

LIABILITY FOR NON-CONTRACTUAL DAMAGES IN THE AGE OF ARTIFICIAL INTELLIGENCE

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ABSTRACT

In the digital age, the application of artificial intelligence in production, business and daily life activities is becoming more and more popular. Beside the potential and benefits, artificial intelligence begins to pose challenges to humans in many fields of science and technology. The emergence of artificial intelligence also entails many related legal issues, particularly, the legal aspect of intellectual property, labor, non-contractual compensation for damages or tort law, etc. Promoting the application of artificial intelligence in human life raises the need to protect people from the challenges of science and technology, especially when the law is showing signs of slowing down compared to the current remarkable progress of science and technology. The article focuses on liability for non-contractual damages caused by artificial intelligence and determining the subject status of artificial intelligence, from there, propose the recommendations in order to improve the current Vietnamese legal system.

Keywords: artificial intelligence, damages, subject, tort law.

I. INTRODUCTION

The Fourth Industrial Revolution is also known as the digital age with the strong development of digital technology, artificial intelligence and other new technologies. Artificial intelligence (hereinafter referred to as AI) is mentioned as one of the outstanding achievements that brings many opportunities for change to society and the global economy (Thiên Kim, 2024). Research and development of AI has become a global trend, in which the US and China are the two countries leading in investing in this technology, followed by the UK and Israel. Accordingly, investment in development and research has produced typical AI products such as: GPT-4 (US), AI Ernie (China) (Phan Văn Hoà, 2024)...

With the continuous progress of science and technology today, AI is developing rapidly, being applied in all fields from culture to the world economy, occupying an important position in the digital age (Kinh tế số, 2023). In the medical field, AI is widely applied to improve professional qualifications and work efficiency such as supporting disease diagnosis, medical imaging diagnosis, assisting surgeons, collecting, storing and managing medical records (Sở Y tế TP. HCM, 2020). For education, AI is applied to research, developing computer software, automating and performing administrative activities to improve teaching and learning (Đinh Thị Mỹ Hạnh & Trần Văn Hưng, 2021). The advent of AI has helped commercial banks and businesses detect fraud, forecast market trends and make smart investment decisions; analyze customer data, manage credit risks. Thanks to that, credit institutions can improve customer experience, increase operational efficiency and reduce costs (Võ Lê Phương Khách & Trương Quang Vinh, 2023).

In Vietnam, since 2014, artificial intelligence has been included in the list of high technologies prioritized for investment and development. The Vietnamese government identifies this as one of the technologies breakthrough, the spearhead of the Fourth Industrial Revolution. In early 2021, the Prime Minister issued the National Strategy on research, development and application of artificial intelligence by 2030 in Decision n° 127/QĐ-TTg dated January 26, 2021. In Vietnam, AI has many positive impacts, improving control efficiency in exit and entry management. AI collects, analyzes and processes big data, builds a database system that ensures scientific and accurate nature, helping authorities conveniently manage and improve the efficiency of exit and entry procedures (Nguyễn Mạnh Hùng, 2023). In addition, AI is also applied in a number of other fields such as services, communications, transportation, production and agriculture (Thạch Thị Mỹ Quyên, 2024). Besides, a number of enterprises and corporations have quickly updated the world's artificial intelligence trends and initially had specific products and applied to the production and business process in a number of industries and fields such as finance, banking, information and communication, healthcare,

education, tourism, transportation, e - commerce, restaurant chatbots, etc. Vietnam has important opportunities for research, development and AI applications in the future. As of 2021, Vietnam has strongly developed artificial intelligence technology, up 14 places compared to 2020, becoming the 62nd most developed country in the world and ranked 6th among ASEAN countries in the AI Readiness Index (Khánh Nguyễn, 2022).

In the innovation of science and technology, the use of AI is expected to bring many benefits to society. However, in the process of AI, if the operations of machines, products, services... have errors, it will cause damages, sometimes extremely important, to social life, which is inevitable. In Vietnam, artificial intelligence technology has created audio, image and video technology products that fake real-life objects with very high accuracy. In recent years, the situation of fraud and appropriation of assets in cyberspace has become very complicated, with scammers using messages asking for money transfers, especially using more sophisticated tricks, taking advantage of Deepfake technology to fake video calls in order to appropriate assets and cause damage to victims (Văn Phong, 2025). However, this article only focuses on liability for non-contractual damages caused by artificial intelligence from the perspective of civil law, especially determining the subject status of artificial intelligence, from there, propose the recommendations in order to improve the current Vietnamese legal system.

