FAN VA TA'LIM YANGILIKLARI
JURNALI
2026-yil
10-son

UDK: 004.4:35.07

Abdullaeva Dilobar Utkirovna,
Senior Lecturer At Renaissance University

SOFTWARE AND METHODOLOGICAL SUPPORT FOR USING STATE ELECTRONIC SYSTEMS AND THEIR CAPABILITIES

Abstract. The rapid development of digital technologies has fundamentally changed the organization of public administration and the mechanisms through which government services are delivered to citizens and organizations. State electronic systems have become an important component of modern public administration, creating opportunities to simplify administrative procedures, accelerate information exchange, improve transparency, and increase the accessibility and quality of public services. At the same time, the effectiveness of such systems depends not only on their technological capabilities but also on the quality of software infrastructure, methodological support, user training, information security, and organizational arrangements.

This article examines the role of software and methodological support in the effective use of state electronic systems and analyzes the main technological, organizational, and methodological factors influencing their implementation and practical application. Particular attention is given to software reliability, interoperability, data management, information security, user-oriented interface design, methodological documentation, employee training, technical support, and feedback mechanisms. The study is based on theoretical, comparative, and system analyses of scientific literature and contemporary approaches to digital government.

Keywords: state electronic systems, digital government, e-government, software support, methodological support, public services, digitalization, information systems, information security, interoperability, digital competencies.

DAVLAT ELEKTRON TIZIMLARIDAN FOYDALANISHNI DASTURIY VA METODIK TA'MINLASH HAMDA ULARNING IMKONIYATLARI

Annotatsiya. Raqamli texnologiyalarning jadal rivojlanishi davlat boshqaruvini tashkil etish hamda fuqarolar va tashkilotlarga davlat xizmatlarini ko'rsatish mexanizmlarini tubdan o'zgartirmoqda. Davlat elektron tizimlari zamonaviy davlat boshqaruvining muhim tarkibiy qismiga aylanib, ma'muriy jarayonlarni soddalashtirish, axborot almashinuvini tezlashtirish, boshqaruv faoliyatining shaffofligi, davlat xizmatlarining ochiqligi va sifatini oshirish imkonini bermoqda. Shu bilan birga, bunday tizimlarning samaradorligi faqat ularning texnik imkoniyatlariga emas, balki dasturiy ta'minot sifati, metodik

ta'minot, foydalanuvchilarni tayyorlash, axborot xavfsizligi va tashkiliy mexanizmlarga ham bog'liq.

Mazkur maqolada davlat elektron tizimlaridan samarali foydalanishda dasturiy va metodik ta'minotning o'rni hamda ularning joriy etilishi va amaliy qo'llanilishiga ta'sir etuvchi texnologik, tashkiliy va metodik omillar tahlil qilingan. Shuningdek, dasturiy ta'minotning ishonchliligi, tizimlararo integratsiya, ma'lumotlarni boshqarish, axborot xavfsizligi, foydalanuvchiga yo'naltirilgan interfeys, metodik hujjatlar, xodimlarni tayyorlash, texnik qo'llab-quvvatlash va qayta aloqa mexanizmlariga alohida e'tibor qaratilgan.

Kalit so'zlar: davlat elektron tizimlari, raqamli hukumat, elektron hukumat, dasturiy ta'minot, metodik ta'minot, davlat xizmatlari, raqamlashtirish, axborot tizimlari, axborot xavfsizligi, tizimlararo integratsiya, raqamli kompetensiyalar.

ПРОГРАММНОЕ И МЕТОДИЧЕСКОЕ ОБЕСПЕЧЕНИЕ ИСПОЛЬЗОВАНИЯ ГОСУДАРСТВЕННЫХ ЭЛЕКТРОННЫХ СИСТЕМ И ИХ ВОЗМОЖНОСТЕЙ

Аннотация. Стремительное развитие цифровых технологий существенно изменило организацию государственного управления и механизмы предоставления государственных услуг гражданам и организациям. Государственные электронные системы становятся важнейшим компонентом современного государственного управления, создавая возможности для упрощения административных процедур, ускорения информационного обмена, повышения прозрачности, доступности и качества государственных услуг. Вместе с тем эффективность таких систем зависит не только от их технических возможностей, но и от качества программного обеспечения, методического сопровождения, подготовки пользователей, обеспечения информационной безопасности и организационных механизмов.

