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Theoretical and legal foundations of the formation of the legal definition of artificial intelligence: challenges and prospects

The purpose of this study is to analyze the theoretical and legal foundations of the formation of the legal definition of artificial intelligence (AI) in the context of its rapid development and implementation in various spheres of public life. The study examines the existing problems associated with the lack of a unified legal definition of AI, as well as analyzes approaches to its regulation applied in various countries and international organizations, including the European Union and the United States. The research methods used were the analysis of regulatory legal acts, scientific publications, as well as comparative legal analysis. As a result of the study, it was revealed that the lack of a unified legal definition of AI creates significant legal difficulties that hinder effective regulation of this area. It has been established that approaches to the definition of AI and its regulation differ significantly in different jurisdictions, which leads to conflicts and legal uncertainty. The need to develop agreed international standards and definitions of AI, as well as mechanisms for allocating responsibility for harm caused by AI, and personal data protection was emphasized. In conclusion, the importance of an integrated and interdisciplinary approach to the development of a legal system capable of effectively regulating relations related to AI is emphasized.

Keywords: Artificial intelligence, legal regulation, legal status, definition of AI, international cooperation, responsibility of AI, ethical principles, regulatory framework, digitalization, information technology, data protection, legal risks, automation, innovation, cybersecurity.

Introduction

In recent years, there has been a rapid development and implementation of artificial intelligence (AI) technologies in various spheres of public life in Kazakhstan. AI applications cover areas such as public administration, healthcare, education, finance, logistics, agriculture, and industry. In particular, in the field of healthcare, AI is used to diagnose diseases through the analysis of medical images, which increases the accuracy and speed of diagnosis. In education, AI contributes to the personalization of learning by adapting educational programs to the individual needs of students. In the financial sector, AI is used to analyze large amounts of data, which improves risk management and increases operational efficiency [1].

Realizing the importance of AI for the country's future, the Government of the Republic of Kazakhstan has approved the Concept of Artificial Intelligence Development for 2024–2029. This strategic document is aimed at creating an AI ecosystem, including the development of infrastructure, data, human capital and scientific research. Special attention is paid to the formation of a regulatory framework and acceleration programs, which demonstrates the comprehensive approach of the state to the development of this advanced technology [2]. However, despite the obvious advantages and prospects of using AI, its rapid spread raises a number of legal and ethical issues. The lack of a unified legal definition of AI and relevant regulations can lead to legal gaps and uncertainties in regulating this area. The Concept of Legal Policy of the Republic of Kazakhstan until 2030 emphasizes the need to develop legal mechanisms aimed at resolving issues of liability for harm caused by AI, as well as determining the legal status of products created with its participation [3]. In this context, it is particularly important to note the initiative to develop a draft law "On Artificial Intelligence" aimed at establishing legal regulation in the field of AI, including interaction between government agencies, individuals and legal entities. This bill also provides for the adoption of ethical standards, state regulation and the definition of the legal regime for the functioning of AI facilities [4].

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The relevance of research on the theoretical and legal foundations of defining artificial intelligence arises not only from its widespread use across various sectors of society but also from the urgent need to establish appropriate legal regulations that balance innovative development with the protection of citizens' rights and freedoms.

The lack of a unified legal definition of AI creates significant legal difficulties that hinder effective regulation of this rapidly developing field. Currently, there are no legislative acts in the Republic of Kazakhstan that directly regulate AI, which creates a legal vacuum in this area [5; 42]. Developing a universal definition of AI is complicated by the interdisciplinary nature of this technology, which requires combining knowledge from various fields such as statistics, linguistics, robotics, mathematics, economics, logic, and law. This leads to different approaches in defining AI, which makes it difficult to form a single legal standard [6; 253].

The lack of a clear legal status of AI leads to uncertainty about responsibility for actions committed with its participation. In particular, difficulties arise in determining the subjects responsible for the harm caused by AI, as well as in matters of intellectual property of works created with its help [3]. In addition, the lack of a single definition of AI makes it difficult for international cooperation and the harmonization of legislation in this area. Differences in national approaches to AI regulation can lead to legal conflicts and hinder the development of cross-border technologies [7]. It can be said that the lack of a unified legal definition of AI creates serious legal difficulties that require the development of coordinated approaches and regulations that ensure effective and fair regulation of this area.

