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Criminal, Administrative, Finance and Legal Aspects of the Use of Artificial Intelligence in the Legal Sphere: Foreign Experience and Prospects for Ukraine Under Martial Law*

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Abstract.

The article studies the nature of artificial intelligence in foreign countries, particularly in criminal law, finance, and administrative regulation. It is substantiated that using artificial intelligence in courts will improve the quality of court decisions and increase the efficiency and objectivity of decisions in the authorities. In 2023, a US federal court ruled on the possibility of registering copyright to a work of fine art created by the artificial intelligence DABUS (United States District Court for the District of Columbia [2023]: Thaler v. Perlmutter, № 22-CV-384-1564-BAH). It should be noted that the introduction of legal regulation of artificial intelligence is critical to ensure its safe and ethical use. International cooperation and harmonisation of the regulatory framework can create an effective regulatory system that considers all parties' interests and promotes innovation while protecting human rights and freedoms. Thus, the analysis of large amounts of data can identify patterns and trends in court decisions and, in general, public administration activities, and software can influence the forecasting of risks. Several serious challenges and risks are associated with ensuring the security of personal data and the validity of court decisions using artificial intelligence technologies. According to the study's results, artificial intelligence in judicial activity is possible only if effective legal mechanisms allow coordinating and regulating these processes.

Keywords: Martial Law; Artificial intelligence; Court Decision; Financial Regulation; Criminal Basis

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A. INTRODUCTION

New computer technologies have radically changed the approach to creativity and its perception. They play an important role in creating musical, architectural, and scientific works. However, if until recently such technologies were perceived only as an auxiliary tool for the artist to create his work, then in the 20th century. It made its corrections, putting artificial intelligence on par with artists. This gave rise to numerous discussions, and the legal systems of the world's countries were not ready to recognise artificial intelligence as equal to a natural person-creator.

According to analytical sources, it is determined that in 2023, the global market of artificial intelligence technologies is estimated at 207.9 billion dollars. USA, and according to the forecast, by 2030 it will grow more than 9 times and will amount to 1 trillion. 848 billion dollars. USA. Asia Pacific will be the fastest-growing segment of the global artificial intelligence technology market over the next ten years. In 2022, the most significant weight among the world regions in the global technology market segmentation prism. Artificial intelligence occupies the North American region, with an indicator of 36.84%. Next comes the European region, which is 25.97%; Asia-Pacific region, 23.93%; Latin America, the Middle East, and Africa (LAMEA) rank last, at 14.26%.

At a time when technology and social trends are progressive, the legislation remains conservative, and in some cases, making changes to it contradicts its foundations and fundamental principles. Therefore, there is an imbalance between new aspects of objective reality and current legal acts. The exponential development of technologies associated with artificial intelligence requires a quick and conscious reaction from the world community to create an appropriate legislative framework. The modern legal framework regulating artificial intelligence in various parts of the world, including Ukraine, is in its infancy. (Law of Ukraine, 2013)

A breakthrough step in the legal regulation of artificial intelligence and its functionality was the adoption of the world's first law on artificial intelligence, adopted by the European Parliament on March 13, 2024. The subject is to ensure a high level of protection of health, safety and fundamental rights enshrined in the Charter, which includes democracy, the rule of law and environmental protection. In particular, this law prohibits emotion recognition in educational and professional environments, social scoring, forecasting and manipulation of human behaviour or vulnerabilities using artificial intelligence (Artificial Intelligence Act European Parliament, 2024). Despite this, in contrast to Ukraine, neither these nor other EU legislative acts define the issue of choosing a model of

legal regulation of objects created with the help of artificial intelligence. (Volobuieva et al., 2023)

In G. Hallevy's "When Robots Kill: Artificial Intelligence under Criminal Law" (Hallevy, 2023), the researcher focuses on assessing the responsibility of robots, machines, and software with varying degrees of autonomy. His theory is that aspects of the responsibility of the manufacturer, programmer, user, and all other parties involved are covered. (Hallevy, 2023)

O. Turuta, O. Zhidkova, and O. Turuta, researching the issue of regulatory regulation of artificial intelligence in Europe, emphasise that "...in Europe, the artificial intelligence industry is developing, and the EU countries continue to emphasise the importance of joining forces and creating the single 'European AI Alliance." (Turuta et al., 2020)

The scientific research aims to study the problems in the legal regulation of artificial intelligence in foreign countries, particularly when applying court decisions. Given the set goal, the task of the research is determined: to investigate the modern norms of legal regulation of artificial intelligence in the context of the leading countries of the world (for example, the EU, the USA, Japan, China, etc.); identify gaps in the modern system of legal regulation of artificial intelligence; develop recommendations for improving the above-mentioned regulatory apparatus.

