



DOI: https://doi.org/10.34069/AI/2024.76.04.4

How to Cite:

Kovalchuk, O., Kolesnikov, A., Proskurniak, I., Halunko, V., & Kovach, Y. (2024). Implementation of innovative information technologies in judicial proceedings: organizational and legal aspect. *Amazonia Investiga*, 13(76), 53-62. https://doi.org/10.34069/AI/2024.76.04.4

Implementation of innovative information technologies in judicial proceedings: organizational and legal aspect

Впровадження інноваційних інформаційних технологій у судочинстві: організаційноправовий аспект

Received: February 14, 2024 Accepted: March 24, 2024

Written by: Olha Kovalchuk¹

https://orcid.org/0000-0001-6490-9633

Andrii Kolesnikov²

https://orcid.org/0000-0003-3064-4133

Igor Proskurniak³

https://orcid.org/0009-0000-3333-0784

Valentyn Halunko⁴

https://orcid.org/0000-0003-1619-5028

Yaroslava Kovach⁵

https://orcid.org/0009-0004-8430-8500

Abstract

This work aims to study the organizational and legal aspects of implementing the latest information technologies (IT), including artificial intelligence (AI), in the justice system. The study was based on a comprehensive approach that integrated analytical methods, comparative analysis, the case study method, and risk assessment. It is determined that to improve the existing regulatory framework on the use of IT in the judicial system, it is necessary to regulate the following organizational and legal aspects: I. enshrine compliance with ethical principles, ensure information security, and define responsibility for the risks of using AI systems at the legislative level; II. develop standards and requirements for algorithms, models, and data used in AI systems that support the information activities of courts;

Анотація

Метою роботи є вивчення організаційних та правових аспектів впровадження інформаційних технологій (IT), зокрема штучного інтелекту (ШІ), систему правосуддя. Дослідження грунтувалося на комплексному підході, який інтегрував аналітичні методи, компаративний аналіз, метод кейс-стаді та оцінку ризиків. Визначено, що для вдосконалення існуючої нормативноправової бази з питань використання IT у системі необхідно судовій врегулювати наступні організаційно-правові аспекти: І. закріпити на законодавчому рівні дотримання етичних принципів. забезпечення інформаційної безпеки визначення відповідальності застосування за ризики систем ШІ; ІІ. розробити єдині стандарти та вимоги до алгоритмів, моделей та даних, які

ISSN 2322- 6307

https://amazoniainvestiga.info/



¹ Ph.D. in Physics and Mathematics, Associate Professor of the Theory of Law and Constitutionalism Department, Faculty of Law, West Ukrainian National University, Ternopil, Ukraine. © WoS Researcher ID: H-3889-2017

² Ph.D., Associate Professor of the Department of Security and Law Enforcement, Faculty of Law, West Ukrainian National University, Ternopil, Ukraine. © WoS Researcher ID: G-5615-2017

³ Assistant Professor of the Department of Procedural Law, Faculty of Law, Yuriy Fedkovych Chernivtsi National University, Chernivtsi, Ukraine. ♥ WoS Researcher ID: KIH-6041-2024

⁴ Doctor of Law, Professor, Chief Researcher of Research Institute of Maritime and Space Law, Professor of Kyiv University of Intellectual Property and Law, Kyiv, Ukraine. © WoS Researcher ID: GNO-9205-2022

⁵ PhD in Law, Leading Research Scientist, Department of Planning and Coordination of Scientific-Llegal researches National Academy of Legal Sciences of Ukraine, Kharkiv, Ukraine. WoS Researcher ID: KIH-4300-2024

IV. provide proper guarantees for respect for human rights, prevention of discrimination and bias in the use of AI in legal proceedings; V. ensure transparency of legal regulation, which will increase public confidence in the use of AI technologies in the judicial system; VI. ensure flexibility and adaptability of legal regulation, and promote harmonization of the regulatory framework at the international level through the adoption of generally accepted principles and unified standards for the use of AI systems.

Keywords: judicial system, organizational and legal support, legal regulation, information technologies, digitalization, artificial intelligence, European integration, international experience, smart technologies, court.

Introduction

The latest information technologies, in particular artificial intelligence (AI), machine learning (ML), and big data analytics, are rapidly evolving and penetrating critical areas of modern technologized society, including enforcement agencies, the judicial system, and security sector. The global digital transformation has encompassed the justice system in recent years, which is responsible for upholding laws and protecting the rights and freedoms of citizens. The judiciary is adapting to the latest challenges and megatrends by implementing digital platforms and utilizing data analytics capabilities.

