, this reform area is among the most promising considering the achievements and projected projects for new digital tool implementation. According to the e-governance world ranking indicator, Uzbekistan occupies the 69th position, which is generally an average score within the regional context [3].

Presently, a single web portal (my.gov.uz) has been implemented in Uzbekistan for providing virtual state administrative services. This platform offers about 250 types of remote services, integrating the information systems of approximately 600 state structures.

This initiative was positively received by business entities, as about 58% of online services were specifically provided to business entities [20, p. 33].

However, despite the presence of fully functioning public digital services in Uzbekistan, several problematic aspects act as significant barriers to accelerating digitalized development of public administration in the country:

- significant functional and regional disparities exist in the implementation and development of digital tools;
- technical inconsistencies in the operation of interdepartmental information systems are prevalent;
- a considerable digital and infrastructure gap greatly limits the potential for digital reforms in Uzbekistan;
- certain social groups have a biased attitude towards digital technologies.

Next, let's examine the challenges of digitalization in Kyrgyzstan's public administration system.

The Republic of Kyrgyzstan encounters various obstacles that may impede innovative development. Among these, limited access to information technology and digital infrastructure stands out. Furthermore, underdeveloped

information technology and limited access to digital infrastructure can hamper the application of innovative solutions and technologies across various sectors.

According to Savinov L., Skorykh N. and Torogeldieva B., one of the key issues obstructing the digitalization of public administration is the "insufficient number of individual internet users (34.50%; CIS average - 65.10%) and households with a computer (21.40%; CIS average - 67.40%), as well as household internet access (18.76%; CIS average - 68.00%)" [22].

Some efforts have been made in recent years in Kyrgyzstan to improve the situation. As highlighted by a research team led by Kulueva Ch., "Kyrgyzstan is intensifying its position in building a 'digital community' as the basis for national economic development in the twenty-first century. To this end, the National Development Strategy of the Kyrgyz Republic for 2018–2040 was approved by the Presidential Decree on November 1, 2018. Within this strategy, the National Digital Transformation Program 'Digital Kyrgyzstan' for 2019-2023 was also considered and approved" [6].

Significant strides in digitalizing public management interactions in Kyrgyzstan include the creation and implementation of unified digital platforms like "Sanarip Kyrgyzstan", the "Tunduk" electronic interdepartmental interaction system, a portal and mobile app for electronic public services, and the "Sanarip aimac" municipal management digital platform.

Finally, we'll examine the features of public administration digitalization in Tajikistan, which, as noted earlier, ranks last among the SCO member countries under consideration.

According to researchers, the issues of innovative development in Tajikistan are severe. Zoidov K., Urunov A., Kharchilava G., and Dzhabarov A. observe that "an analysis of the resource potential of the innovation sector in Tajikistan shows that it is in a deep crisis, which significantly diminishes opportunities for its growth and competitiveness. The number of scientists in the

country is inadequate, and its share in the global market for science-intensive products is no more than 0.0001%" [16].

Summing up the research on the implementation of public administration in Tajikistan, we can highlight several key obstacles that impede the development of the country's innovative sector.

Among the general issues of public administration in Tajikistan are: the absence of a comprehensive system for strategizing and prioritizing development processes; functional disorganization of individual executive authorities due to an imperfect regulatory framework; inconsistent use of regulatory tools; low levels of transparency in state institutions; and weak tripartite communication links between the state, the business environment, and civil society [25].

Given these issues, a critical area for optimizing Tajikistan's modern public administration system and for improving the implementation of innovation policy is the introduction of digital technologies (both within information systems of government bodies and the public services sector).

Analyzing the relevant processes within Tajikistan's system, the development rates in this area are sluggish. In the international e-government ranking, Tajikistan holds the 129th position out of 193, marking one of the lowest rates among regional countries [3].

Primary reasons for this include: a low level of IT specialists training, leading to frequent functional errors in coordinating digital tools and their scope; issues of confidentiality and cybersecurity of system users' personal data; prevalent negligence among individuals responsible for digital development processes; and misuse of budgetary resources for digitalization [24, p. 28].

A pressing issue in Tajikistan's digital development is the frailty of the technical infrastructure necessary for using digital products (coverage of high-speed internet, mobile communications, availability of computing facilities), and basic digital literacy skills among the population and civil servants.