B. METHODS

This study is based on the works of foreign and Ukrainian researchers regarding methodological approaches to the disclosure of criminal-legal, administrative-legal and financial-legal aspects of the use of artificial intelligence in the legal sphere (foreign experience and prospects for Ukraine under martial law), etc. Using the epistemological method, criminal-legal, administrative-legal and financial-legal aspects of the use of artificial intelligence in the legal sphere (foreign experience and prospects for Ukraine under martial law), etc. were disclosed; Thanks to the logical-semantic method, the conceptual apparatus was deepened, criminal-legal, administrative-legal and financial-legal aspects of the use of artificial intelligence in the legal sphere were defined (foreign experience and prospects for Ukraine under martial law), etc. Thanks to the existing methods of law, we were able to analyse the disclosure of criminal-legal, administrative-legal and financial-legal aspects of using artificial intelligence in the legal sphere (foreign experience and prospects for Ukraine under martial law).

Analytical methods were used to investigate the available data and

scientific sources of information on the use of artificial intelligence in the activities of government bodies and the court. The most common applications created based on artificial intelligence can be used to exercise a person's right to access the court and prepare a judge to administer justice.

Microsoft Copilot (formerly Bing Chat) is an artificial intelligence tool developed by Microsoft Corporation and OpenAI. Its main task is to work with files on a computer and increase work efficiency on a personal computer: creating documents and presentations, editing photos, organising files, helping during or after meetings in Microsoft Teams, writing a letter in Outlook, etc.

Gemini (formerly Google Bard) is a conversational generative artificial intelligence chatbot developed by Google. It was initially based on the LaMDA family of large language models and later on PaLM. It was developed in direct response to the growing popularity of ChatGPT.

The article used logical-semantic methods to reveal the essence of artificial intelligence in foreign countries and features of its application in courts. The comparative legal method made it possible to compare the legislation of foreign countries in the article, including the evaluation of regulatory legal acts.

C. RESULTS AND DISCUSSION

1. Artificial Intelligence Regulation

The London summit on artificial intelligence security became a platform for the participating countries to discuss and sign the Bletchley Declaration. This document calls for guaranteeing respect for human rights, data protection, ethics, and safety in the development of artificial intelligence and emphasises the importance of human control over these systems (Bazarov, 2022). He also drew attention to the need to develop strategies to prevent the use of artificial intelligence for harmful purposes.

Despite the awareness of the potential challenges associated with artificial intelligence's risks and the understanding of the need for global regulation, given the global nature of such challenges, the key actors—the European Union and the United States—admit that they cannot yet find the same approaches to regulating the use of artificial intelligence. (Zadyraka *et al*., 2023)

This was discussed during an expert discussion of this problem on July 6, 2023, at Stanford University as part of Stanford HAI (Stanford University Human-Centred Artificial Intelligence). The USA and the EU, for which digital technologies make up 10% and 5-6% of GDP, respectively, have different views

on the regulatory regulation of artificial intelligence, which is why, today, one gets the impression that the field of artificial intelligence regulation can develop by analogy with defense of personal data: similar to how GDPR was introduced in the European Union. In contrast, in the United States, each state has its own rules in this area. To this day, this trend has not changed.

