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Responsibility for damages done by robots: The European Union experience

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Abstract

Relevance Today, artificial intelligence is being actively implemented in many important areas of human activity, so any malfunction in the activities of the robot can lead to negative consequences, the liability for which remains a controversial issue.

Purpose. The research aims to investigate the grounds, types, and peculiarities of the application of liability for damage caused by a robot within the European Union (EU).

Methodology. The following methods were used: analysis and synthesis, induction, deduction, comparison, statistical analysis, formal-legal method and interdisciplinary approach.

Results\Conclusions. The methodological basis of the research was formal-logical, the method of system-structural analysis, and the method of generalization, which allowed to find out the concept and essence of artificial intelligence, robots, defects of artificial intelligence, responsibility for the work of automated mechanisms and machines; determine the content and elements of the legal status of robots; establish the main socio-legal principles of the creation and operation of robots; explore the legal basis for regulating the creation, implementation, and operation of robots within the EU; characterize the signs and types of liability for damage caused by robots; identify problems of liability for robotic activities; generalize approaches to the application of liability and methods of compensation for damage caused by robots in individual court cases; analyse the prospects for development of the law enforcement in the sphere of damage liability, caused by robots in the EU countries.

Keywords: automated machines; artificial intelligence; legal status; compensation mechanisms; functional algorithms.

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Introduction

The social purpose of robots is to simplify specific life processes while minimizing human intervention. However, robots are still only tools for carrying out certain tasks, since artificial intelligence has no personal autonomy. This is caused by the fact that there is a direct link between the robot and its manufacturer or supplier. In this context, it is important to understand robots' lack of morality and ethics, which primarily determine guilt for the harm caused. Since guilt is the mental attitude of the individual to the acts or omissions committed, as well as the corresponding consequences, which manifests itself as carelessness or intent. At the same time, the issue of infliction and compensation for damage caused by robots was not entirely solved in the studies of modern scientists and practitioners, which is caused by the lack of thorough studies of the scope of liability for damage caused by robots. Consequently, the research aims to conduct a comprehensive analysis of the essence, grounds, types, and peculiarities of liability for damage caused by a robot and the definition of prospects for improving the legislative and practical aspects of actions and inactions of robots that lead to negative consequences.

P. McAleenan, analysing the studies of the Institute of Civil Engineers, argued that effective digitalization to meet public, industry, and workplace needs requires that the design and development of artificial intelligence take place in this context, and not simply as technical issues to be solved by functional algorithms [1]. The design and operation of robots must include the application of human rights principles. At the same time, G. Lima et al., studying the moral responsibility of artificial intelligence, noted that along with the development of artificial concepts of freedom, there is a need to regulate such innovation, by creating a workable concept of the moral responsibility of robots [2].

While researching European legislation on artificial intelligence, L. Floridi pointed out that what matters most is whether an artificial intelligence system or service (such as a machine-learning-based loan management program) affects European citizens, rather than where the company providing such a service or using it is physically or legally located [3]. That is, the geographic location of the manufacturer or supplier is irrelevant when applying liability and damages for the harm caused by robots. Meanwhile, C. Bartneck et al. studying the liability of robots and artificial intelligence systems, noted that liability for the relevant product is a legal responsibility regarding compensation for relevant losses or injuries caused by a particular product [4].

F. Santoni de Sio and G. Mecacci, analysing the accountability gap with AI, argue that the accountability gap problem with AI is not one problem, but a set of at least four interrelated problems – gaps in guilt, moral accountability, public accountability, and civic responsibility [5]. As S. Heiss noted, a robust liability plan for effective and reliable artificial intelligence forms the basis for optimal social welfare and allows the development of a free market for artificial intelligence [6].

Thus, the lack of proper interpretation of the concept, legal regulation, classification, and peculiarities of application of liability for harm caused by a robot lead to

several problems in the use of automated machines and robots. The above circumstances determine that reforming the order of creation and operation of robots and improvement of mechanisms of responsibility for their activities is a requirement of our time.

