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## Comparative study of artificial intelligence in judicial activity

The purpose of this article is to conduct a comparative analysis of trends and practices in the use of artificial intelligence technologies in the justice sector in foreign countries, as well as to develop a framework for extrapolating international experience within the context of a comparative study. The research methodology is based on a comparative method, which serves as a fundamental tool for identifying best practices and correlating them with existing capabilities in the Republic of Kazakhstan in order to determine areas for extrapolation. The study employs methods of system analysis, as well as logical-legal, and theoretical-legal analysis of international experience, including the identification of both positive and negative aspects. The main conclusion of the study is that the pace of development of artificial intelligence technologies does not allow states to ignore their relevance for progressive development. Only bold and radical decisions to integrate artificial intelligence into various spheres of the state and society are the key to national success, provided that such implementation is carried out in compliance with ethical aspects and legal regulations. Proposals for extrapolating best practices have practical significance in implementing the priority trend of digital transformation associated with the use of artificial intelligence.

*Keywords:* artificial intelligence, neural networks, justice, access to justice, digitalization, law enforcement, legal processes, extrapolation of foreign experience, comparative study.

### Introduction

Artificial intelligence and neural network technologies are developing rapidly, and at a certain point, they have become a race in which Kazakhstan must not only keep up with the leaders but also strive to become one. Given that our country has relatively recently joined the process of integrating artificial intelligence into various fields, a comparative study of the experience of foreign countries in using artificial intelligence technologies in judicial proceedings seems relevant. The global significance of artificial intelligence technologies is objectively confirmed by global financial flows on artificial intelligence. According to the Global AI Report, these expenditures will double in 2024 compared to 2023, averaging \$2.5 million per company. As noted in the Artificial Intelligence Development Concept: “By 2030, global GDP is projected to increase by 14 % due to artificial intelligence, which, according to a PwC study, is equivalent to an additional \$15.7 trillion. That is, in the changing trends of the global economy, the biggest commercial opportunity is artificial intelligence” [1].

The Concept for the Development of Artificial Intelligence for 2024–2029 sets forth a new national vision: “utilizing the transformative power of artificial intelligence to develop human capital, stimulate research and development, foster a thriving startup ecosystem, and engage leading corporations in collaborative efforts to ensure Kazakhstan’s position as a global leader in artificial intelligence” [1].

Judicial practice is a sensitive area where digitalization has been underway for two decades. Digitalization in this area has gone through various stages, previously explored by one of the authors of this article. The current stage is the introduction of artificial intelligence into legal processes, judicial, and law enforcement activities [2; 54]. Against the backdrop of accelerating artificial intelligence implementation in judicial practice, academic interest in studying best practices is increasing. A comparative study of international experience in this area allows us to analyze global trends in the use of artificial intelligence technologies in the legal sphere and substantiate promising areas for the extrapolation of international experience.

The purpose of this study is to comparatively analyze the legal framework and practices for the application of artificial intelligence technologies in judicial practice in foreign countries and to identify possible areas for the extrapolation of best practices in the Republic of Kazakhstan.

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The purpose of the study determines the following research objectives:

- comparative analysis of trends and practices in the use of artificial intelligence in judicial practice in foreign countries;
- comparative analysis of the legal framework regulating artificial intelligence;
- formulation of promising areas for the extrapolation of best practices in the use of artificial intelligence in judicial practice in the Republic of Kazakhstan.

Issues of digitalization in the legal sphere are studied in the works of Ida Koivisto, Riikka Koulu, Stefan Larsson [3; 1]; Shepitko, V., Shepitko M., Latysh K., Kapustina M., Demidova E. [4; 135]; Idrysheva S.K. [5; 72]; Inozemcev M.I. [6; 8]; Mefod'eva K.A. [7]; Konobeevskaya I.M. [8]; Sarpekov R.K. [9; 12]; Sidorova N.V., Serikbaev A.M. [2; 54]; Sulejmenov M.K. [10]; Fedorchenko S.N. [11; 161] and others. The works of these authors have an industry focus and are devoted to the study of digitalization issues in the context of a separate industry and a separate group of legal relations, or within the framework of a separate institution (body).

