

STATE REGULATION OF THE USE OF ARTIFICIAL INTELLIGENCE: CIVIL LAW AND ECONOMIC AND LEGAL ASPECTS

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Abstract. The article's objective is to establish the status of state regulation of artificial intelligence in terms of civil law and economic and legal regulation. To this end, the following tasks are to be carried out: firstly, the nature of the legal consolidation of the use of artificial intelligence is to be determined; secondly, international legal standards of the use of artificial intelligence are to be outlined; and thirdly, the economic and legal tools used for organising the use of artificial intelligence are to be identified. The present study was conducted utilising a combination of general and special scientific cognition methods. The method of comparison was utilised to identify the model of state regulation of artificial intelligence in Ukraine. The analysis was employed to ascertain the quantitative and qualitative parameters that characterise the specifics of implementing certain measures at both the international and national levels, which relate to artificial intelligence. The *findings* of the study have demonstrated that there is no universally applicable approach to the definition and regulation of artificial intelligence. The formation of legal systems is contingent on political and legal priorities, resulting in the establishment of distinct models. These models encompass the protection of human rights, the promotion of innovation, and the augmentation of state control. The Ukrainian model of state regulation of artificial intelligence is still in the process of being formed. It takes a risk-based approach to legal consolidation while also considering ethical guidelines. It has been found that all international legislation on this matter provides for the establishment of control mechanisms that enable the explanation and verification of the decisions of artificial intelligence systems, thereby minimising the risk of unpredictable or discriminatory outcomes. Essentially, the key principle is human oversight, ensuring that people remain central to decision-making processes affecting society, even in cases involving automated or autonomous systems. Proper provision for the use of artificial intelligence involves intensifying the use of economic and legal instruments – a combination of government programmes, private investments, public–private partnerships, and international financial mechanisms that ensure the financial stability of scientific and technological projects and contribute to the commercialisation of results in the global digital space. *Conclusion.* The following is proposed: the adoption of a special law on artificial intelligence, combining innovative development with guarantees of security and human rights; the harmonisation of related areas of legislation, particularly laws on the protection of personal data (based on the GDPR), copyright in the digital environment, and the regulation of online platforms, in accordance with the requirements of the EU Digital Services Directive.

Keywords: state regulation, artificial intelligence, civil law, economic and legal regulation, financial stability, public-private partnerships.

JEL Classification: K15, K40, L32

1. Introduction

The advent of artificial intelligence (hereinafter referred to as AI) has gradually become a pivotal factor in the transformation of modern society, exerting a profound influence on various sectors, including the

economy, healthcare, education, security and justice. Concomitant with new opportunities, however, are ethical, legal and social challenges, including the risks of discrimination, threats to privacy and the danger of human rights violations. The regulation of

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artificial intelligence in Ukraine is in its infancy and is characterised by fragmentation. Presently, there is an absence of a specific legal framework that would provide comprehensive regulation of the utilisation and advancement of AI. However, a number of conceptual and program acts have been formed, and changes have been made to related branches of legislation that directly affect the field of artificial intelligence. The overarching guideline for the formulation of national policy in the domain of artificial intelligence is the Concept of the Development of Artificial Intelligence in Ukraine (2020), which delineates the strategic objectives of AI development at the national level. These objectives encompass the establishment of conducive conditions for the development and implementation of innovative algorithmic systems, the promotion of scientific research and commercial initiatives, the safeguarding of human rights and freedoms in the context of digitalisation, and the integration of Ukraine into the global scientific and technical landscape. The Concept pays particular attention to ethical and socially responsible aspects, enshrining the principles of inclusiveness, openness, transparency and security. These principles reproduce international standards for the ethical use of AI, as developed by organisations such as UNESCO and the Council of Europe.

A separate vector for ensuring the legal regulation of the use of artificial intelligence in Ukraine is the development of national standards and regulations for algorithmic systems. In addition, the implementation of educational programmes for training specialists in the field of artificial intelligence is required, as are the creation of the necessary data infrastructure and the development of mechanisms for scientific and technological co-operation with international partners. At the same time, systems for monitoring and assessing the risks associated with the use of AI must be properly established to allow potential threats to security, human rights and ethical standards to be identified at the stage of developing and implementing algorithmic systems. These systems also contribute to the development of an innovative environment for startups, research centres and university laboratories, laying the foundation for the creation of innovative products and technologies that meet modern international requirements.