Artificial intelligence is considered one of the most significant achievements in the field of information technology. This cutting-edge technology has penetrated all sectors of modern digital society and is being actively implemented in the judicial systems of different countries, including Ukraine. AI is called one of the most promising technologies of the future due to its extraordinary functional capabilities that go far beyond human abilities. Judicial bodies have accumulated huge arrays of various legal data that require prompt and high-quality processing. This information is constantly being updated from various sources, so powerful technological tools are needed for its analysis. The problem of effective processing of legal data has become particularly acute in the context of Russia's fullscale war against Ukraine and the need for

застосовуються ШІ. В системах забезпечують інформаційну діяльність судів; IV. передбачити належні гарантії дотримання прав людини, запобігання дискримінації та упередженості при використанні ШІ судочинстві; V. забезпечити прозорість правового регулювання, ЩО сприятиме підвищенню довіри громадськості застосування технологій ШІ в судовій системі; VI. зумовити гнучкість та адаптивність правового регулювання, сприяти гармонізації нормативно-правової бази на міжнародному рівні шляхом ухвалення загальноприйнятих принципів та уніфікованих стандартів використання систем ШІ.

Ключові слова: система судочинства, організаційно-правове забезпечення, правове регулювання, інформаційні технології, діджиталізація, штучний інтелект, євроінтеграція, міжнародний досвід, смарт технології, суд.

careful documentation of war crimes by international standards.

AI tools can optimize this process and provide rapid and high-quality analysis of evidence. They are capable of obtaining data from sensors that go beyond human perception and processing visual, audio, geospatial, and tactile information. The logical capabilities of AI systems surpass those of the most powerful computing systems. The application of probabilistic analytics and fuzzy logic based on parallel and quantum computing allows for more accurate modeling of biological systems even under conditions of uncertainty and incomplete data.

Modern AI systems can be considered intelligent, as the complexity of data representation in them often goes beyond human comprehension even after computer analysis. This creates a risk of misinterpreting AI results and even losing human control over such systems. Of particular concern is the uncontrolled use of AI in judicial proceedings, which can lead to serious threats and violations. To prevent these risks, it is necessary to develop clear legal frameworks and ethical norms for the use of AI in the judicial system, ensure proper supervision and control, and take measures to combat bias and protect human rights. To date, in the science of information law, there has been comprehensive analysis of the organizational and legal foundations for the implementation of innovative IT in the judicial proceedings of



countries around the world and the judicial system of Ukraine. Therefore, there is an urgent need to conduct comprehensive multidisciplinary research on this issue.

This article aims to investigate the organizational and legal aspects of implementing the latest IT in the justice system. To achieve this aim, the possibilities of using innovative technologies in the digitalization of judicial proceedings have been studied; the current state of international and domestic legislation in the field of AI has been analyzed; and proposals have been made to improve the legal regulation of the use of AI in Ukraine.

Literature Review

The topic of research on the comprehensive analysis of the organizational and legal foundations for the implementation of innovative IT in judicial proceedings is quite new and underexplored in domestic science. This issue has an interdisciplinary nature, as it lies at the intersection of several fields of knowledge information law, jurisprudence, and information technology. The issue of applying machine learning, big data, and artificial intelligence in judicial proceedings is being actively researched in developed countries, where these technologies are already finding practical applications. These issues were discussed in the works of the following authors: Münch & Ferraz (2024), Demertzis et al. (2023), Ho et al. (2020). However, in Ukraine, this topic remains underexplored in legal science. It is addressed only in separate works by the following researchers: Berezka et al. (2022), Kovalchuk et al. (2022), and Kovalchuk et al. (2023). The few publications by domestic scholars touch only on certain aspects of the problem of digitizing judicial proceedings, including Turkanova (2023), Teremetskyi et al. (2023), Kovalchuk & Teremetskyi (2023). However, comprehensive studies on the implementation of AI in the judicial system from an organizational and legal perspective are practically non-existent. The legal foundations of the organizational support of the activities of the courts of Ukraine are dedicated to the works of the following authors: Pavlyuk (2020), Goncharuk & Bielova A (2022), Svitlychnyi (2023). Thus, this study has a high degree of scientific novelty, as it is one of the first in Ukraine to comprehensively consider the opportunities, challenges, risks, and legal aspects of using AI in the judicial system based on an analysis of global experience. Due to the lack of a sufficient range of national scientific research, particular attention is currently required to

address the issues of improving the organizational and legal support of the activities of courts based on the use of data science methods and innovative IT, as well as adapting legislation in the field of digital technologies and data, including AI, by EU norms. The improvement of legal norms on the widespread use of AI in the judicial system also remains relevant.

Methodology

This study employed a qualitative research approach combining multiple methods to evidence-based recommendations. Specifically, a documentary analysis method was used to critically review relevant scientific literature. international documents. legislative acts from different countries, including Ukraine, related to the regulation of AI in the judicial system. A comparative analysis method was applied to study and compare different approaches to the legal regulation of AI across various countries worldwide. method Furthermore, a case study implemented to examine practical cases of implementing digital technologies and AI systems in the judicial systems of selected countries.

