

УДК 342+347.73+346.7+336

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DOI: 10.32782/LST/2024-4-6

To cite this article: Hasanov, Z. (2024). Vykorystannia shtuchnoho intelektu ta avtomatyzatsii v derzhavnykh posluhakh: mozhlyvosti ta ryzyky [The Use of Artificial Intelligence and Automation in Public Services: Opportunities and Risks]. *Law. State. Technology*, 4, 31–36, doi: 10.32782/LST/2024-4-6

THE USE OF ARTIFICIAL INTELLIGENCE AND AUTOMATION IN PUBLIC SERVICES: OPPORTUNITIES AND RISKS

This article explores in detail the opportunities and risks of using artificial intelligence (AI) and automation technologies in public services. AI and automation technologies enable government and municipal agencies to deliver services more efficiently, quickly, and accurately. Applications such as automatic data processing, forecasting, chatbots, and information system automation provide citizens with more accessible, personalized, and flexible services. However, it is essential to ensure adherence to ethical standards, data privacy protection, and impartial decision-making when using these technologies. The article discusses the importance of ensuring safe and beneficial use of these technologies through ethical guidelines and standards established by international organizations. In the future, a broader role for AI in public services will contribute to enhancing service quality and increasing citizen satisfaction. It is determined that artificial intelligence and automation technologies are powerful tools that allow providing public services more efficiently, faster and more accurately. It is emphasized that these technologies significantly contribute to simplifying decision-making processes in central and local government, efficient resource management and improving the quality of services. It is established that the role of artificial intelligence in providing personalized and accessible services helps to increase the level of citizen satisfaction and strengthen trust in public institutions. It is emphasized that the use of AI requires strict attention to ethical standards and data security. Principles such as transparency, accountability, data confidentiality and fairness are supported by international standards to ensure the safe and effective application of AI. It is concluded that the recommendations and standards established by international organizations on the ethical use of artificial intelligence are designed to ensure that public institutions and municipalities use these technologies responsibly and adhere to ethical rules.

Key words: artificial intelligence, automation, social welfare, risk, chatbot.

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DOI: 10.32782/LST/2024-4-6

Бібліографічний опис статті: Гасанов, З. (2024). Використання штучного інтелекту та автоматизації в державних послугах: можливості та ризики. *Law. State. Technology*, 4, 31–36, doi: 10.32782/LST/2024-4-6

ВИКОРИСТАННЯ ШТУЧНОГО ІНТЕЛЕКТУ ТА АВТОМАТИЗАЦІЇ В ДЕРЖАВНИХ ПОСЛУГАХ: МОЖЛИВОСТІ ТА РИЗИКИ

У цій статті детально досліджуються можливості та ризики використання штучного інтелекту (ШІ) і технологій автоматизації в державних службах. ШІ та технології автоматизації дозволяють державним і муніципальним установам надавати послуги ефективніше, швидше та точніше. Такі програми, як автоматична обробка даних, прогнозування, чат-боти та автоматизація інформаційних систем, надають громадянам більш доступні, персоналізовані та гнучкі послуги. Однак при використанні цих технологій важливо забезпечити дотримання етичних стандартів, захист конфіденційності даних і неупередженість прийняття рішень. У статті обговорюється важливість забезпечення безпечного та вигідного використання цих технологій через етичні рекомендації та стандарти, встановлені міжнародними організаціями. У майбутньому ширша роль штучного інтелекту в державних послугах сприятиме підвищенню якості послуг і підвищенню задоволеності громадян. Визначено, що технології

штучного інтелекту та автоматизації є потужними інструментами, які дозволяють надавати державні послуги ефективніше, швидше та точніше. Підкреслено, що ці технології значною мірою сприяють спрощенню процесів прийняття рішень у центральному та місцевому врядуванні, ефективному управлінню ресурсами та підвищенню якості послуг. Встановлено, що роль штучного інтелекту в наданні персоналізованих і доступних послуг допомагає підвищити рівень задоволеності громадян і зміцнити довіру до державних установ. Підкреслено, що використання ШІ вимагає суворої уваги до етичних стандартів і безпеки даних. Такі принципи, як прозорість, підзвітність, конфіденційність даних і справедливість, підтримуються міжнародними стандартами для забезпечення безпечного та ефективного застосування ШІ. Зроблено висновок, що рекомендації та стандарти, встановлені міжнародними організаціями щодо етичного використання штучного інтелекту, розроблені для забезпечення того, щоб державні установи та муніципалітети відповідально застосовували ці технології та дотримувались етичних правил.