Notwithstanding the encouraging advancements witnessed in the establishment of the regulatory framework, Ukraine is confronted with numerous systemic impediments that substantially impede the effective legal regulation of artificial intelligence. These impediments include, but are not limited to: 1) the absence of a specific legislation addressing artificial intelligence; 2) technical and institutional constraints; 3) challenges pertaining to the protection of personal data and human rights; 4) incongruence

with international standards; and 5) potential risks to innovative development. The aforementioned factors have also precipitated an urgent need to rethink the role of state influence on the use of artificial intelligence in Ukraine, primarily in terms of civil law and economic and legal direction.

The *objective of the present research* endeavour is to ascertain the current status of state regulation of artificial intelligence in the context of civil law and economic and legal regulation. To this end, the following research tasks have been undertaken: firstly, to determine the nature of the legal consolidation of the use of artificial intelligence; secondly, to outline international legal standards of the use of artificial intelligence; and thirdly, to identify the economic and legal tools that are used to organise the use of artificial intelligence.

The *practical significance* of the research is twofold. Primarily, the results obtained have considerable usefulness in the development of effective tools for the legalisation of artificial intelligence in Ukraine. Additionally, the research findings have significant economic and legal implications.

2. Legal Consolidation of Artificial Intelligence in Ukraine

In the national context, the importance of AI is influenced by several key factors: 1) Economic potential: implementing AI can significantly boost labour productivity, stimulate the growth of innovative startups and attract investment in high-tech sectors of the economy. For Ukraine, these issues are particularly significant in several key areas. Firstly, they relate to the modernisation of industry and the advancement of the digital economy. Secondly, they involve the digital transformation of public administration, as artificial intelligence offers new opportunities for automating and optimising public services, enhancing the transparency and efficiency of governmental operations, and improving the quality of services delivered to citizens. Thirdly, the integration of AI strengthens international competitiveness, since its application across both the public and private sectors serves as an indicator of a nation's technological progress and its standing in the global market. Finally, the social and legal dimensions of AI implementation require the establishment of effective legislative and ethical frameworks that ensure data security, protect human rights, and foster the inclusiveness of digital technologies.

The transfer of artificial intelligence (hereinafter referred to as AI) to the legal plane of the national level mediates the clarity of the interpretation of the concept itself, because the further correctness of legal regulation depends on it. At present, there is no legal definition of "artificial intelligence" in

Ukrainian legislation. In contrast, the Concept for the Development of Artificial Intelligence in Ukraine defines artificial intelligence as "technologies that simulate human intellectual activity, particularly the ability to learn, reason, make decisions, and interact with the environment" (*The Resolution of the Cabinet of Ministers of Ukraine "On Approval of the Concept for the Development of Artificial Intelligence in Ukraine"*, 2020). In the primary sectoral sense, the issue of AI is principally subject to the influence of civil law.

In the context of the development of legal frameworks pertaining to artificial intelligence, Ukraine stands to benefit from the strategic approach adopted by the European Union. The scientific literature rightly emphasises that the creation of an adequate legal regime for AI is contingent on a clear definition of its content and functional characteristics. Given the absence of a legal definition of this term in current Ukrainian legislation, domestic researchers and legislators are compelled to refer to international documents that do contain such definitions. Thus, the AI Act (*Regulation (EU) 2024/1689 of the European Parliament and of the Council of 13 June 2024 on Artificial Intelligence*, 2024) establishes a technically neutral understanding of artificial intelligence as a system that, based on algorithms or models, is capable of generating results that affect the external environment. A similar functional approach can also be observed in the documents of the Council of Europe. In the Recommendation of the Committee of Ministers on the human rights impacts of algorithmic systems (Council of Europe, Recommendation CM/Rec(2020)1 of the Committee of Ministers to Member States on the human rights impacts of algorithmic systems, 2020), algorithmic systems are defined as those that automate the decision-making process or exert a significant influence upon it, thereby creating potential risks to fundamental rights. Instead, Ukrainian legislation (2020) emphasises the imitation of human intellectual activity, such as learning and decision-making, and the ability to interact with the environment (*The Resolution of the Cabinet of Ministers of Ukraine "On Approval of the Concept for the Development of Artificial Intelligence in Ukraine"*, 2020). Thus, international and national approaches complement each other. While European documents focus on the functional aspect and possible risks, assigning the primary role to international law, the Ukrainian concept emphasises the cognitive and behavioural similarity of AI to humans, assigning the primary role to civil law. This creates the basis for harmonising definitions and developing a holistic regulatory framework.

