Introduction of Artificial Intelligence in the Justice System: International Experience

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Abstract

[Purpose] The purpose of this study is to determine ways to introduce artificial intelligence into the Ukrainian justice system.

[Methodology/Approach/Design] The methodological basis of the study consists of theoretical and specialised legal methods: philosophical approaches, general and special methods of modern legal science, which are to interpret the law, and also general scientific styles.

[Findings] During the study, the features of the use of artificial intelligence in the justice system were established and an analysis of international experience in the use of artificial intelligence in the justice system was conducted, which allowed identifying positive and negative aspects in the practice of other countries. In addition, problems that may hinder the development of artificial intelligence in the justice system of Ukraine and positive trends in the introduction of this innovative communication technology were identified.

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Based on the identified disadvantages and advantages of using artificial intelligence in justice, it was determined which systems should be implemented in the Ukrainian justice system, in particular the 'judge's companion' system. However, it is evident that at the moment artificial intelligence cannot completely replace people.

Keywords: Legal Science. Judge's Companion System. Court. Machine Civilisation. Computer Logic.

INTRODUCTION

Today, artificial intelligence is one of the most important matters in modern philosophy, science, and technology. The birth of the 'machine civilisation' can be witnessed at the moment. Previously, artificial intelligence was associated with applied research in the military, robotics, astronautics, and other fields far from the common man. Today, artificial intelligence achievements are literally at the service of each person. An example is the well-known problem of recognising visual images. Users of text recognition systems, not always intentionally, use algorithms developed in research laboratories when entering printed materials into a computer (AIZSTRAUTS et al., 2015). Such linguistic algorithms help translate texts from foreign languages. Predicate logic, frames, and semantic networks help formalise knowledge for input and processing on a computer, and for output in a language close to natural. Neural systems handle huge amounts of text and digital information (SHEMSHUCHENKO, 2020; KORZHYK et al., 2017).

Programming languages of expert systems are widely used in information and search engines, and bibliographic databases. Expert systems are used to solve a wide range of practical problems in medicine, biology, and the humanities. In the era of the dominance of so-called high technologies in the modern global world, artificial intelligence can be correlated with the practical application of knowledge in the form of a meaningful search for information on the Internet (GINTERS, 2020). For example, artificial intelligence can be considered a site on which information is searched (queries play the role of signals, stimuli, responses – the role of reactions). Such an understanding opens a real perspective for the deeper integration of scientific thought into the content of the evolution of a particular subject. In modern society, the expediency of using artificial intelligence is best characterised by a quote from Google Executive Director S. Pichai: "Artificial Intelligence is the new electricity. Very soon, neural networks will penetrate all spheres of life". One of the areas of 'penetration' of new technologies is the sphere of justice. The above is not a matter of the future, but an already accessible reality: in the judicial systems of some countries, the

introduction of the latest technologies and algorithms is already observed, which can easily and quickly process a large array of data and, most importantly, make the system fair, transparent, and efficient (SHEMSHUCHENKO, 2020).

It is advisable to note that the High Council of Justice approved a draft Order of the Cabinet of Ministers of Ukraine No. 438-2021-r "On Approval of the Action Plan for the Implementation of the Concept of Artificial Intelligence Development in Ukraine for 2021-2024" (2021) and suggested launching a pilot project based on one of the courts of first instance using artificial intelligence to develop common standards for accounting for court decisions and other data generated by the administration of justice, to identify unfair judicial practice through text analysis. The above refers to automated consideration by the system of administrative offences with a formal composition (offences for the objective side of which the law requires establishing the act only) using artificial intelligence. The introduction of such systems in the information industry and, in particular, in search engines and electronic litigation, would achieve the ambition of the founding fathers of cybernetics about smart machines that help people in the creative transformation of information reality as effectively as industrial robots, telecommunications satellites, and other man-made mechanisms (JATKIEWICZ, 2019; ULENAERS, 2020; KUPPALA et al., 2022).

The purpose of this study is to determine ways to introduce artificial intelligence into the Ukrainian justice system.