Along with the above, in June 2022, the Canadian government presented its draft Artificial Intelligence and Data Act (AIDA), which, according to the developers, aims to establish a harmonious balance in regulating artificial intelligence. AIDA aims to promote innovation and expand access to international markets for Canadian companies with a significant share of the global market for artificial intelligence systems. However, the draft law met with significant criticism from human rights defenders. In particular, there are significant concerns that the Canadian government has prioritised artificial intelligence's economic and commercial aspects while drafting the bill and has not paid enough attention to protecting human rights. Considering the harsh criticism, one gets the impression that the draft law developers must consider the opponents' point of view. (Tylchyk *et al*., 2022)

At the same time, the European Union seeks to become a leader in regulating artificial intelligence, which is why it is developing a draft law "On Artificial Intelligence". This act is expected to implement the world's first comprehensive legislative framework for the regulation of artificial intelligence. In this regard, it should be noted that in February 2020 the European Commission published a White Paper on Artificial Intelligence: A European Approach to Excellence and Trust (White Paper on Artificial Intelligence – A European approach to excellence and trust), which proposes numerous measures and policy options for the future EU regulatory framework for artificial intelligence. The commission also prepared a report on the security and liability implications of artificial intelligence, the Internet of Things, and robotics (European Commission, 2020); (White Paper on Artificial Intelligence – A European approach to excellence and trust, Brussels, 2020).

Also, the European Union pays excellent attention to data protection and confidentiality. In May 2018, the General Data Protection Regulation (GDPR) entered into force - a large-scale regulation designed to strengthen and unify data protection for all individuals in the EU. It extends the scope of the EU data protection law to all foreign companies that process data of EU residents. Thus, all interested parties in artificial intelligence must strictly adhere to the General Data Protection Regulation (GDPR), which is considered the strictest privacy and security law in Europe and the world. This regulation is an important step

towards strengthening fundamental rights in the era of digital technologies (protection of individuals about the processing of personal data) and simplifying doing business due to the unification of rules for companies and government bodies in a single digital market (Regulation (EU) 2016/679 on the protection of natural persons about theprocessing of personal data and on the free movement of such data, and repealing Directive95/46/EC).

It is worth emphasising that the European Commission identified the development of national strategies for the development of artificial intelligence as one of the main tasks and obliged the governments of the EU member states to support the implementation of the "Coordinated Plan on Artificial Intelligence", which was joined by several other countries that are not EU members (Switzerland, Norway). For the first time, the Report on reviewing national strategies on artificial intelligence among EU countries was published in February 2020. It is an updated overview of a national strategy for artificial intelligence among EU member states, Norway and Switzerland. So, in June 2022, 20 EU member states published a national strategy for developing artificial intelligence, while seven other countries (Austria, Belgium, Greece, Ireland, Italy, Romania, Croatia) were at the final stage of their development (Table 1).

Table 1. Implementation of national artificial intelligence strategies in foreign countries

Country	The status of adoption and development of the artificial intelligence strategy	Date
Austria	In the process of development	
Belgium	In the process of development	
Bulgaria	Published	December 2020
Croatia	In the process of development	
Cyprus	Published	January 2020
Czech Republic	Published	May 2019
Denmark	Published	March 2019
Estonia	Published	July 2019
Finland	Published	October 2022
Germany	Published	December 2021
Greece	In the process of development	
Hungary	Published	September 2020
Lithuania	Published	March 2019
Italy	В процесі розробки	

Latvia	Published	February 2020
Ireland	In the process of development	
Luxembourg	Published	May 2019
Malta	Published	October 2021
Netherlands	Published	October 2019
Poland	Published	December 2022
Romania	In the process of development	
Portugal	Published	June 2019
Slovakia	Published	July 2019
Slovenia	Published	May 2021
Spain	Published	December 2020
Sweden	Published	May 2018

Let us add that the OECD report "National strategies on Artificial Intelligence, a European perspective" examines specifically national strategies among EU member states for the development of artificial intelligence and provides an overview of national political initiatives in the following directions: human capital, "from the laboratory to the market", network interaction, regulation, infrastructure. (AI Watch - National strategies on Artificial Intelligence: A European perspective, 2021)

We must take into account that in the national strategies of the EU countries much attention is paid to the problem of safe and controlled development of artificial intelligence technologies, because the use of specific subtypes of artificial intelligence technologies violates ethical and legal norms, which unprecedentedly demand the immediate development of a legislative framework for the safe impact of advanced technologies on various aspects of the existence of modern humanity and compliance with ethical norms. The European legal circle raises the issues of human rights, confidentiality, justice, transparency, risklessness, and algorithmic bias from using artificial intelligence technologies. Solving ethical problems, from the point of view of legal regulation of artificial intelligence technologies among EU countries, differs from other governmental strategic approaches and the level of focus on their development and implementation. (Matviichuk *et al.*, 2022)