The variety of approaches demonstrates the multidimensionality of the AI phenomenon itself and determines the different models of its legal consolidation. Depending on the goals set at the level

of state regulation – ensuring innovative development, protecting human rights, or exercising political control – an appropriate regulatory approach is formed. The following models of the legal regulation of AI are currently recognised:

1. Risk-based model (EU). The European Union has laid the foundation for a systemic approach based on the classification of technologies by risk level: unacceptable risk (e.g., social evaluation of citizens, certain forms of behavioural manipulation are prohibited); high risk (biometric identification, critical infrastructure, medicine, judiciary) require strict compliance assessment, transparency, and monitoring procedures; limited risk (e.g., chatbots that must inform about interaction with AI); minimal risk – most applications where only voluntary compliance with ethical norms is established (Yanyshivsky, 2024). This approach facilitates the integration of human rights protections and innovation, while concurrently ensuring a flexible response to technological advancements.

2. Ethical (soft law) model. The foundation of this approach is rooted in international declarations and recommendations, which collectively constitute universal principles. The UNESCO Recommendation on the Ethics of AI is of particular significance in this context, as it establishes requirements for ensuring human dignity, human rights, preventing discrimination and guaranteeing the transparency of algorithms (Recommendation on the Ethics of Artificial Intelligence, 2021). The Council of Europe has also issued guidelines on the matter, adopting a series of recommendations focused on human rights issues in the context of automated decision-making during the 2021–2023 period. Despite the absence of legal obligation, these documents establish a recognised international "soft" standard that national governments are guided by. Ukraine, in adopting the Concept of AI Development (2020), has demonstrated a commitment to these principles, including transparency, inclusivity, and respect for the individual.

3. Market-liberal model (USA). The United States of America does not possess a single national law pertaining to artificial intelligence; rather, regulation is primarily executed through sectoral acts (for instance, within the domain of personal data protection or medical technologies). Programme acts have been shown to play a significant role in this field, particularly in the context of the US National Strategy in the field of AI and the guiding principles of the "AI Bill of Rights" (2022) (Oliinyk, 2025). Concurrently, the emphasis is on stimulating innovation and market development, and control over compliance with human rights and ethics is entrusted to the self-regulation of corporations (Google, Microsoft, OpenAI). The model under discussion has been demonstrated to engender dynamism and competitiveness; nevertheless, it must be noted that

there are concomitant risks of legal uncertainty and fragmentation of regulation.

4. Sectoral model (China). The People's Republic of China has opted for a course of strict centralisation and sectoral regulation. Regulatory acts are adopted in the form of administrative rules that concern specific areas, including the use of algorithms in social networks, recommendation systems, biometric technologies, and generative AI (Ding, 2023). Consequently, in 2022–2023, China implemented regulations pertaining to recommendation algorithms and generative systems, mandating that companies must register their algorithms with the pertinent state authorities. It is also important to note that these acts combine technical standards with elements of political control, as the state reserves the power to block or adjust the activities of AI systems. This model has been criticised by the international community for its potential impact on human rights and freedom of speech (Roberts, Cows, Morley, Taddeo, Wang, Floridi, 2021).

In conclusion, it can be noted that the Ukrainian model of state regulation of artificial intelligence is at the nascent stage of formation. It is focused on a risk-based approach to legal consolidation as in the EU, but at the same time ethical guidelines are taken into account. This is confirmed by the Action Plans (*The Resolution of the Cabinet of Ministers of Ukraine "On Approval of the Action Plan for the Implementation of the Concept of Artificial Intelligence Development in Ukraine for 2021–2024"*, 2021; *The Resolution of the Cabinet of Ministers of Ukraine "On Approval of the Action Plan for the Implementation of the Concept of Artificial Intelligence Development in Ukraine for 2025–2026"*, 2025). This enables Ukraine to assimilate the most effective practices while sustaining a balance between human rights and the necessity for innovative development.