According to data cited from Kayumov N. and Dovgyallo Ya., Tajikistan “has the lowest network readiness among the CIS countries, indicating an insufficient level of information technology development. Today, technology plays a leading role not only in the country's economic development, but also in its public administration system. This is evidenced by state structures' readiness to use modern information and communication technologies in the management process, as measured by the e-government development index... Tajikistan lags far behind other CIS countries in terms of e-government development” [18].

Notably, in analyzing various government programs and development plans of the countries studied, we noticed that almost all underscore the importance of providing quality education. We propose that education could be the link between forming a digital state and successfully implementing an innovation policy. On one hand, all the countries need to overcome the digital divide by equipping their populations with necessary competencies. On the other hand, innovation is an integral part of the knowledge triangle. Without high-quality education—and thus high-quality human capital it will be impossible to conduct promising scientific research and, moreover, to incorporate it into the production process.

**Conclusion.** In summarizing the preceding analysis of the issues surrounding the digitalization of public administration systems in Kazakhstan, Kyrgyzstan, Tajikistan, and Uzbekistan, we can identify common problems in implementing innovation policy. These typically concern matters related to institutional reform and further stimulation of digital development processes. Overcoming barriers and fostering an environment conducive to innovative development requires systemic changes. These changes include creating effective financing mechanisms, bolstering the research base, developing digital infrastructure, ensuring stability and predictability in the political and economic spheres, and cultivating a culture of innovation and entrepreneurship.

A key issue common to all the countries under study is the absence of a robust system for strategizing digital development processes in the public services sector. This could eventually lead to technical inconsistencies in information systems and inadequate financial backing for their proper implementation.

In our view, it is vital to conduct research that will help these countries establish a scientific foundation for significantly bolstering digitalization processes and intensifying innovative development.

### **Literature**

1. Economic Commission for Latin America and the Caribbean (ECLAC), Digital technologies for a new future (LC/TS.2021/43), Santiago, 2021. URL: [https://www.cepal.org/sites/default/files/publication/files/46817/S2000960\\_en.pdf](https://www.cepal.org/sites/default/files/publication/files/46817/S2000960_en.pdf) (date of access: 22.07.2023).
2. eGov. Мемлекеттік қызметтер және онлайн ақпарат. URL: <https://egov.kz/cms/kk/> (date of access: 18.07.2023).
3. E-Government Survey 2022. The Future of Digital Government. UN. URL: <https://desapublications.un.org/sites/default/files/publications/2022-09/Web%20version%20E-Government%202022.pdf/> (date of access: 22.07.2023).
4. Global Innovation Index 2022. WIPO. 2023. URL: <https://www.wipo.int/edocs/pubdocs/en/wipo-pub-2000-2022-en-main-report-global-innovation-index-2022-15th-edition.pdf> (date of access: 22.07.2023).
5. Karimova M. What China’s Belt and Road Initiative Means for the Republic of Tajikistan. *China's Development and the Construction of the Community with a Shared Future for Mankind. Research Series on the Chinese Dream and China's Development Path*. Springer, Singapore. doi: [https://doi.org/10.1007/978-981-19-7423-6\\_54](https://doi.org/10.1007/978-981-19-7423-6_54) (date of access: 15.07.2023).

6. Kulueva C.R., Myrzaibraimova I.R., Alimova G.B., Kuznetsov V.P., Romanovskaya E.V. The Role of Scientific and Educational Platform in Formation of the Innovative Economy of Kyrgyzstan: Foreign Experience, Realities, and Prospects. *The 21st Century from the Positions of Modern Science: Intellectual, Digital and Innovative Aspects*. ISC 2019. Lecture Notes in Networks and Systems. 2020. Vol 91. Springer, Cham. doi: [https://doi.org/10.1007/978-3-030-32015-7\\_55](https://doi.org/10.1007/978-3-030-32015-7_55) (date of access: 22.07.2023).
7. Medina L., Schneider F. Shadow economies around the world: What did we learn over the last 20 years? IMF. 2018. URL: <https://www.imf.org/en/Publications/WP/Issues/2018/01/25/Shadow-Economies-Around-the-World-What-Did-We-Learn-Over-the-Last-20-Years-45583> (date of access: 24.07.2023).
8. Mukhamediyev B., Spankulova L., Kerimbayev A. Diffusion of Innovation, Knowledge Spillover and Economic Growth in the Regions of Kazakhstan. *Int Adv Econ Res*. 2019. № 2. P. 487-488.
9. Nasyrov A. Civil Service Reform in Kyrgyzstan: Challenges and Threats. *Public Service Evolution in the 15 Post-Soviet Countries*. Palgrave Macmillan, Singapore. 2022. doi: [https://doi.org/10.1007/978-981-16-2462-9\\_8](https://doi.org/10.1007/978-981-16-2462-9_8) (date of access: 24.07.2023).
10. Nurpeisova A.A., Smailova L.K., Akimova B.Z., Borisova E.V., Niyazbekova S.U. Condition and Prospects of Innovative Development of the Economy in Kazakhstan. *Socio-economic Systems: Paradigms for the Future. Studies in Systems, Decision and Control*. Springer, Cham. 2021. Vol 314. doi: [https://doi.org/10.1007/978-3-030-56433-9\\_184](https://doi.org/10.1007/978-3-030-56433-9_184) (date of access: 23.07.2023).
11. Sabzalieva E. From Policy Design to Lived Experiences: Developing University Research Capacity in Tajikistan Since 1991. *Building Research Capacity at Universities*. Palgrave Macmillan, Cham. 2022. doi: [https://doi.org/10.1007/978-3-031-12141-8\\_14](https://doi.org/10.1007/978-3-031-12141-8_14) (date of access: 25.07.2023).