The works of the following authors are devoted to the study of artificial intelligence in the legal field: Amijanc K.A., Chemerinskij K.V. [12; 49]; Ahmetzakirov N.R. [13]; Buglaeva E.A. [14; 7]; Karpika A.G. [15; 130]; Klychev R.A., Mankieva A.V. [16; 57]; Morhat P.M. [17]; Sidorova N.V., Dulatbekov N.O., Kusainova L.K. [18; 78]; Temirbekov Zh.R. [19; 142]; Tlembaeva Zh.U. [20; 61]; Sherstoboev O.N., Miheeva I.V. [21; 178]; Shul'gin E.P. [22; 179] and others. Nevertheless, the dynamic development of technologies and the legal framework for regulating artificial intelligence are causing scientific research to lag behind the implemented tracks of digital modernization.

Publications in the field of integration of artificial intelligence into judicial and law enforcement activities based on comparative studies belong to the following authors: Calo R [23]; Castillo del A.P.F. [24; 11]; Hilgendorf E., Kim M. [25]; Felipe Calderon-Valencia, Juan-Jose Perez-Montoya, Fausto Santos de Morais [26; 143]; Birjukov P.N. [27; 79]; Galkina N.M., Kuznetcova D.V., Vorob'ev M.A. [28; 35]; Kashkin S.Ju. [29; 151]; Shahnazarova Je.A. [30; 34]; Sheveleva K.V. [31; 448]. In the domestic scientific school, a comparative study of artificial intelligence in legal processes, judicial and law enforcement activities has not been conducted. Some domestic scientists in their scientific publications on the use of artificial intelligence in the legal sphere reveal foreign experience, but in the context of the related topic under consideration, for example, Konusova V.T. [32; 48]; Simonova V., Seitova A., Aubakir Zh. [33]; Adilov S.A., Shul'gin E.P. [34; 4]. Significant independent scientific studies of artificial intelligence in judicial activity in a comparative aspect have not been conducted in domestic legal science, which is due to the novelty of the institution of "artificial intelligence" as an object of legal regulation, and, consequently, an object of scientific and legal research.

Particular attention is being paid to artificial intelligence technologies at the state level, and the importance of the country's innovative development is also reflected in the draft Constitution of the Republic of Kazakhstan [35]. Analysis of conceptual documents on digital transformation [36] and artificial intelligence development [1] shows that the implementation of the digital transformation indicators stated in these documents should be carried out, including through best practices.

We believe that the need for scientific research in this area is obvious, and this determines the relevance and scientific novelty of this article. This comparative study of artificial intelligence in judicial activity fills a gap in Russian legal science. The formation of the national scientific school on issues of artificial intelligence in law and legal activity is at the initial stage of formation, which is due to the novelty of the technology of artificial intelligence in the global sense, as well as applied to such a sensitive area as justice. The scientific novelty of the work consists in the study of theoretical approaches to the formation of a separate direction of digital modernization of judicial activity through the use of artificial intelligence technologies, as well as the generalization of advanced practices in the field of using artificial intelligence in judicial activity. The practical significance of the study lies in identifying the prospects for extrapolation, formed on the basis of best practices, experience in using artificial intelligence technologies in law, as well as in identifying the barriers and risks of these processes.

#### *Methods and materials*

The research methodology is based on a comparative method, through which an analysis of the legal framework and practices of integrating artificial intelligence into the judicial system was conducted, which

allowed us to correlate the research results with the conceptual directions of innovative development of judicial activity in Kazakhstan. The comparative research method is successfully complemented by fundamental methods based on the analysis and synthesis of legal knowledge. A logical-legal and theoretical-legal analysis of international experience made it possible to identify existing doctrinal approaches and best practices in the topic under study. Systemic and structural analyses, in addition to the comparative method, expanded the possibilities for formulating proposals for extrapolating international experience in Kazakhstan. The use of this methodology made it possible to realize the research objectives and achieve the stated goal. The theoretical basis of the study includes publications on the stated topic. The legal basis of the study consists of legal acts of foreign states and the Republic of Kazakhstan, in the context of an analysis of the legal prerequisites for the use of artificial intelligence technologies in judicial activity. The empirical basis includes materials from scientific missions to Dubai (UAE) and Shanghai (China).