To ensure methodological rigor, documentary analysis followed a systematic process of searching, screening, and analyzing relevant documents based on predefined inclusion and exclusion criteria. The comparative analysis involved a structured framework to evaluate and contrast AI regulation approaches across countries based on key dimensions such as scope, principles, and enforcement mechanisms. For the case study method, a purposive sampling strategy was employed to select relevant cases that demonstrated diverse applications of AI in judicial processes. Triangulation of data sources, including official reports, legal documents, and expert interviews, was conducted to enhance the validity and reliability of the findings.

Additionally, a risk and opportunity analysis was carried out to comprehensively assess the potential benefits, challenges, risks, and threats associated with the use of AI in the field of justice. This analysis was informed by the insights gained from the documentary analysis, comparative study, and case examinations, as well as input from subject matter experts and stakeholders.

Based on the cumulative findings from the various methods employed, specific proposals

and recommendations were formulated to improve the legal regulation of AI use in Ukraine's judicial system, addressing identified gaps, mitigating potential risks, and capitalizing on opportunities for enhancing judicial processes through responsible AI adoption.

Results and Discussion

Use of IT Technologies in Digitalization of Judicial Proceedings Worldwide

In countries with high crime rates, such as the United States, the digital modernization of the justice system is actively taking place through the implementation of statistical methods, machine learning, artificial intelligence, and big data analytics. However, predictions made by machines are not accurate, and the cost of errors increases sharply when artificial intelligence is applied in critically important areas related to life, security, and freedom of people. Meanwhile, the justice system is becoming increasingly technologically complex, and its effectiveness depends on processing vast amounts of unstructured and disorganized data.

Artificial intelligence technologies increasingly being used in the justice system to predict the likelihood of crimes and their recurrence, assess risks in determining bail or punishment, as well as to establish a person's guilt or innocence (Yu et al., 2020). Law enforcement agencies in developed countries are actively involving predictive methods to identify potential offenders, and crime victims, and identify criminals. The application of machine learning technologies in the judicial system can be extremely useful. One of the key advantages of AI is the ability to effectively analyze previous court decisions in similar cases to reduce the number of biased verdicts (Mathis, 2022).

Computer vision and image recognition algorithms can automatically analyze video surveillance, and identify people, license plates, weapons, and other important details, helping investigators find key evidence more quickly (Gkougkoudis et al., 2022). Machine learning technologies can analyze vast amounts of financial data to detect suspicious transactions, money laundering, fraud, etc., finding complex patterns invisible to humans (Shetty et al., 2023). AI algorithms can assess the risk of former prisoners re-offending based on historical data to determine the necessary monitoring and rehabilitation measures (Berezka et al., 2022). AI systems can quickly analyze large databases of previous court decisions to search for relevant precedents in the current case, helping lawyers build more substantiated arguments. By analyzing large data on previous sentences, AI systems can assist courts in determining optimal sanctions, taking into account various factors, and reducing the risk of unjustifiably severe or lenient punishments (Alghazzawi, Machine learning can detect potential systemic bias in the decisions of individual judges based on race, gender, age, etc. AI algorithms allow for efficient scheduling of court hearings, taking into account the complexity of cases and the availability of participants. Based on an analysis of data on past proceedings, AI systems can more accurately predict the expected duration of different categories of cases (Shaikh et al., 2020).

Many progressive countries are actively implementing a probation system, which allows individuals convicted of non-serious crimes to be released and begin the process of reintegration into a law-abiding society. Probation legislation and its functioning are regulated by national laws and regulations of each state, which may include different rules, procedures, and standards depending on the region. In Ukraine, probation is regulated by legislation that establishes the conditions and procedures for the execution of this type of punishment, with the key regulatory act being the Criminal Executive Code of Ukraine. However, there is a risk that courts may impose overly lenient sentences, creating potential threats to public safety. A dilemma arises: to ensure the safety of society or to give convicts a chance for resocialization and correction. To make such decisions, reliable information support is needed – the application of a scientific approach and artificial intelligence algorithms, including the creation of predictive models to determine the likelihood of recidivism among convicts (Berezka et al., 2022).

There is also a "sensitivity and specificity dilemma": what is more important – to prove the innocence of a potential suspect (risking their impunity) or to protect the rights of an innocent victim? Because of this, crime facts are often silenced by victims due to a feeling of insecurity based on negative experiences from previous cases where the guilty went unpunished. Solving crimes is a complex task that requires significant resources and expertise. Intelligent data analysis models can provide effective solutions for nonstandard crime investigation problems. Artificial intelligence algorithms are increasingly being used in predictive justice, including the qualification of crimes and their conformity with criminal proceedings. Text analysis algorithms provide reliable support in building an evidence



base, judicial analytics, and making informed decisions during proceedings (Ma et al., 2021).