2. Foreign Experience of Using Artificial Intelligence in Court Proceedings

Artificial Intelligence systems are increasingly being used in litigation and courtrooms in jurisdictions worldwide, from Australia, Brazil, China, Estonia,

Mexico, the United Kingdom, and the United States. The UK experience with the artificial intelligence system HART - Harm Assessment Risk Tool ("HART") is of interest for analysing the risks and potential for the use of artificial intelligence in the judicial system HART is designed to assist in the assessment of potential harm and risks associated with individuals risk assessment tool (European Ethical Charter on the Use of Artificial Intelligence in the Justice System and its Environment, 2018). This machine learning-based technology used the Durham Police Department archives from 2008 to 2012 to study decisions made by police officers during that period. Machine learning is expected to assess risk based on about 30 factors, some of which (such as zip code and gender) are unrelated to crime. Suspect risk is categorised as low, medium, or high; tests conducted in early 2013 showed that HART predictions were 98% valid for low risk and 88% for high risk recidivism prediction. During this experimental phase, the HART system will have purely advisory value to the referee; the police will regularly audit the operation of HART and the reliability of its results.

In July 2022, China also published draft rules for regulating generative artificial intelligence services for the first time, which became one of the first cases of comprehensive regulation in this field at the national level. The updated rules entered into force on August 15, 2022 and were developed based on current laws on cybersecurity, data security and personal data protection. According to the new rules, all AI service providers offering text, image, audio, and video generation services must undergo a security assessment and obtain administrative permissions if required by law. At the same time, artificial intelligence tools must adhere to socialist values, protect users' rights, and prevent possible abuse and dependence on artificial intelligence. At the same time, China aims to become a world leader in artificial intelligence by 2030, planning the active use of artificial intelligence in the military sphere and developing "smart cities". Chinese companies, including big players like AI and Huawei, are investing in US and European technology firms, opening research centres in Silicon Valley and investing in startups to achieve this goal.

These actions raise concerns in the US because of the risk of leakage of sensitive technology and the possible loss of technological leadership. Washington has recently tightened controls on Chinese investments in American technology, particularly in artificial intelligence. (Villasmil Espinoza *et al*., 2022)

Japan is also actively moving towards innovation, especially in artificial intelligence, trying to find an optimal balance between promoting technological development and protecting the rights and interests of its citizens. In recent

years, the country has demonstrated an open and progressive approach to regulating artificial intelligence, particularly in matters related to copyright, seeking to decide how to liberally approach the use of available data for training artificial intelligence models without violating applicable legislation. Japan's decision not to treat the use of publicly available data for training artificial intelligence as a violation of copyright opens vast opportunities for the development of the latest technologies and innovations, reducing obstacles for researchers and developers in this field. This can undoubtedly strengthen Japan's position in the world market of high technologies, especially in the growing demand for microcircuits and computing systems. (Khan, 2023)

Such a policy causes mixed reactions, especially from representatives of the creative professions and the intellectual property industry, who express concern about possible copyright violations due to using their works without proper licensing. At the same time, there is an argument that artificial intelligence can create unique content that can bypass the traditional copyright framework.

Japan's step could significantly impact international regulation in this area, paving the way for new standards for using data for artificial intelligence and promoting international exchange of experience and unification of rules. (Sinkevych *et al.*, 2024)

Using artificial intelligence tools in judicial decision-making also raises ethical issues regarding delegating authority to algorithms. If not particularly carefully monitored and regulated, reliance solely on algorithmic approaches could violate human rights and foster discriminatory practices. (Korniienko *et al.*, 2023)

In May 2016, a report was published in the United States of America, according to which artificial intelligence was accused of racism. Thus, the computer program used by the American court to assess the risk was biased against African Americans (in the original, it is used - black prisoners). The Corrections Offender Profiling Alternative Sanctions Program (COMPAS) was more likely to mislabel African-American defendants (used initially as black defendants) as potential repeat offenders, mislabeling them nearly twice as often as white people (45% to 24%), according to ProPublica investigative journalism. This was also noted in the Dec. 3-4, 2018 Code of Ethics for the Use of Artificial Intelligence in the Judiciary and its Environment, where it was noted that ProPublica found discrimination in the algorithm used in the COMPAS software, which aims to assess the risk of recidivism, when the judge must determine the sentence individually. (Leheza *et al.*, 2023)