### Results

A comparative study of international experience in integrating artificial intelligence technologies into judicial practice demonstrates that defining conceptual priorities for digital transformation and developing institutional tools for implementing these areas, both strategically and in the near term, are key to the development of artificial intelligence technologies. A key component of the successful integration of artificial intelligence into various spheres is the development of a legal framework and the creation of relevant legislation.

The conducted doctrinal analysis shows that polar approaches to the use of artificial intelligence in judicial and law enforcement activities have been formed in the scientific environment.

1. Assistive aspect of introduction of technologies to artificial intelligence. Solomatina A.G. adheres to this position [37; 97] and Kartashov I.I. [38; 75]. That is, the main purpose of using artificial intelligence is improvement and assistance in the implementation of the functions of a judge, investigator, police officer, etc., as well as the implementation of consulting activities, document processing, and analytical work.

2. Full replacement of participants in criminal proceedings with artificial intelligence technologies. This prospect of applying artificial intelligence in judicial and law enforcement activities is substantiated in the publications of Gavrilin A.V., Filatov A.A. [39], Gordeev A.Ju. [40; 123].

A critical analysis of these approaches shows that at the current stage of the development of artificial intelligence technologies and their application in judicial and law enforcement activities, according to the research of advanced practices, it shows that these technologies have an auxiliary aspect and are aimed at the complete replacement of a person in the justice system. However, the dynamics of the development of artificial intelligence technologies, the format of their use, can exclude the reliability of forecasts, supporters of the second approach. In this case, only time can prove or disprove the forecast of full replacement of a person in court proceedings.

The author's position on this issue is the adoption of the auxiliary function of artificial intelligence in judicial and law enforcement activities, the effectiveness of which is confirmed by foreign experience. According to the authors, the complete replacement of human units with artificial intelligence contradicts the principles of justice and its essence.

While foreign countries' practices in using artificial intelligence in judicial practice have their own unique characteristics, there is a universality in the trends of using artificial intelligence in courts across the globe (Tab. 1) [41].

Table 1

#### Trends in the use of artificial intelligence in foreign courts

№	Direction of use	State	Functional
1	Informatization and systematization	USA	automatic recognition of documents submitted by the parties
			case materials analysis (eDiscovery)
		Brazil	document systematization (Victor system)
		China	analysis of visual evidence, processing of scanned documents
		United Kingdom	improving the efficiency of electronic document management (HMCTS Digital Case System)
		European Union	improving the efficiency of electronic judicial document management
Netherlands	electronic document management		

Continuation of Table 1			
2	Search for legislation and judicial practice	China	automatic search for court decisions on similar cases (Pkulaw)
			intelligent search of relevant legal norms (Pkulaw)
			search with analysis of meaning at the level of articles, points, paragraphs and sentences (Pkulaw)
		Brazil	search for judicial precedents
		United Kingdom	searching for information in legal archives and repositories
France	an internal state semantic search engine used by courts and law enforcement agencies		
3	Document project designer	China	automatic generation of draft procedural documents
			preliminary generation of draft court decisions
			provides recommendations for sentencing based on the case
		Brazil	intelligent generation of draft documents (draft court decisions)
		Argentina	preliminary generation of draft court decisions (Prometea system)
Netherlands	in-depth data mining of text documents and their processing generating document templates		
4	Routine tasks	China	automatic generation of court hearing minutes
			automatic speech-to-text transcription
			automatic recognition of speakers and the content of a court hearing
			the ability for judges and parties to view the transcribed text in real time
		India	automatic calculation of interest (costs)
India	translation of court documents into other languages		
UAE	blockchain technology aimed at reducing financial costs and expediting the enforcement of court decisions access of the parties and the legal community to court documentation		
5	Predictive justice	USA	an algorithm predicting the correct decision of the US Supreme Court with 70 % accuracy
		USA	cautious attitude towards predicted justice
		Canada	cautious attitude towards predicted justice
		United Kingdom	79 % predictability of European Court of Human Rights decisions
		European Union	private companies (lawyer investment pools) are buying the results of predictive forensic analytics
		Netherlands	predictive forensic and law enforcement analytics
		France	preventive forensic analytics systems for private law firms
6	Intelligent answers to legal questions	China	answers to legal questions based on the knowledge base
		USA	intelligent responses to legal questions, supported by judicial precedent and legal norms (Ross system, “robot lawyer”)
		France	AI-powered chatbots