MATERIALS AND METHODS

The study of the functioning of the artificial intelligence mechanism in the justice system set a number of tasks and purposes. The tasks set can be fulfilled using various methodological approaches that disclose both theoretical and practical aspects of the study. Firstly, it is worth mentioning the importance of disclosing the theoretical component. It is conditioned by the fact that this would help in conducting a more detailed analysis of the functioning of the mechanism under study. This can be achieved by using a theoretical-methodological approach that discloses the concept of artificial intelligence and highlights its characteristic features and principles of implementing its activities. The dialectical-methodological approach defines the main areas and goals that the functioning of artificial intelligence in the justice system sets for itself. The method of legal hermeneutics allows evaluation of the activity of this mechanism from a legal standpoint, which as a result determines its positive and negative aspects. This method is used in the interpretation of legal texts. Legal hermeneutics establishes the conceptual foundations so that the analysis of legal norms is as equitable as possible. The authors analyzed the Code of Judicial Ethics (2013) and the Order

of the Cabinet of Ministers of Ukraine No. 1556-2020-r "About the Approval of the Concept of Development of Artificial Intelligence in Ukraine" (2020).

The comparative analysis examines the experience of other countries in the field of functioning artificial intelligence in the justice systems, which helps to consider the aspects of artificial intelligence in more detail and introduce it into the justice system of Ukraine. The importance of using a system-structural methodological approach is conditioned by the fact that it provides an opportunity to examine the activity of artificial intelligence through the prism of a comprehensive review of the justice system in Ukraine. The deduction discloses the components of artificial intelligence in the justice system for the functioning of an integral mechanism of artificial intelligence, which would help to characterise artificial intelligence in this system, considering its principles and areas of activity. The concretisation method helps to detail the identified theoretical and practical aspects of examining artificial intelligence and its activities in the justice system, which allows describing the problems of functioning of this segment and prospects for its development. The formal dogmatic method allows for conducting a legal analysis of regulations of legislation of other countries and Ukrainian legislation, which helps in identifying conflicts in the implementation of artificial intelligence activities in the justice system.

Thus, based on the above, it is worth highlighting the following stages of the study. In the first stage, to cover the use of artificial intelligence in the justice system, the theoretical component of this segment was examined, namely the investigation of artificial intelligence and the identification of its characteristic features and principles of interaction. The second stage examined the international experience of using artificial intelligence in the justice system, which allows for tracking positive and negative aspects in the practice of other countries. The third stage identified problems that may hinder the development of artificial intelligence in the justice system of Ukraine and tracked positive trends in the introduction of this innovative communication technology, which provides an opportunity to present a comprehensive mechanism for the functioning of artificial intelligence in the justice system.

RESULTS AND DISCUSSION

The term *artificial intelligence* in the modern interpretation resembles the ancient Greek indivisible atom (Greek átomos – indivisible), which has long been successfully perceived by world practice. Modern studies in the field of artificial intelligence raise acute theoretical and methodological questions. These studies are interdisciplinary since they involve an increased number of scientific disciplines while issues in the development of artificial intelligence assign a more

important role to interdisciplinary approaches to their solution. This is also evidenced by the fact that there is a growing understanding of the dependence of human development on the use of the findings of natural intelligence research among specialists in the field of computer science (JATKIEWICZ, 2021). However, some of these specialists believe that the nature of solving artificial intelligence problems should be autonomous, since proven mathematical, logical, and algorithmic methods are used, and there is no need to address psychological issues or examinations of the human brain.

Currently, there is international experience in using artificial intelligence to make decisions in court proceedings when considering simple cases. For example, in the American judicial system, machines running on artificial intelligence make pre-trial decisions against accused persons, while in Estonia a robot judge is tested on resolving disputes arising from contractual legal relations. Similar programmes are being used or are beginning to be used in China, Singapore, France, and other countries (KUPPALA et al., 2022). The leading users of artificial intelligence in justice are courts in the United States. There, the technology is mainly used in civil and criminal cases. In particular, researchers from Stanford University have developed an algorithm that assists the judge when choosing a preventive measure for the defendant: detention or bail. After reviewing about 100 thousand procedural documents, the developers found that some judges in 90% of cases allow citizens to leave on bail, while others – only in 50%. Alternatively, the program allows for a fair assessment of risks and the detention of far fewer people without endangering the public (ULENAERS, 2020). In China, since 2017, an online court has been operating in the form of a mobile application of the main Chinese programme WeChat. There is video chat instead of a courtroom and instead of a judge, there is an avatar controlled by artificial intelligence. The court is authorised to consider copyright disputes, business disputes on the Internet, and violations in the field of e-commerce.