В статье рассматривается роль программного и методического обеспечения в эффективном использовании государственных электронных систем, а также анализируются основные технологические, организационные и методические факторы, влияющие на их внедрение и практическое применение. Особое внимание уделяется надежности программного обеспечения, межсистемному взаимодействию, управлению данными, информационной безопасности, удобству пользовательского интерфейса, методической документации, подготовке сотрудников, технической поддержке и механизмам обратной связи.

Ключевые слова: государственные электронные системы, цифровое государство, электронное правительство, программное обеспечение, методическое обеспечение, государственные услуги, цифровизация,

информационные системы, информационная безопасность, межсистемное взаимодействие, цифровые компетенции.

Introduction. The digital transformation of public administration is one of the most significant directions of contemporary socio-economic development. The widespread implementation of information and communication technologies has created fundamentally new opportunities for organizing government activities, processing administrative information, providing public services, and establishing more efficient interaction between government institutions, citizens, and businesses.

In recent years, electronic government systems have increasingly become an integral part of public administration. Their development makes it possible to transfer many administrative procedures into digital form, reduce the need for direct contact between citizens and government employees, accelerate the processing of applications, and provide access to services regardless of the physical location of the user. The development of digital government is also associated with broader objectives, including improving administrative efficiency, strengthening transparency, increasing accountability, and creating more citizen-oriented public services.

The United Nations emphasizes that digital government should be viewed not simply as the introduction of information technologies into government institutions but as a broader transformation of public administration based on digital technologies, institutional development, and user-oriented services [1]. Similar principles are reflected in the OECD approach, where digital government is considered a component of modern public-sector transformation and is associated with data-driven decision-making, openness, user orientation, and proactive service delivery [2].

However, the introduction of an electronic system does not automatically guarantee its effective functioning. The practical results of digitalization depend on a combination of technological and human factors. A technically sophisticated information system may remain inefficient if its interface is difficult to understand, users are insufficiently trained, methodological instructions are outdated, or technical assistance is unavailable when problems arise.

Software support represents one of the fundamental components of an electronic state system. It includes application software, databases, system integration mechanisms, authentication technologies, information security tools, communication components, monitoring systems, and technical maintenance. At the same time, methodological support encompasses user instructions, regulations, recommendations, standards, training materials, operational procedures, and other documents that explain how the system should be used in particular administrative situations.

Consequently, software and methodological support should not be considered as independent elements. They form an interconnected system in which technological functionality must correspond to organizational procedures and the practical competencies of users. The World Bank's GovTech approach similarly emphasizes that successful public-sector digital transformation requires attention not only to technological infrastructure but also to institutional capacity and user needs [3].

The purpose of this article is to analyze the role of software and methodological support in the effective use of state electronic systems and to identify practical approaches for improving their functionality, accessibility, reliability, and organizational effectiveness.

Literature Review. The development of electronic government has been extensively studied by international organizations and researchers from the perspectives of public administration, information technologies, institutional transformation, and digital service delivery. The United Nations E-Government Survey provides a comprehensive framework for evaluating the development of digital government and emphasizes the importance of online services, telecommunications infrastructure, and human capital [1]. This approach demonstrates that the effectiveness of digital government depends on the interaction of technological infrastructure and the capabilities of people who use it.

The OECD has developed a broader conceptual framework for digital government based on several dimensions, including digital by design, data-driven public sector, government as a platform, open by default, user-driven services, and proactiveness [2]. This framework is particularly important for understanding the relationship between software functionality and methodological support. A digital system can provide technological functionality, but its effective use requires institutional processes and user competencies that correspond to this functionality.