Consequently, an analysis of the conceptual framework and extant models of legal regulation of artificial intelligence in the leading jurisdictions worldwide suggests that a universal approach to the definition and regulation of AI is not in evidence. The formation of legal systems is contingent on political and legal priorities, resulting in the establishment of distinct models. These models encompass the protection of human rights, the promotion of innovation, and the augmentation of state control. For Ukraine, which has elected to pursue European integration, the most pertinent is the adoption of the risk-oriented model of the EU in conjunction with the ethical principles of the Council of Europe.

The Strategy for the Development of Artificial Intelligence in Ukraine comprises two implementation stages: 2023–2025 and 2026–2030 (Shevchenko, 2020). The first stage focuses on establishing a solid

foundation for development, while the second stage focuses on applying research outcomes to production and public administration, incorporating innovative solutions into practical business operations, and ensuring long-term economic benefits from AI usage. The primary mechanism for implementing the strategy is the annual action plans developed by the Committee on the Development and Implementation of Artificial Intelligence. The legislative basis for the development of artificial intelligence in Ukraine is formed by the Constitution of Ukraine (1996) and a number of regulatory legal acts that provide a legal framework for conducting scientific research, development, and implementation of technologies. Among the key documents, the following are worth noting: the Law of Ukraine "On Scientific and Scientific-Technical Activities" (2015), which regulates the procedure for financing scientific research, supporting innovative projects, and co-operating with business; the Law of Ukraine "On Higher Education" (2014), which defines standards for training specialists in the field of information technology, and also contributes to the formation of educational programmes focused on the practical application of innovations; the Law of Ukraine "On Copyright and Related Rights" (1993), which ensures the protection of intellectual property and creates incentives for the commercialisation of scientific developments; the Law of Ukraine "On Protection of Rights to Inventions and Utility Models" (1993), which establishes legal guarantees for inventors and enterprises engaged in high-tech projects.

These regulatory and legal acts establish a comprehensive legal framework for the development of AI, offering assurances to scientific institutions, innovative enterprises, and startups involved in high-tech projects. At the same time, they establish the foundations for protecting intellectual property, thereby stimulating the innovation process and the commercialisation of scientific developments. This is a key factor in Ukraine's sustainable development and integration into the global technological landscape.

It should be noted that, at present, the use of artificial intelligence technologies is only partially regulated within the framework of legislation on personal data, copyright and digital services. Reviewing these acts enables to assess the national legal system's readiness for integration into the European legal space in the field of AI. For example:

1) The Law of Ukraine "On Personal Data Protection" (2010) establishes the basic requirements for the processing of personal data used to train algorithmic systems. In 2024, the Verkhovna Rada adopted in the first reading a new Draft Law of Ukraine "On Personal Data Protection" No. 8153, developed on the basis of the GDPR (2024). Adopting it will allow national legislation to be harmonised with European legislation, increasing the level of personal data protection

and ensuring more effective control over its use in AI systems.

2) The Law of Ukraine "On Copyright and Related Rights" (2023) implemented a number of provisions of European directives, in particular regarding text and data mining (TDM). This is essential for training AI algorithms, as it establishes the legal framework for using copyrighted material to train models and prevents intellectual property rights infringement.

3) The Law of Ukraine "On the Basic Principles of Cybersecurity in Ukraine" (2017), which establishes the legal basis for protecting critical infrastructure, where artificial intelligence technologies are actively used, ensuring the security of state and commercial information systems. It is worth emphasising that Ukraine is committed to aligning its legislation with EU law. This process involves considering the Council of Europe's recommendations regarding algorithmic systems (Council of Europe. Recommendation CM/Rec (2020)1 of the Committee of Ministers to member States on the human rights impacts of algorithmic systems, 2020).