Traditionally, law enforcement agencies have acted reactively – arresting criminals after crimes have been committed. However, the emergence of the latest technologies, such as intelligent data analytics and artificial intelligence, has opened unique opportunities for predicting preventing crime. New tools effectively gather information from various sources (databases, geospatial data, social media, news) and detect hidden connections and patterns. exponential growth of data volumes has led to the need for scalable algorithms for information analysis. Today, predictive policing actively uses AI predictive algorithms to identify criminals by facial features, assess the risk of recidivism, predict likely crime sites, monitor social media, and more. Artificial intelligence systems are used at various stages of criminal proceedings: to determine the possibility of parole, and participation in probation, calculate optimal prison terms, and assess the defendant's danger.

In the high-tech society of the 21st century, questions arise about recognizing humanoid robots as legal entities, the feasibility of granting them citizenship, and protection from global AI threats. AI systems can be used for facial and human silhouette recognition, tracking, and information search on social networks. Such technologies to some extent violate the right to privacy, but at the same time, they make it possible to make a balanced decision. Private data can be encrypted, not stored, and not disseminated to minimize risks.

The issue of the impact of AI on ensuring transparency, fairness of justice, and the rule of law remains unresolved, creating new opportunities and threats for legal systems. For example, judges and lawyers may use AI systems to obtain recommendations on decisions in court cases, which could facilitate the decision-making process and help avoid bias. However, there are risks in the field of justice related to human rights violations or case law if AI decisions are erroneous or the system is used for malicious purposes.

Already today, judicial systems in many countries around the world use digital tools such as electronic document management systems, video conferencing, analytical systems, AI, cloud services, etc., which optimizes workflows and increases productivity. International experience in implementing innovative IT in the judicial system demonstrates a general trend toward

digitalization and automation of judicial processes. For example, Singapore has an advanced eLitigation electronic litigation system (Heng, 2023), Estonia has a fully digital court system (Maakohtu, 2023), the UK uses an advanced video conferencing and electronic document exchange system (James, 2020). The UAE uses artificial intelligence for document translation, case distribution, and retrieval of judicial practice (Park & Chai, 2021). Canada is implementing solutions for automatic order evidence generation. management, transcription of meeting records (Alcántara Francia et al., 2022). Brazil uses digital case management systems, electronic signatures, and judicial statistics analysis (Reiling & Contini, 2022). China is developing a "Smart Court" system based on AI, voice recognition, and big data analytics to automate judicial proceedings (Zheng, 2020). Some U.S. states use AI systems for legal materials search, case outcome prediction, and risk analysis (Sajida et al, 2023). The introduction of innovative AI technologies, machine learning, big data analytics, and digital tools in the judicial system opens up new opportunities to improve the efficiency, accuracy and transparency of justice, but requires careful consideration of ethical aspects, security assurance, and respect for human rights.

Application of Innovative IT Technologies in the Digitalization of the Judicial System of Ukraine

The judicial system of Ukraine is currently only at the initial stage of digital transformation. Its goal is to ensure the unity, transparency, openness, accessibility, and human-centricity of justice. In the context of the rapid development of digital technologies, the digitalization of judicial proceedings is considered an objective necessity for creating an effective, independent, and impartial judicial system, which is an integral component of building Ukraine as a legal European state. The digitalization of the court is part of the State Anti-Corruption Strategy.

Ukraine has a Unified Judicial Information and Telecommunication System (UJITS), which provides automation of judicial processes, document flow, office work, analytics, and courts communication between through electronic data exchange, video conferencing, electronic digital signature, and other services. Its legal basis is the Law of Ukraine "On Access to Court Decisions" (Law of Ukraine No. 3262-IV. 2005) and resolutions of the Cabinet of Ministers "On Approval of the Procedure for Maintaining the Unified State Register of Court Decisions" (Law of Ukraine No. 1200/0/15-18,

2018). One of its subsystems is the "Electronic Court", which allows filing claims and documents electronically and participating in hearings via video conferencing. The UJITS also includes the Unified State Register of Court Decisions since 2006, but it is still operating in test mode with functional limitations. Since March 2023, it has been possible to receive notifications about cases and decisions in digital format through the "Diya" application (Kibenko, 2023). The digital transformation of the judicial system of Ukraine can increase its efficiency, accessibility, and transparency through the use of the latest technologies. However, the European integration processes and the active war with Russia impose new requirements on digital justice in Ukraine, which can only be met on a solid legal foundation (Ablamskyi et al., 2023).

The application of ML and AI in the legal field opens up wide opportunities to increase efficiency, optimize processes, and ensure greater fairness in the justice system. However, AI systems are not neutral and safe. AI-based decisions can be inaccurate, and discriminatory due to built-in biases, and become a new source of errors and data leaks. AI algorithms can inherit biases from training data and make biased decisions based on race, gender, socio-economic status, etc., violating the principle of equality before the law. Many AI models are difficult to explain and interpret, which can undermine trust in the judicial system. AI systems can make mistakes due to incomplete, outdated, or biased training data, causing erroneous judicial decisions with serious consequences.

