

ARTIFICIAL INTELLIGENCE-GENERATED WORKS AND PATENT LAW

Analysis of the DABUS Case in the European Union, South Korea and Proposal for Vietnam

Hong Nhung PHAM*
PhD candidate (University of Debrecen)

Abstract

The development of generative Artificial Intelligence has created several legal implications in intellectual property law. The most prominent example is DABUS case, in which DABUS – the AI invented by Stephen Thaler created a food container and a light by itself. Afterwards, Thaler tried to name the AI as the inventor of the product and claim the patent by being an employer of the AI. The case was trialled in 16 countries, including the European Union (EU) and South Korea, creating a major debate on the matters of inventorship and patentability. In Vietnam, since the invention of ViGPT, there has also been debates on similar issues. The aim of this paper is to provide Vietnam with solutions to this issue, thus the country can prepare for the phenomenon. This research will analyse and evaluate the DABUS decisions from the EU and South Korea, with comparison to Vietnamese law to answer questions on the inventor of AI-generated works and its patentability. The finding revealed that despite the differences in the law, the interpretation concluded similarly. However, as the direction of legislation in the European Union and South Korea were divergent, it can be beneficial for Vietnam to learn from the experience of both.

Keywords: intellectual property, patent, artificial intelligence, DABUS, inventorship

* ORCID: <https://orcid.org/0009-0009-5641-4599>.

1. Introduction

Artificial Intelligence (AI) is one of the main focuses in the world, as it is changing many aspects of our daily lives. One type of AI – generative AI – has been creating numerous legal implications since its appearance due to its ability to construct new products without the help of human. As generative AI is not only capable of improving the quality of content, image or videos¹, it also can manufacture things by itself, the intellectual property (IP) right of the work generated by them has been an extremely controversial topic, especially the patent right of the inventor. Generally, human involves the help of AI in order to work more efficiently, however, when AI makes new products without their help, it is unsure whether the legal inventor in this case should be the human or the machine. This issue was demonstrated through a famous case titled the DABUS case which was filed in 16 countries, and each country had given their ruling based on their law.

In Asia, Vietnam is one of the countries with the fastest development speed. The country is executing out a plan called ‘National Development Plan until 2030’ which specified AI as the top priority of development in the next five years². According to the World Intellectual Property Office (WIPO), Vietnam is within the fastest ‘risers’ in the last 10 years around the globe in terms of innovation³. Many technology companies within the nation are researching and expanding on AI, most notably the establishment of ViGPT – the Vietnamese version of the world-famous generative AI – ChatGPT. Despite not being in the 16 countries the DABUS was submitted to, the matter surrounding generative AI and patent is also being actively discussed among the legislators. In order to provide the country with the most optimal solution, it is suggested that Vietnam studies the decisions of other states before beginning drafting. One of the most detailed rulings for the DABUS case is from the European Patent Office (EPO) in 2020, which would be relevant to the law of Vietnam as a country with civil law system. Since the signing of the European Union (EU) – Vietnam Free Trade Agreement (EVFTA) in 2020, harmonisation with the law in the EU can also help companies in Vietnam to implement the rules of the agreement more smoothly. On the other hand, along with the Vietnam – Korea Free Trade Agreement (VKFTA), the decision of South Korea would be appropriate for Vietnam to analyse as it is a country relatively close to Vietnam in terms of location and development direction. The two nations recently held a forum together on cooperating in the new era titled ‘Vietnam – South Korea: Partners in the AI generation’ in which former clearly mentioned the

¹ János Tamás PAPP: Adapting to Change: AI’s Potential Impact on Journalism. *Pázmány Law Review* XI, 1. (2024), 17–31. <https://doi.org/10.55019/plr.2024.1.17-31>.

² Giang HOANG: Trí tuệ nhân tạo là ưu tiên hàng đầu. [Artificial Intelligence is the first priority]. *Báo Chính phủ Việt Nam (Journal of the Government of Vietnam)*. (2022). <https://tinyurl.com/4rz2b58b> (Accessed on: 15 May 2024).

³ World Intellectual Property Office (WIPO): Global Innovation Index 2024: Switzerland, Sweden, US, Singapore, UK Top Ranking; China, Türkiye, India, Viet Nam, Philippines Among Fastest 10-Year Risers; Dark Clouds for Innovation Investments. (2024). https://www.wipo.int/pressroom/en/articles/2024/article_0013.html (Accessed on: 20 November 2024).

experience learned from the latter in legislation such as the consultation on drafting the Electronic Transaction Law and High Technology Law⁴. It is also interesting to spot the differences in the law on patent in two of the most innovative regions in the world in civil law, representing two continents with distinct perspectives; therefore, providing not only Vietnam but other developing countries with the effective solution to this matter.

Generative AI is a type of AI which has the ability to generate works such as text, images, sounds, product, etc. after being fed data on the applicable subjects⁵. Its products are titled AI-generated works, regardless of human involvement in the process. The DABUS case has raised two questions about patent law which need thorough examination. The first one is the one named as the legal holder of the patent of the AI-generated work when it is created partially or without the involvement of human, whether the AI can be considered as the inventor or should the human obtain the right to the patent. The second question is the patentability of AI-generated work and if it is possible for the work to be patented without a legal inventor.