Criticism of the COMPAS system is a criticism of commercial algorithms for assessing the risks of recidivism and evaluating the work of artificial intelligence in court. However, the main thing is that the COMPAS system is explicitly used in criminal proceedings; it simplifies the work of judges in making procedural decisions and increases the efficiency of the court. (Dymko *et al*., 2017)

Negative experiences of artificial intelligence in court will be used to correct mistakes in the future. An excerpt from the Wisconsin Supreme Court decision in Wisconsin v. Loomis states: It is important to consider tools like COMPAS to keep changing and evolving. (Leheza *et al*., 2023)

Problems we address today may change in the future, and better tools may be developed. As data changes, our use of evidence-based tools must also change. The justice system must keep pace with research and constantly evaluate the use of these tools. (Samiksha, 2021)

At least 47 courts in Brazil use or develop AI programs or systems (Eduardo Villa Coimbra Campos, 2023). The Brazilian Federal Supreme Court uses software to automate appeals, providing unlimited precedents and potential courses of action when dealing with legal challenges. Similarly, the Minas Gerais State Court of Justice uses software to identify and categorise legal resources related to the same issue or subject to applicable precedent. (Brehm et al, 2020)

Saudi Arabia (March 2022) introduced a virtual enforcement court that operates without human intervention, reportedly simplifying the 12-step judicial process to two steps (Justice Minister inaugurates Virtual Enforcement Court in Saudi Arabia, Zawya, 2022). In the United Arab Emirates, Abu Dhabi's judicial branch introduced the "Smart Court" initiative in August 2022 to increase court rulings and speed up judicial procedures through artificial intelligence. (Rasheed, 2022)

The Court of Appeal of Singapore considered an interesting case (Quoine Pte Ltd v. B2C2 Ltd) between a cryptocurrency exchange and a trader regarding the possibility of challenging a smart contract concluded by computer algorithms. (Quoine Pte Ltd v. B2C2 Ltd, 2020)

The Singapore Court of Appeal held that in cases where contracts are concluded using deterministic algorithms, any analysis relating to knowledge of the error must be made by reference to the state of mind of the algorithms' programmers at the time of programming (para 97).

Lord Mance dissented from the majority's position and delivered a dissenting opinion. In particular, he pointed out that "do ordinary legal

principles apply, or do they perhaps need to be adapted when traders turn their affairs over to algorithmic computers? The computers in question were "deterministic," meaning they operated according to predetermined algorithmic programs set by humans. So, it refers to the rules that apply when machines are mechanically compressed by reference to their input, and the input is mistakenly interrupted, so that the result is fundamentally distorted" (para. 152). "The key question is whether the error should be applied to disregard circumstances ordinarily relevant to its application, simply because the parties have entrusted their operations to computers that cannot have consciousness. The law must be adapted to the new world of algorithmic programs and artificial intelligence to produce the results that reason and justice would expect. There are certainly risks involved in the introduction of computers. However, I do not think they include the risk of being bound by an algorithmic contract that anyone who learns about it can immediately see can only be the result of some fundamental error. Computers are domestic workers, not masters, to whose operations the parties may be presumed to have unconditionally obeyed under such unusual circumstances." (para. 197)

3. Experience of Ukraine in the Use of Artificial Intelligence

In Ukraine, according to the decree of the Cabinet of Ministers, the Concept of the Development of Artificial Intelligence was approved, which defines the strategic directions of the country's development of this industry. (On the approval of the Concept of the Development of Artificial Intelligence in Ukraine, 2020)

Implementation of the Concept is foreseen for the period until 2030. Given the war, these terms may be adjusted. In the same context, on October 7, 2023, the Ministry of Digital Transformation of Ukraine presented a roadmap for regulating artificial intelligence in Ukraine. The road map involves two stages: the first, which is expected to last 2-3 years (2023-2025), will allow businesses to prepare for regulation; on the second - the regulatory process will begin, which provides for the implementation of the EU law on artificial intelligence (AI ASI) and the development of a national law taking into account the experience gained at the first stage. (Regulation of artificial intelligence in Ukraine: we present the road map, 2024)