Materials and Methods

The formal-logical method was primarily used in the research to identify the features of individual legal phenomena and their legal nature. Therefore, this allowed to clarify the concept and core of artificial intelligence, robots, defects of artificial intelligence, responsibility for the work of automated mechanisms and machines; define the content and elements of the legal status of robots; establish the main social and legal principles of creation and operation of robots; investigate the legal basis for regulation of creation, implementation, and operation of robots in the EU; define the rules for the use of robots; summarize approaches to the interpretation of liability for artificial intelligence and robots; determine the current classification of types of liability for damage caused by robots; establish the essence of each type of liability for damage caused by robots; justify the application of liability and compensation for damage caused by robots.

The system-structural analysis methods allowed to establish structural relationships between variables or elements of the system under research. The method of system-structural analysis determined the signs and types of liability for harm caused by robots analysed the possibility of attributing robots to individuals or legal entities, determined the elements of the legal status of an electronic entity and certain aspects of the regulatory legal framework in the field of artificial intelligence; clarified the issues of intellectual rights protection in the context of robots and artificial intelligence; identified problems of liability for robotic activities.

Common features and properties of a certain class of objects are fixed through the generalization method and the transition from the singular to the general, from less common to more common is carried out. Using the method of generalization, it was possible to characterize the approaches to the application of liability and methods of compensation for damage caused by robots in individual court cases; to analyse the prospects of development of legal provision in the field of liability for damage caused by robots in the EU countries. The research theoretical basis consists of the studies by scientists and practitioners of the Commonwealth of Independent States and the European Union in the field of artificial intelligence, creation, operation, and responsibility of robots, within the need to study the issue of compensation for damages caused by robots.

The normative basis of the study is the current and prospective legislation in the field of liability for damage caused by robots, including the European Parliament resolution of July 4, 2017 No. 2015/2013 [7], Civil law rules on robotics [8], Council Directive of 25 July 1985 on the approximation of the laws, regulations and administrative provisions of the Member States applicable to liability for defective products No. 85/374/EEC [9], European Parliament resolution of 16 February 2017 with recommendations to the Commission on Civil Law Rules

on Robotics No. 2015/2103 [10], Regulation EU 2016/679 of the European Parliament and of the Council of 27 April 2016 No. 2016/679 [11] and legal positions of judicial practice, which became the basis for further scientific analysis. Each of the issues studied is analysed separately (looking at the specific legislative provisions that apply). To reflect the identified legal problems of artificial intelligence and robot liability for the most vulnerable groups and factors, the author followed the approaches enshrined in the law. The study provides general recommendations to improve the understanding and mechanisms of the application of liability for damage caused by robots.

Results

Robot legal status

In today's context, the concept of "artificial intelligence" is widely used in society, but its exact meaning is disputed in both scientific studies and normative documents [12]. Artificial intelligence is considered an exceptional product of technological development that allows automated machines, with the help of their and human experience, to acquire knowledge, adapt to new conditions within the limits of use, perform a variety of functions, foresee events, and rationalize resources [13]. Currently, there are attempts to define artificial intelligence within the theories of the object or subject of civil law [14]. The authors believe that robots are relatively autonomous functioning general functional systems or mechanisms, the purpose of which is to reproduce the intellectual, motor, and physical capabilities of people with the properties of learning and adaptation in direct interaction with the environment.

It is important to understand that the legal status of robots cannot be formed based on a physical person's status model. Because in this case the robot will be endowed with human rights (right to dignity, inviolability, remuneration, citizenship). The legal status of a robot cannot be identical to that of a legal person, because it implies a separate group of people representing and controlling the legal person. Represented physically in robots, artificial intelligence should be analysed as a subject of legal relations, having an independent legal status, given the relevant specifics [15]. At the same time, the lack of a legal definition of the concepts of "robot" and "artificial intelligence" leads to their use of all information technology endowed with multitasking. The development of modern society determines the development of innovative technologies, which resulted in significant public interest in large-scale digitalization and the use of cryptocurrency [16].

The European Parliament proposed several ways to form an insurance fund, a mechanism for registering robots, and a classification of types of liability of robot owners and developers, that is, in fact, at the official level has formalized the status of robots as "electronic persons". However, for example, no provisions directly concerning artificial intelligence and the legal consequences of its actions have been introduced into Polish civil law [17]. E-activity refers to a legal person to a certain extent, given the fact that legal capacity derives from the provisions of the law [18]. The actions of such a person would require the introduction of an appropriate detailed legal regulation. Due to this nature, an electronic person could acquire legal

capacity once he is entered into the relevant registry. The actions of an e-person, although carried out independently, would, to some extent, burden individuals. Therefore, it seems that the status of artificial intelligence becomes relevant only if its application can lead to a simpler application of liability for the actions of artificial intelligence [17].