II. MATERIAL AND METHOD

A descriptive statutory approach through legal research is the first method applied in this article. In addition, the analysis of regulations related to liability for non-contractual damages caused by artificial intelligence is also used in this study. Moreover, a comparative method is adopted throughout this article in order to compare the provisions of European and Vietnamese legal systems related to the determination of subject of artificial intelligence. Therefore, the article proposes the recommendations related to liability for non-contractual damages caused by artificial intelligence in Vietnam.

The three main sources of law used for description, analysis and comparison are as follows.

Firstly, the Artificial Intelligence Act of the European Union was published in the Official Journal of the European Union and entered into force on August 1, 2024.

Secondly, the Civil Code in Vietnam was promulgated by Law no 91/2015/QH13 of 24 November 2015 and entered into force on January 1, 2017.

Thirdly, the current Draft Law on Digital Technology Industry in Vietnam.

III. RESULT AND DISCUSSION

3.1. Conception of liability for non-contractual damages caused by artificial intelligence

Artificial intelligence is a branch of computer science that deals with the automation of intelligent behavior. Alan Turing's 1950 work *Computing Machinery and Intelligence* raised the question of whether machines could think, conducted a study known as the "*Turing test*" to determine whether machines had intelligence and thus introduced the concept of machine thinking. In 1956, John McCarthy introduced the term "*artificial intelligence*" into a scientific conception at the Dartmouth conference, marking the birth of this term (Lev Craig, Nicole Laskowski, Linda Tucci, 2024). Currently, the term artificial intelligence is becoming more and more popular thanks to the development of intelligent technology and its usefulness when applied to many different fields. Through research on artificial intelligence, there has not yet been an official, non-standard conception to define AI.

The conception of AI is presented by many authors according to their personal views, showing different perspectives on the nature and purpose of applying AI in many fields. Among them, two authors, Stuart Russel and Peter Norvig, in the famous book "*Artificial Intelligence: A modern approach*" have many definitions of AI. For example, artificial intelligence is the actions of machines associated with human thinking, such as decision making or problem solving; artificial intelligence is the art of creating machines that can perform functions that require intelligence when performed by humans (Trần Minh Tâm, 2019). In another research article in Vietnam, Nguyen Manh Hung also gave the view on AI as a system of machines or application software programs created by humans that can automatically perform intelligent behaviors such as the ability to behave, communicate with humans, can learn and intelligently adapt to many situations (Nguyễn Mạnh Hùng, 2023).

From the above analysis, it can be understood that AI is basically a machine or computer system created by humans and programmed to have logical thinking in order to perform and handle problems similar to humans. In addition, AI's ability to learn and provide optimal solutions is also very important for unexpected situations (Yurii Khodyko, 2024).

Artificial intelligence has been widely applied, so it is inevitable that new challenges will arise for society in many aspects. In particular, in the legal field, the existence of AI has affected many aspects, such as labor, intellectual property, compensation for damages, etc. According to the article 13 of the 2015 Civil Code in Vietnam, compensation for damages is the act of compensating all damages of the party that infringes civil rights to the party whose rights are infringed. From there, it can be understood that compensation for damages is a form of civil liability in which the party causing the damage must be responsible for their illegal acts. Evidence of the responsibility to compensate for damages is the remedy of consequences, through compensation for material or spiritual losses. In Vietnam, compensation for damages is stipulated in the articles 360 and 584 of the 2015 Civil Code in two types, including liability for damages due to breach of contract and liability for damages outside of contract. Compensation for non-contractual damages in the era of artificial intelligence is understood as a type of legal liability, applied when all conditions prescribed by law are met, accordingly, forcing the subject causing damage to compensate for material and spiritual losses caused by artificial intelligence, where that act is an illegal act that infringes upon the life, health, honor, dignity, reputation, property, rights and legitimate interests of another subject.

3.2. Meaning of liability for non-contractual damages caused by artificial intelligence

According to the articles 584 and 585 of the 2015 Vietnamese Civil Code, compensation for damages is a form of civil liability that forces the party causing damage to remedy the consequences by compensating for material and spiritual losses to the injured party. Compensation for damages in general and compensation for damages in the era of artificial intelligence in particular have many meanings as analyzed below.

Firstly, the liability for damages in the era of artificial intelligence aims to restore the original state. The application and implementation of the liability for damages aims to restore the rights and interests of the injured party that have been violated. However, this restoration is only relative, in some cases, the injured party has had the damage remedied but still cannot return to the original state.