The paper will apply case study method along with doctrinal method to review the decisions of the DABUS case from the EPO, the court of South Korea and the law of Vietnam. Comparative method will also be used to make relevant comparisons between the rules of these jurisdiction before providing proposals for Vietnam in the final section.

2. Background of the study

2.1. AI and its relationship with patent

Currently, there is no harmonised definition on AI and it is usually understood as machine or robot with the ability to learn and mimic the “intelligence” of the human brain. AI is divided into two types including “strong” and “weak” AI.⁶ While the strong AI is the type that possesses the capability to solve problems by itself – an actual human-like mind, weak AI can only execute simple tasks such as chatbot, information searching, etc.⁷ Most of the AI in the market at the moment is the latter one since the former one involves a complex system requiring more research. These kinds of AI are relevant as some countries consider strong AI to be one of the conditions to reward the patent or not. Generative AI is a more recent type of AI which utilises the large language models (LLMs) to train the machine to provide materials based on the

⁴ HIEN MINH: Việt Nam – Hàn Quốc đồng hành hướng tới thời đại AI. [Vietnam – South Korea heading together towards AI generation]. *Báo Chính phủ Việt Nam*. [Journal of the Government of Vietnam]. (2024). <https://tinyurl.com/5d7zzjw4> (Accessed on: 24 November 2024).

⁵ Stefan FEUERRIEGEL – Jochen HARTMANN – Christian JANIESCH – Patrick ZSCHECH: Generative AI. *Business & Information Systems Engineering* 66, 1. (2024), 111–126. <https://doi.org/10.1007/s12599-023-00834-7>.

⁶ Jonathan Charles FLOWERS: Strong and Weak AI: Dewayan Considerations. *CEUR Workshop Proceedings* 22, 87. (2023). <https://ceur-ws.org/Vol-2287/paper34.pdf>.

⁷ Ibid.

written request of the user⁸. This is more widely used form of technology during this generation, including ChatGPT, DALL-E, etc. DABUS is also a generative AI with the ability to create its own work after receiving the knowledge fed by the owner.

When working with AI, human can involve it in the process by different methods and different proportion. There are five levels of interaction that are accepted: human only invention, AI-assisted human invention, joint invention between human and AI, human-assisted AI invention and AI only invention⁹. Based on the level of involvement, the right to the patent can be different due to the requirement of disclosure. DABUS's creation in this case is placed in the human-assisted AI invention – where the human contribution is not substantial to the process of generating and AI is the one who participates the majority of the time.

In patent, the inventor is always the most important person in registering since they are the one who will directly benefit from the right of the patent. Before, there were some distinctions between the inventor and the patent holder. The inventor is the one who invents or creates the product; however, the patent holder can be the successor who only inherits it from the inventor. This is demonstrated in the law of many countries, for example, in Article 60 of the European Patent Convention (EPC), stating that ‘the right to a patent shall belong to the inventor or his successor in title’¹⁰. Nonetheless, in the modern age, these two definitions are becoming more and more related owing to the fact that the successor is assigned by the inventor. For the patent right holder, their most important rights include moral and economic rights. Moral right is the right of the holder to be mentioned in the patent, regulated in Article 4ter of the Paris Convention¹¹. In the DABUS case, both the issue of the inventor and his successor will be analysed to determine the one who has the right to be named in the patent.

2.2. Background of DABUS case

The DABUS case is one of the landmark cases regarding AI and patent law. This case was not only filed at the EPO but also in 16 others including courts of the United States, the United Kingdom, Australia, South Korea, China, etc. but only one of them concluded differently than the rest, in the court of South Africa.

In the United States, a man named Stephen Thaler invented an AI called DABUS. Afterwards, this AI created an invention which is a plastic food container¹² and a device to ‘attract enhanced attention’¹³ without the help of any human. Thaler filed

⁸ FEUERRIEGEL op. cit. 112.

⁹ World Intellectual Property Organization (WIPO) Standing Committee on the Law of Patents: Artificial Intelligence (AI) and Inventorship’. [2023] Thirty-Fifth Session. (2023), 5–6. https://www.wipo.int/edocs/mdocs/scp/en/scp_35/scp_35_7.pdf.

¹⁰ European Patent Convention, Article 60 (1).

¹¹ *Paris Convention for the Protection of Industrial Property*, signed 20 March 1883, amended 28 September 1979, 21 U.S.T. 1583; 828 U.N.T.S. 305 (entered into force on 7 July 1884), article 4ter stated that: ‘The inventor shall have the right to be mentioned as such in the patent’.

¹² J 0008/20 (Designation of inventor/DABUS II) 21-12-2021 [ECLI:EP:BA:2021:J000820.20211221].