Consequently, the regulatory framework of Ukraine in the field of artificial intelligence is being established through conceptual documents of the government and the modernisation of related legislation. Nevertheless, it remains of a framework nature and necessitates systematisation in the form of a special law on artificial intelligence. The European integration course pursued by Ukraine establishes the primacy of adapting national legislation to European Union standards, a matter of particular pertinence in the domains of digital technologies and artificial intelligence. Concurrently, it is imperative to align related legislative domains, notably personal data protection laws (in accordance with the GDPR), copyright regulations within the digital sphere, and the governance of online platforms, in accordance with the stipulations of the Digital Services Directive. These measures facilitate a comprehensive legal approach that encompasses both the technical and ethical dimensions of AI utilisation.

Adopting a special law on artificial intelligence is a promising and necessary step. It will establish a legal framework for the comprehensive regulation of AI, ensuring the integration of innovative development with security and human rights guarantees, and promoting Ukraine's integration into the European and international legal landscape in the field of digital technologies.

3. International Standards for the Use of Artificial Intelligence

In the context of regulating artificial intelligence, national legal systems are ineffective because digital technologies operate on a global scale, beyond the

jurisdiction of individual states. The rapid growth of the impact of AI on the social, economic and legal spheres makes it necessary to study international standards for its use. Technologies that penetrate key areas of life present the international community with fundamentally new challenges: ensuring the protection of human rights, avoiding bias and discrimination, and integrating innovations into global processes without endangering security. These challenges have catalysed the development of ethical, legal and technical norms that have gradually formed the basis for the international regulation of artificial intelligence.

In the early 2010s, in the context of the rapid proliferation of automated systems, the international community's primary concern was the identification of potential risks and the formulation of fundamental principles for the responsible utilisation of technologies. International organisations played a leading role in coordinating the efforts of states and developing unified standards. An example is the work of UNESCO, which in 2021 adopted the UNESCO Recommendation on AI Ethics (Recommendation on the Ethics of Artificial Intelligence. 2021), which became the first global document and established the principles of respect for human rights, transparency, accountability and inclusion, providing countries with guidelines for the formation of national policies and legislative frameworks. Consequently, in 2019, the OECD adopted the Principles of AI (OECD Principles on Artificial Intelligence, 2019), encompassing innovation, reliability, security, transparency and accountability, providing instruments for both governments and businesses. In contrast to the recommendations put forward by UNESCO, these principles find application in a more natural environment and are oriented towards the practical regulation of technology implementation.

The UN adopted the Principles for the Ethical Use of AI for all agencies of the organisation in 2022 (United Nations System Chief Executives Board for Coordination (UNSCEB). Principles for the Ethical Use of Artificial Intelligence in the UN System. 2022), which emphasise the importance of human oversight, inclusiveness, and the prevention of discrimination, emphasising social responsibility in the implementation of technology.

A special place is occupied by the Council of Europe Framework Convention on AI (Council of Europe. The Framework Convention on Artificial Intelligence, 2024), which became the first international treaty with a legally binding nature. Unlike previous acts, it contains specific legal provisions aimed at protecting personal data, ensuring transparency, non-discrimination and accountability.

It is evident that, from the inception of initial initiatives to the adoption of large-scale international acts,

the development of AI standards has undergone a gradual transition from ethical declarations to the establishment of a comprehensive system of global regulation. It integrates legal, ethical and technical requirements, thereby establishing a universal foundation for the safe, fair and responsible utilisation of technologies on a global scale.

An analysis of the historical evolution and contemporary international standards governing the use of artificial intelligence demonstrates that the regulation of AI has developed gradually – from the earliest academic studies and national codes of ethics to comprehensive global frameworks. Documents adopted by UNESCO (2021), the OECD (2019; updated 2024), the United Nations (2022), and the Council of Europe (2024) define the key principles of ethics, transparency, accountability, and the security of AI systems, thereby establishing a foundation for the protection of human rights and social inclusion. Collectively, these international instruments integrate ethical, legal, and technical approaches, forming the basis for the development of national policies and ensuring the responsible use of AI on a global scale.