Currently, there is no unified approach in the scientific community to determining the legal status of AI, which creates significant gaps in research and theoretical schools. Existing concepts range from recognizing AI as an object of law to offering it the status of an independent subject of legal relations. However, none of these theories has been universally accepted, which indicates the need for further research in this area [8; 126].

One of the key gaps is the absence of clear criteria to distinguish AI as both an object and a subject of law. The absence of such criteria makes it difficult to determine the rights and obligations associated with the use of AI, as well as to establish responsibility for its actions. In addition, many studies focus on the technical aspects of AI, overlooking its legal nature and the possible legal consequences of its use [9; 138]. Existing theoretical schools offer different approaches to the legal regulation of AI. Some scientists insist on the need to develop special regulations governing the use of AI, while others consider it sufficient to apply existing legal norms and adapt them to new technologies. However, none of these approaches provides an exhaustive solution that takes into account all the features and risks associated with AI [10; 68].

From our point of view, existing research does not sufficiently take into account the dynamic nature of AI development and its ability to self-learn. This leads to the fact that the proposed legal models quickly become outdated and do not meet the real needs of society. An integrated and interdisciplinary approach is needed, combining the efforts of lawyers, engineers, philosophers and other specialists to develop a flexible and adaptive legal system capable of effectively regulating AI-related relationships. Gaps in existing research and theoretical schools require the development of new concepts and approaches that can adequately reflect the complexity and versatility of AI, as well as ensure its effective and safe use in the legal field.

Methods and materials

In the course of the research, an integrated approach was used, including several methods and sources. The analysis of regulatory legal acts covers national and international documents, such as the Concept of Artificial Intelligence Development in Kazakhstan (2024–2029), the Concept of Legal Policy of the Republic of Kazakhstan until 2030, Federal Law No. 123-FL of the Russian Federation, the European Ethical Charter on the Use of Artificial Intelligence in Judicial Systems, as well as the “Bill of AI Rights” There is also a Framework convention on Artificial Intelligence in the USA. The analysis of scientific publications is based on the study of modern research on the legal status, ethical aspects and international regulation of AI. Documents from international organizations (the UN, the OECD, the Council of Europe, and EU expert groups) were used to substantiate the conclusions. Considerable attention is paid to comparative analysis, which makes it possible to identify differences in approaches to the definition and regulation of AI in the European Union, the United States and other jurisdictions. The complex nature of the methods used ensures the depth and comprehensiveness of the research, however, the lack of an explicit description of the methodology in a separate section limits the transparency of the approaches used.

Results

In the context of the rapid development of AI technologies, various countries and international organizations are making efforts to form legal definitions and regulate this area. However, there is still no single, universally accepted definition of AI, which leads to a variety of approaches and terminological interpretations.

In the European Union, a High–level Expert Group on Artificial Intelligence (AI HLEG) [11] in 2019 proposed a definition according to which AI is a system that demonstrates intelligent behavior by analyzing its environment and taking actions with a certain degree of autonomy to achieve specific goals. This definition focuses on the ability of AI systems to perceive, reason, and make decisions, as well as their autonomy.

In the Russian Federation, the concept of AI was legislated in 2020. According to Federal Law No. 123-FL, AI is defined as a set of technological solutions that allow simulating human cognitive functions and obtaining results comparable to the results of human intellectual activity when performing specific tasks. This definition emphasizes the imitation of human cognitive functions and focuses on the practical application of AI technologies [12; 116].

International organizations are also taking steps to develop definitions and standards in the field of AI. In 2018, the Council of Europe adopted the European Ethical Charter on the Use of Artificial Intelligence in Judicial Systems, where AI is considered as a set of technological solutions capable of performing tasks that require intellectual efforts normally inherent in humans. This approach focuses on the ethical aspects of the use of AI, especially in the context of judicial systems [13; 72].