The use of AI in justice also poses risks to human rights and due process without proper safeguards. There is a threat of malicious use or manipulation of AI systems in judicial proceedings to achieve biased goals. In case of errors, it is unclear who should be held responsible – developers, data providers, or judges. This creates serious risks to confidentiality, fairness, respect for human rights, and other fundamental values. The application of AI in the justice system can pose several risks and threats if it is not properly regulated and controlled.

Legal Regulation of Artificial Intelligence in the World

One of the most progressive and promising technologies of our time is AI. Thanks to the rapid development of computer computing power and cloud technologies, AI systems can operate with huge amounts of data and perform complex calculations in record time. Machine

learning allows AI systems to self-learn from data, identify complex patterns, and adapt to new situations. AI has wide applications in various fields, which determines its interdisciplinary nature. Due to intensive research and investment, AI technologies are constantly improving, expanding their capabilities and areas of application. This causes additional ethical and legal challenges in the use of AI algorithms. Its progressive nature also requires careful study of the ethical and legal issues associated with ensuring security, transparency, and respect for human rights.

Currently, there is no universal international legislation that would comprehensively regulate the field of AI. However, several international organizations are developing recommendations, guidelines, and standards in this area. In particular, the United Nations, through UNESCO, in 2021 adopted the Recommendation on the Ethics of AI, which calls on states to develop legal regulation of AI based on the principles of respect for human rights, inclusiveness, equality, privacy protection, etc. (Ramos, (s.f)). The Organization for Economic Cooperation and Development (OECD) in 2019 adopted the OECD Principles on Artificial Intelligence, defining standards for responsible use of AI in the interests of people and society (OECD, 2019). In 2021, NATO endorsed the Principles on the Use of AI to ensure the responsible and ethical development and implementation of AI technologies in the defense sphere (Taddeo et al., 2021). The International Organization for Standardization is developing technical standards related to AI. International legislation in the field of AI is still in its early stages of development, and most countries are only shaping national approaches to regulating artificial intelligence.

Different countries approach the regulation of the AI field differently, but many have already developed or are developing relevant regulations. The United States does not have a single federal law on AI, but there are separate initiatives and bills at the state level. For example, in California, there has been an artificial intelligence law in decision-making since 2022 (Bosley et al., 2023).

China pays close attention to the comprehensive development of AI and the formation of an appropriate legal framework. In 2017, the National Plan for the Development of Emerging Industries was adopted, which sets a course for leadership in AI. In 2020, the "AI Standards Guide" with recommendations for its use was published. It is planned to develop regulations on



the ethics, security, and regulation of AI. China is developing a comprehensive state policy to stimulate research, development, and application of advanced AI technologies, as well as forming a legislative framework to ensure a balance between innovation and risk control (Tu et al., 2022). In 2023, the UK presented a White Paper on flexible AI regulation and a code of practice (Kurth, 2023). In 2022, Canada adopted the Directive on Automated Decision-Making Systems for the public sector and is developing a draft AI Act (Canaan, 2023). In 2019, Japan approved the Data Business Development Strategy and the Artificial Intelligence Strategy, and AI legislation is expected to be developed (Maruyama & Nicola, 2022). In 2023, Singapore updated its National AI Strategy and is shaping regulatory approaches to prevent risks (Kaur, 2023). In 2023, India presented a draft National AI Policy (Dumouchel, 2023). Most countries recognize the need to regulate AI to ensure security, ethics, and respect for human rights, but specific approaches vary depending on national priorities.

Legal and Regulatory Framework for Using AI in the Ukrainian Judicial System

In Ukraine, the situation with regulating the use of AI at the regulatory level is formal and needs further improvement and more active concrete actions to determine the ways of its application. Currently, there is no separate legal act that would comprehensively regulate the use of AI in the judicial system. The digitalization of legal proceedings is a dynamic process that requires constant updating of the legal and regulatory framework, as well as information and technical support. On May 26, 2021, the Law of Ukraine On Amendments to Certain Legislative Acts of Ukraine Concerning the Gradual Implementation of the Unified Judicial Information and Telecommunication System came into force (Law of Ukraine No 1416-IX, 2021). This law was adopted by the Verkhovna Rada of Ukraine on April 27, 2021, to ensure the gradual implementation of the Unified Court Information and Telecommunication System (UCITS) (Teremetskyi & Duliba, 2023). Ukraine has been developing and discussing AI legislation, but no AI law has yet been officially adopted. It is actively exploring the possibility of creating a regulatory framework for AI and studying the experience of other countries.

In Ukraine, there are legislative acts that relate to certain aspects related to AI, such as data protection, intellectual property, cybersecurity, etc. However, the current legislation contains only isolated references to the use of information technologies in legal proceedings, but without details regarding artificial intelligence. Issues of ethics, safety, and responsibility in the use of AI also need to be regulated. It is necessary to clearly define the range of tasks and processes where AI can be used in legal proceedings, establish requirements and standards for algorithms, models, and data for AI systems in courts, and provide guarantees of human rights and avoidance of bias. Transparent regulation will help increase trust in the use of AI in legal proceedings. An important issue is the adaptation of the legal and regulatory framework for judicial information systems in Ukraine to European legislation and the improvement of the principles of their functioning to ensure the possibility of easy integration with EU systems.