Heeks considers electronic government from the perspective of implementation and management and emphasizes that information systems introduced into public institutions should correspond to existing organizational conditions, administrative processes, and user capabilities [4]. From this perspective, technological systems cannot be evaluated independently from the organizational environment in which they operate.

The World Bank's GovTech approach also stresses the importance of citizen-centered digital transformation. The development of public-sector technologies should focus on improving government capacity and ensuring that digital services respond to the actual needs of citizens and organizations [3]. This principle is especially relevant to the design of interfaces, methodological materials, and training programs.

The OECD Digital Government Policy Framework further emphasizes that digital transformation requires institutional and organizational changes alongside technological development [6]. Therefore, methodological support should be

regarded as a permanent component of the digital transformation process rather than as a supplementary document prepared only during the initial implementation stage.

Information security represents another important research area. The ISO/IEC 27001 standard establishes requirements for information security management systems and provides a framework for managing information-security risks [8]. In the context of state electronic systems, information security should be integrated into both software architecture and user procedures. Employees and citizens should understand basic security requirements, access-control procedures, authentication practices, and appropriate methods for handling sensitive information.

The analysis of the literature indicates that contemporary approaches to digital government increasingly move away from a purely technological understanding of electronic systems. Their effectiveness is now evaluated through a combination of technological reliability, organizational readiness, human competencies, security, interoperability, and user experience. This provides a theoretical basis for considering software and methodological support as interconnected elements of a unified digital-government infrastructure.

Materials and Methods. The study is theoretical and analytical in nature. The methodological basis consists of theoretical analysis, comparative analysis, system analysis, generalization, and interpretation of scientific and methodological sources concerning digital government and electronic public administration.

The system approach was used to examine state electronic systems as complex structures consisting of interconnected technological, organizational, informational, and human components. From this perspective, software, hardware, databases, communication networks, security mechanisms, users, methodological documentation, and administrative procedures operate as parts of a single system.

The comparative approach was used to distinguish between the functions of software and methodological support. Software support was analyzed primarily in relation to system functionality, reliability, integration, information security, data processing, and maintenance. Methodological support was considered in relation to user training, documentation, standardization, administrative procedures, and practical recommendations for system operation.

A user-oriented approach was also applied. According to this approach, the effectiveness of a state electronic system should not be assessed exclusively through technical indicators. Accessibility, comprehensibility, convenience, reliability, and the ability of citizens and employees to use the system correctly are equally important.

The analytical criteria included accessibility of electronic services, software reliability, interoperability, information security, data management, methodological documentation, user training, technical support, feedback mechanisms, and adaptability to changing administrative and technological requirements.

Results. The analysis demonstrates that software and methodological support have a direct influence on the effectiveness of state electronic systems. The first important factor is software reliability. Government systems often process large volumes of personal, administrative, financial, and organizational information. Technical failures, interruptions, software errors, or insufficient system capacity can therefore affect not only the operation of a particular institution but also the quality and continuity of public services.

Reliable software requires regular testing, monitoring, updating, backup procedures, and technical maintenance. The development of a system should therefore be regarded as a continuous process rather than a one-time project. Changes in legislation, administrative procedures, technologies, and security requirements require corresponding changes to software functionality.

Another significant factor is interoperability. In many public administration systems, different institutions maintain separate databases and information resources. If these systems are unable to exchange information efficiently, the same information may have to be entered or submitted repeatedly. This increases administrative workload and creates unnecessary inconvenience for citizens and organizations. Effective interoperability allows authorized systems to exchange relevant information automatically, thereby reducing duplication and accelerating administrative procedures.

Information security is equally important. State electronic systems contain information that may have significant social, administrative, or economic value. Authentication, authorization, encryption, access control, data backup, monitoring, vulnerability management, and incident response mechanisms should therefore be incorporated into system design and operation. The ISO/IEC 27001 framework demonstrates the importance of establishing a systematic approach to information-security management rather than relying solely on individual technical measures [8].