At the heart of implementing the regulation of artificial intelligence is a simple approach, which involves moving from less to more: first, we will provide businesses with the tools to prepare for future requirements, and then the law will be passed. The approach considers the interests of all key stakeholders and

makes it possible to find a balance between business interests and the protection of citizens' rights. (Kobrusieva *et al.*, 2021)

In the decision of the Commercial Court of Cassation as part of the Supreme Court dated February 8, 2024, in case No. 925/200/22, it is stated that the applicant cites the provisions of Art. 509, 510, 526 of the Civil Code of Ukraine, as well as the content of the concept of "voluntary commitment" provided by ChatGPT artificial intelligence. (Halaburda *et al.*, 2021)

The complainant points out that ChatGPT's artificial intelligence identified this legal construction as an obligation (theoretically), which the parties reached voluntarily (by their own will), without interfering with the concept's meaning. Therefore, according to the applicant, taking into account the theoretical definition of the concept of "obligation", the concept of "voluntary obligation" used by the court is subject to clarification — the definition of the subjects, object and content of such a concept and the definition of its difference from the theoretical definition of "obligation" (subject, object, content of this concept). That is, the applicant is asking the Supreme Court to deny or confirm what ChatGPT, an artificial intelligence, generated from the outlined question, which is not recognised as a source of reliable, scientifically proven information, contrary to the conclusions made by the court in the court decision. In this way, the applicant questioned the judicial discretion and interpretation of this issue in the decision, which acquired the final status, disregarding the judiciary's authority. (Leheza *et al.*, 2022)

In the separate opinion of the Commercial Court of Cassation judge, who is part of the Supreme Court in this case, it is stated that the current commercial procedural legislation does not prohibit the use of artificial intelligence technologies during commercial proceedings. In addition, in judicial practice, there is no established approach or clear criteria for using artificial intelligence by participants in the judicial process to be recognised as an abuse of procedural rights.

D. CONCLUSIONS

Scholars and legal practitioners continue to debate artificial intelligence's legal status and liability. Proposals exist regarding possible directions for the development of legal regulation of artificial intelligence, including the adaptation of existing civil liability mechanisms and the development of new approaches that would consider the unique features of artificial intelligence technologies.

The main steps of analysing court decisions based on machine learning algorithms include the following stages: 1). Data collection and preparation: In this stage, court decisions and relevant metadata are collected. This data can be taken from various sources, such as court archives, databases or legal portals. The data is then subjected to pre-processing, such as cleaning, normalisation, and transformation, to an understandable format for further analysis; 2). Selection of machine learning models: At this stage, appropriate models are selected to analyse court decisions. These can be classification, clustering, regression and other algorithms. The choice of model depends on the task and requirements for data analysis; 3). Training models: In this stage, machine learning models are trained on prepared data. They analyse the characteristics of court decisions and learn to identify patterns, connections and data structure; 4). Feature Analysis: After training the models, the judgments are analysed to extract useful features or characteristics that can be used for further analysis. These can be signs of types of cases, resolved issues, decisions made by judges, judicial practice, reasons for decisions, and many others; 5. Identifying patterns and precedents: Using machine learning models, patterns, trends, and precedents in court decisions can be identified. For example, it is possible to discover which factors or arguments influence decision-making most, which decisions are similar in circumstances, or which legal standards are most often applied; 6). Decision Prediction: Machine learning models can be used to predict future court decisions based on the collected data and analysis. For example, it is possible to predict the results of some instances or the probability of an appeal's success; 7). Legal resolution and consultation: Analysis of court decisions based on machine learning algorithms can be used for legal resolution and consultation. It can be helpful for lawyers, advocates and judges in preparing a case, identifying grounds for an appeal or providing advisory support.

A survey of existing artificial intelligence systems used in the judiciary in various countries revealed their characteristics and potential advantages for improving the quality of court decisions. Information about these systems helped us understand how their use could contribute to judicial objectivity and efficiency. Analysing artificial intelligence's valuable tools and benefits for evaluating evidence and motivating court decisions highlights the potential for using these technologies in criminal justice. In particular, these technologies can help predict risks and develop effective strategies to address these risks.

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