¹³ J 0009/20 (Designation of inventor/DABUS II) 21-12-2021 [ECLI:EP:BA:2021:J000920.20211221].

a patent application to the EPO in 2018 claiming DABUS to be the inventor, and he would also be assigned the patent as DABUS is considered to be his employee. This was denied in 2019 by the EPO before getting appealed by Thaler. Nevertheless, this application ultimately led to two questions of the person can be named as the inventor of AI-generated works and whether AI-generated work is patentable.

At the EPO, the original applications number EP18275163 and 18275174 were filed but were rejected. Afterwards, the applicant appealed and the Board of Appeal of the EPO reviewed the DABUS case in cases J08/20 and J09/20. Since these two cases are identical in reasoning, case J08/20 would be chosen as the example for this study. Similarly, in South Korea, it was first filed in the application number 1020207007394 to the Korean Intellectual Property Office (KIPO) on 28 September, 2022. This application was denied and the applicant, again, appealed the decision. Consequently, the Seoul Administrative Court had to trial this case and came to the decision upholding the nullification from the KIPO, resulting in the ruling number 2022Guhap89524¹⁴ on 30 June, 2023 will also be examined in comparison with its counterpart in Europe.

3. AI-generated works and patent law in the EU, South Korea and Vietnam

3.1. The legal inventor of AI-generated works

3.1.1. *The AI as the inventor*

Regarding this, the EPO stated that DABUS cannot be the legal inventor because the inventor needs to be a natural human. Firstly, Article 81 of the EPC has regulated that it is mandatory in the application that an inventor to the work must be stated, and a statement explaining the origin of the right should also be included when there is more than one inventor. In this case, Thaler has indicated that the inventor is DABUS – the AI, and he is also entitled to the patent by being DABUS's employer. According to Rule 19 of the EPC, the owner of the patent shall state 'the family name, given names and full address of the inventor, contain the statement referred to in Article 81 and bear the signature of the applicant or his representative'¹⁵. Therefore, the inventor needs to be a human in order to have a full name and signature. Moreover, the EPC was originally made for legal and natural human only, the scope of the law does not cover non-human identities. Thirdly, all of the preparatory documents (*travaux préparatoires*) of the EPC also referred to the owner of the patent as a natural person, which leaves no room for AI or machines to be the inventor. Lastly, the decision cited identical international standards on the requirement to be the inventor.

¹⁴ Seoul Administrative Court, *Thaler v. Commissioner of the Korean Intellectual Property Office*, No. 2022Guhap89524 (June 30, 2023). After this, Thaler submitted an appeal to request the cancellation of the decision above but was rejected by Seoul High Court on 18 April, 2024, written in decision number No. 2023Nu52088, published on 16 May 2024.

¹⁵ European Patent Convention, Rule 19 (1), third sentence.

Similar to the decision of the EPO, the Seoul Administrative Court also based the ruling on Article 42¹⁶ and Article 203¹⁷ of the Korean Patent Act (KPA) which stated that the inventor had to register the name and address when applying for a patent. This regulation is similar to Rule 19 of the EPC above which emphasizes that the inventor has to be a legal person with a name. However, the law of South Korea also allows legal entities to own the patent, which opens more opportunities for non-person owner than in the EU. In South Korea, there is no definition of inventor, but invention is defined in Article 2 of the KPA as ‘the highly advanced creation of a technical idea using the rules of nature’¹⁸. The term ‘technical idea’ and ‘highly advanced’ refer to the high level of intellectual which only a human is capable of. Furthermore, article 3 and 4 of the Korean Civil Act only permit a natural or legal person to have legal capacity. Therefore, since the inventor has to possess legal capacity to inherit the right of patent, AI cannot be an inventor under the law of South Korea. The Court of South Korea made one more point by emphasising that DABUS in this case is not a “strong” AI – a machine which can decide and act on its own. It was ruled that in the process of creating the food container, significant contribution by human had been made to DABUS’s learning process, therefore, it did not generate the work by itself. The South Korean government believed that there were not sufficient reasons to allow AI the right to be inventor, even though it did motivate the AI and technology market, it could affect human creativity negatively, leading to the disruption of the research market.¹⁹

The law of Vietnam has the same approach with South Korea in using clear language in the law to regulate both natural person and organization can be the owner of a patent. This was demonstrated through many articles in the Vietnamese Intellectual Property Law, including Article 86²⁰, 121²¹, 125²², etc. In clause 12, Article 4 of the

¹⁶ Korean Patent Act, Article 42 (1) and (4) (i) regulated that a person who is seeking to apply for patent must state in the application ‘the name and address of the applicant’ and ‘the name and address of the inventor’.

¹⁷ Korean Patent Act, Article 203 (1) and (4) (i) provided that an applicant has to state in their application for an international patent ‘the name and address of the applicant’ and ‘the name and address of the inventor’.

¹⁸ Korean Patent Act, Article 2(i).

¹⁹ Min SON: Can AI be named as an inventor in Korea? *Managing IP*. (2024). <https://tinyurl.com/mujzjh3s> (Accessed on: 9 June 2024).