Following a comprehensive review of the primary international actors in the field of artificial intelligence, it is recommended that a comparative analysis be conducted. This approach facilitates the identification of both common features and differences between the documents, as well as an assessment of the interaction and complementarity of international standards. Thus, several common features can be identified: a) despite differences in format and legal status, all major international instruments on artificial intelligence share a set of common principles that establish ethical and legal guidelines for states, businesses, and scientific institutions; b) each of these documents underscores respect for human rights. UNESCO, the OECD, the United Nations, and the Council of Europe all stress the importance of safeguarding human dignity, privacy, and fundamental freedoms, thereby ensuring social responsibility in the development and implementation of AI systems; c) another shared principle is transparency and accountability: all instruments provide for the establishment of oversight mechanisms that enable the explanation and verification of AI-driven decisions, reducing the risks of unpredictable or discriminatory outcomes; d) the documents also highlight inclusivity and non-discrimination; e) finally, a core principle is human oversight, which guarantees that human judgement remains central in decision-making processes affecting society, even in contexts involving automated or autonomous systems.

Despite the existence of a considerable number of shared principles, international instruments regulating artificial intelligence also exhibit notable differences arising from their distinct objectives, approaches, and

legal nature. (a) The legal status of these instruments varies substantially. For example, the Council of Europe Framework Convention on Artificial Intelligence (2024) is legally binding for the participating States, whereas the UNESCO Recommendation on the Ethics of Artificial Intelligence (2021) and the OECD Principles on Artificial Intelligence (2019; updated 2024) serve primarily as political and ethical guidelines. In contrast, the Principles for the Ethical Use of Artificial Intelligence in the United Nations System (2022) are intra-institutional in nature, applying exclusively within the UN agencies. (b) The level of detail also differs: UNESCO and the OECD provide a broad ethical framework adaptable to national systems, while the Council of Europe Convention establishes explicit legal norms concerning data protection, non-discrimination, and transparency. (c) Furthermore, there is a variation in the emphasis on priority values: UNESCO stresses inclusiveness and cultural diversity; the OECD focuses on innovation and market development; the United Nations prioritises the prevention of discrimination and the maintenance of human oversight; whereas the Council of Europe highlights the protection of human rights and the rule of law.

Consequently, the disparities among international instruments do not contradict each other; rather, they collectively enhance the comprehensive regulatory framework. This enables a multi-level approach, ranging from general ethical guidelines to specific legal norms, thereby establishing a more stable and comprehensive system of international standards in the field of AI.

A significant element of the international regulation of artificial intelligence encompasses not only the existence of distinct legislative acts, but also their interaction and complementarity. Despite the heterogeneity in status, format and focus of the documents of different international organisations, collectively they constitute a holistic system of regulatory standards that ensures consistent and effective regulation on a global scale. Thus, all international acts can be considered elements of a single AI regulatory framework: recommendation documents establish common guidelines, internal institutional standards ensure their practical implementation, and convention mechanisms enshrine these principles as international obligations. This multi-level approach prevents the regulatory field from becoming fragmented and contributes to the gradual formation of a global legal space for the safe, ethical, and socially responsible use of artificial intelligence technologies.

International legal instruments in the field of artificial intelligence are laying the groundwork for the development of a global system of ethical, legal, and technical standards. The evolution of these

instruments, from declarative recommendations to binding conventions, reflects the world community's gradual recognition of the need to regulate the impact of AI on human rights, democracy, and security. The harmonisation of documents from UNESCO, OECD, UN and Council of Europe establishes a coherent framework integrating ethical principles, political and legal guidelines, and legally binding norms. In this context, it is imperative for Ukraine to consider international standards when establishing its own regulatory framework. This will ensure compliance with global approaches and strengthen the legal basis for the safe and responsible use of artificial intelligence.

Nevertheless, the transition from the declarative level of international documents to practical implementation at the national level is accompanied by a number of difficulties. National systems, including the Ukrainian one, face legal and technical barriers that complicate the adaptation of international standards to the domestic legal environment.

It is also important to consider the technical and institutional constraints. The implementation of AI standards necessitates contemporary digital infrastructure, access to substantial data sets, and a high level of specialist qualification. For Ukraine, these challenges are exacerbated in the context of war and economic instability. The paucity of autonomous monitoring and risk assessment entities further curtails the efficacy of regulatory oversight with regard to the utilisation of artificial intelligence.