There is no single federal definition of AI in the United States of America. Various departments and organizations offer their own interpretations. For example, the National Institute of Standards and Technology (NIST) [14] defines AI as a system capable of perception, learning, reasoning, and decision-making, reflecting a functional approach to understanding AI. NIST is engaged in fundamental research, evaluation, and standards development for AI, including software, hardware, architectures, human interaction, and teamwork, as well as all relevant intersections and interfaces that are vital to trust in AI computing. In addition, NIST has developed an "AI Risk Management Framework" designed for voluntary use and aimed at improving the ability to take reliability aspects into account in the development, implementation and evaluation of AI products, services and systems.

Analyzing the existing definitions, it can be noted that most of them focus on the ability of AI systems for autonomous decision-making, imitation of human cognitive functions and applicability in various fields. However, the lack of a unified approach and a variety of terminological interpretations create difficulties in international cooperation and harmonization of legal norms in the field of AI. The development of a coherent and comprehensive definition of artificial intelligence is a necessary step for effective legal regulation of this field. This approach will eliminate existing discrepancies and ensure uniformity in the understanding and application of AI technologies at the international level.

Analyzing the existing legal definitions of AI in various countries and international organizations, we can identify several key elements and criteria that are often used to characterize AI:

The ability of AI to process and analyze large amounts of data to identify patterns and make informed decisions is a key element;

Many definitions emphasize the ability of AI to mimic or reproduce human cognitive functions such as thinking, learning, analysis, and decision-making. For example, in V.A. Laptev's article, AI is defined as "the ability of intelligent systems to perform creative functions normally inherent in humans" [15; 83];

The ability of AI to act autonomously, without direct human intervention, is another important criterion. The European Charter of Ethics on the Use of Artificial Intelligence in Judicial Systems and Related Fields describes AI as a system that "demonstrates reasonable behavior by analyzing its environment and taking action with a certain degree of autonomy to achieve specific goals" [16; 54];

Some definitions focus on the ability of AI to adapt to new data and learn from it. This allows the AI to improve its productivity and efficiency in completing tasks. The same article by Laptev V.A. notes that AI includes systems that are "capable of learning and adapting based on data analysis" [15; 84];

Other definitions include an indication of the need for AI to comply with established ethical and legal standards. The European Ethical Charter on the Use of Artificial Intelligence in Judicial Systems [17] emphasizes the importance of observing the principles of transparency, impartiality and respect for fundamental rights when using AI.

These criteria reflect the desire of legal systems to take into account the complexity and diversity of AI technologies when regulating them. However, despite certain achievements in the formulation of AI characteristics, in practice there are significant gaps and contradictions in approaches to its legal regulation.

One of the key problems is the lack of a unified approach to determining the legal status of AI. Various concepts are proposed in the scientific literature, including recognizing AI as an object of law or granting it the status of an independent subject of legal relations. However, the lack of universal acceptance of these approaches indicates the need for further development and unification of legal regulation of AI [18; 90]. In addition, existing definitions of AI often focus on its technical characteristics, overlooking legal and ethical aspects. This leads to uncertainty about responsibility for AI actions, personal data protection, and respect for human rights. Bakhteev D.V. notes that the lack of a clear legal status of AI creates difficulties in determining the subjects responsible for its actions [19; 11]. There is also a gap between the rapid development of AI technologies and the slow process of adapting legislation. Many legal systems do not have time to respond to new challenges related to AI, which leads to legal gaps and conflicts.

These contradictions and gaps in existing definitions and approaches to AI indicate the need to develop a coherent legal framework that takes into account both technical and ethical aspects of the use of AI. Only an integrated and interdisciplinary approach will make it possible to create an effective regulatory system capable of adapting to rapidly changing conditions and ensuring a balance between innovation and the protection of human rights and freedoms.