Ключові слова: *штучний інтелект, автоматизація, соціальний добробут, ризик, чат-бот.*

Introduction. In the modern era, artificial intelligence (AI) and automation technologies are widely utilized in public services. The implementation of these technologies enables the delivery of services more efficiently, quickly, and accurately. AI and automation play a significant role in facilitating decision-making processes in central and local administrations, managing resources, and improving the quality of services provided to citizens. However, the application of these technologies also presents certain risks and challenges. This article will thoroughly examine the opportunities and risks arising from the use of AI and automation in public services.

The state of scientific development of the problem. The issue of legal regulation of artificial intelligence is addressed in the works of Ukrainian scientists such as S. Barbashyn, K. Globa, I. Vakhliis, S. Zytskyk, O. Zozulyak, D. Kovalenko and M. Utkina, K. Tokareva, N. Savliiva, O. Yara, A. Blazheev, L. Golovko and V. Bashkatova; at the same time, the topic of legal regulation of artificial intelligence in leading countries of the world is the object of research by D. Pozov, O. Turut, O. Zhydkov, M. Scherer, F. Shimpo and others. Despite the significant interest of scientists in the problems of legal regulation in the field of use of artificial intelligence, some issues of a regulatory and legal nature remain unexplored.

Main Text. The use of artificial intelligence and automation in public services promotes the adoption of digital technologies and automated systems to enhance the efficiency, speed, and accuracy of services provided by state and municipal authorities. The application of these technologies reduces the dependency of public services on human resources, better meets the needs of citizens, and optimizes service processes.

Although the application areas of artificial intelligence are diverse, several primary areas of implementation are emphasized. For example, automated data processing and forecasting are considered key areas in this context. AI algorithms enable the collection and analysis of large vol-

umes of data in public services. For instance, in social welfare and healthcare services, it becomes possible to predict citizens' needs based on the data provided. With the support of the state, various "Startup" projects are regularly implemented in the direction of data automation and processing at DOST centers and SME houses.

Adherence to ethical standards is essential in the use of artificial intelligence. "Trustworthy artificial intelligence must respect human rights, and be transparent and impartial" (European Commission, 2019). Ensuring the ethical use of AI helps maintain the fair and just implementation of processes in public services.

"AI-powered chatbots ensure that people can access services at any time" (Brynjolfsson, E., McAfee, A., 2018), supporting the transformative role modern technologies play in citizen services. AI-based chatbots significantly improve customer or citizen experiences by efficiently managing simple and repetitive queries. However, to achieve better results, it is crucial to support these chatbots with human expertise and ensure they can redirect complex inquiries to human agents. Thus, the role of chatbots can be regarded as a successful example of collaboration between technology and human effort.

Furthermore, chatbots and virtual assistants are considered key AI tools for answering citizens' questions, providing information, and directing them as needed. This alleviates the workload of call centers and enables faster service delivery to citizens. Without the need to wait in physical lines, these AI-driven solutions ensure the inclusivity of all services. This inclusivity is a direct result of the state's strategic, outcome-oriented steps to improve welfare in the realm of social services.

The automation of information systems is one of the most widely adopted applications of artificial intelligence. During the automation of various information systems in government institutions, AI is employed to increase data accuracy and minimize errors. Reducing errors is considered a citizen-oriented measure that helps save time and prevent additional stressful situations.

AI applications in monitoring, compliance, decision-making, and risk management allow the automation of processes that identify regulatory violations and predict risks based on collected data, aiding decision-making processes. For example, in sectors like traffic regulation or tax evasion, AI algorithms can detect unlawful activities. Identifying such irregularities plays a crucial role in governance by minimizing, or even eliminating, anticipated risks.

The application of AI in public services helps increase citizen satisfaction in various ways. Personalization of services and improved accessibility hold special significance in this regard. AI creates opportunities to personalize services, enhance accessibility, and simplify requests, thereby improving the quality of services provided by governments and municipalities while strengthening citizens' trust in these institutions.

AI technologies allow governments and municipalities to better understand the individual needs of citizens and offer tailored services. By analyzing large datasets, AI can study citizens' behaviors and needs, enabling the implementation of personalized approaches. For example, in healthcare, personalized examination or treatment programs can be proposed based on citizens' medical histories.

The creation of self-service portals tailored to individuals allows citizens to address their needs and queries effortlessly. For instance, a citizen applying for a pension can manage the process independently by entering their personal information into an AI-powered portal. Virtual assistants and AI-based chatbots respond to individual questions and requests, providing timely information and analyzing citizen inquiries to deliver personalized guidance or relevant information. This leads to increased satisfaction.