It is equally important to achieve a balance between innovation and security. Excessive regulation has the potential to impede technological advancement, while a lack of oversight can heighten the likelihood of human rights violations and discriminatory outcomes in algorithmic decision-making processes. Consequently, national policies ought to integrate the safeguarding of public interests with the promotion of innovative development.

Furthermore, there are limitations in terms of personnel and education. The paucity of specialists in the fields of law, ethics and AI technologies has a detrimental effect on the ability of state bodies to effectively assess risks and control the use of algorithms. International organisations should consider ways to enhance their coordination and support for states, particularly through the provision of technical and expert assistance to countries in the process of establishing legal frameworks within the domain of AI. The development of common indicators for the assessment of the effectiveness of the implementation of standards will contribute to the comparability of results at the international level, thereby strengthening the global regulatory system and supporting the exchange of best practices.

A study of the problems and challenges of national regulation, in particular in Ukraine, shows the multi-

layered nature of the barriers. Among them, the fragmentation of legislation, the absence of special norms on liability for autonomous systems and the limits of permissible use of AI, technical and institutional restrictions, the inadequate level of digital infrastructure and human resources, and the challenge of harmonising international and national standards, are worthy of particular note. The aforementioned factors serve to complicate the safe and ethical use of technologies, thereby creating the potential for violations of human rights and social justice.

The implementation of international standards is associated with a comprehensive approach that combines legislative reforms, the development of digital infrastructure, the training of specialists and the creation of mechanisms for transparent and accountable control. It is imperative for international organisations to persist in their coordination and support of states, offering technical and expert assistance, developing shared indicators for evaluating the efficacy of standard implementation, and fostering the exchange of best practices.

4. The Essence of Economic and Legal Instruments Used to Rationalise the Use of Artificial Intelligence

The field of artificial intelligence encompasses a wide range of disciplines, including industry, agriculture, healthcare, finance and public administration. Concurrently, AI facilitates enhanced efficiency in production processes, optimised management decisions, reduced costs and the creation of new economic opportunities, a matter of particular significance for countries engaged in active integration into the digital economy. The investigation of economic instruments for regulating AI in Ukraine facilitates the integration of economic development with the assurance of security, legality and social responsibility. This, in turn, establishes the foundations for the sustainable advancement of the state within a high-tech environment. The Concept for the Development of Artificial Intelligence in Ukraine (2020) defines it as follows: firstly, as a priority area of national development, and secondly, as strategic for the economy and public administration as a whole. Accordingly, this approach ensures the systematic and comprehensive development of technologies. It enables consideration of the economic, social and security potential, and establishes the conditions for an innovative environment that fosters startup development and investment attraction.

The legislative framework clearly defines the distribution of public and private finances, establishes the priority areas for scientific and research activities, and creates incentives for the development of innovative startups. Thus, the combination of strategic documents

and regulatory legal acts establishes a comprehensive system in which economic and legal instruments are pivotal in implementing the national artificial intelligence development strategy. For instance, the establishment of effective mechanisms for financing artificial intelligence and the provision of support for innovative startups and scaling technologies at the national level are recommended. It is noteworthy that the economic and legal measures employed for the regulation of artificial intelligence are intended to establish the conditions for the integration of developments into the economy and public administration, as well as to stimulate the commercialisation of scientific projects. A more detailed analysis is warranted.

1. State programmes and grants. State funding through scientific programmes and grants is a pivotal instrument in this regard, providing support for fundamental and applied research in the field of artificial intelligence. To illustrate, the National AI Development Program facilitates annual grant competitions for universities, research institutions, and enterprises. These competitions enable the development of innovative projects with high commercialisation potential (*The Resolution of the Cabinet of Ministers of Ukraine "On Approval of the Concept for the Development of Artificial Intelligence in Ukraine"*, 2020).

2. Investment in startups and innovation hubs. Private investments, venture funds and specialised incubators also play an important role in the development of AI. The provision of financing at the nascent stages of technological development is a key element of their remit, as is the facilitation of the establishment of new enterprises and the provision of support for innovation laboratories. The combination of state support and private financing creates a synergistic effect, allowing for faster implementation of technologies in production and business processes.