It is important that the introduction and marketing of robots must be carried out under the stipulated requirements. While the consequence of a defect in the artificial intelligence was damage due to the fault of the manufacturer, who may also have failed to inform the consumer in the relevant instruction about possible negative features of operation, the developer himself should be liable for damage according to the rules of liability for damage caused by defects in goods. In the case where the damage was caused by a product with artificial intelligence, purchased by the consumer, the norms of the legislation on consumer protection should be applied [15]. The European Union has a Resolution of the European Parliament of 16.02.2017, which includes the Robotics Charter. Under this legal act [10]:

- the intellectual property regulation system applies to robotics;
- intellectual property rights are approached from a technology-neutral perspective, that is, there is a human behind the artificial intelligence system.

The Resolution is the foundation of the legislative provision of standards for the creation and implementation of artificial intelligence. Although this document has only a recommendatory character, its provisions provide an opportunity to form an understanding of the principles of regulation of these activities. Resolution notes the impossibility of holding robots liable for damage caused to third parties [10]. First of all, to determine the scope of liability, the main aspect is to establish the fact of predicting negative results. The general possibilities for transforming the legal regulation of the use of robots and responsibility for their actions can be summarized in three main postulates:

- consideration of robots exclusively as objects of social relations. In this case, robots are only auxiliary means concerning legal and physical persons;
- robots are only separate subjects of relations. Then robots should be perceived as independent subjects of social relations, who understand and can evaluate the core of their behavior and the behavior of other persons to a proper extent;
- robots can be both separate objects and subjects of legal relations.

The following cases of robot misconduct can be distinguished:

- the accumulation by robots of information about people, for illegal purposes, the transfer of such information to persons who do not have access to it;
- human rights violations by robots caused by improper public disclosure of personal or other private information;
- artificial intelligence making decisions that discriminate against a person or group of people;
- violation by artificial intelligence of the rights to the results of intellectual activity, intellectual property law.

The social basis of robot activity

The European Commission has formed a department for artificial intelligence and robotics, whose main task is to promote the competitiveness of this field in Europe, which includes the development of services, industrial robots, and autonomous systems (such as vehicles or drones). The highest authorities of the EU define several principles for the development and operation of robots [19]:

1. The principle of respect for human autonomy. The fundamental rights on which the EU is based aim to ensure respect for human freedom and autonomy. People who interact with artificial intelligence systems must be able to maintain full and effective self-determination and be able to participate in the democratic process.

2. The harm prevention principle. Artificial intelligence systems must not cause or exacerbate harm or otherwise adversely affect people.

3. The principle of fairness. The development, deployment, and use of artificial intelligence systems must be fair. The essential dimension involves obligations to ensure equal and fair distribution of both benefits and costs, and to ensure that individuals and groups are free from unfair bias, discrimination, and stigma.

4. The principle of explicitness. Explicability is crucial for building and maintaining user trust in artificial intelligence systems. This means that all processes carried out by robots should be transparent and their decisions should be open.

The EU General Data Protection Regulation (GDPR) came into force on May 25, 2018 [11]. Its application is possible in every EU member state where there is no necessary legislation. The regulation assumes the foundation of robot activity – protecting humans from any harm. Following individual decisions of the European Court of Human Rights, the principle of dignity conditions the protection of life and the prohibition of inhuman or degrading behavior [20]. As the cornerstone of all rights, human dignity is the basis of protection against violations of physical integrity caused by robots (the decision “S.V. v. the United Kingdom” of 22.11.1995 and the decision “Goodwin v. the United Kingdom” of 11.06.2002) [21]. The May 2019 meeting of the Organization for Economic Cooperation and Development set recommended rules for dealing with robots. These include the following principles:

- transparency and explainability;
- sustainable development and well-being;
- inclusive growth;
- safety and accountability;
- and human-centered values and justice.

Meanwhile, the Legal Affairs Committee of the European Parliament and the European Parliamentary Research Service are forming recommendations to improve the ethical and legal and ethical awareness of robot development and implementation. These recommendations include the creation of a robot agency and a robot registry. This agency should be charged with the task of providing normative, moral, and technical expertise and developing codes of research ethics and moral conduct committees for robotic engineers. Such Codes should be created based on the following moral foundations [8]:

- justice;

- independence;
- safety;
- public service.