12. Sadyrova M., Yusupov K., Imanbekova B. Innovation processes in Kazakhstan: development factors. *Journal of Innovation and Entrepreneurship*. 2021. 10. P. 1-13.
13. Umarova A. Uzbekistan: Long Awaited Transformation of Civil Service—Paradigm Shift or Hot Air? *Public Service Evolution in the 15 Post-Soviet Countries*. Palgrave Macmillan, Singapore. 2022. doi: [https://doi.org/10.1007/978-981-16-2462-9\\_16](https://doi.org/10.1007/978-981-16-2462-9_16) (date of access: 17.07.2023).
14. Аубакирова Г.М., Исатаева Ф.М. Модернизация системы государственного управления Республики Казахстан. *Экономика, предпринимательство и право*. 2021. № 11. С. 827-844.
15. Еңбек ресурстарын дамыту орталығы: сайт. URL: <https://www.enbek.kz/kk> (date of access: 22.08.2023).
16. Зоидов К.Х., Урунов А.А., Харчилава Г.П., Джабаров А.А. Инновационное пространство Республики Таджикистан: анализ состояние и возможности развития. *Региональные проблемы преобразования экономики*, 2021. № 7(129). С. 112-120
17. Казиева А. Н., Шалбаева Ш. Е., Кадырова К. Ж. Цифровая трансформация как процесс изменения системы государственного управления в Казахстане. *Мемлекеттік аудит–государственный аудит*. 2022. № 56. С. 47-57.
18. Каюмов Н.К., Довгялло Я.П. Роль инноваций в развитии экономики Республики Таджикистан. *Евразийская интеграция: экономика, право, политика*. 2023. № 17(1). С. 29-49.
19. Қазақстан Республикасының 2025 жылға дейінгі Ұлттық даму жоспарын бекіту және Қазақстан Республикасы Президентінің кейбір жарлықтарының күші жойылды деп тану туралы. Қазақстан Республикасы нормативтік құқықтық актілерінің ақпараттық-құқықтық жүйесі. URL: <https://adilet.zan.kz/kaz/docs/U1800000636#z28> (date of access: 25.08.2023).

20. Очилова Х.Ф. Особенности развития цифровой экономики в Узбекистане. *Современные инновационные технологии и проблемы устойчивого развития в условиях цифровой экономики*. 2020. С. 32-36.
21. Роботизация және блокчейн. eGov. URL: <https://egov.kz/cms/kk/robotization/> (date of access: 20.08.2023).
22. Савинов Л.В., Скорых Н.Н., Торогельдиева Б.М. Цифровая трансформация государственного и муниципального управления в Республике Кыргызстан. *Гуманитарные науки. Вестник Финансового университета*. 2020. № 10(2). С. 24-30.
23. Тошпулотов А. А. Роль государственных предприятий в инновационном развитии экономики Республики Таджикистан. *Финансы: теория и практика*. 2021. № 25. С. 20-34.
24. Чиниев Д. Б. Цифровое государство в Таджикистане: основные этапы формирования, проблемы и возможности. *Россия и Азия*. 2019. № 4. С. 25-31.
25. Шодиев Б., Султонов Б., Рахимов Ш. Приоритетные направления совершенствования государственного управления в республике Таджикистан. *Вестник Курган-Тюбинского государственного университета имени Носира Хусрава*. 2015. № 3. С. 28-32.