AI technologies also contribute to ensuring service accessibility for all citizens. Accessibility

measures are especially targeted at inclusive populations (e.g., persons with disabilities, orphans, war veterans, children of martyrs, and individuals associated with penitentiary services). AI transcends language barriers by offering services in multiple languages. For instance, automatic translation tools enable citizens who speak different languages to access services in their native tongues. For visually impaired individuals, modern solutions such as audio scripts or speech recognition technologies replace traditional Braille systems, making services more accessible.

Automated services for the general public offer 24/7 availability, making them convenient for working individuals or those unable to access services during the day, thus enhancing satisfaction. AI systems can also ensure prompt support for citizens during emergencies. For example, during natural disasters, services that provide immediate assistance and guidance on safety measures increase citizen satisfaction. Additionally, the application of AI enables proactive services by anticipating citizens' needs. For instance, initiating an automatic pension process for citizens who reach a certain age or offering preventive measures based on their health conditions is possible.

The use of AI in public services can have both positive and negative impacts on citizen trust. The effective, transparent, and ethical implementation of these technologies increases public confidence in government institutions. On the other hand, certain risks and challenges may harm this trust. Overall, the use of AI in public services has the potential to strengthen trust in the government by enhancing citizen satisfaction and effectively managing potential risks.

To achieve this, government institutions must ensure transparency, adhere to ethical standards, and protect data security. Such approaches boost public confidence in technology and strengthen their trust in the state.

Table 1

Illustrates how the use of AI impacts citizen trust

Positive impacts	Negative impacts
Transparency and Accountability – Automated processes enhance transparency and minimize human errors.	Risks of Privacy Breaches – The collection of large volumes of data can jeopardize the privacy of personal information.
Fair and Unbiased Decisions – Unbiased algorithms facilitate the making of objective decisions.	Ethical and Bias Issues – Algorithms with biased data can make incorrect and discriminatory decisions.
Attention to Privacy and Data Security – Strong security measures protect citizens' data.	Clarity and Explanation Issues – When decisions are difficult to understand, it can lead to mistrust among citizens.
Fast and Efficient Services – The acceleration of services ensures increased citizen satisfaction.	Unemployment and Social Concerns – Automation can lead to a reduction in job opportunities and cause social concerns.

Artificial intelligence (AI) and automation will enable faster, more efficient, and personalized services in public administration. These technologies will ensure greater transparency and flexibility in government services, increasing citizen satisfaction by better addressing their needs. However, these advancements will also require the protection of citizen privacy and the improvement of ethical standards. In the future, the proper and balanced use of AI will enhance the quality of public services and mark the beginning of a new era in the relationship between the state and its citizens.

“Digital transformation enables efficient resource utilization in government services”. (Çilinoğlu, İ., 2020).

Today, we can observe the successful application of automation across various sectors in the Azerbaijani context. Moreover, the future role of AI and automation in public services will expand in response to rapidly advancing technologies and growing digital demands, covering a wider range of functionalities. It is expected that these technologies will play a significant role in numerous areas of public services. *“AI algorithms enhance service quality by automatically solving complex problems that are challenging for humans to resolve”.* (Russell, S., Norvig, P., 2020).

People often face limitations in time and resources when analyzing large data sets and addressing complex issues. AI algorithms can resolve these problems in an automated manner. However, this approach is only effective when the data is accurate, and the algorithms function objectively. AI's automated analysis and predictive capabilities allow for faster and more accurate services for citizens. For instance, applications like early disease detection in healthcare or forecasting individual needs in social services highlight its potential. Delegating routine and repetitive tasks to AI enables humans to focus on more creative and strategic activities. Nevertheless, if AI algorithms are trained on biased data or lack transparency in their decisions, these technologies may exacerbate existing issues rather than resolve them.

Key Future Roles of AI and Automation in Public Services:

1. Fully Automated Service Centers. The establishment of fully automated service centers supported by AI is anticipated in the future. In these centers, citizens can manage their services with minimal human intervention. For example, services such as document issuance, license renewals, and information retrieval will be entirely provided through digital platforms.

2. Proactive and Personalized Services. Leveraging AI's predictive analytics capabilities,

government agencies will be able to anticipate citizen needs in advance and provide proactive services. For instance, offering automatic pension benefits to individuals reaching a certain age, sending notifications related to preventive healthcare services, or proposing training programs to citizens at risk of unemployment will become feasible. These personalized services will further enhance citizen satisfaction.

3. More Agile Decision-Making Processes.

AI-assisted decision-making will enable faster and more accurate resolutions. By analyzing large data sets, government institutions can swiftly make policy decisions and manage resources more efficiently. This approach will be particularly critical during emergencies. *“AI technologies provide government institutions, especially during emergencies, with unique capabilities to rapidly analyze large volumes of data and make optimal decisions. These technologies reduce human error and increase the accuracy of decision-making processes”.* (Smith, J., 2023).