²⁰ Intellectual Property Law of Vietnam 2005 (amended 2022), Article 86 (1) stated that the these subjects are able to apply for a patent : ‘a) Authors who have created inventions, industrial designs or layout-designs with their own efforts and expenses’ and ‘b) Organizations or individuals who have supplied funds and material facilities to authors in the form of job assignment or hiring unless otherwise agreed by the involved parties whose agreements are not contrary to the provisions of Clause 2 of this Article.’

²¹ Intellectual Property Law of Vietnam 2005 (amended 2022), Article 121 (1) regulated that owners of inventions can be ‘organizations or individuals that are granted by the competent agency protection titles for respective industrial property objects.’

²² Intellectual Property Law of Vietnam 2005 (amended 2022), Article 125 (1) provided that: ‘Owners of industrial property objects as well as organizations and individuals granted the right to use or the right to manage geographical indications may prevent others from using such industrial property objects unless such use falls into the cases specified in Clauses 2 and 3 of this Article.’

IP Law of Vietnam defined an invention as ‘a technical solution in form of a product or a process which is intended to solve a problem by application of laws of nature’²³. It is also similar to the law of South Korea including the words ‘technical’ and ‘the rules of nature’. However, the term ‘highly advanced’ in the South Korea law further accentuates the role of the human in the process of creating an invention. On the other hand, the law of Vietnam also includes the definition of an inventor as the one who directly creates the invention²⁴. This is a relatively ambiguous description since it can be interpreted differently in different circumstances. Moreover, in comparison with the other two jurisdictions, this definition only exists in the law of Vietnam. In contrast, the law of the South East Asian country does not possess a rule about registering a name and address despite mentioning the right to amend the name and address of the inventor in the patent certificate²⁵. Even though the vague definition along with the lack of provision on the name of the inventor cannot overrule the fact that the inventor has to be either a natural person or an organization, it is foreseeable that it can create more complication for the country when dealing with AI as an inventor. To conclude, in Vietnam, an AI such as DABUS will not be considered to be a legal owner of the patent; however, with the current law, the country is expected to face some problems when dealing with this phenomenon.

3.1.2. *The human as the inventor*

In the case, the human – Thaler stated that he had the right to the patent by being the employer of DABUS and he should be assigned the patent according to Article 60 (1) of the EPC: ‘The right to a European patent shall belong to the inventor or his successor in title’²⁶. As Thaler was not the inventor, the only way he could obtain the right was through being a successor. However, the EPO’s President commented that he could not be the owner of the patent by this method due to the fact that an AI did not have legal personality, therefore, could neither be an employee or transfer him any rights. This was partly admitted by the applicant also in the addendum, stating that: ‘They do not have legal personality or independent rights and cannot own property’²⁷. Therefore, the owner of the AI also was not acknowledged as the appropriate assignee of the patent in the law in the EU.

The law of South Korea has a similar perspective with the EU when the Court also ruled that under the first sentence of Article 33 (1) of the KPA, the inventor or his successor could claim the right to the patent²⁸. From the argument above, the Court

²³ Intellectual Property Law of Vietnam 2005 (amended 2022), Article 4 (12).

²⁴ Intellectual Property Law of Vietnam 2005 (amended 2022), Article 122 (1) defined authors of inventions as ‘persons who have personally created such industrial property objects.’

²⁵ Intellectual Property Law of Vietnam 2005 (amended 2022), Article 97 (1) (a).

²⁶ European Patent Convention, Article 60 (1), first sentence.

²⁷ [ECLI:EP:BA:2021:J000820.20211221] para XV (b).

²⁸ Korean Patent Act, Article 33 (1), first sentence stated that: ‘A person who makes an invention or the person’s successor is entitled to obtain a patent under this Act’.

held that because AI was not neither a natural or legal person, hence, could not be considered as an inventor and could not have any successor in title. As a result, the conclusion did not contradict with the EPO's.

In comparison, Article 121 (1) of the Vietnam IP Law defines the owner of the patent as 'organizations or individuals that are granted by the competent agency protection titles for respective industrial property objects.'. Meanwhile, Article 86 (1) lists the ones who can apply for the patent, including:

'a) Authors who have created inventions, industrial designs or layout-designs with their own efforts and expenses; b) Organizations or individuals who have supplied funds and material facilities to authors in the form of job assignment or hiring unless otherwise agreed by the involved parties whose agreements are not contrary to the provisions of Clause 2 of this Article.'

Thaler's circumstance does not fall under point a of this rule; thus, he can only claim the patent through point b. As DABUS is not recognized as an author, Thaler also cannot obtain the right under this provision. In Article 3 (4) of the Labour Code of Vietnam, an employee is understood as 'a person who works for an employee under an agreement, is paid, managed and supervised by the employer.'²⁹, emphasizing that in order to be in a labour relationship, the employee is required to be a natural person, which DABUS also does not satisfy. In conclusion, although the law of Vietnam does not contain any provisions stating about the successor of the right like the former two, the human owning the AI is also unlikely to be able to obtain the patent in this jurisdiction.

3.2. Patentability of AI-generated works

Based on the previous decisions, in the legal framework of the three countries, both AI and its human owner cannot claim the right to the patent. This raises the question of whether the work is protected by patent law when there is no patent owner and if this circumstance will go against Article 27 of the TRIPS Agreement: 'patents shall be available for any inventions, whether products or processes, in all fields of technology'³⁰.