The rapid development of AI in recent years has significantly outpaced the speed of law-making, which leads to legal gaps and challenges in its regulation. In the Republic of Kazakhstan, the issue of the need for legal regulation of AI was first identified in 2021 in the "Concept of Legal Policy until 2030" [20]. The document emphasizes the need to address issues of allocating responsibility for the harm caused by AI, as well as determining the ownership of intellectual property rights to works created with its participation. However, despite the recognition of these problems, legislative initiatives in the field of AI remain under development. The lack of specialized regulations governing the use of AI creates uncertainty in law enforcement practice and may hinder the introduction of innovative technologies. The accelerated pace of AI development and its penetration into many areas of life require adequate and timely legal regulation.

The slow pace of the law-making process is due to several factors. One of the problems is the complexity and diversity of AI technologies which make it difficult to create general legal norms that could embrace all the possible areas of its application. Third, lack of technical expertise among legislators may cause some delays in the adoption of appropriate laws. Many lawmakers and lawyers may lack a strong technical understanding of AI, making it challenging to create effective rules and standards. Furthermore, legal systems are usually reactive to the social relations that are already in place while AI technologies are progressive, creating new forms of relationships and risks. This results in a situation where the existing legal norms are not yet adapted to the new realities and there are legal vacuums.

In the present world where AI is gradually finding its way into almost all aspects of life from the economic sector to the healthcare sector it is important to accelerate the process of law making. This paper aims to explore how to accelerate the legal system to develop versatile and flexible legal frameworks that can keep pace with technological changes to ensure the safe implementation of AI in society.

Today there are critical variations in the legal regulation of AI between the European Union (EU) and the United States of America (USA) which results in conflicts of jurisdiction and legal challenges in the international arena.

The EU has set its sights on the strict regulation of AI, and for all the right reasons, namely to protect fundamental rights and ensure security. The European Commission on Ethics in Science and New Technologies (EGE) has identified a set of principles based on the core values of the EU treaties and the Charter of Fundamental Rights. These principles place humans at the centre of technological progress. There are three ethical principles that underpin the reliability of the development and use of AI systems: respect for individual autonomy, fairness, solidarity and honesty, as well as openness and transparency.

In 2018, a group of leading experts in AI (AI HLEG) was established by the European Commission to provide advice on the legal and ethical implications of AI. The Ethics Guide for Artificial Intelligence developed by the group in April 2019 identified three key criteria: legality, ethics, and reliability of AI. The Law on Artificial Intelligence (AIA), presented by the European Commission on April 21, 2021, defines the subjects of AI application (suppliers, users, as well as suppliers and users from third countries whose products are used in the EU).

It should be noted that, according to sources, the AIA does not apply to private users and does not provide mechanisms for protecting the rights of individuals, such as procedural rights or the right to compensation for damages. Also, the sources emphasize that the AIA needs to be improved in various aspects [21; 376].

Unlike the EU, the United States strives to maintain its international leadership in the field of AI by adhering to a policy of "soft regulation" that creates favorable conditions for innovation and technological progress. This strategy has been reflected in a number of initiatives aimed at strengthening the country's position in the global technology race. So, in 2019, President Donald Trump signed a decree aimed at strengthening the global leadership of the United States in the field of artificial intelligence. This step highlighted the country's desire to dominate the development and application of AI technologies, laying the foundations for a national strategy in this area.

As a continuation of this policy, a draft "AI Bill of Rights" was presented in 2022, which included principles such as creating secure systems, protecting against discrimination, ensuring privacy, transparency, and the ability to choose between using a machine or a human. However, despite its importance, this document remains a recommendation and has no legal force. This approach confirms the desire of the American government and companies to maintain a balance between innovation and minimal interference in the process of their development. Nevertheless, in recent years, there has been a noticeable trend in the United States towards borrowing elements of the European regulatory model, which is manifested in the release of the Principles for the Development, Deployment and Use of Generative Artificial Intelligence Technologies. However, like the AI Bill of Rights, these principles are purely advisory in nature, remaining within the framework of a "soft regulation" approach [22; 253].

The differences in approaches between the EU and the US create difficulties for companies operating in both markets. Strict EU requirements may conflict with more lenient US standards, leading to legal uncertainty and additional costs for businesses. U.S. Secretary of Homeland Security Alejandro Majorca's noted that uncoordinated regulation of AI on both sides of the Atlantic could lead to confusion and security vulnerabilities [23].