### **References**

1. Economic Commission for Latin America and the Caribbean (ECLAC), *Digital technologies for a new future (LC/TS.2021/43)*, Santiago, 2021. URL: [https://www.cepal.org/sites/default/files/publication/files/46817/S2000960\\_en.pdf](https://www.cepal.org/sites/default/files/publication/files/46817/S2000960_en.pdf) (date of access: 22.07.2023).
2. eGov. Мемлекеттік қызметтер және онлайн ақпарат. URL: <https://egov.kz/cms/kk/> (date of access: 18.07.2023).
3. E-Government Survey 2022. The Future of Digital Government. UN. URL: <https://desapublications.un.org/sites/default/files/publications/2022->

- 09/Web%20version%20E-Government%202022.pdf/ (date of access: 22.07.2023).
4. Global Innovation Index 2022. WIPO. 2023. URL: <https://www.wipo.int/edocs/pubdocs/en/wipo-pub-2000-2022-en-main-report-global-innovation-index-2022-15th-edition.pdf>. (date of access: 22.07.2023).
  5. Karimova, M. What China's Belt and Road Initiative Means for the Republic of Tajikistan. China's Development and the Construction of the Community with a Shared Future for Mankind. Research Series on the Chinese Dream and China's Development Path. Springer, Singapore. URL: [https://doi.org/10.1007/978-981-19-7423-6\\_54](https://doi.org/10.1007/978-981-19-7423-6_54) (date of access: 15.07.2023).
  6. Kulueva, C.R., Myrzaibraimova, I.R., Alimova, G.B., Kuznetsov, V.P. and Romanovskaya, E.V. (2020). The Role of Scientific and Educational Platform in Formation of the Innovative Economy of Kyrgyzstan: Foreign Experience, Realities, and Prospects. The 21st Century from the Positions of Modern Science: Intellectual, Digital and Innovative Aspects. ISC 2019. Lecture Notes in Networks and Systems. 91. Springer, Cham. doi: [https://doi.org/10.1007/978-3-030-32015-7\\_55](https://doi.org/10.1007/978-3-030-32015-7_55) (date of access: 22.07.2023).
  7. Medina, L. and Schneider F. (2018). Shadow economies around the world: What did we learn over the last 20 years? IMF. URL: <https://www.imf.org/en/Publications/WP/Issues/2018/01/25/Shadow-Economies-Around-the-World-What-Did-We-Learn-Over-the-Last-20-Years-45583> (date of access: 24.07.2023)
  8. Mukhamediyev, B., Spankulova, L. and Kerimbayev A. (2019). Diffusion of Innovation, Knowledge Spillover and Economic Growth in the Regions of Kazakhstan. *Int Adv Econ Res.* 2, 487-488.
  9. Nasyrov, A. (2022). Civil Service Reform in Kyrgyzstan: Challenges and Threats. *Public Service Evolution in the 15 Post-Soviet Countries*. Palgrave Macmillan, Singapore. doi: [https://doi.org/10.1007/978-981-16-2462-9\\_8](https://doi.org/10.1007/978-981-16-2462-9_8) (date of access: 24.07.2023).

10. Nurpeisova, A.A., Smailova, L.K., Akimova, B.Z., Borisova, E.V. and Niyazbekova, S.U. (2021). Condition and Prospects of Innovative Development of the Economy in Kazakhstan. *Socio-economic Systems: Paradigms for the Future. Studies in Systems, Decision and Control*, 314. Springer, Cham. doi: [https://doi.org/10.1007/978-3-030-56433-9\\_184](https://doi.org/10.1007/978-3-030-56433-9_184) (date of access: 23.07.2023).
11. Sabzalieva, E. (2022). From Policy Design to Lived Experiences: Developing University Research Capacity in Tajikistan Since 1991. *Building Research Capacity at Universities*. Palgrave Macmillan, Cham. doi: [https://doi.org/10.1007/978-3-031-12141-8\\_14](https://doi.org/10.1007/978-3-031-12141-8_14) (date of access: 25.07.2023).
12. Sadyrova, M., Yusupov, K. and Imanbekova B. (2021). Innovation processes in Kazakhstan: development factors. *Journal of Innovation and Entrepreneurship*. 10, 1-13.
13. Umarova, A. (2022). Uzbekistan: Long Awaited Transformation of Civil Service—Paradigm Shift or Hot Air? *Public Service Evolution in the 15 Post-Soviet Countries*. Palgrave Macmillan, Singapore. doi: [https://doi.org/10.1007/978-981-16-2462-9\\_16](https://doi.org/10.1007/978-981-16-2462-9_16) (date of access: 17.07.2023).
14. Aubakirova, G.M. and Isatayeva, F.M. (2021). Modernizatsiya sistemy gosudarstvennogo upravleniya Respubliki Kazakhstan [Modernization of the system of public administration of the Republic of Kazakhstan]. *Ekonomika. predprinimatelstvo i pravo - Economy. entrepreneurship and law*. 11, 827-844.
15. Center for development of labor resources: website. URL: <https://www.enbek.kz/kk> (date of access: 22.07.2023).
16. Zoidov, K.Kh., Urunov, A.A., Kharchilava, G.P. and Dzhabarov A.A. (2021). Innovatsionnoye prostranstvo Respubliki Tadzhikistan: analiz sostoyaniye i vozmozhnosti razvitiya [Innovation space of the Republic of Tajikistan: analysis of the state and development opportunities]. *Regionalnyye problemy*