In the EPO decision, the Board agreed with the argument that any invention was patentable as long as they satisfied three requirements: novelty, industrial applicability and the involvement of an inventive step or the non-obvious test under Article 52 of the EPC. These are the general obligations for patent around the world, and it is not different when it comes to non-human inventors. However, if this interpretation is accepted, an invention would be patentable, meanwhile no right would be provided to the inventor. According to Bonadio, McDonagh & Dinev³¹, it is important to distinguish between

²⁹ Labour Code of Vietnam 2019, Article 3 (4).

³⁰ *The Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS)* signed 15 April 1994, Marrakesh Agreement Establishing the World Trade Organization, Annex 1C, 1869 U.N.T.S. 299, 33 I.L.M. 1197 (entered into force 1 January 1995), article 27 (1), first sentence.

³¹ Enrico BONADIO – Luke McDONAGH – Plamen DINEV: Artificial Intelligence as Inventors: Exploring the Consequences for Patent Law. *Intellectual Property Quarterly* 1, (2021), 48–66.

the AI itself and its output, due to the fact that the abstract mathematical algorithms in the AI may lead to unpatentability, while the output, which has technical purpose, may not be excluded from patentability. This is a reasonable argument, in line with the European Parliament resolution on IP rights for the development of AI technologies (2010/2015 (INI)) Resolution No. P9 TA (2020) 0277, stating that: ‘Takes the view that technical creations generated by AI technology must be protected under the IPR legal framework ... they are among the main users of AI technologies for the time being [...]’³².

Afterwards, the court of South Korea did not mention explicitly whether they accepted an invention to be patented without an inventor or not. However, under Article 29 (1), (2), (3) of the KPA, the East Asian country also has the identical requirements for patentability as the EU despite the difference in wording. The court decision also stated that as long as there is a human involved in the listing in the registration, the work could be patented and this was perceived as the method with the most potential to protect AI-generated works. Moreover, the ruling cited trade secret as another way to protect the inventions³³. An amendment in the law was also considered in South Korea if there was an emergence of a “stronger” AI which could affect the life of human much more significantly.

Lastly, in Vietnam, the same conditions to patent are also applied, stated in Article 58 of the Vietnamese Intellectual Property Law 2005, amended 2022³⁴. The law of Vietnam does not mention if an inventor is needed for the invention to be patented, thus, AI-generated works can be patented in Vietnam as long as they satisfy the three requirements listed above. This approach is similar to the EU, demonstrating the compliance to international law.

3.3. Evaluation of the approaches

Despite the similarities in the decisions from three regions regarding dismissal of the idea of a non-human inventor, there exists some differences in the approaches in regulations. While the EU mainly interpreted the wording from the EPC to apply to the case, South Korea and Vietnam used the clear wording written in the Patent Act. The EU opted for a broader explanation of the traditional principles of patent law, which was well-demonstrated in the EPC, along with authoritative reasoning, outlining a sharp route for future cases in the same field. However, reliance on legal principles, and less on written laws can lead to room for ambiguity in interpretation, especially in a multi-state authority such as the EU.

³² European Parliament resolution of 20 October 2020 on intellectual property rights for the development of artificial intelligence technologies (2020/2015(INI)), point 15.

³³ Young-bo SHIM – Dong-Hwan KIM: South Korea: IP Office’s DABUS Nullification Highlights Stance Towards AI Inventors. *I AM*. (2024). <https://tinyurl.com/5e2uev64> (Accessed on: 23 November 2024).

³⁴ Intellectual Property Law of Vietnam 2005 (amended 2022), Article 58 (1) listed the conditions for patent protection: ‘An invention shall be protected by mode of grant of invention patent when it satisfies the following conditions: a) Being novel; b) Involving an inventive step; c) Being susceptible of industrial application.’

On the other hand, the Asian countries chose the statutory method to resolve the issue. South Korea showed great consistency in the legislation process, showcasing precise language in the official case and all related documents. The most prominent drawback of this approach is the lack of flexibility in dealing with diverse cases, particularly in the field of technology which is changing every day. AI and novel inventions are not conventionally regulated in legal documents, which was published years ago; therefore, minimal flexibility would create countless debates when new technology starts entering the market. Vietnam is on the same page with South Korea in utilising clear-cut expressions in the law, in spite of the possible restrictions. However, the absence of further guidelines in Vietnam, unlike in South Korea, is causing several problems in implementing and enforcing the law on AI and their generated works. Nonetheless, the fact that Vietnam recently amended their law in 2022 illustrated the country's willingness to adapt to the innovative wave of the near future.

4. Experience from the EU, South Korea and proposal for Vietnam

4.1. The solution of the EU

After the EPO's decision, another country in the EU – Germany also published their ruling, which was in line with the former, determining that patent cannot be granted to AI in this case³⁵. This not only consolidated the unity of IP law in the region, but also demonstrated Germany's homogenous opinion with most countries.