Specifics of liability for acts or omissions of robots in the EU

Due to social prejudice, society expects the same level of moral control over actions and damages from robots as it does from humans [22]. Similarly, the European norms on tort liability, developed in connection with the attempt to create a European Civil Code, have taken shape. European rules of civil law provide for an obligation to compensate for harm in three cases: harm caused by one's fault; harm caused by hazardous activities based on risk (strict liability); harm caused by others (liability for others). The possibility of attributing liability for harm caused by artificial intelligence in a situation where it operates completely independent of the creator, operator, or customer is most questionable. The dispute in this respect concerns the absence of a causal link between the harm and the actions of a human being. It cannot be ruled out that granting artificial intelligence subject matter status will be beneficial from a societal perspective in the future [17]. This possibility for the victim requires compensation from several parties and further be a sign of a revised product liability regime, although the parties who may be liable may be open to revision [23-25].

The person who purchased the defective goods, which caused bodily injury and/or property damage, can sue, but concerning the defective goods themselves, this person must sue the other party (the contractual seller) under a different regime (non-compliance of the goods with the contract). This proves the need for better coordination between the product liability regime and the regime of sale to the consumer [6]. The existing doctrines are not able to ensure public welfare optimal within the application of artificial intelligence. In cases where two or more high-risk artificial intelligence operators harm each other, severe liability is applied with compensation to the state. At the same time, the other party is not compensated [5]. Guilt is a particularly serious form of (moral) responsibility, but not the only one.

Moral responsibility can be blurred in various ways through the introduction of artificial intelligence. By facilitating a more complex chain of decisions and actions, artificial intelligence can make it more difficult for individual agents to understand why a certain decision was made, and what reasons and considerations drove the system. Moreover, these gaps are caused by different sources: social and technical; political and economic; moral or legal [26-28]. For example, a military commander can reasonably be held liable for his conscious decision to deploy a technical system during a military mission that resulted in the unlawful killing of innocent civilians [29; 30]. Similarly, the head of an automobile manufacturing company and/or the head of a traffic safety agency may be legitimately held liable for the decision to allow a vehicle on public roads whose behavior could not have been reasonably foreseeable [31]. Consequently, it is the responsibility of the person or organization using the robots to make sure that the algorithms obtain adequate data sets to reduce biased decisions [4].

The key question here is not whether the persons concerned were aware of the potential risks and the wrong decision, but whether such persons had the opportunity to become aware of the existing risks and to identify them. In any event, legal liability must be proven in court. In turn, product liability is the concept that when a company or its employees harm others by neglecting their responsibilities, it is the company that will be held liable. The European Court of Human Rights has addressed the issue of analysing the dependence of citizens' private lives on the influence of information networks (*Big Brother Watch and Others V. The United Kingdom* case) [32]. Thus, the Court has determined that the protection of personal information is of primary importance for the individual's ability to realize the guaranteed right to privacy and family life [33]. Therefore, the European Commission encourages all EU member states to develop a national strategy for the development of artificial intelligence, and several states, such as the UK, have even promulgated such a strategy [34-36].

In December 2018, the European Commission also agreed on a coordinated plan for artificial intelligence with the EU member states, Norway, and Switzerland to promote the development and use of artificial intelligence in Europe [37]. The overall goal of working together is for Europe to become the world's leading region for the development and application of "modern, moral, and safe artificial intelligence." In Austria, the court in the case "*Acohs Pty Ltd v. Ucorp Pty Ltd*" ruled that a piece of art (product) created by artificial intelligence cannot be considered a copyright object [38]. In this case, plaintiff Acohs and defendant Ucorp compete in the production of electronic material safety data sheets. Therefore, the lawsuit addressed the issue of copyright concerning such passports. In this case, the Acohs passports were created by a computer program called "Infosafe".