The analysis also confirms the importance of methodological support. Users may encounter difficulties even when the software itself functions correctly. Complex procedures, unclear terminology, insufficient instructions, and a lack of practical examples can lead to incorrect use of system functions. Clear user manuals, methodological recommendations, frequently asked questions, video instructions, and step-by-step guidelines can significantly reduce such difficulties.

Employee training represents another important component. Digital transformation changes not only technological tools but also professional responsibilities and administrative procedures. Government employees therefore need both general digital competencies and specific knowledge related to the electronic systems they use. Training should cover system functionality, electronic document management, data protection, information security, and procedures for responding to technical problems.

User-oriented design is also essential. Electronic public services should be understandable to users with different levels of digital competence. Interfaces should be logically structured, accessible, consistent, and where appropriate available in several languages. The simplification of interfaces can reduce the number of user errors and decrease the workload of technical support services.

An additional result of the analysis concerns the need for continuous feedback. Users should have opportunities to report technical difficulties, identify unclear procedures, and suggest improvements. Systematic analysis of feedback allows public institutions to identify weaknesses in software functionality and methodological documentation and to make evidence-based improvements.

Discussion. The findings indicate that digitalization of public administration should not be reduced to the introduction of new software. Digital transformation represents a complex organizational process that requires simultaneous development of technological infrastructure, institutional procedures, human resources, information security, and methodological support.

One of the major challenges is the difference in digital competencies among users. Citizens, public employees, managers, and technical specialists may have significantly different levels of experience with digital technologies. Consequently, methodological materials should be differentiated according to the characteristics and needs of specific user groups. A general user manual may be insufficient for employees who perform complex administrative procedures on a daily basis.

Another important issue is the continuous updating of software and methodological materials. Administrative procedures and legislative requirements can change, while technological developments introduce new functionality and security requirements. If methodological instructions are not updated together with the software, discrepancies may emerge between the actual system interface and the instructions provided to users. Such discrepancies can reduce confidence in the system and increase operational errors.

Interoperability also requires not only technical but methodological coordination. Different government institutions may use different terminology, data formats, organizational procedures, and standards. Even technically compatible systems may experience difficulties if institutions do not have common approaches to data exchange and administrative processes. Therefore, the development of unified standards and methodological recommendations is necessary.

Information security should also be incorporated into methodological support. Users should be informed about secure authentication, password management, access rights, suspicious activities, personal data protection, and procedures for reporting security incidents. This means that cybersecurity training should be incorporated into regular professional development programs rather than being treated as a separate one-time activity.

The development of effective feedback mechanisms is another important condition for continuous improvement. User feedback can reveal problems that are not always visible during technical testing. For example, a function may work correctly from a software perspective but remain difficult to understand from the user's perspective. Such problems can only be identified effectively when users have convenient channels for reporting difficulties and suggesting improvements.

Based on the analysis, several practical directions for improving the use of state electronic systems can be identified. First, unified standards for software and methodological support should be developed. Second, software should be regularly updated according to technological and legislative changes. Third, interoperability among government information systems should be strengthened through unified data-exchange standards. Fourth, information-security mechanisms should be continuously improved. Fifth, methodological materials should be written in clear and accessible language and updated whenever system functionality changes. Sixth, regular training should be provided for public employees. Finally, technical support and feedback mechanisms should operate continuously throughout the entire life cycle of an electronic system.

These measures correspond to the broader international understanding of digital government as a process that combines technology, institutional transformation, data management, and citizen-oriented service delivery [1; 2; 3; 6]. Thus, software and methodological support should be regarded not as separate technical documentation but as an integral element of sustainable digital public administration.

Conclusion. State electronic systems are becoming an increasingly important component of modern public administration. Their development provides significant opportunities for improving the accessibility, efficiency, transparency, and quality of public services. At the same time, the effectiveness of digital government cannot be ensured by technological implementation alone.