In 2023, the announcement of the world's first AI Act in the EU created great discussion among patent law legislators. Since the law clearly distinguished the difference in the level of risk, it was predicted that this regulation would affect IP law. The members are also allowed to interpret this law into their domestic patent law in a suitable way. As a result, a number of technology inventions are expected to be excluded from patentability as the requirement for transparency would be raised, similar to the effect of the Biotech Directive³⁶.

In March 2024, the recently issued Guidelines for Examination in the European Patent Office became the latest development in the legal system of the EU surrounding AI and patent law. AI was included in section 3.3.1 titled 'Artificial Intelligence and Machine Learning' in the list of exclusions under Article 52(2) and (3) of the EPC. In this guideline, AI and machine learning are considered to be part of 'computational models and algorithm' which is not granted patentability unless it possesses any technical mean³⁷. This changes when the abstract mathematic methods are subjected

³⁵ Case 11 W (pat) 5/21, decision of 11 November 2021 [ECLI:DE:BPatG:2021:111121B11Wpat5.21.0 – Food container].

³⁶ Directive 98/44/EC of the European Parliament and of the Council of 6 July 1998 on the legal protection of biotechnological inventions. See more at: Terence BRODERICK: EU AI Act – What will this mean for Patent? *Murgitroyd*. (2023). <https://www.murgitroyd.com/insights/patents/eu-ai-act-what-will-this-mean-for-patents> (Accessed on: 20 November 2024).

³⁷ Guidelines for Examination in the European Patent Office (March 2024 edition), Part G, Chapter II, Section 3.3.

to the use of a device which provides it with technical character to overcome the requirement. Additionally, it is also essential for AI-generated works to address a specific issue. Therefore, in order for AI to be patentable within the rules of the EPO, regulations regarding inventive step must be carefully assessed. As one of the primary requirements for patentability which was created to ensure only relevant innovations would be protected, the examination of inventive step in AI-related patent would demand inventors to underscore the practical implementation of AI technology in real life, on top of its abstract description. A number of examples are listed by the EPO in the website such as the use of network in a heart monitoring system to identify irregular heartbeats. Moreover, this would also affect the condition of disclosure. The updated rules request that the company reveal sufficient information about the AI model and its training process, which oblige AI developers to balance between transparency and trade secret. Despite the expected difficulties in patentability for AI in the EU regarding the updated guideline, it has outlined a more detailed and specific method for developers to obtain patent for AI, partly opening a new road for the new technology to be patentable, while upholding the previous judgments on the patent holder being a natural person.

4.2. The solution of South Korea

According to the EPO, South Korea in 2018 has become the world's fifth most innovative region, after the USA, the EU, Japan and China³⁸. In the Global Innovation Index 2024, the nation was also placed at number 6³⁹, leading to the call for urgent administration in technology-related legal issues. The country's legislators reacted appropriately to this situation and became one of the first countries in the world to regulate this matter on a policy level.

As mentioned above, the court of South Korea stated that they were ready to change the law to adapt to this new situation with AI. This is in line with the 'National Strategy for Artificial Intelligence' published in 2020 by the country which stated that the legal system should be amended in order to 'allow all innovative attempts to create new services and accelerate the spread of innovation'⁴⁰. To prepare for this scenario, the Korean Intellectual Property Office conducted a survey on almost 1500 people, including 1204 citizens and 292 experts⁴¹ on the field of inventorship of AI. This was a remarkable move from the government of the east Asian country, making it one of

³⁸ EPO: Fourth Industrial Revolution. <https://www.epo.org/en/news-events/in-focus/ict/fourth-industrial-revolution> (Accessed on: 22 November 2024).

³⁹ World Intellectual Property Office (WIPO), Global Innovation Index 2024. (2024). <https://www.wipo.int/web-publications/global-innovation-index-2024/en/index.html>.

⁴⁰ National Strategy for Artificial Intelligence of South Korea 2020, Section 1.3. <https://shorturl.at/vXWd9>

⁴¹ Korean Intellectual Property Office: Public survey regarding AI an AI inventor. *KIPO*, (2024). https://www.kipo.go.kr/en/HtmlApp?c=92008&catmenu=ek03_08_01 (Accessed on: 10 June 2024).

the first nations in the world to publish a law on IP law and AI – generated works – the White Paper on AI and IP in 2022⁴², not to mention a public opinion questionnaire.

On the topic of AI being the inventor, 60,8% of the respondents (177 people) did not agree with this idea, while 35,3% of the people believed that AI should only be allowed as an inventor when it contributed greatly to the inventive process of the invention, and another 33,3% assumed that AI could only be an inventor when it was named in the patent with a natural person⁴³. This was an interesting take on this issue, when this could open the opportunity for a joint inventorship between the AI and the human on a patent, which was proposed by a few scholars, however, had yet to be implemented. Additionally, the survey also discovered that 70% of the people considered AI to be an “invention partner” instead of just a tool, hence, making it possible for AI to be one of the inventors.