The court ruled that although the electronic passports were created by a computer program, the latter belongs to Acohs, as does the copyright in the passports. For such reasons, Ucorp was held liable for copyright infringement of all electronic passports used by Acohs. Also on November 10, 2021, the Supreme Court of Great Britain closed the case of the collective suit (4 million British citizens) against Google for compensation of 3.5 billion euros for the secret keeping of private information about the citizens by the company's computer systems. The Court decision was denied since the complainants did not provide information about the ways and circumstances of the unlawful storage of personal data [39]. Thus, the lawyer Richard Lloyd initiated a class action against Google because the company had allegedly secretly stored the data of iPhone mobile gadget owners during 2011-2012. The High Court in London dismissed the lawsuit in 2018 for lack of evidence. A year later, on appeal, it was reopened. Thus, the case was reviewed by the Court again in 2021. In a decision dated 18.12.2012 in the case of *Ahmet Yildirim v. Turkey*, the European Court of Human Rights (ECHR) concluded that the inability of an individual to access his web page due to the interference of state authorities cannot make the computer system or its owner liable for these actions [40].

In this case, the Turkish regulator blocked access to the entire domain of Google Sites because the site of its user

Ahmet Yildirim contained insulting remarks about Mustafa Kemal Atatürk, which is a violation of Turkish law. The European Court ruled that the actions of the Turkish authorities violated freedom of expression and freedom of information. The European Court on Human Rights insisted that "the restriction of access to information is consistent with the European Convention on Human Rights only when there is a clear legal basis regulating the grounds for the blocking and guaranteeing the possibility of judicial review to prevent possible abuses. Despite the technical impossibility of the Turkish regulator to block only one site (through which the entire domain had to be blocked), the European Court on Human Rights noted that the Turkish courts "should have carefully analysed the fact that the application of such a strict measure would lead to the inability to access a wide range of information of other Internet users, which violates their rights and is a significant side effect". [40-42].

The Supreme Administrative Court of the Czech Republic has expressed the belief that copyright does not apply to a graphical user interface created by artificial intelligence (a computer program), it can only apply to the code of such a program. The complainant in this case was the "Security Software Association," which sought permission to act as a collective copyright protection society for computer programs in the Czech Republic. The Czech Ministry of Culture refused to grant such permission and, as a result of the proceedings, the national court referred two questions for review to the Supreme Administrative Court: whether the graphical user interface of a program was a "form of expression of that program" and whether the television broadcasting of the graphical user interface of a computer program was a "grant of access" to the work. The Court concluded that the graphical user interface does not reproduce the computer program itself, but merely constitutes one of the elements of that program with which users use the functions of that program. A graphical user interfaces as a work can be protected by copyright if it is its author's intellectual creation.

The abovementioned allow to argue that the priority measures in the field of liability for harm caused by works in Kazakhstan should be: not only the implementation of the relevant pan-European norms in national legislation but also the possibility of their practical implementation; creation of new and improvement of existing bodies, whose competence will include consideration of complaints of consumers and other categories of citizens about the harm caused by robots; building an effective judicial system, which will allow victims to collect damages caused by the activities of artificial intelligence from the owners and suppliers of automated systems.

Discussion

Analysis of the literature sources allows to assert the absence of comprehensive special studies devoted to the problem of liability for damage caused by robots in the European Union states. To date, provisions regarding partial regulation of the legal nature of robot liability, the specifics of its understanding and implementation are enshrined in the European Parliament resolution of July 4, 2017 No. 2015/2013 [7], Civil law rules on robotics [8], Council Directive of 25 July 1985 on the approximation of

the laws, regulations and administrative provisions of the Member States applicable to liability for defective products No. 85/374/EEC [9], European Parliament resolution of 16 February 2017 with recommendations to the Commission on Civil Law Rules on Robotics No. 2015/2103 [10], Regulation EU 2016/679 of the European Parliament and of the Council of 27 April 2016 No. 2016/679 [11] and the legal positions of jurisprudence.

Artificial intelligence systems are designed to improve individual and collective well-being. E.O. Mychuryn believes that activities using artificial intelligence should be attributed to such activities concerning which requirements related to the environment, property, health, and safety of life of consumers should be defined, provided by special regulations, normative and legal acts [15]. However, the scientist does not include in the above list requirements on personal information, honour, and dignity of the person.

As defined by F. Santoni de Sio and G. Mecacci, the general concern is that artificial intelligence may make individuals less able to understand, explain and reflect on their behavior and the behavior of others [5]. This phenomenon is called the moral responsibility gap. The above provisions should be interpreted into a rule that robots cannot be held accountable due to a lack of moral and human characteristics.