Some of the aforementioned trends in the implementation of AI systems in judicial practice are also present in Kazakhstan. For example, automated judicial workstations; digital analytics of judicial practice; robotic automation of certain processes (authorizing travel restrictions, issuing court orders for alimony collection); and the execution of routine tasks. However, the predictive justice system, developed using artificial intelligence tools by one of the study's authors, remains to be tested.

The use of artificial intelligence in the judicial system in most countries is in the early stages of its integration. An analysis of trends in the use of artificial intelligence in foreign countries revealed that a pool of leading countries has emerged, and these countries are developing best practices that are subsequently extrapolated to other countries.

Priority practices that, according to the authors, can be extrapolated in the near future in Kazakhstan:

1. In the field of digital support for judicial activities:

- automated analysis of case materials, including document recognition and processing;
- smart validation of documents and visual materials;
- smart systematization of case materials;
- improved efficiency of electronic document management.

2. “Smart search” for relevant legislation and judicial practice.

3. Document designer (in the advisory context):

- automatic generation of a draft court decision;

- automatic generation of a court document to assist the parties;
- automatic generation of draft procedural documents;

4. Routine tasks:

- automatic preparation of court hearing minutes;
- automatic transcription of speech to text;
- automatic calculation of legal costs;
- automatic translation of court documents into other languages;
- expediting the enforcement of court decisions.

5. Predictable justice, including for the purpose of financing legal costs.

6. Legal assistance to the public.

The implementation of certain areas of artificial intelligence in the justice system will be carried out within the framework of the targeted funding program “Innovative approaches to ensuring access to justice for the population of the Republic of Kazakhstan, using artificial intelligence tools” and the completion of work on the digital platform LegalExpert.kz (<https://legalexpert.kz/request>), created on the basis of artificial intelligence [42; 80].

### *Discussion*

At an extended government meeting on January 28, 2025, Prime Minister K. Tokayev instructed to intensify efforts to develop artificial intelligence and implement it in the activities of government agencies and national companies [43]. Issues of artificial intelligence and the importance of its integration into various spheres of Kazakhstan’s life are addressed by the Head of State in the overwhelming majority of his speeches, messages, interviews, and other publications.

The United States and China occupy leading positions in the development of artificial intelligence technologies. Legal processes, judicial, and law enforcement activities are also among the clusters subject to digital transformation in these countries, including in the direction of integrating artificial intelligence. According to I.A. Filipova, “In the AI technology race, countries compete on three indicators:

1. The level of artificial intelligence development, with the United States leading the way, and China in second place.
2. The pace of artificial intelligence development, with China firmly in the lead, and the United States lagging behind.
3. The level of legal regulation of artificial intelligence; according to this indicator, China and the European Union occupy leading positions” [42; 80].

In 2017, China adopted a Next-Generation Artificial Intelligence Development Plan, which set an ambitious goal of achieving global leadership in this field by 2030. An important aspect worth noting is the institutional support for the plan’s implementation, which included the establishment of an Advisory Committee on Artificial Intelligence Strategy within the Ministry of Science and Technology of the People’s Republic of China. Currently, regulatory functions in the field of artificial intelligence are vested in the Cyberspace Administration of China [44; 46].

The development of artificial intelligence technologies in the PRC occurred in parallel with the formation of a legal framework. The legal basis for regulating the development of artificial intelligence in China includes the following acts: The Cybersecurity Law of the PRC of November 7, 2016 (came into force on June 1, 2017); the 2018 White Paper on Artificial Intelligence Standardization; the 2019 Beijing Principles on Artificial Intelligence; the 2021 Code of Ethics for Next-Generation Artificial Intelligence; Regulations on the Administration of Deep Synthesis Internet Information Services dated November 25, 2022 (came into effect on January 10, 2023) and others [44; 46].