The study demonstrates that software support and methodological support should be developed as complementary components of a unified system. Reliable software, effective system integration, secure data management, user-oriented interfaces, comprehensive methodological documentation, employee training, and continuous technical support form an interconnected basis for effective digital public administration.

Particular attention should be paid to the development of users' digital competencies. The successful use of electronic systems requires not only access to technology but also an understanding of system functionality, administrative procedures, information-security requirements, and appropriate methods of working with digital information.

The regular updating of methodological materials is equally important. Instructions and recommendations should correspond to the current version of the software, legislative requirements, and organizational procedures. Otherwise,

differences between the actual system and available methodological materials may reduce the effectiveness of digital services.

The analysis also demonstrates that interoperability and information security should be treated as strategic priorities. Unified standards for data exchange, authentication, access control, information protection, and system integration can reduce administrative barriers and improve the reliability of electronic public services.

Therefore, the effective use of state electronic systems requires an integrated approach combining technological innovation, methodological support, organizational development, information security, and continuous professional training. Such an approach can contribute to strengthening digital public administration, improving the quality and accessibility of electronic services, reducing administrative barriers, and increasing public confidence in digital government.

References:

1. United Nations Department of Economic and Social Affairs. United Nations E-Government Survey: Digital Government in the Decade of Action for Sustainable Development. New York: United Nations.

2. OECD. Digital Government Review: Strengthening Digital Government. Paris: Organisation for Economic Co-operation and Development.

3. World Bank. GovTech: Putting People First in Public Sector Transformation. Washington, DC: World Bank.

4. Heeks R. Implementing and Managing eGovernment: An International Text. London: SAGE Publications.

5. United Nations Department of Economic and Social Affairs. United Nations E-Government Knowledgebase. New York: United Nations.

6. OECD. The OECD Digital Government Policy Framework: Six Dimensions of a Digital Government. Paris: OECD Publishing.

7. World Bank Group. Digital Government for Development. Washington, DC: World Bank.

8. ISO/IEC 27001. Information Security, Cybersecurity and Privacy Protection — Information Security Management Systems — Requirements. International Organization for Standardization.

FAN VA TA'LIM YANGILIKLARI
JURNALI

2026-yil
10-son

Muassis - "FAN VA INNOVATSIYA YANGILIKLARI" MCHJ
Jurnal hamkori - «PROFI UNIVERSITY»

Jurnal O'zbekiston Respublikasi Prezidenti Administratsiyasi huzuridagi axborot va ommaviy kommunikatsiyalar agentligi tomonidan 2024-yil 24-may kuni № 454068-sonli guvohnoma bilan ro'yxatga olingan.

Jurnal 2024-yilda tashkil etilgan, 1 oyda bir marta o'zbek, tojik, qozoq, qirg'iz, qoraqalpoq, rus va ingliz tillarida nashr etiladi.

Tahririyat manzili: 190110, Toshkent shahri Uchtepa tumani, Bog'iston MFY, 14-mavze, 8-uy.

Telefonlar: +998 90 749 00 00
+998 90 749 77 77
+998 91 902 05 01
E-mail: saen_2024@mail.ru
Jurnal sayti: www.saen.uz
Telegram kanali: **https://t.me/saen_2024**

Maqolada keltirilgan fakt va ma'lumotlarning to'g'riligi uchun mualliflar mas'uldirlar.

"Fan va ta'lim yangiliklari" ilmiy-amaliy jurnali Oliy attestatsiya komissiyasi Rayosatining qarori (25.08.2025 y., №374/5) bilan pedagogika va psixologiya fanlari bo'yicha falsafa doktori (PhD) va fan doktori (DSc) ilmiy darajasiga talabgorlarning dissertatsiyalari asosiy ilmiy natijalarini chop etish tavsiya etilgan milliy ilmiy nashrlar ro'yxatiga kiritilgan.

ISSN: 3093-8694