When it came to patent protection, 75% of the public and 65% of experts stated that if the work was patentable, the term of protection should be shorter than general, standing at 10 years or less. This is only half of the term for an invention, illustrating the concern of the people that with the help of AI, the world could be filled with new inventions, creating a lot of challenges in the market when the exclusive right granted by patent could last up to 20 years.

Lastly, on the human who should inherit the right of the patent of AI-generated works, 50,5% of the respondents voted for the AI user, while less than half of that believed that the right should go to the AI developer at 22,7%, and 16,2% agreed that the patent should belong to the company which owned the AI. This study partly solved the debatable question about the human owner of the patent that many countries in the world were having, and at the same time, guided the path for the government of South Korea to head towards in this situation.

As one of the most developed countries in Asia, especially in the field of technology development, South Korea has truly pioneered in the journey towards harmonising the law on AI. This strategy would be an example for developing countries to study in order to facilitate the law on AI in their own land, especially countries such as Vietnam in the race for the Fourth Industrial Revolution.

4.3. Proposal for Vietnam

Taking from the EPO and South Korea, it is important for Vietnam to learn from their decisions to draft regulations in their own legal framework. From the two previous cases, the most prominent issue presented is the fact that when there is no inventor, an invention can be refused protection, which goes against international standards

⁴² Korean Intellectual Property Office: 인공지능(AI)과 지식재산백서. [White paper on Artificial Intelligence and Intellectual Property]. (2022). <https://tinyurl.com/57cs359r> (Accessed on: 11 December 2024).

⁴³ Korean Intellectual Property Office: KIPO finds that AI cannot be a legal ‘inventor’ under the Korean Patent Act. (2022) <https://shorturl.at/OAPYr> (Accessed on: 11 December 2024).

in Article 27 of the TRIPS Agreement. Therefore, this paper would provide three proposals to the law of Vietnam to resolve this problem in the near future.

Firstly, since the law of Vietnam does not allow neither AI or the human to be the patent holder of AI-generated works, it is recommended that the country should follow the current regulations. Out of the 16 countries which the DABUS case was submitted to, only South Africa went down another direction from the other 15 to recognize AI as the inventor in July 2021⁴⁴. However, it is suggested that Vietnam kept the current approach and ruled towards inventorship with the involvement of a natural person to observe relevant international precedents. Going against the decisions of developed countries and the trend of the world at the moment is not exactly the best choice since it can create various difficulties and risks in trade or in attracting investment and funding for the technology industry. This is also the direction which South Korea is heading towards, which was highlighted in the White Paper of AI and IP Law, stating that: ‘there is no immediate need for South Korea to be ahead of other countries in legislating to allow inventors other than natural persons’⁴⁵. One of the methods to implement this is to supplement a rule which is similar to Rule 19 of the EPC for the inventor to register a name and address to further clarify the requirement of the inventor being a natural human. In addition, amending the definition of the ‘author of invention’ within the meaning of Article 122 of the IP Law can also help in keeping this regulation in line. It is recommended that the country should first seek to change this term into ‘inventor’ to harmonise with international laws⁴⁶. Clarity, consistency and timelessness in the law should be the priorities for the country in this period.

Secondly, learning from the experience of the two jurisdictions, it is suggested that Vietnam fast-track the process of drafting a clause or a soft law document to clarify the circumstance when there is no legal patent holder to an invention. While it can be patented under the law, in the case where no legal person or organization would benefit from the right, it is possible that the invention be excluded from protection, creating a breach of Article 27 of the TRIPS Agreement, which Vietnam is also a party member. Therefore, it is an urgent requirement to research and quickly provide a regulation to state evidently who would be the beneficiary when all people in the application are not accepted as patent holders, even better if there is clause exclusively on the matter of AI-generated works. Regarding this, Vietnam can consider balancing between the principle-based and the statutory-based approaches of the two regions to find the appropriate response for the country. Moreover, it is also important to evaluate the fine lines between encouraging innovation, protecting human’s right and optimising risks

⁴⁴ Desmond Osaretin ORIAKHOGBA: DABUS gains territory in South Africa and Australia: Revisiting the AI-inventorship question. *South African Intellectual Property Law Journal*, 9. (2021), 87–108. <https://doi.org/10.47348/SAIPL/v9/a5>.

⁴⁵ 인공지능(AI)과 지식재산백서. [White paper on Artificial Intelligence and Intellectual Property]. chapter 1, section 3.

⁴⁶ Kim Hoang Nguyen NGO – Hong Quan DOAN: Artificial intelligence and inventorship under the patent law regime: practical development from common law jurisdictions. *Vietnamese Journal of Legal Studies* 8, 1. (2023), 25–54. <https://doi.org/10.2478/vjls-2023-0002>.

in legislation to avoid overlooking the basis of patent law in exchange for economic gains.