These disagreements highlight the need to harmonize legal standards in the field of AI at the international level. Without coordinated approaches, companies face uncertainty, and governments face risks to the security and rights of citizens. Cooperation between jurisdictions and the development of common principles for regulating AI are key steps for effective management of this technology on a global scale.

In the context of the rapid development of artificial intelligence (AI) technologies, a number of ethical and legal dilemmas arise that require careful analysis and regulation. One of the most significant issues is the responsibility for the harm caused by AI and the protection of personal data.

The lack of a clear legal status of AI in the legislation of the Republic of Kazakhstan creates uncertainty regarding the allocation of responsibility for the harm caused by its actions. Currently, various concepts of regulating the legal status of AI are presented in the scientific literature. The following models stand out among them:

– AI as an object of law, similar to a property or technological asset;

– AI as a legal entity equated to legal entities;

– AI as an "electronic person" with legal duties and rights formulated specifically for autonomous systems [24].

The criteria for recognizing AI as a legal entity are external isolation, personification, and the ability to develop, express, and implement a unified will. However, this approach does not always take into account the complexity and autonomy of modern AI systems.

AI systems often process large amounts of personal data, which creates risks of violating the right to privacy. The Law "On Personal Data and their Protection" [25] is in force in Kazakhstan, but its provisions do not fully take into account the specific features of AI data processing. Companies are responsible for violations of this law, but no direct regulation of the use of AI in the context of data protection has been undertaken yet.

In 2024, the Office of the Data Protection Commissioner of the Astana International Financial Center, together with the Digital Rights Center Qazaqstan law firm, developed a guide on data protection and artificial intelligence. The document contains recommendations on the use of personal data in AI systems and is aimed at reducing the associated risks [26].

These ethical and legal dilemmas require the development of an integrated approach that takes into account both the technical and legal aspects of using AI. It is necessary to create a regulatory framework that ensures a balance between the development of innovation and the protection of fundamental human rights.

Discussion

The fragmentation of definitions of AI in various jurisdictions and international organizations significantly complicates the process of international cooperation and generates significant legal risks. The lack of a unified approach to the definition of AI leads to discrepancies in law enforcement practice, which makes it difficult to develop and implement agreed international standards and norms. Differences in definitions of AI between countries create obstacles to effective cooperation in the development, application and regulation of these technologies. The lack of agreed international standards in the field of AI leads to fragmentation of legal regulation, which, in turn, complicates international cooperation and creates legal risks.

In addition, a variety of approaches to the definition of AI can lead to conflicts of jurisdiction and complicate the process of resolving cross-border disputes related to the use of AI. The article by Lev M.Yu., Leshchenko Yu.G., Medvedeva M.B. emphasizes that the lack of harmonized international standards in the field of AI can lead to legal uncertainty and increase risks for all participants in the process [27; 2001]. The authors of this study express concern about the current fragmentation of legal definitions of AI and emphasize the need to develop consistent international standards and definitions. Legal risks can only be minimized, and effective international cooperation in the field of AI can be ensured, through collaborative efforts and the harmonization of approaches.

In the context of the rapid development of AI technologies, there is a need to develop a universal legal definition that can ensure a balance between flexibility, necessary to stimulate innovation, and concreteness, ensuring the protection of the rights of subjects. On the one hand, an excessively narrow and detailed definition of AI can limit the development of new technologies that do not fall under the established definition, which will lead to a deterrence of innovation. On the other hand, too general definition can create legal uncertainty, making it difficult to apply legal norms and protect the rights of subjects.

The Concept of Legal Policy of the Republic of Kazakhstan until 2030 [20] emphasizes the need to develop legal mechanisms capable of adequately responding to the rapid development of technologies, including AI. The document notes that legal regulation should be aimed at creating conditions for innovative development, while ensuring the protection of citizens' rights and freedoms.

When forming a legal definition of AI, it is necessary to take into account the need for its adaptability to future technological changes, as well as to ensure clarity and certainty for law enforcement practice. This will create a legal framework that promotes the development of AI without prejudice to the rights and interests of legal entities. Achieving such a balance is a key factor for effective and fair legal regulation of AI in modern society.