S. Heiss proves in the context of the study the need to provide a flexible regulatory framework instead of a universal system [6]. If artificial intelligence is to be used for the benefit of society, then the limits of its influence must be brought to the desired result, considering all scenarios. Here it is worth agreeing with the scientist, since most cases of harm caused by robots are unpredictable and, accordingly, it is impossible to establish responsibility for them. This is due to the rapid development of modern technology and ways of using robots in human life. Meanwhile, there are several problems associated with the nature, implementation, and use of artificial intelligence. R. Rodrigues highlights the following problems of exploitation of artificial intelligence, including robots [43]:

- lack of algorithmic transparency (on management, coordination, and decision-making);
- cybersecurity exploits;
- injustice, bias, and discrimination (caused by inconsistent use of algorithms and automated decision-making systems);
- issues of the legal status of robots (creation of a new type of legal personality).

It should also be noted that the existing problematic issues of intellectual property protection in the use of robots, as stipulated by F.A. De Costa III [14]. These include ensuring the independence of actions when using robots, considering the intellectual property rights of third parties, and the security of investments in the use of robots. These problems can also include the lack of regulation of liability for damage caused by robots that were sent by the manufacturer, but not yet received by the consumer; the lack of uniform rules for the qualification of harm caused by robots.

S. Whittam determines that under the current EU liability system, damages caused by artificial intelligence can be claimed under national liability rules or European directives [33]. For example, the Product Liability

Directive harmonizes at the EU level the requirements for a manufacturer regarding harm caused to a consumer by a product defect, and the manufacturer is strictly liable (i.e. liable regardless of fault, intent, or negligence) for the harm caused, provided that the injured party can prove harm, defect and the causal link between them [9; 44; 45]. However, the non-harmonized civil liability plans of EU member states complement the Directive by allowing consumers to bring claims against various potentially liable parties, such as owners and operators. Claims for harm caused by artificial intelligence and emerging technologies can be considered to fall under the traditional liability rules of EU Member States based on fault and contractual, or national, strict liability regimes. Thus, today, most of the new digital technologies do not have a special liability regime and limit liability.

Liability for harm caused by robots consists of product liability, general tort law, and potentially contractual liability. However, the unique characteristics of artificial intelligence, such as its complexity, opacity, and the ability of some artificial intelligence systems to self-adapt, combined with the limitations of existing liability regimes, mean that injured parties may often be left without compensation for damages caused by robots [33; 46-48]. The EU needs to have an updated legal framework that is convenient for manufacturers, which simultaneously protects consumers and ensures the safe development of artificial intelligence. One legal instrument that needs to be changed is the Product Liability Directive [49]. D.L. Gogoshin found that robots are unlikely to meet all accountability and responsibility requirements [50].

In this context, S.B. Schutte et al. emphasize that although individual EU countries have laws on liability for damages caused by robots, there is a risk that the results of the relevant cases will be unpredictable, and in some cases even unfair [51]. Therefore, a level playing field for the entire market implies harmonizing many aspects of liability for damages related to artificial intelligence. M. Veale and F.Z. Borgesius argued that EU law risks having an extremely broad scope of application, which could result in limiting countries legitimate national attempts to manage the social consequences of the use of robots [52]. M. Ebers et al. think that the Artificial Intelligence Act does not clarify how the different components of artificial intelligence systems should be treated [53]. In addition, limiting the geographical scope of the Artificial Intelligence Act to the "use" of artificial intelligence systems within the European Union excludes cases where the ban on the development, sale or export of high-risk artificial intelligence systems applies within the EU, but they are used outside the EU.

L. Floridi discovered that the EU is the sole interlocutor not only on personal data management but now also on artificial intelligence systems [3]. That is, companies and artificial intelligence providers will have to deal with the EU, rather than individual member states, when they have to prove that they comply with the new artificial intelligence legislation. Each EU member state must designate a national body responsible for the oversight of artificial intelligence. However, the new European Advisory Board on Artificial Intelligence (EABAI), which includes representatives from each member state, the European Data Protection Inspector, and the Commission,

will help the national supervisory authorities and the EU legislator ensure consistency in the application of the Artificial Intelligence Act [53]. M. Jarota notes that when considering the worker-robot interaction, the question arises as to who is responsible for the harm caused by artificial intelligence. To prevent negative consequences from robots, companies should take the following steps [54]:

- keep a record of all available artificial intelligence systems;
- establish a system of risk classification;
- risk mitigation measures;
- conducting independent audits;
- monitor data risk management processes;
- definition of artificial intelligence control structure.