Relatively recently, the first international regulation specifically dedicated to the use of artificial intelligence in justice appeared – the "European Ethical Charter on the Use of Artificial Intelligence in Judicial Systems and their Environment" (2018), approved by the European Commission for the Efficiency of Justice of the Council of Europe. The "European Ethical Charter on the Use of Artificial Intelligence in Judicial Systems and their Environment" (2018) sets five principles for the use of artificial intelligence, and the principle of user control is of particular interest, according to which a judge should be able to disagree with the decision proposed by artificial intelligence and make their own decision on the case, while the participant in the dispute should be given the opportunity to directly appeal to the court without the use of artificial intelligence and the right to appeal the decision made by the latter (JUDGES NOW USING…, 2018). Therewith, the European Commission for the Efficiency of Justice calls for caution in automating processes in the search for alternative measures to resolve civil lawsuits, and the use of online dispute resolution platforms. Experts advise being especially careful with the quantitative indicators that the programme can appeal to when analysing precedents and with the use of artificial intelligence

when analysing the propensity to commit a crime of a person (ULENAERS, 2020).

As an example of an unsuccessful application of programmes, the "European Ethical Charter on the Use of Artificial Intelligence in Judicial Systems and their Environment" (2018) cites the algorithm of the American COMPAS programme. According to a non-governmental organisation that decided to test the efficiency of this tool, the programme, almost twice as often as in other groups, indicated a possible risk of recidivism when it came to African Americans. This could be attributed to specific socio-economic trends in certain groups. Still, the researchers stated that artificial intelligence could call a recidivist even a person who has never been in prison but answered the questions in the electronic questionnaire appropriately (AI JUDGES, VERDICTS…, 2019). In general, experts have different opinions about the use of such systems in criminal law. On the one hand, artificial intelligence does not depend on anyone and draws conclusions based on pure data, whether it is facts from a biography or the provisions of the Constitution. On the other hand, there is an issue of transparency in the development of the algorithm, besides, the programme takes the initial data as an axiom and instead of correcting the imperfections of the system, it increases their number (EUROPEAN ETHICAL CHARTER…, 2018).

In Ukraine, in recent years, the legal community has also been very actively discussing the use of artificial intelligence systems injustice, which is a set of technological solutions that allow simulating of human cognitive functions and obtaining results comparable to the results of natural intellectual activity. A prerequisite for the introduction of artificial intelligence technologies in Ukraine is the launch of a unified judicial information and telecommunications system (RYBIKOVA, 2020). In addition, today the electronic court subsystem operates in a test mode, which can independently file a list of lawsuits, monitor the progress of the case, file procedural documents, pay court fees, and control the receipt of lawsuits against itself, and all this is done online (RYKOV, 2020). As noted by Deputy Chairman of the High Council of Justice O. Malovatsky (2021),

> "the use of artificial intelligence technologies in the judiciary in terms of forecasting a particular court decision would considerably reduce the workload of courts and make it more efficient".

In many countries, the potentially applicable systems in e-justice include artificial intelligence systems that assist the judge in the adoption of final judgments ('judge's companion') and artificial intelligence systems that replace the judge in the adoption of final judgments ('digital judge'). These systems have not yet been created in Ukraine, so it is advisable to empirically assume the advantages and possible risks associated with their use based on the analysis of foreign experience in the use of artificial intelligence systems in justice and the level of development of modern technologies that affect the achievement of the main goal of justice – effective protection of rights, freedoms, and legitimate interests of citizens, organisations, and the state. Regarding the use of the first

artificial intelligence system, the judge's companion, the following main advantages can be noted: the ability to quickly process a huge amount of information; simultaneous accounting of more facts than a human judge; performance of routine work (translation support, installation of falsified materials, etc.); preparation of draft decisions, thereby improving their quality and the efficiency of the entire judicial system. The main risks of using this artificial intelligence system are the problem of possible excessive confidence of judges in the correctness of their decisions and failure of proper verification, the problem of poor-quality input of source data for analysis and processing. The risks of information loss and corruption when making a decision also remain.