Further, there is a need to develop effective mechanisms for its regulation. We should consider the prospects in this area, including the harmonization of legislation through international organizations, the creation of specialized regulatory bodies to assess AI risks, and the introduction of ethical principles into legal norms.

International organizations such as the United Nations (UN) and the Organization for Economic Cooperation and Development (OECD) play a key role in shaping global standards for AI regulation. In 2024, the UN Economic and Social Council emphasized the need to develop universal principles and standards to ensure the responsible use of AI, focusing on ethical aspects and human rights [28].

OECD plays an important role in shaping the rules for the development and implementation of AI at the global level. In May 2019, the OECD adopted the "Recommendations of the Council on Artificial Intelligence" (OECD AI Principles), which were signed at the meeting of the OECD Council at the ministerial level. This document became the first intergovernmental standard in the field of AI management, which underlines the importance of international coordination in regulating this complex and rapidly developing field.

The OECD AI Principles are advisory in nature and are divided into two blocks: five principles for responsible AI development and five recommendations in the field of national policy and international cooperation in the field of AI [29; 76]. These principles and recommendations provide the basis for a responsible and ethically sound approach to the development and application of AI technologies. In addition, the document provides a terminology framework that clarifies key concepts, including definitions of AI systems, their lifecycle, actors, and stakeholders.

Of particular historical significance is the fact that the signing of the OECD Principles of AI was the first time when states agreed on the rules for the development of AI at the international level. This step not only consolidated a common approach to ethical issues related to AI, but also served as the basis for further initiatives in this area. The Principles have been signed by 46 countries, including not only OECD members, but also 8 States outside its structure, which demonstrates a broad international consensus on the need to regulate this area. However, the importance of the OECD AI Principles goes beyond their original purpose: they contribute to the harmonization of AI standards, as many countries and international organizations refer to the definitions and approaches proposed by the OECD. Thus, this standard has become an important guideline for developing national strategies and establishing mechanisms for international cooperation.

To effectively monitor and manage the risks associated with AI, it is necessary to create specialized regulatory bodies. A group of UN experts stated [30] that global management of artificial intelligence is "mandatory". Experts urge the UN to lay the foundations for the first inclusive global institutions to regulate fast-growing technologies.

They note that AI is "transforming our world", offering enormous potential for good, from opening up new fields of science and accelerating economic growth to improving public health, agriculture, and optimizing energy networks. However, if AI remains unmanaged, its benefits may be confined to a select few countries, companies, and individuals. More advanced systems "could upend the world of work", create autonomous weapons, and pose significant risks to peace and security.

The Group has developed principles that should form the basis for the formation of new institutions for AI governance, including international law, and especially human rights law. They call on all Governments and parties involved in AI to cooperate to protect human rights. The group's recommendations include the creation of an international scientific committee on AI to form a global understanding of its capabilities and risks, as well as a global dialogue on AI governance at the United Nations to consolidate future institutions based on the principles of human rights and international law. This is consistent with your idea of the need to create specialized regulatory bodies to assess threats and develop security standards.

It is also proposed to create a global AI fund so that technologies can bridge the gap between rich and poor countries and contribute to the achievement of the UN development Goals for 2030, as well as the "Exchange of standards" to ensure technical compatibility. Currently, only seven of the 193 UN member states are participants in seven recent notable AI governance initiatives, while 118 countries, mostly from the global South, are "completely absent" from any conversation. The Expert Group stresses that "technology is too important and the stakes are too high to rely solely on market forces and a fragmented mosaic of national and multilateral actions".

Despite the fact that experts do not recommend the creation of a new UN AI agency at this stage, they emphasize the importance of exploring such a possibility in the future, similar to the International Atomic Energy Agency, which has knowledge and some regulatory powers.

Integrating ethical principles such as transparency, accountability, and fairness into legal norms is an important step to ensure responsible use of AI. In 2024, the first legally binding AI treaty was signed, known as the Framework Convention on Artificial Intelligence, which sets out the basic principles for AI systems, including data protection, law enforcement, and transparency. This treaty highlights the need to ensure that AI is consistent with human rights, democracy, and the rule of law [31].