Conclusions

The analysis of the state of application of AI tools in the judicial systems of countries around the shows that artificial intelligence algorithms are being actively implemented in the judicial systems of many countries, including Ukraine. This optimizes judicial processes, increases the efficiency of the judicial system, and ensures fair justice. The use of AI in legal proceedings opens up wide opportunities but also carries risks and threats related to bias, violation of human rights, loss of control, and undermining trust in the judicial system. At the international recommendations, principles, standards are being developed for the ethical and responsible use of AI, but there is still no universal legislation. Most countries in the world are forming national approaches to the legal regulation of the AI field, but specific solutions differ depending on priorities.

In Ukraine, there is currently no comprehensive legislative regulation of the use of AI in the judicial system, with only isolated mentions in regulations without details. For the effective implementation of AI in the Ukrainian judicial system, it is necessary to develop a clear legal framework, establish requirements standards, provide guarantees of human rights, and avoid bias, as well as adapt legislation to EU norms. Today, there is an urgent need to establish a proper legal basis to ensure the safe, ethical, responsible application of artificial intelligence technologies in the justice system of Ukraine.

To improve the current legal and regulatory framework, which only partially mentions the use of information technologies in legal proceedings, but does not detail the application of artificial intelligence, it is necessary to regulate several organizational and legal aspects: I. regulate compliance with ethical norms, ensure information security, and assign responsibility for the risks of using artificial intelligence; II. clearly outline the range of tasks and processes where AI can be used in legal proceedings; III. establish uniform requirements and standards for algorithms, models, and data for artificial intelligence systems in courts; IV. provide guarantees for observing human rights, avoiding discrimination and bias in the application of artificial intelligence; V. ensure transparent regulation that will help increase public trust in the use of artificial intelligence in legal proceedings.

AI is constantly evolving, so legislation in the field of its application needs constant improvement and adaptation to new realities. Rapid progress in this area poses new challenges. To ensure the safe, ethical, and responsible use of AI technologies, it is necessary to regulate the following organizational and legal aspects at the level of laws and regulations: I. periodic review of existing norms and standards, since with the development of AI, new risks or problem areas may emerge that will require regulatory regulation; II. flexibility and adaptability of legal regulation to ensure the development of innovation while simultaneously setting clear boundaries and limitations to prevent abuse or violation of human rights; III. harmonization of the legal framework at the international level through the adoption of common principles and standards for the use of AI. IV. Consideration by the legislation of ethical principles such as accountability. transparency, discrimination, confidentiality, and protection of personal data in AI systems; V. involvement of all stakeholders - developers, businesses, civil society, experts - in the process of forming AI policy and legislation to ensure a balanced approach.

Legislation regulating the creation and use of AI systems is developing in many countries and does not yet have clear international standards. Laws and regulations can vary across different regions and include issues around safety, copyright, data privacy, liability for harm caused by a robot, and many other aspects. However, it is important to consider issues of privacy, ethics, and accountability in the context of using artificial intelligence in the justice system. Guarantees are also needed that AI algorithms and systems do not discriminate against any group of people and adhere to the principles of

fairness. The use of AI in legal proceedings can have both positive and negative impacts on case law and human rights violations. It is important to ensure that the use of these technologies is fair, effective, and meets the requirements of human rights and justice.

Bibliographic references

- Ablamskyi, S., Tchobo, D. L., Romaniuk, V., Simic, G., & Ilchyshyn, N. (2023). Assessing the Responsibilities of the International Criminal Court in the Investigation of War Crimes in Ukraine. *Novum Jus*, *17*(2), 353-374.
- Alcántara Francia, O.A., Nunez-del-Prado, M., & Alatrista-Salas, H. (2022). Survey of Text Mining Techniques Applied to Judicial Decisions Prediction. *Applied Sciences*, 12(20), 10200. https://doi.org/10.3390/app122010200
- Alghazzawi, D., Bamasag, O., Albeshri, A., Sana, I., Ullah, H., & Asghar, M.Z. (2022). Efficient Prediction of Court Judgments Using an LSTM+CNN Neural Network Model with an Optimal Feature Set. *Mathematics*, 10(5), 683. https://doi.org/10.3390/math10050683
- Berezka, K., Kovalchuk, O., Banakh, S., Zlyvko, S., & Hrechaniuk, R. (2022). A Binary Logistic Regression Model for Support Decision Making in Criminal Justice. *Folia Oeconomica Stetinensia*, 2(1), 1-17. https://doi.org/10.2478/foli-2022-0001
- Bosley, J.S., Capell, J.M., Kinaga, P., & LeCrone, J.P. (2023). *California Proposed Employment AI Regulations and Legislation*. Davis Wright Tremaine LLP. URL: https://acortar.link/GjMPCr
- Canaan, R.G. (2023). *AI Regulation in Canada: Protective and Innovation-Enabling*. RAILS. URL: https://acortar.link/W7EYEN
- Demertzis, K., Rantos, K., Magafas, L., Skianis, C., & Iliadis, L. (2023). A Secure and Privacy-Preserving Blockchain-Based XAI-Justice System. *Information*, *14*(9), 477. https://doi.org/10.3390/info14090477
- Dumouchel, P. (2023). AI and Regulations. *AI*, *4*, 1023-1035. https://doi.org/10.3390/ai4040052
- Gkougkoudis, G., Pissanidis, D., & Demertzis, K. (2022). Intelligence-Led Policing and the New Technologies Adopted by the Hellenic Police. *Digital*, *2*, 143-163. https://doi.org/10.3390/digital2020009
- Goncharuk, N., & Bielova, A. (2022). The current state of organizational, legal and personnel support for the activities of local courts in the conditions of the