The second artificial intelligence system, the digital judge, differs, in that the final court decision on a case is made by a digital judge without deep immersion in the process of a real judge. The main advantages of using this system are the impartiality in decision-making, provided that the data entered into the system is correct; the speed of data processing and the ability to analyse a large amount of information; simultaneous accounting of a large number of facts to be evaluated; the absence of arithmetic errors in calculations; reduction of the burden on judges; elimination of corruption. The main disadvantage associated with using such systems is the inability to determine the legal status of a digital judge. To this day, in other countries, the decisions of a digital judge are made on behalf of a human judge. There is also a likely risk of an increase in the number of complaints against digital judges' final judgments, which can be conditioned by the incompleteness or inaccuracy of the data entered into the system.

An example from the United States case law “State of Wisconsin v. Loomis” (2016) can be provided to illustrate this statement. The verdict was given to E. Loomis by the COMPAS artificial intelligence system, which showed the risks of recidivism, and the accused was sentenced to a more severe sentence. E. Loomis appealed against this decision, which violated his right to be convicted based on accurate information. However, the Supreme Court of Wisconsin concluded that the use of the COMPAS system was correct and that there was no violation of the rights of the accused in this case (CUI et al., 2019; GINTERS et al., 2014). In addition to these disadvantages there is the inability of a digital judge to be guided by internal beliefs, and principles of law, and apply them by analogy. The understanding of such general categories is established in the judge during personality development, and therefore, it cannot be included in the programme algorithm (COVELO DE ABREU, 2019; DEEKS, 2019).

Considering the activities of a judge, it should be noted that they belong to law enforcement. That is, the judge, when administering justice, is guided by the rule of law. Nevertheless, understanding the phenomenon of the rule of law and its implementation in professional activities is not possible without a positive legal consciousness. Just as a judge is characterised by the possession of will and understanding of the decisions they make; artificial intelligence is characterised by programmatic ability. In this case, it is especially important to analyse the Code of Judicial Ethics (2013) to understand whether the replacement of a judge by artificial intelligence is appropriate and grounded. For example, Article 6 of the Code of Judicial Ethics (2013) points to the need to provide one's own evaluation

of the evidence. At first glance, the formalisation of this procedure seems quite easy, because it involves getting information, analysing the information provided, and making a certain decision. However, at the analysis stage, the capabilities of the judge and artificial intelligence differ considerably. This stage is characterised by the manifestation of the judges' bias and mistakes. That is, at this stage, judges can be guided by their own beliefs, so the correctness and fairness of the decision made would depend on their professional level. Therefore, in this case, the use of artificial intelligence can be useful since it would provide an objective evaluation of evidence.

Further, it is necessary to analyse the provisions of Article 7 of the Code of Judicial Ethics (2013). It indicates the need to deepen the knowledge and improve the practical skills of judicial officers. This requirement is important in meeting the needs for the professional evaluation of legal reality, which has the characteristic feature of being in a state of constant development. Unlike employees of judicial instances, artificial intelligence is characterised by the supplementation of information already provided earlier, the perception of which occurs in accordance with the principle of similarity, but not in a meaningful way. Thus, artificial intelligence can make decisions based on existing information and update it without being in a state of development. According to this, artificial intelligence is not capable of providing an evaluation of the development of legal reality. Notably, supporters of the introduction of artificial intelligence pay attention to the existence of a number of formalised cases (ZURYAN, 2021). Examples of such cases are writ proceedings. To address the fact that the courts now have a large number of such cases in their own activities, supporters believe that the use of artificial intelligence would be a logical and effective solution to this problem, but this does not eliminate the causes of writ proceedings. They arise only if there are no controversial issues and there are written proceedings regarding certain requirements. It is advisable to increase the level of legal consciousness and legal culture in society to eliminate a large number of writ proceedings in judicial instances.