In particular, smart cars are a testament to the incompleteness of the law in this area. When a driverless car causes an accident to a pedestrian, for example leading to death, the responsibility lies with its creator or with the car user. In this case, although the total material and spiritual loss has been compensated, the fatal damage cannot be restored to its original state. The same question is also raised in the medical field, with surgical robots or with AI systems used to detect diseases (Lê Thiên Hương, 2021). In the case of applying AI to surgery but encountering an unexpected incident that causes damage to health or violates life, no matter how large the compensation is, it cannot replace the original health condition or, more dangerously, cannot replace the human life caused by AI. Therefore, in the above cases, compensation for damages is only aimed at restoring the original state, not completely restoring it to the state before the damage occurred. Another example is that recently, a software error by security firm CrowdStrike caused many computers using Microsoft operating systems to freeze, thereby causing more than 5,000 flights to be canceled and affecting a series of industries, from retail, transportation to hospitals. CrowdStrike's security software update caused this system error, causing many businesses to lose revenue, workers to waste time and reduce labor productivity. Even some airlines such as Delta Airlines have had to cancel hundreds of flights to date because they have not recovered (Băng Băng, 2024). Thus, although security firm CrowdStrike has fixed this error, the damage that Delta Airlines has suffered still cannot be restored to its original state.

Secondly, the responsibility for compensation for damages in the era of artificial intelligence aims to propagate and educate the awareness of law compliance, while respecting the rights and legitimate interests of other subjects. The application of the responsibility for compensation for damages, in addition to the purpose of restoring the rights and legitimate interests of infringed subjects, also aims to educate the awareness of law compliance, respecting the rights and legitimate interests of other subjects. Moreover, any subject that commits an illegal act that causes damage to others is responsible for compensation. Therefore, the provisions related to the responsibility for compensation for damages will make the subjects in civil relations think carefully about the possible consequences before acting to choose a

behavior in accordance with the provisions of law.

Finally, the responsibility to compensate for damages in the era of artificial intelligence also has the meaning of protecting the life, health, honor, dignity, reputation, property, rights and legitimate interests of the victim, which is clearly demonstrated through the economic impact that forces the person responsible for compensating for damages to compensate the victim. The responsibility to compensate for damages in the era of artificial intelligence helps restore the rights and legitimate interests of the victim in order to restore balance in social life.

In Vietnam, the 2015 Civil Code has provided regulations on liability for compensation for damages in order to protect the legitimate rights and interests of other entities. This is a solid legal basis for competent authorities to quickly and accurately resolve disputes related to liability for compensation for damages, thereby ensuring the principle that damages caused must be compensated in full and timely which lawmakers aimed for when drafting the article 585 of the current Civil Code.

In short, compensation for damages in the era of artificial intelligence is extremely important for civil relations between subjects in society through protecting the legitimate rights and interests of people whose lives, health, honor, dignity, reputation, property and other legitimate rights and interests of others are violated; ensuring the fairness of the law, increasing deterrence for subjects to comply with legal regulations correctly and fully. Thereby, the implementation of the provisions of civil law in general and the provisions of other legal documents in particular are increasingly more serious and responsible.

3.3. Determining the subject of liability for non-contractual damages caused by artificial intelligence

In Vietnam, the 2015 Civil Code stipulates a separate regime for the subject responsible for compensation for damages when damage occurs, which can be an individual or a legal entity (Thúy Hiền, 2022). According to article 13 of the 2015 Vietnamese Civil Code, individuals and legal entities whose civil rights are violated are entitled to full compensation for damages. However, the provisions on the subject of compensation for damages are only general and are mainly mentioned in a few areas. In addition, when being drafted, the 2015 Civil Code did not foresee the case where products in social life using AI technology infringe upon the life, health, honor, dignity, reputation, property, rights and other legitimate interests of civil law subjects. In particular, in the context of applying high-level technology and science to social life, to perform the function of compensation for non-contractual damages, the injured party must request compensation for damages and that request must be accepted by the Court, the injured party must identify the person causing the damage, then file a lawsuit, moreover, have to prove that the person causing the damage caused the loss. Therefore, the cost is quite large while it is not always possible to prosecute the person responsible for compensation for damages even if a lawsuit is filed in the Court. In addition, in cases where many people commit acts causing damage, filing a lawsuit is not simple and even if a lawsuit is filed, establishing evidence to prove the causal relationship between the harmful act and the loss is not easy.