- Europeanization of the judicial administration system in Ukraine. *Aspects of public administration*, 10(4), 5-12. https://doi.org/10.15421/152221
- Heng, T.B. (2023). *E-litigation: The Singapore Experience*. Focus. URL: https://v1.lawgazette.com.sg/2001-11/Nov01-focus2.htm
- Ho, J.-H., Lee, G.-G., & Lu, M.-T. (2020). Exploring the Implementation of a Legal AI Bot for Sustainable Development in Legal Advisory Institutions. *Sustainability*, 12, 5991. https://doi.org/10.3390/su12155991
- Kurth, A. (2023). *UK Government Publishes AI White Paper*. Hunton. URL: https://acortar.link/u8u53w
- James, W. (2020). *UK Supreme Court switches* to video conferencing. Reuters. URL: https://acortar.link/LX8gl2
- Kaur, G. (2023). Singapore makes key policy shifts in revised national AI strategy. Computerworld. URL: https://acortar.link/kJpoBA
- Kibenko, O. (2023). The future of online courts in Ukraine: digitization of existing processes or digital transformation of justice?. *Legal Newspaper*, 1-2, 759-760. URL: https://acortar.link/6moavj
- Kovalchuk, O., Banakh, S., Masonkova, M., Berezka, K., Mokhun, S., & Fedchyshyn, O. (2022). Text Mining for the Analysis of Legal Texts. *Proceedings of the 12th International Conference on Advanced Computer Information Technologies* (pp. 502-505). Ruzomberok, Slovakia: IEEE. https://doi.org/10.1109/ACIT54803.2022.99 13169
- Kovalchuk, O. Karpinski, M., Banakh, S., Kasianchu,k M., Shevchuk, R., & Zagorodna, N. (2023). Prediction Machine Learning Models on Propensity Convicts to Criminal Recidivism. *Information*, 14(3), 161. https://doi.org/10.3390/info14030161
- Kovalchuk, O., & Teremetskyi, V. (2023). Informational and Legal Support of the Justice System. *Scientific notes. Series: Law, 15*, 271-278. URL: https://pravo.cusu.edu.ua/index.php/pravo/article/view/378/397
- Law of Ukraine No. 3262-IV. On Access to Court Decisions. *Bulletin of the Verkhovna Rada of Ukraine*, Kyiv, Dec 22, 2005. URL: https://cis-legislation.com/document.fwx?rgn=10165
- Law of Ukraine No 1416-IX. On Amendments to Certain Legislative Acts of Ukraine Concerning the Gradual Implementation of the Unified Judicial Information and Telecommunication System from Apr. 27,

