

ABSTRACT

of the dissertation by **Bakenova Aigerim Kanatovna**, a doctoral candidate at the **Academy of Public Administration under the President of the Republic of Kazakhstan**, on the topic «**Mechanisms for making management decisions using artificial intelligence systems in the field of administrative proceedings**», submitted for the degree of **Doctor of Economics in the educational program «8D04113 – Public Administration»**

Relevance of the research topic is determined by the fact that the current stage of administrative reform in the Republic of Kazakhstan is characterized by a transition from the automation of document flow to the implementation of cognitive technologies capable of independent information processing and the formulation of management decisions. The development of artificial intelligence necessitates a re-evaluation of new risks and the introduction of mechanisms for «reasonable control», highlighting the problem of balancing the efficiency of algorithmic governance with guarantees of individual rights.

Despite technological progress, the theoretical and legal framework for the use of AI in the public administration of Kazakhstan remains fragmented. Strategic documents define the technical and infrastructural parameters of development but do not disclose the procedural and legal mechanisms for integrating AI into administrative procedures.

The scientific problem of the research lies in the contradiction between the potential of AI technologies and the absence of institutional and legal means for their implementation in administrative proceedings. The introduction of AI transforms administrative discretion, evidentiary criteria, and the procedure for making decisions affecting citizens' rights; however, a comprehensive analysis of AI as a subject or quasi-subject of administrative proceedings is lacking.

The relevance of the dissertation is underscored by the need for a scientific rethinking of fundamental categories of administrative law in the context of using autonomous algorithms. This is necessary to prevent the risks of inefficient technology use and violations of citizens' procedural rights, as well as to harmonize the digital and administrative legislation of the Republic of Kazakhstan.

Object of the research. Social relations emerging in the process of managerial decision-making by public authorities of the Republic of Kazakhstan in the sphere of administrative proceedings with the use and implementation of artificial intelligence technologies.

Subject of the research is the theoretical and legal foundations and mechanisms of legal regulation for the adoption of administrative acts using artificial intelligence technologies in the Republic of Kazakhstan.

The aim of the dissertation research is to develop a theoretical model and practical recommendations for implementing mechanisms of managerial decision-making using artificial intelligence in the sphere of administrative proceedings in the Republic of Kazakhstan.

To achieve this aim, the following **tasks** are addressed in the dissertation:

1. To reveal the content and provide the author's definitions of key research concepts: «administrative proceedings», «managerial decision in the sphere of administrative proceedings», «decision support system (DSS)» in relation to public administration.

2. To analyze the current state and foreign experience (cases of Estonia, Singapore, the USA, the EU) of implementing AI in administrative procedures.

3. To conduct a comparative legal analysis of the regulatory framework of the Republic of Kazakhstan (the Code of Administrative Procedure, laws on services, on data) and identify gaps regulating the use of AI in administrative proceedings.

4. To assess, through empirical research (questionnaires), the perception and readiness for the implementation of AI mechanisms among key stakeholders (court staff, government bodies).

5. To identify critical risks and ethical-legal challenges (algocracy, discrimination, responsibility) and propose tools for managing them.

6. To develop and substantiate the author's integrated model («Legal Expert») and a classification of AI-assisted decision-making mechanisms for the sphere of administrative proceedings in the Republic of Kazakhstan.

7. To formulate specific proposals for improving legislation and the institutional environment.

Scientific novelty of the dissertation lies in the fact that it is the first in Kazakhstani legal science to carry out a comprehensive theoretical and applied study of the problems of legal regulation and organizational-managerial support for the implementation of artificial intelligence technologies in administrative proceedings. In contrast to existing research that examines general issues of digitalization or the technological aspects of creating AI, this work proposes an integrative approach combining legal, managerial, and technological analysis applied to the specifics of administrative procedures.

The scientific novelty is confirmed by the following **results** personally obtained by the author:

1. For the first time in Kazakhstani legal science, the author's definition of DSS (decision support system) in relation to the sphere of administrative proceedings is formulated, which, unlike narrow technological interpretations, defines DSS as a hybrid legal-technological system whose key feature is not the replacement, but the enhancement of the administrative discretion of an official. This provides a conceptual basis for the «human-in-the-loop» model as a fundamental principle of using AI in administrative proceedings.