In general, 70% of court decisions in Ukraine are not implemented (KARMAZA et al., 2021). The reason for this is legal nihilism. People expect a court to make decisions objectively. In this way, people attempt to solve the problem of subjectivity of the position which may be shown by some non-professional judges. Artificial intelligence, although it cannot express a subjective point, cannot express an objective one either. In accordance with this, the problem that the opinion of a judge cannot be actually subjective arises, because it must be subjective, which indicates the embodiment of the level of professionalism in objective reality. However, for a judge to express a subjective point, an appropriate professional level of consciousness is required. The professional level of consciousness consists of legal and moral consciousness, but they are not inherent in artificial intelligence. According to this statement, the objectivity of artificial intelligence remains fiction. Despite the listed disadvantages of the use of artificial intelligence in the field of justice, it is worth considering the advantages and trends in the development of this area. Considering the current stage of automation of the justice system, it should be noted that it is possible to

fully replace some professions in this area with artificial intelligence. For example, the secretary of the court session. Artificial intelligence is capable of providing court notices and summonses, checking the presence of persons in the courtroom, recording the hearing by information and communication means, keeping a log of the court session, issuing a writ of execution, sending copies of court decisions, registering court case materials, complying with internal labour regulations, conducting a preparatory stage for the information that is scheduled for consideration (SANTONI DE SIO et al., 2021).

It is worth considering such a promising area as the creation of an automated workplace for a judge which would automate the judge's decision-making processes during the proceedings and the imposition of appropriate punishment in accordance with the crime (ACIKGOZ et al., 2020). Notably, an essential feature of the introduction of this mechanism in the justice system is that its focus is on assisting a judge, providing information and technical support in making certain decisions, rather than replacing a judge or excluding them from the justice system. Thus, it creates a symbiosis between the work of artificial intelligence and the judge. The system of the automated workplace of a judge should not only consider cases, analyse their algorithms and methods but also collect useful information for the judge, in which the judge can participate directly. For example, this system can create court documents and drafts, while the judge has the opportunity to choose the version of the court decision on a particular case based on established forensic methodology and generalised case law on certain types of criminal offences. In this case, the advantages of electronic legal proceedings include the minimisation of time spent by court employees, timeliness in informing court employees, electronic filing of claim documents, the possibility of providing electronic requests and providing electronic copies, etc. This approach to the introduction of artificial intelligence in the justice system allows minimising errors that occur during court proceedings, reducing the level of corruption, and increasing the level of efficiency in solving certain categories of cases in various areas of legal proceedings.

Regarding the state of the introduction of artificial intelligence in Ukraine, it is worth noting the Order of the Cabinet of Ministers of Ukraine No. 1556-2020-r "About the Approval of the Concept of Development of Artificial Intelligence in Ukraine" (2020), which provides for the use of artificial intelligence in the field of jurisprudence and justice. It should be noted that this is a big step in modernising justice and public administration in general. The introduction of artificial intelligence into the justice system will be based on the principles enshrined in the previously mentioned "European Ethical Charter on the Use of Artificial Intelligence in Judicial Systems and their Environment" (2018).

CONCLUSIONS

The introduction of artificial intelligence in the current environment of growth of property turnover and digitalisation would have a positive impact on economic and business development in the country, reduce the human factor in

judicial arbitrariness, and solve the growing number of lawsuits. However, the introduction is possible provided that the technical level can ensure the confidentiality of the data provided, transparency, impartiality, fairness of the case, and respect for human rights. However, the most important thing is not to fully replace employees of the justice system with artificial intelligence, but to introduce their symbiosis, which would increase the efficiency of judicial instances.

Given the listed advantages and risks of using artificial intelligence in e-justice, the introduction of the judge's companion system that supports judges is the most acceptable. Artificial intelligence makes practical sense to reflect the gradual introduction of e-justice, ranging from the introduction of certain elements of informatisation to the emergence of a single system provided for by the legislation of Ukraine, which ensures the implementation of full and continuous proceedings in electronic form at all stages of the trial. Nevertheless, no matter how perfect a computer is, it is only a means for creative expression – the same as paints, a palette, and a canvas for an artist or a music notebook and a musical instrument for a composer. Artificial intelligence is just one of the tools of a student, researcher, or judge.

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