Nowadays, even though it is called an AI product, the program unit (pre-programmed) is not considered an independent physical entity. In most cases, AI is understood as a robot equipped with artificial intelligence or in other words, robot = artificial Intelligence + machine science. With that reasoning, it is said that an AI program itself cannot be discussed as responsible for its negative impact on society and artificial intelligence only when combined with machine science with an appearance like a robot can be discussed as responsible for compensation for damages (Nguyễn Thị Phương Châm, 2024).

Self-driving cars use AI, in case of a traffic accident due to AI operations being mistaken during the process of collecting self-learning and self-operating data, the question is who is responsible for compensating for the damage. Even when AI operations are mistaken, there are many situations that lead to damage to both businesses in general and individuals in particular. AI makes mistakes in judging traffic conditions due to errors in data collection (big data), along with that judgment leading to wrong behavior and causing accidents. In other situations, AI recognizes that the situation is beyond its control and returns control to the driver, but the driver is not paying attention, leading to an accident...

The next situation is that an exceptional traffic situation arises that is not foreseen in the programming and design of AI, leading to the inability to judge, handle and cause accidents. In many cases, such as self-driving cars, satellites

are used to take pictures or transport goods, but due to incorrect judgment, the satellite AI causes damage to people and property (Phóng viên, 2021)... In addition, a pharmaceutical or medical device manufacturing company signs a purchase contract with a robot design and manufacturing company. Then, the robot manufacturing company signs a contract with an AI manufacturing company, designing the AI program to install on the robot. During use, the AI makes a manufacturing error that creates pharmaceuticals or medical devices that cause damage to the health and property of consumers (Sở Y tế TP. HCM, 2019)... Furthermore, in the case of businesses using AI to collect data, analyze data and then give advice to investors in stocks, real estate..., in the case of AI making an error, giving unsatisfactory advice, causing damage to investors (Thảo Vân, 2024). Finally, nursing homes use robots to act as nurses to take care of the elderly such as feeding and giving injections. In cases where robots misjudge the elderly's injection status or at the wrong time or overdose, leading to death, etc (Phương Vũ, 2020).

Compensation for non-contractual damages in the era of artificial intelligence is an issue related to a third party that is not a party to the contract such as the relationship between the AI designer and the AI machine manufacturer or the relationship between the seller of AI-based products and the buyer of the product when one or more parties in the contractual relationship violate the obligations arising from the agreement of the parties. Therefore, all issues arising in the relationship of compensation for non-contractual damages are not foreseen by the parties and resolved in the terms related to the contract. For these cases, there must be direct provisions of the governing law. In addition, when being formulated, Vietnamese law has not foreseen the case of products in social life using AI technology that infringe upon the property, life, health and other legitimate rights and interests of civil law subjects, so it is not yet certain whether the application of current regulations is completely appropriate and brings positive value.

First of all, from the above situations, it can be seen that the legal relationship on compensation for non-contractual damages in cases of applying AI technology becomes very complicated due to the participation of many subjects. *Firstly*, the enterprise providing data and programs; the enterprise designing artificial intelligence. *Secondly*, the enterprise manufacturing products using artificial intelligence or the enterprise providing services using artificial intelligence. *Thirdly*, the user of machines and services with artificial intelligence design. *Fourthly*, the injured party, the person receiving damage and loss or the third party through the use of machines and services with artificial intelligence design by others. According to Ms. Le Thi Van Anh, Deputy Director of the Department of Criminal and Administrative Law, Ministry of Justice, there are four related subjects related to AI, including (i) the subjects that create AI, the programmers and authors who design the software, (ii) the owners of AI, the manufacturers and investors, (iii) the users, the people who put AI into operation, monitor the operation process and finally (iv) the AI entity itself (Đỗ Mến, 2024).

While advances in AI technology have had a positive impact on human life, there are still risks and accidents caused by robot errors. This reminds us that AI technology still has many limitations. In 1981, a robot killed a worker at the Kenji Urada motorcycle factory in Japan because it mistook him for a danger (Larry Alton, 2017). In 2015, a 22-year-old engineer working at a Volkswagen factory in Germany was in the process of finishing parts for a robot when he was lifted up by the robot and thrown against metal plates, resulting in his death due to serious injuries (Mỹ Loan, 2015). Also in 2015, a worker named Ramji Lal was killed at the Haryana Manesar factory in India when he approached the robot from behind (Nguyễn Thị Thu Vân, 2023). While adjusting a metal plate, he was pierced by the robot's welding rods (Trung Nguyễn, 2017). On March 18, 2018, the first fatal accident involving a self-driving car occurred when Elaine Herzberg was hit by an Uber self-driving car while crossing the street (Bảo Duy, 2018). In April 2021, another accident killed two people while driving a Tesla Model S self-driving car (Bằng Hưng, 2024). From the above damages, it can be seen that although AI technology brings many benefits to human life, it also poses unforeseen risks. Accidents caused by robots and self-driving cars not only raise questions about the safety of the technology but also emphasize the need to improve and perfect these systems. This affirms the urgent need to research, develop and apply safety solutions to protect people, while ensuring that AI technology is deployed effectively and reliably in the future.