Thus, the harmonization of legislation through international organizations, the creation of specialized regulatory bodies and the introduction of ethical principles into legal norms are key areas for ensuring the safe and responsible development of AI.

In the course of our research, certain limitations have been identified that must be taken into account when forming the legal framework for regulating AI. Effective implementation and application of legal norms in the field of AI largely depends on the political will of the country's leadership. Without top-level support, even the most thoughtful legislative initiatives may remain unrealized. The desire to purposefully influence the process of technology development requires the removal of legal barriers that hinder the development of the digital economy. This highlights the importance of the active participation of government agencies in shaping and supporting legal initiatives in the field of AI.

Given the identified limitations, the proposed legal definitions and mechanisms for regulating artificial intelligence require constant revision and adaptation to new realities. The conclusions and recommendations presented in the study can be used as a starting point for further discussions and developments in the field of legal regulation of AI, and thus to the development of a fair and effective legal system that is capable of addressing the challenges of the present day.

Conclusions

The study has been carried out to identify and discuss key issues pertaining to the legal regulation of AI. In particular, it was found that the absence of a single legal definition of AI and the absence of generally accepted international standards are the significant legal issues and obstruct the ability to regulate this area. The methods of defining AI and the varying approaches used by different countries and international organizations such as the European Union, Russian Federation and United States of America are analyzed. It was observed that the majority of the definitions are based on the principles of decision making, simulation of human cognition and the use of AI in different industries.

Furthermore, the study establishes that there are crucial variations in the approaches to the legal regulation of AI between the EU and the USA which results in conflicts of jurisdiction and legal challenges in the international arena. The EU is very much keen on strong regulation of AI, and more specifically, on the protection of fundamental rights. The U.S. has a policy of what might be called “soft regulation”, one that is more oriented toward encouraging innovation. The problem of liability for harm caused by AI, and personal data protection was also addressed, which is an important aspect for the development of an effective legal system.

The key results of the study revealed that the absence of a single definition of AI and international standards in the regulation of this area is difficult and incompatible to regulate effectively without such a framework and creates barriers to cooperation between international regimes. There are conflicts of jurisdiction as the EU and the US have different approaches to the regulation of AI. Therefore, there is a need to agree on standards and mechanisms such as identifying who is to blame for the harm caused by AI and personal data protection. For the purpose of this paper, it is emphasized that regulation is best implemented as a hybrid model, which means that it has to be multidisciplinary and interdisciplinary in approach, including the establishment of specific regulatory bodies to monitor risks and the integration of ethical principles into legal norms to ensure that the use of AI is both efficient and safe.

The practical importance of the research is that it reveals critical issues and deficiencies in the legal system regulating AI which is relevant for government entities creating policies for this area. The outcomes of the study can be used as a reference for the formulation of national strategies and action plans for the development and regulation of AI. Moreover, the study may be helpful for companies engaged in AI-related business as it offers a clearer view of the legal matters involved in their operations and ways of avoiding risks.

From a scientific point of view, the research is aimed at the development of the theory of legal regulation of AI, systematizing of various approaches and concepts. It also focuses on the necessity of an interdisciplinary approach towards the research of AI and its legal implications. The results of the study can be used as a basis for further scientific work in this field and also to contribute to the development of an international dialogue on AI regulation.

The results of the research can be used in such fields as legislative development, where they can be used to develop new laws on the use of AI in different areas of the economy and society and to formulate public policy to inform national strategies and programs for the development of AI. In the area of education, they will aid in training specialists in the field of law, information technology and artificial intelligence, as well as in enhancing legal awareness of the population. To businesses, the findings of the study will aid companies that are using AI in their legal update and risk management. In international cooperation, they can contribute to the convergence of laws and the enhancement of the relationship between countries. In judicial practice, the results can be applied to the development of approaches to the consideration of cases involving AI, including questions of responsibility and protection of rights.