China’s list of legal acts regulating artificial intelligence includes not only policy documents but also legislative and bylaws. Particular attention should be paid to bylaws (regulations) regulating the technological, generative, and algorithmic aspects of artificial intelligence. The authors believe the key provisions of these documents should be studied in more detail to determine the prospects for their adoption in Kazakhstan’s legal framework:

- labeling of generated content;
- registration of artificial intelligence algorithms;
- prohibition of the use of artificial intelligence to create fake news;
- prohibition of monopoly of artificial intelligence platforms; Prohibition of discriminatory tags in artificial intelligence algorithms;
- consumer right to disable algorithmic platforms, etc.

The use of artificial intelligence in legal processes, judicial, and law enforcement activities in China is under special management by generative artificial intelligence services. Thus, the integration of artificial intelligence into court operations, according to the documents under review, must be done cautiously and in compliance with copyright [45]. This means that content generated by artificial intelligence and used by the court or other legal community, including law enforcement agencies, is protected by copyright. This is associated with the commercialization of the results of companies developing algorithms for generating content in legal processes, judicial, and law enforcement activities.

China's experience in applying artificial intelligence in judicial activities is indicative, and includes the following clusters:

1. Strategic priorities for modernizing China's judicial system through the introduction of artificial intelligence technology (implementation of the "Smart Court" concept, as well as the formation of the "Guidelines of the Supreme People's Court of China on the Application of Artificial Intelligence in Judicial Activities").

2. Technological foundations (Table 2).

Table 2

#### An overview of key AI technologies and their application in China's judicial system

Artificial intelligence technologies	Specific judicial application	Examples
Natural language processing (NLP)	understanding legal texts, analyzing court records, converting natural language into legal language	Pkulaw, Shanghai Supreme Court System
Machine Learning	case selection, intelligent sentencing, evidence analysis, document generation, pattern identification	Pkulaw, Shanghai Supreme Court System, 206 System
Big Data Analytics	processing and analysis of huge amounts of legal information, identifying trends, and supporting decision-making	Pkulaw, Artificial Intelligence in Environmental Justice
Image Recognition	analysis of visual evidence, processing of scanned documents	Shanghai Supreme Court System

3. Artificial intelligence in judicial decision-making (assisted generation and review of legal documents using artificial intelligence; sentencing support using artificial intelligence and discretionary guidance; case selection).

4. Artificial intelligence in trial preparation and courtroom support (intelligent systems for pre-trial procedures and evidence management; a "mart litigation" ecosystem that goes beyond protocol and encompasses a range of artificial intelligence tools to assist judges).

5. Key platforms and systems (e.g., Pkulaw, the "206" system, etc.). Pkulaw is an artificial intelligence-based platform that has evolved from a legal information search system created in 1985 to a platform that actively utilizes artificial intelligence. Pkulaw's goal is to make legal services more professional, accurate, and intelligent (Table 3).

Table 3

#### An overview of Pkulaw's AI-powered litigation support features

Pkulaw's artificial intelligence function	Description of functionality	The corresponding system (module) Pkulaw
Intelligent determination of guilt and imposition of punishment	provides recommendations for sentencing based on the case	FABAO Zhixing
Selection of precedents	recommends similar previously considered cases	Smart Justice Business Platform FABAO Zhixing
Intelligent document generation	assists in drafting legal documents	FABAO Zhixing
Recognition of case elements	automatically identifies key elements of the case	Smart Justice Business Platform
Provision of laws and regulations	intelligently selects relevant legal norms	FABAO Zhixing
Analysis of deviations in sentence lengths	analyzes the proposed sentence for deviations from standard practice	FABAO Zhixing
Intelligent answers to questions	provides answers to legal questions based on a knowledge base	FABAO Cloud Service
Intelligent search with semantic analysis	provides search with analysis of meaning at the level of articles, points, paragraphs and sentences	Pkulaw

6. The symbiosis of humans and artificial intelligence, based on judicial autonomy and the advisory role of artificial intelligence (supporting judicial discretion, i.e., artificial intelligence as an auxiliary tool; analyzing the dynamics of judges' agreement and disagreement with artificial intelligence recommendations).