The Artificial Intelligence Act of the European Union (hereinafter referred to as AIA) is considered the world's first legal framework on AI until now. AIA was adopted with the aim of protecting fundamental rights, democracy, the rule of law, promoting innovation and making Europe a leading region in the field of AI (Hùng Tuấn, 2024). AIA

provides regulations and guidelines on some AI applications that threaten citizens' rights and will be prohibited in order to protect their rights and minimize the risk of AI systems causing unintended consequences for people and society. At the same time, AIA also helps shape a common standard on AI, ensuring unity and integration in the management and development of AI technology in the EU region. Although the AIA of the European Union does not have specific provisions on compensation for damages caused by the behavior of AI systems, if manufacturers, suppliers and user importers violate AIA regulations, they are obliged to pay a fine depending on the severity of the violation (Matt Kosinski & Mark Scapicchio, 2024). Similar to the AIA of the European, Russian law is very cautious in granting legal status to AI, because regardless of the robot's autonomy, the country imposes all responsibility on the developer, operator or manufacturer of the robot. Accordingly, the Robot Agent acts as a party to legal relations and the owner will be liable for damage caused by activities that create an increased danger to the community, regardless of the fault (Đặng Lê Phương Uyên, 2023).

In Vietnam, in the liability for compensation for non-contractual damages, according to the clause 3 of the article 584 of the 2015 Civil Code, if property is the subject causing damage, the owner of this property or the possessor of the property must be responsible for compensation for damages, except in cases of force majeure, due to the fault of the damaged party or in cases where there is another agreement or the law provides otherwise. It can be seen that property here, according to the article 105 of the 2015 Civil Code, is objects, money, valuable papers and property rights. Therefore, in this case, is artificial intelligence considered as property or not, if AI is considered as property, who will compensate for the damage caused by AI? (Đỗ Giang Nam, Đào Trọng Khôi, 2022). The current Vietnamese civil law still does not have any specific regulations recognizing the legal subject to be responsible for compensation for damages or not.

According to the Draft Law on Digital Technology Industry in Vietnam, the bill dedicates a chapter to regulate AI with the orientation that this is one of the most core digital technologies. The bill also dedicates a section on digital assets. Pursuant to the clause 1 of the article 10 of the Draft Law on Digital Technology Industry, digital assets are digital technology products created, issued, transferred and authenticated by blockchain technology, with value and property rights according to the provisions of civil law and relevant laws. In addition, the regime of compensation for non-contractual damages is stipulated in the clause 3 of the article 584 of the 2015 Civil Code, accordingly, in case property causes damage, the owner or possessor of the property must be responsible for compensating for the damage. Thus, if considered as a type of property (Nguyễn Mỹ Linh, 2024), when AI causes damage to the life, health, honor, reputation, dignity, property, rights and legitimate interests of others, the subject responsible for compensating for the damage belongs to the owner or possessor of the AI.

IV. CONCLUSION

With the rapid development of scientific and technological advances, a society where humans and AI entities that are no different from humans live together is no longer a fantasy. At that time, many regulations will no longer be appropriate, current standards of legal responsibility will not be sufficient in cases where damage is caused entirely by decisions made by robots independently or if machines are designed to choose partners themselves, agree on contract terms, sign and decide how to implement those agreements, it is clear that the usual principles will not apply to them. According to current Vietnamese law, damages caused by illegal acts of others must be compensated. However, the problem is that up to now, Vietnamese law does not recognize AI as a legal subject. This means that AI cannot be personally responsible for the damages it causes (Đương Quỳnh Hoa, 2020). Determining the subject of compensation for damages in the era of artificial intelligence is very necessary. It is thought that the current trend in the world is to expand the scope of subjects of rights instead of just for the traditional subjects of human individuals. Therefore, Vietnam needs to prepare for the above demands of society in order to ensure that AI can be protected and controlled by law. Recognizing AI as a digital asset in the current Draft Law on Digital Technology Industry in Vietnam, thereby determining the status of subjects in the relationship of compensation for damages outside the contract in the era of artificial intelligence is in line with the current trend of countries.

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