In conclusion, the study emphasizes the necessity of an integrated and interdisciplinary approach to the legal regulation of AI, and the role of international cooperation in the face of challenges arising from the rapid development of this technology.

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А.Б. Сактаганова, И.С. Сактаганова

Жасанды интеллектің құқықтық анықтамасын қалыптастырудың теориялық және құқықтық негіздері: мәселелері мен болашағы

Мақаланың мақсаты жасанды интеллектің (ЖИ) құқықтық анықтамасын қалыптастырудың теориялық және құқықтық негіздерін оның қарқынды дамуы және қоғамдық өмірдің әртүрлі салаларына енуі жағдайында талдау. Жұмыста ЖИ-дің бірыңғай құқықтық анықтамасының болмауына байланысты мәселелер зерттелген, сондай-ақ Еуропалық одақ пен АҚШ-ты қоса алғанда, әртүрлі елдерде және халықаралық ұйымдарда қолданылатын және оны реттеу тәсілдері талданған. Зерттеу әдістері ретінде нормативтік-құқықтық актілер, ғылыми жарияланымдар, сондай-ақ салыстырмалы-құқықтық талдау қолданылды. Зерттеу нәтижесінде бірыңғай құқықтық анықтаманың болмауы және осы саланы тиімді реттеуге кедергі келтіретін айтарлықтай құқықтық қиындықтар туғызатыны анықталды. Жасанды интеллекті анықтау және оны реттеу тәсілдері әртүрлі юрисдикцияларда айтарлықтай ерекшеленетіні айқындалды, бұл қақтығыстар мен құқықтық белгісіздікке әкеледі. Келісілген халықаралық стандарттар мен ЖИ анықтамаларын, сондай-ақ ЖИ келтірген зиян үшін жауапкершілікті бөлу және дербес деректерді қорғау тетіктерін әзірлеу қажеттілігі айтылған. Қорытындылай келе, ЖИ-мен байланысты қатынастарды тиімді реттеуге қабілетті құқықтық жүйені дамытуға кешенді және пәнаралық көзқарастың маңыздылығы көрсетілген.

Кілт сөздер: жасанды интеллект, құқықтық реттеу, құқықтық мәртебе, жасанды интеллект анықтамасы, халықаралық ынтымақтастық, жасанды интеллект жауапкершілігі, этикалық принциптер, нормативтік-құқықтық база, цифрландыру, ақпараттық технологиялар, деректерді қорғау, құқықтық тәуекелдер, автоматтандыру, инновациялар, киберқауіпсіздік.

А.Б. Сактаганова, И.С. Сактаганова

Теоретико-правовые основы формирования правового определения искусственного интеллекта: проблемы и перспективы

Целью данного исследования является анализ теоретико-правовых основ формирования правового определения искусственного интеллекта (ИИ) в условиях его стремительного развития и внедрения в различные сферы общественной жизни. В данной работе исследуются проблемы, связанные с отсутствием единого правового определения ИИ, а также анализируются подходы к его регулированию, применяемые в различных странах и международных организациях, включая Европейский Союз и США. В качестве методов исследования были использованы анализ нормативно-правовых актов, научных публикаций, а также сравнительно-правовой анализ. В результате исследования было выявлено, что отсутствие единого правового определения ИИ создает значительные юридические сложности, препятствующие эффективному регулированию данной сферы. Установлено, что подходы к определению ИИ и его регулированию существенно различаются в разных юрисдикциях, что приводит к конфликтам и правовой неопределенности. Подчеркивается необходимость разработки согласованных международных стандартов и определений ИИ, а также механизмов распределения ответственности за вред, причиненный ИИ, и защиты персональных данных. В заключение, освещается важность комплексного и междисциплинарного подхода к разработке правовой системы, способной эффективно регулировать отношения, связанные с ИИ.

Ключевые слова: искусственный интеллект, правовое регулирование, правовой статус, определение ИИ, международное сотрудничество, ответственность ИИ, этические принципы, нормативно-правовая база, цифровизация, информационные технологии, защита данных, правовые риски, автоматизация, инновации, кибербезопасность.

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