The abovementioned circumstances allow to consider as a priority the need to give artificial intelligence the status of “electronic person”. To regulate the legal status of robots in society it is necessary: to form a modern reporting structure for organizations that use robots; to form a special agency for artificial intelligence and robotics; to implement the concept of “robot” in the regulatory framework; to create a mechanism for registering the types of robots and their classification; to provide obligations for developers to provide risk prevention guarantees [55-57].

Thus, analysing the existing scientific opinions on liability for harm caused by robots, it is seen that for the effective operation of robots and levelling the negative consequences of their activities there is a need for legal identification of the parties of legal relations in the system of coexistence of people with robots and robots among themselves to determine the level of liability, establishment of the legal status of such parties and the introduction of insurance system for robotics.

Conclusions

As a result of the study, it was found that artificial intelligence today is widely used in almost all spheres of human activity. It was determined that robots in the context of their legal status are not legal or physical persons. It is necessary to develop and implement in the current EU legislation the concept of an electronic person, which will allow to introduce specific requirements to the robots themselves, and not only to their manufacturers or

suppliers. It is found that the principles of development and operation of robots are respect for human autonomy, the principle of prevention of harm, fairness, explicitness, transparency of actions and decisions, safety, and accountability. It is found that within the European Union compensation for damage caused by robots is possible in the following cases: damage caused by one’s fault; damage caused by hazardous activities based on risk (strict liability); damage caused by others (liability for others).

It is established that the question of whether the guilty persons or organizations had the opportunity to be aware of the risks in the behavior of the robot is to be decided when imposing liability. Several problems in the area of liability for damage caused by robots were identified: illegal collection, storage, and transfer of personal information; making discriminatory decisions; violation of intellectual property rights; lack of algorithmic transparency; vulnerability of cybersecurity; unfairness and bias; issues of the legal status of robots; lack of unified rules for qualification of damage caused by robots, and others.

The need to bring the existing national laws of the EU states and the European Union itself to the real needs of manufacturers, suppliers, and consumers in the development, implementation, and use of robots is considered. Materials of this article can be applied in the development of additions and amendments to the relevant resolutions, charters, regulations of EU institutions and national legislation, state programs, concepts, and strategies of EU member states. New issues that need to be solved were selected in the research. It is necessary to continue to study the content of the legal status of robots, the essence and types of liability for damage caused by robots, the procedure and ways of liability for damage caused by robots, their problems, and solutions.

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Conflict of Interest

None.

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Відповідальність за шкоду, завдану роботами: Досвід Європейського Союзу

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Анотація

Актуальність Сьогодні штучний інтелект активно впроваджується в багато важливих сфер людської діяльності, тому будь-який збій в діяльності робота може призвести до негативних наслідків, відповідальність за які залишається спірним питанням.

Мета. Метою дослідження є вивчення підстав, видів та особливостей застосування відповідальності за шкоду, завдану роботом, у Європейському Союзі (ЄС).

Методологія. Використано такі методи: аналіз і синтез, індукція, дедукція, порівняння, статистичний аналіз, формально-юридичний метод та міждисциплінарний підхід.

Результати/Висновки. Методологічною основою дослідження стали формально-логічний, метод системно-структурного аналізу та метод узагальнення, що дозволило з'ясувати поняття та сутність штучного інтелекту, роботів, дефектів штучного інтелекту, відповідальності за роботу автоматизованих механізмів і машин; визначити зміст та елементи правового статусу роботів; встановити основні соціально-правові засади створення та експлуатації роботів; дослідити правові засади регулювання створення, впровадження та експлуатації роботів у країнах ЄС; охарактеризувати ознаки та види відповідальності за шкоду, завдану роботами; виявити проблеми відповідальності за діяльність роботів; узагальнити підходи до застосування відповідальності та способів відшкодування шкоди, завданої роботами, в окремих судових справах; проаналізувати перспективи розвитку правозастосування у сфері відповідальності за шкоду, завдану роботами в країнах ЄС.

Ключові слова: автоматизовані машини; штучний інтелект; правовий статус; механізми відшкодування; функціональні алгоритми.