7. Ethical aspects of the use of artificial intelligence in judicial activities (ensuring data integrity, countering algorithmic bias and the "black box" problem; mechanisms for responsibility and accountability in decision-making using artificial intelligence; the implementation of artificial intelligence in parallel with the adaptation of the legal framework, forming the legal basis for overcoming existing risks).

In the Republic of Kazakhstan, informatization and digitalization are currently the subject of legal regulation of the Law of the Republic of Kazakhstan "On Informatization" dated November 24, 2015 No. 418-V [46]. However, this is not a single legislative act that regulates this sphere. The array of legal acts in the field of digitalization and informatization includes not only basic legislative acts, but also subordinate acts, the number of which is more than two hundred [18; 78]. A large array of normative legal acts was one of the reasons for the development of the draft Digital Code, which at the time of writing this article was adopted by the Parliament and signed by the President of the Republic of Kazakhstan, the code did not enter into force [47]. The project code contains chapter 19 "Guarantee of safe use of technologies (systems) of artificial intelligence" (15 articles) [48]. In the final version, the Digital Code does not contain independent chapters containing provisions on guarantees of safe use of artificial intelligence, as adopted by the Law of the Republic of Kazakhstan dated November 17, 2025 "On artificial intelligence" [49], which is also connected with the extrapolation of international experience.

The Artificial Intelligence Development Plan, approved by the State Council of the People's Republic of China in 2017, defined global goals through 2030 (hereinafter referred to as the Plan) [44]. The Plan envisages the integration of artificial intelligence into various clusters of the economy and public life. The Plan does not contain a direct reference to the use of artificial intelligence in the judicial system; however, the general political basis for the implementation of artificial intelligence in the judicial system is formed through the objective set out in the Plan: building a "safe, convenient, and smart society" [50].

Unlike China, the legal regulation of artificial intelligence in the United States is fragmented, unsystematic, and uncoordinated. Until recently, this area lacked a clearly defined national strategy and was predominantly decentralized [51; 134]. Legislative acts regulating artificial intelligence include: the National Artificial Intelligence Initiative Act of December 28, 2020; the Artificial Intelligence Training Under the Workforce Engagement Act of October 17, 2022; the Executive Order of the President of the United States of February 11, 2019, "On Maintaining American Leadership in Artificial Intelligence"; the Executive Order of December 3, 2020, "On Promoting the Use of Trustworthy Artificial Intelligence"; and the Executive Order of October 30, 2023, "On the Safe and Secure Development and Use of Artificial Intelligence".

The progressive leap in the application of artificial intelligence technologies in the United Arab Emirates is noteworthy. The main concept being implemented in this country is investing in artificial intelligence (attracting foreign specialists) and a stated desire to become a leader in this field. In the UAE, a specialized Ministry of Artificial Intelligence has been established [52], an Artificial Intelligence Council has been formed [53], and an Artificial Intelligence Center has been opened [54]. In the Republic of Kazakhstan, a Ministry of Artificial Intelligence and Digital Development was also established in the fall of 2025 as a tool for extrapolating the experience of foreign countries. Back in 2018, Abu Dhabi launched the first digital courtroom in global practice. Its features include digital documentary support, remote access to digital court materials, electronic registration, real-time broadcast recording, etc. In many countries, online justice was a response to the Covid-19 pandemic; the UAE implemented this system much earlier [55]. ADGM Courts have implemented blockchain technology, reducing financial costs and expediting the enforcement of court decisions. It also provides access for parties and the legal community to court documents, which are stored in digital format on a distributed ledger. A pilot version of this project has been tested in international trade and commercial cases [56].