3. Public-private partnerships are a means of combining the resources of the state and business to implement large-scale projects in the field of AI. The provision of financial support is but one of the benefits of this arrangement; there is also the provision of access to modern infrastructure, the exchange of technological experience, and the joint development of standards and regulations for the use of AI (*Reports on innovative startups and venture investments in the field of artificial intelligence*, 2023).

4. International financial mechanisms, including grants from the European Union, international research programmes, and funding from international technology development funds, are also available. The aforementioned process facilitates the acquisition of supplementary resources, whilst concomitantly enabling the incorporation of Ukrainian initiatives into global platforms and the fulfilment of international

standards (*Horizon Europe – Research and Innovation Funding for AI*, 2023.).

Thus, the combination of state programmes, private investment, public-private partnerships and international financial mechanisms constitutes a unified system of economic and legal measures for regulating AI in Ukraine. This system ensures the financial stability of scientific and technological projects and increases their efficiency. It also promotes the commercialisation of research results and the integration of Ukrainian developments into the global digital space.

The possibility of allocating economic and legal resources to regulate artificial intelligence is available through auxiliary means of influence, forming a methodological and analytical basis. In particular, conferences and scientific events provide a platform for consolidating knowledge and sharing experience. The Scientific and Practical Conference "Use of Artificial Intelligence in Public Administration: Challenges, Opportunities, Prospects" (2023), which discussed the application of AI in public administration, the training of public servants for digital transformation, and the development of the competencies necessary for integrating innovative technologies into state processes.

Moreover, the scientific literature underscores fundamental research on the ethical, legal and organisational aspects of AI, which form the basis for the development of national policy and regulatory frameworks. Accordingly, P. Ivanenko (2022) directs his research towards an examination of the legal and ethical dimensions inherent in the implementation of AI within diverse sectors of the economy. The author conducts a thorough analysis of the legal obligations of developers and users of algorithmic systems, and puts forward recommendations for the incorporation of ethical programming standards and personal data protection into national legislation. The research of O. Sydorenko (2023) focuses on practical mechanisms of ethical control and ensuring the transparency of algorithmic decisions. The author explores how state institutions and businesses can implement internal control systems that ensure the transparency of algorithms, the accountability of AI decisions, and the minimisation of the risks of discrimination or manipulation in public services. The works of L. Kovalchuk (2022) assess the role of academic and industrial centres in the formation of the AI innovation ecosystem. Kovalchuk's work demonstrates the integration of scientific research with venture capital investments and technology commercialisation, thereby establishing an infrastructure for startups and innovation labs.

Therefore, the implementation of economic and legal means of testing artificial intelligence is based on scientific conferences, analytical studies and comparative legal analyses.

5. Conclusions

The article concluded that Ukraine's regulatory framework for artificial intelligence is being developed through government conceptual documents and the modernisation of related legislation. However, the framework is still in its infancy and needs to be formalised in the form of a special AI law. International legal instruments in this field lay the foundation for the development of a global system of ethical, legal, and technical standards. Their evolution, from the initial declarative recommendations to the current binding convention mechanisms, reflects the world community's gradual realisation of the need to regulate the impact of AI on human rights, democracy, and security. The complementary documents from UNESCO, the OECD, the UN and the Council of Europe create a coherent framework combining ethical principles, political and legal guidelines, and legally binding norms. In this context, it is crucial for Ukraine to consider international standards when developing its regulatory framework. This will guarantee compliance

with global approaches and reinforce the legal foundation for the secure and ethical use of artificial intelligence.

The legislative framework clearly defines the distribution of public and private finances, establishes priority areas for scientific and research activities, and creates incentives for developing innovative startups. Thus, the combination of strategic documents and regulatory legal acts establishes a comprehensive system in which economic and legal instruments are pivotal in implementing the national artificial intelligence development strategy. The following is proposed: the adoption of a special law on artificial intelligence, combining innovative development with guarantees of security and human rights; the harmonisation of related areas of legislation, particularly laws on the protection of personal data (based on the GDPR), copyright in the digital environment, and the regulation of online platforms, in accordance with the requirements of the EU Digital Services Directive.

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