2. A new classification of mechanisms for managerial decision-making using AI in administrative proceedings is proposed and substantiated, based on the criterion of the system's level of autonomy and its impact on administrative discretion. Informational-reference, assisting, coordinating, and predictive-analytical levels are identified, creating a foundation for differentiated legal regulation depending on the degree of algorithm autonomy.

3. Based on a comparative analysis of international experience and the results of the author's sociological research, a comprehensive (integrated) model for implementing AI in administrative proceedings - the «Legal Expert» model - has been

developed. The novelty of the model lies in the fact that it, for the first time, combines a phased implementation algorithm, regulatory requirements for AI systems, risk management mechanisms, and consideration of key stakeholders' attitudes, allowing the design of AI implementation as a complex legal-managerial, rather than a narrow technological, process.

4. Specific risks of implementing AI in the administrative proceedings of the Republic of Kazakhstan are identified and systematized. These are not limited to well-known ethical-technological problems but are associated with the potential violation of fundamental principles of the administrative process: legality, adversarial nature, and the right to a fair trial. This systematization enables the development of targeted legal mechanisms for risk minimization.

5. Concrete proposals for amendments and additions to the current administrative and procedural legislation of the Republic of Kazakhstan, aimed at regulating the use of algorithmic systems, have been developed and scientifically substantiated. Unlike existing approaches limited to general declarations, the proposals contain specific norms enshrining the «human-in-the-loop» principle, requirements for algorithmic explainability, mechanisms for the distribution of responsibility, and the citizen's right to alternative non-digital channels of interaction.

Provisions for the defense:

1. The author's definition of a decision support system (DSS) in administrative proceedings. The understanding of DSS as a hybrid legal-technological system operating within the framework of administrative procedures is substantiated.

2. Classification of managerial decision-making mechanisms using AI by the level of autonomy (informational-reference, assisting, coordinating, predictive-analytical).

3. The integrated model «Legal Expert» as an algorithm for implementing AI in administrative procedures.

4. A system of specific risks of applying AI in the administrative law of the Republic of Kazakhstan.

5. Proposals for improving the administrative and procedural legislation of the Republic of Kazakhstan. A package of proposals for modernizing the Administrative Procedural Code of the Republic of Kazakhstan and related legislation in terms of regulating algorithmic systems is substantiated.

Compliance with directions of scientific development or state programs. The research corresponds to the goals and objectives outlined in the Concept for the Development of Artificial Intelligence for 2024–2029, the draft Law of the Republic of Kazakhstan «On Artificial Intelligence», the state program «Digital Kazakhstan», and the Concept for the Development of Public Administration in the Republic of Kazakhstan until 2030.

Theoretical and practical significance of the work. The research results enrich the theory of public administration and administrative law, creating a foundation for new models of legal regulation in the era of digitalization. The developed recommendations, models, and proposals for legislative changes can be used by state bodies of the Republic of Kazakhstan in modernizing administrative procedures, developing AI systems, training personnel, and in educational programs in the field of

digital law and management.

Approbation of research results and description of the doctoral candidate's contribution to each publication. The main provisions of the dissertation were reported at international scientific conferences and seminars. 3 scientific papers have been published on the topic of the dissertation, including in journals recommended by the Committee for Quality Assurance in Science and Higher Education of the Ministry of Science and Higher Education of the Republic of Kazakhstan, and in a journal indexed in the Scopus database.

1. Bakenova, A., & Bakhteyev, D. (2025). Improving Mechanisms for Managerial Decision-Making Using Artificial Intelligence Technologies. // Bulletin of the National Academy of Sciences of the Republic of Kazakhstan, 413(1), 363–379. <https://doi.org/10.32014/2025.2518-1467.902>. Author's contribution 90%.

2. Bakenova, A. (2024). Theoretical Foundations of Administrative Justice in Foreign Countries and Kazakhstan. // Public Administration and Civil Service, (1) (88), 2–10. <https://doi.org/10.52123/1994-2370-2024-1154>. Author's contribution 90%.

3. Bakenova A.K., Begaliyev E.N., Aubakirova A.A., Bakhteyev D.V., Kusainova L.K. (2025). Application of Artificial Intelligence Systems in Identifying Expert Errors: A Scientific Review. // Russian Journal of Forensic Medicine, 11(1). <https://doi.org/10.17816/fm16176>. Author's contribution 90%.