One of the problems with the use of artificial intelligence in legal processes, judicial and law enforcement activities is ethical issues. An example of the "unethical" use of artificial intelligence technologies, according to a number of authors, is the American Correctional Offender Management Profiling for Alternative Sanctions (COMPAS) system [28; 35]. The essence of the system is to make a decision about the possible recidivism of an individual under the jurisdiction's scrutiny, based on artificial intelligence algorithms that generate an analytical forecast based on the answers received during interrogation (other procedural actions), in conjunction with criminal record data and other information. Research has determined that the system contains discriminatory algorithms, since race influences the

artificial intelligence's predictions, according to which black people, compared to white people, are more often identified as prone to recidivism [57].

An example of a "smart assistant" for supporting legal processes is the American digital technology Ross. The primary users of this AI system are members of the legal community (attorneys and legal professionals), who can receive up-to-date answers to legal questions, supported by references to legal norms and case law. The commercialization of legal services related to artificial intelligence technologies is linked to predictive justice, which is used by law firms.

Predictive justice is also a new format for legal processes and judicial activity in the European Union. Artificial intelligence technologies minimize the labor costs of lawyers, thereby improving productivity [58]. Predictive justice predicts case outcomes based on machine learning algorithms that analyze large data sets. This prediction serves as a trajectory for formulating a case position, within which the financial prospects and financial costs of the case can also be assessed. According to a study, the effectiveness of artificial intelligence in predicting case outcomes is 80 % [59]. How effective is this indicator of a machine-generated case outcome prediction? It seems advisable to conduct research in this area based on testing predictive justice systems and real-world judicial practice. This, in turn, will require time resources for a more comprehensive and reasoned analysis of existing judicial practice and artificial intelligence forecast data [42; 80].

Predictive analytics is another area of artificial intelligence application in law enforcement agencies, which exists in Austria, the Netherlands, and France. In these countries, artificial intelligence is also used in electronic document management and archival management, enabling information retrieval and analysis relevant to the task at hand. However, in terms of the effectiveness and scope of AI-generated predictive analytics used by law enforcement agencies, EU countries lag behind the United States, China, and the United Kingdom (with the exception of the Netherlands) [60].

Predictive analytics is a tool that eliminates "subjectivity" and "bias" and is aimed at developing a "preemptive model" of law enforcement activities, which is actively used by law enforcement agencies in the European Union, individual Asian countries, and the United States (Table 1). Artificial intelligence makes it possible to create a model of an object of interest to law enforcement activities and proactively respond to emerging risks and threats based on big data analysis. For example, the Shanghai Pudong District Prosecutor's Office has integrated more than 17,000 cases since 2015 (for the following crimes: credit card fraud, dangerous driving, intentional damage, theft, fraud, hooliganism, obstruction of official duties) to analyze the information and develop leads in criminal cases, the accuracy of which, according to published data, is 97 % [61]. The positive aspects of the "AI prosecutor" include assistance to prosecutors, relief from a large caseload, reliable forecasts, and the redirection of prosecutorial efforts to other tasks. The main drawback is that the AI prosecutor is trained based on previously downloaded data, without taking into account modern realities. This factor is the key to the current rejection of predictive analytics.

### *Conclusions*

A comparative study of international practices shows that artificial intelligence technologies, on the one hand, have innovative potential and are aimed at the technological modernization of processes and procedures in various fields, including the judiciary. On the other hand, the different approaches of states to integrating artificial intelligence into judicial activity are primary factors in choosing the format and direction of integrating artificial intelligence into judicial activity, taking into account potential risks. The conducted study allowed us to formulate the following conclusions:

- artificial intelligence is a tool for digital development, and states must create the legal, organizational, and technological conditions for the successful use of this tool;
- state leadership in the global context involves a complex set of components, including innovative transformations based on artificial intelligence and neural networks;
- a group of leading states in the field of artificial intelligence determines trends and directions for the implementation of artificial intelligence, including in the judicial sphere;
- the digital transformation of judicial activity is entering a qualitatively new direction, including the use of artificial intelligence tools;
- successful integration of artificial intelligence into all areas, including judicial activity, is possible through combining state priorities with the active involvement of the commercial sector (technology, investment, specialists, commercialization, etc.);