- preobrazovaniya ekonomiki - Regional problems of economic transformation. 7 (129), 112-120.
17. Kazyeva, A.N., Shalbayeva Sh.E. and Kadyrova K.Zh. (2022). Tsifrovaya transformatsiya kak protsess izmeneniya sistemy gosudarstvennogo upravleniya v Kazakhstane [Digital transformation as a process of changing the public administration system in Kazakhstan]. Gosudarstvennyy audit - Government Audit. 56, 47-57.
18. Kayumov, N.K. and Dovgyallo, Y.P. (2023). Rol innovatsiy v razvitii ekonomiki Respubliki Tadjikistan [The Role of Innovation in Economic Development Republic of Tajikistan]. Evraziyskaya integratsiya: ekonomika. pravo. politika. Eurasian integration: economics, law, politics. 17(1), 29-49.
19. On approval of the National Development Plan of the Republic of Kazakhstan until 2025 and recognition of the repeal of some decrees of the President of the Republic of Kazakhstan. Information and legal system of normative legal acts of the Republic of Kazakhstan. URL: <https://adilet.zan.kz/kaz/docs/U1800000636#z28>. (date of access: 25.07.2023).
20. Ochilova, Kh.F. (2020). Osobennosti razvitiya tsifrovoy ekonomiki v Uzbekistane [Features of the development of the digital economy in Uzbekistan]. Sovremennyye innovatsionnyye tekhnologii i problemy ustoychivogo razvitiya v usloviyakh tsifrovoy ekonomiki. - Modern innovative technologies and problems of sustainable development in the digital economy. 32-36.
21. Robotization versus blockchain. eGov. URL: <https://egov.kz/cms/kk/robotization/> (date of access: 20.07.2023).
22. Savinov, L.V., Skorykh, N.N. and Torogeldieva, B.M. (2020). Tsifrovaya transformatsiya gosudarstvennogo i munitsipalnogo upravleniya v Respublike Kyrgyzstan [Digital Transformation of state and Municipal Governance in Kyrgyzstan]. Gumanitarnyye nauki. Vestnik Finansovogo universiteta.

Humanities and Social Sciences. Bulletin of the Financial University. 10(2), 24-30.

23. Toshpulotov, A.A. (2021). Rol gosudarstvennykh predpriyatiy v innovatsionnom razvitii ekonomiki Respubliki Tadjikistan [The Role of Public Enterprises in the Innovative Development of the Economy of the Republic of Tajikistan]. *Finansy: teoriya i praktika. Finance: Theory and Practice*. 25(3), 20-34.
24. Chiniyev, D. B. (2019). Tsifrovoye gosudarstvo v Tadjikistane: osnovnyye etapy formirovaniya. problemy i vozmozhnosti. [Digital state in Tajikistan: main stages of formation, problems and opportunities]. *Rossiya i Aziya. Russia and Asia*. 4, 25-31.
25. Shodiyev, B., Sultonov, B. and Rakhimov Sh. (2015). Prioritetnyye napravleniya sovershenstvovaniya gosudarstvennogo upravleniya v respublike Tadjikistan. [Priority areas for improving public administration in the Republic of Tajikistan]. *Vestnik Kurgan-Tyubinskogo gosudarstvennogo universiteta imeni Nosira Khusrava. Bulletin of the Kurgan-Tube Nosir Khusrav State University*. 3, 28-32.