- 2021. *Holos Ukrainy Voice of Ukraine*. URL:
- https://zakon.rada.gov.ua/laws/show/1416-20#Text
- Law of Ukraine No. 1200/0/15-18. On Approval of the Procedure for Maintaining the Unified State Register of Court Decisions: Decision of the High Council of Justice. *Bulletin of the Verkhovna Rada of Ukraine*, Kyiv, Apr 19, 2018. URL: https://zakon.rada.gov.ua/rada/show/v12009 10-18#Text
- Ma, L., Zhang, Y., Wang, T., Liu, X., Ye, W., Sun, C., & Zhang, S. (2021). Legal Judgment Prediction with Multi-Stage Case Representation Learning in the Real Court Setting. In Proceedings of the 44th International ACM SIGIR Conference on Research and Development in Information Retrieval, Virtual (pp. 993-1002). https://doi.org/10.1145/3404835.3462945
- Maakohtu, H. (2023). A step towards the digital future how is justice administered in Estonia? The Estonian IT Centre. URL: https://rit.ee/en/news/step-towards-digital-future-how-justice-administered-estonia
- Maruyama, M., & Nicola, C. (2022). *Recent Updates On Japan's National Strategy On AI*. Eu-Japan.AI. URL: https://www.eu-japan.ai/ja/recent-updates-on-japans-national-strategy-on-ai/
- Mathis, B. (2022). Extracting Proceedings Data from Court Cases with Machine Learning. *Stats.*, 5(4), 1305-1320. https://doi.org/10.3390/stats5040079
- Münch, L.A.C., & Ferraz, T.S. (2024). Exploring Defuturing to Design Artificial-Intelligence Artifacts: A Systemic-Design Approach to Tackle Litigiousness in the Brazilian Judiciary. *Laws*, *13*(1), 4. https://doi.org/10.3390/laws13010004
- OECD. (2019). Recommendation of the Council on Artificial Intelligence. OECD Legal Instruments. URL: https://legalinstruments.oecd.org/en/instruments/oecd-legal-0449
- Park, M., & Chai, S. (2021). AI Model for Predicting Legal Judgments to Improve Accuracy and Explainability of Online Privacy Invasion Cases. *Applied Sciences*, 11(23), 11080. https://doi.org/10.3390/app112311080
- Pavlyuk, I. Yu. (2020). Legal principles of organizational ensuring the activities of commercial courts. *Legal Science*, *3*(105), 251-257. https://doi.org/10.32844/2222-5374-2020-105-3.32
- Povydysh, V., Kobko, Y., Svyrydenko, S., Nironka, I., & Dobroskok, A. (2023).



- Information and analytical support for the State defense order in Ukraine. *Amazonia Investiga*, 12(65), 59-67. https://doi.org/10.34069/AI/2023.65.05.6
- Ramos, G. (s.f). Ethics of Artificial Intelligence.
 UNESCO. URL:
 https://www.unesco.org/en/artificialintelligence/recommendation-ethics
- Reiling, D., & Contini, F. (2022). E-Justice Platforms: Challenges for Judicial Governance. *International Journal for Court Administration*, 13(1), 6. https://doi.org/10.36745/ijca.445
- Sajida, T.K., Zakir, M.Y., Khan, T., & Khan, S.H. (2023). Nurturing Rehabilitation and Reintegration of Youth Offenders in the Pakistani Justice System: An Analysis of Juvenile Probation Officers. *Journal of Asian Development Studies*, 12(4). URL: https://poverty.com.pk/index.php/Journal/art icle/view/267
- Shaikh, R.A., Sahu, T.P., & Anand, V. (2020).

 Predicting Outcomes of Legal Cases based on
 Legal Factors using Classifiers. *Procedia*Computer Science, 167,23932402. https://doi.org/10.1016/j.procs.2020.0
 3 292
- Shetty, V.R., Pooja. R., & Malghan, R.L. (2023). Safeguarding against Cyber Threats: Machine Learning-Based Approaches for Real-Time Fraud Detection and Prevention. *Engineering Proceedings*, 59(1), 111. https://www.mdpi.com/2673-4591/59/1/111
- Svitlychnyi, O.P. (2023). Organizational Ensuring the Activities of Commercial Courts. *Legal Scientific Electronic Journal*, *3*, 344-347. https://doi.org/10.32782/2524-0374/2023-3/80

- Taddeo, M., & McNeish, D., Blanchard, A., & Edgar, E. (2021). Ethical Principles for Artificial Intelligence in National Defence. *Philosophy & Technology*, *34*(886), 1-23. http://doi.org/10.1007/s13347-021-00482-3
- Teremetskyi, V., Boiko, V., Malyshev, O., Seleznova, O., & Kelbia, S. (2023). Electronic Judiciary in Ukraine: Problems of Implementation and Possible Solutions. *Amazonia Investiga*, 12(68), 33-42. https://doi.org/10.34069/AI/2023.68.08.3
- Teremetskyi, V. I., & Duliba, YE.V. (2023). Peculiarities of Implementation and Functioning of the Unified Judicial Information and Telecommunication System as an E-Justice Tool. *Forum Prava*, 75(2), 130-143.
 - https://doi.org/10.5281/zenodo.7947514
- Tu, M., Dall'erba, S., & Ye, M. (2022). Spatial and Temporal Evolution of the Chinese Artificial Intelligence Innovation Network. *Sustainability*, 14, 5448. https://doi.org/10.3390/su14095448
- Turkanova, V. (2023). Prospects for the use of artificial intelligence and machine learning algorithms for effective resolution of civil disputes. *Access to Justice in Eastern Europe*, 2(19), 1-10. https://doi.org/10.33327/AJEE-18-6.2-n000224
- Yu, H., Liu, L., Yang, B., & Lan, M. (2020). Crime Prediction with Historical Crime and Movement Data of Potential Offenders Using a Spatio-Temporal Cokriging Method. *ISPRS international journal of geo-information*, 9(12), 732. https://doi.org/10.3390/ijgi9120732
- Zheng, G. (2020). China's Grand Design of People's Smart Courts. *Asian Journal of Law and Society*, 7(3), 1-22. https://doi.org/10.1017/als.2020.20