- the Republic of Kazakhstan, in light of adopted strategic documents, plans to take a leading position in the field of innovation using artificial intelligence;
- key areas of application of artificial intelligence in judicial activity in foreign countries: systematization and informatization; smart assistance to judges and other participants in the process; predictive justice; documentation of judicial activity; performance of routine tasks;
- extrapolation of best practices in the application of artificial intelligence in judicial activity should occur through the prism of domestic law, with respect for human rights and the implementation of ethical principles;
- best practices in the application of artificial intelligence in judicial activity can be transformed into Kazakhstani practice only after their testing and research into the effectiveness of these technologies;
- content generated by artificial intelligence for judicial purposes must be protected by copyright, which will require amendments and additions to this area of domestic law.

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## Сот тәжірибесіндегі жасанды интеллекттің салыстырмалы зерттеуі

Мақаланың мақсаты — шетелдердегі сот төрелігі саласында жасанды интеллект технологияларын пайдалану үрдістері мен тәжірибелеріне салыстырмалы талдау жүргізу, сондай-ақ салыстырмалы зерттеу аясында халықаралық тәжірибені экстраполяциялау үшін негіздеме әзірлеу. Зерттеу әдіснамасы салыстырмалы әдіске негізделген, ол ең үздік тәжірибелерді және оларды

экстраполяциялау салаларын анықтау үшін Қазақстан Республикасындағы бар мүмкіндіктермен байланыстырушы негізгі құрал. Зерттеуде жүйелік талдау, халықаралық тәжірибенің логикалық-құқықтық және теориялық-құқықтық талдау әдістері оң және теріс аспектілерді анықтау тұрғысынан қолданылды. Зерттеу процесінде негізделген негізгі қорытынды мынадай: жасанды интеллект технологияларының даму қарқыны мемлекеттерге олардың үдемелі дамуға деген сұранысын елемеге мүмкіндік бермейді. Тек мемлекет пен қоғамның барлық салаларына жасанды интеллекті интеграциялау бойынша батыл және түбегейлі шешімдер ғана мемлекет табысының кілті болады, оны енгізу этикалық аспектілер мен құқықтық реттеуге сәйкес жүзеге асырылуы тиіс. Ең үздік тәжірибелерді экстраполяциялау бойынша ұсыныстар жасанды интеллекті пайдаланумен байланысты цифрлық трансформацияның басым үрдісін жүзеге асыруда практикалық маңызға ие.

*Кілт сөздер:* жасанды интеллект, нейрондық желілер, сот төрелігі, сот төрелігіне қолжетімділік, цифрландыру, құқық қолдану, құқықтық процестер, шетелдік тәжірибені экстраполяциялау, салыстырмалы зерттеулер.

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## Компаративное исследование искусственного интеллекта в судебной деятельности

Цель статьи — сравнительный анализ тенденций и практик использования технологий искусственного интеллекта в зарубежных странах в сфере правосудия, а также формирование фрейма направлений экстраполяции зарубежного опыта в контексте компаративного исследования. Методология исследования основывается на сравнительном методе, который является базовым и позволяет определить передовые практики, соотнести их с имеющимися возможностями в Республике Казахстан для определения направлений экстраполяции. В процессе исследования применяются методы системного анализа, логико-правового и теоретико-правового анализа зарубежного опыта, в том числе в контексте определения положительных и отрицательных аспектов. Основной вывод, который обоснован в процессе исследования, заключается в том, что темпы развития технологий искусственного интеллекта не позволяют государству игнорировать их востребованность в поступательном развитии. Только смелые и кардинальные решения интеграции искусственного интеллекта во все сферы функционирования государства и общества являются залогом успешности государства, реализация которых должна осуществляться с соблюдением этических аспектов и при правовом регулировании. Предложения по экстраполяции передовых практик имеют практическое значение в реализации приоритетного тренда цифровой трансформации, связанного с использованием искусственного интеллекта.

*Ключевые слова:* искусственный интеллект, нейронные сети, правосудие, доступ к правосудию, цифровизация, правоохранительная деятельность, юридические процессы, экстраполяция зарубежного опыта, компаративное исследование.

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