This statement accurately reflects the growing role and potential of AI technologies in modern governance. AI eliminates human limitations in data analysis, offering greater precision and speed. In emergencies, efficient management of time and resources is of critical importance, and AI's analytical tools play a vital role in making optimal and timely decisions.

While AI significantly reduces human error, it is essential to note that it should not act as an independent decision-making tool. The analysis and outcomes generated by AI must be combined with human expertise and ethical principles. Otherwise, the potential biases and limitations of these technologies may be overlooked. Therefore, AI should be regarded only as a supporting tool, with ultimate responsibility for decisions always resting with humans.

4. Smart Infrastructure and Cities “Smart city” technologies are among the most significant applications of artificial intelligence and automation. Within this framework, services such as intelligent transportation, energy management, waste optimization, and urban safety will be enhanced. For instance, using AI in transportation networks will improve traffic efficiency, prevent energy waste, and strengthen the monitoring of urban infrastructure.

5. Environmentally Sustainable Services In the future, AI will play a crucial role in establishing eco-friendly, green, and sustainable service models. Services such as optimizing energy consumption, managing water and other resources, and ensuring efficient waste management will be han-

Table 2

Key International Standards and Guidelines Regulating the Ethical Use of AI

Organization / Standard	Guidelines and Standards	Key Principles
OECD (Organisation for Economic Co-operation and Development)	Artificial Intelligence Principles	Human-centered approach, safety and reliability, transparency and accountability, data privacy, prevention of discrimination.
UN / UNESCO	Global Recommendations on the Ethics of Artificial Intelligence	Justice, human rights, environmental protection, safety, data privacy.
G20	Artificial Intelligence Guiding Principles	Human-centered approach, reliability and safety, data privacy, transparency, accountability.
AI4People (Global Partnership on Artificial Intelligence)	Recommendations for Ethical Development of AI:	Human rights, social benefit, fairness and impartiality, transparency, accountability, and safety.
ISO/IEC (International Organization for Standardization and International Electrotechnical Commission)	Technical Standards for Artificial Intelligence	Təhlükəsizlik və etibarlılıq, məlumat məxfiliyi, qərəzsizlik, şəffaflıq və hesabatlılıq

dled more effectively with AI. This will positively impact ecological sustainability.

6. Improving Health and Social Services AI will bring significant advancements to the fields of healthcare and social security. For example, AI-based systems will be widely used for early disease detection and prediction, creating personalized health plans, and effectively managing social assistance programs.

7. Enhanced Security and Privacy Protection The security and privacy of citizens' personal data will be a key focus in the future. With the development of AI, stronger measures will be implemented in areas of cybersecurity and data privacy. AI and automation will be managed in a more reliable and transparent manner to protect privacy and build trust with citizens.

8. Balancing Technology and Human Resources Although automation and AI technologies may replace some jobs involving direct interaction with citizens, there will be a growing demand for highly skilled workers to manage these technologies in the future. Government institutions will need to continuously retrain their workforce to balance technology with human resources and provide high-quality services to citizens.

Various international organizations and governments have developed standards and guidelines to ensure the ethical use of AI. These standards aim to ensure that AI is used transparently, without bias, safely, and in compliance with human rights.

A Comparative Overview of the Key Principles and Standards Established by International Organizations for the Ethical Use of Artificial Intelligence. Table 2 provides a comparative analysis of the primary principles and standards established by international organizations for the ethical use of AI.

Among these principles, protecting human rights, ensuring data privacy, security, and fairness are of paramount importance. These guidelines and standards aim to ensure that AI is developed in a manner that is both safe and beneficial for society.

Conclusion. Artificial intelligence and automation technologies are powerful tools that enable public services to be delivered more efficiently, quickly, and accurately. These technologies significantly contribute to simplifying decision-making processes in central and local governance, effectively managing resources, and enhancing service quality. Furthermore, the role of AI in delivering personalized and accessible services helps improve citizen satisfaction and strengthens trust in government institutions.

However, the use of AI requires strict attention to ethical standards and data security. Principles such as transparency, accountability, data privacy, and fairness are supported by international standards to ensure the safe and beneficial application of AI. The guidelines and standards established by international organizations for the ethical use of AI are designed to ensure that government institutions and municipalities apply these technologies responsibly and in compliance with ethical rules.

In the future, the role of AI in public services will continue to expand, and the proper management of these technologies will further enhance service quality and citizen trust. The correct and balanced implementation of AI marks the beginning of a new era in which the state ensures social welfare and better addresses citizens' needs. These technologies facilitate the creation of more transparent, agile, and personalized service models for society and strengthen the relationship between the state and its citizens.

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