Lastly, Vietnam can consider the approach of South Korea – an Asian nation which has a number of similarities in term of development direction and currently one of the biggest investors in the country. The public survey method is a quite appropriate response in this situation, when it can collect the public opinion on the topic and at the same time, lessen the hardship for legislators in the process of drafting new law. As the AI market in Vietnam is growing at a fast speed, it is predicted that the country will run into problems regarding its IP ownership in the near future, thus, a suitable solution should be implemented as soon as possible to mitigate the foreseeable gaps. It is also recommended for Vietnam to research and publish soft law instruments such as the White paper on AI and IP of South Korea. An official document would emphasize the country's stand clearly on the issue and relieve the pressure on the law-making bodies and courts. Furthermore, it is crucial that the country actively tracks international cases and development in legislation to ensure harmonisation and prevent future conflicts.

In the period when Vietnam is in the race for innovation within the South East Asia region, it is essential that the country foresees the development speed of AI to propose legal documents on the issue of AI in general, and with IP law in particular. The law of the country despite having amended three times and the latest one is in 2022, a number of gaps and irrationalities are yet to be resolved in the technology generation. Many developed nations have drafted their own law regarding AI such as the EU AI Act, the South Korea White Paper on AI and IP and the under-revision Act on Promotion of AI Industry and Framework for Establishing Trustworthy AI, the draft AI Law of China, China's Notice on Issuing the 'Measures for Identifying Synthetic Content Generated by Artificial Intelligence' on 14 March, 2025, etc.; thus, making now the appropriate time for a future AI economy such as Vietnam to publish the law on this as well. Due to the lengthy the process to publish a legal document or amend a law in the civil law jurisdiction, it is proposed that Vietnam begins this procedure as soon as possible. As of 2024, the country has published a draft for Digital Technology Industry Law which partly addressed the role of AI in the next development phase⁴⁷, nevertheless, this law would only address AI in a general sense, with only 11 Articles in one chapter. In spite of that, with Vietnam's great commitment in amending the system by publishing the Personal Data Protection Law in June, 2025, and will enter into force on 1 January, 2026⁴⁸, it is observable that the country is ready to implement laws on technology to adapt to the current trend of the world.

⁴⁷ Quy HOANG: Luật Công nghiệp công nghệ số tạo môi trường thuận lợi để phát triển doanh nghiệp công nghệ số. [Digital Technology Industry Law creates a favourable environment for business to develop digital technology]. *Báo dân tộc và phát triển*. [Journal of Ethnicity and Development], (2024). <https://tinyurl.com/bdftbwt> (Accessed on: 25 November 2024). See more at: Lawmakers approve Law on Digital Technology Industry. <https://tinyurl.com/yc64u4vd>.

⁴⁸ Personal Data Protection Law of Vietnam. <https://tinyurl.com/388jftz6> (Accessed on: 10 September 2025).

5. Conclusion

While some scholars believe that AI inventorship should be recognised due to the natural rights theory, others opposed that this exposed a lot of risks to the current system because it may discourage human creativity and innovation, at the same time, expose gaps in legal framework. It is true that giving AI the right of patent can be beneficial in preventing dishonest application and raising the position of real human-only invention, but it can also disturb the market with the ability of generating at high speed of AI. Joint inventorship is also a promising solution to this, being mentioned in the South Korea decision.

In the current generation when technology development is always growing faster than the law, instead of nullifying the AI related applications, law-makers ought to find a solution to minimise the gap in the law, while still allowing technology to surge. This is also the direction the world is following, in which countries are drafting their own law according to their economic situation. Hence, it is urgent that Vietnam – a greatly AI-concentrated nation to learn from the experience of others and establish regulations to control technology development effectively and simultaneously maintain legal stability.

Bibliography

Enrico BONADIO – Luke McDONAGH – Plamen DINEV: Artificial Intelligence as Inventors: Exploring the Consequences for Patent Law. *Intellectual Property Quarterly* 1, (2021), 48–66.

Terence BRODERICK: EU AI Act – What will this mean for Patent? *Murgitroyd*. (2023). <https://www.murgitroyd.com/insights/patents/eu-ai-act-what-will-this-mean-for-patents> (Accessed on: 20 November 2024).

EPO: Fourth Industrial Revolution. <https://www.epo.org/en/news-events/in-focus/ict/fourth-industrial-revolution> (Accessed on: 22 November 2024).

Stefan FEUERRIEGEL – Jochen HARTMANN – Christian JANIESCH – Patrick ZSCHECH: Generative AI. *Business & Information Systems Engineering* 66, 1. (2024), 111–126. <https://doi.org/10.1007/s12599-023-00834-7>.

Jonathan Charles FLOWERS: Strong and Weak AI: Dewayan Considerations. *CEUR Workshop Proceedings* 22, 87. (2023). <https://ceur-ws.org/Vol-2287/paper34.pdf>.

HIEN MINH: Việt Nam – Hàn Quốc đồng hành hướng tới thời đại AI. [Vietnam – South Korea heading together towards AI generation]. *Báo Chính phủ Việt Nam*, [Journal of Government of Vietnam], (2024). <https://tinyurl.com/5d7zzjw4> (Accessed on: 24 November 2024).

Giang HOANG: Trí tuệ nhân tạo là ưu tiên hàng đầu. [Artificial Intelligence is the first priority]. *Báo Chính phủ Việt Nam*, [Journal of the Government of Vietnam], (2022). <https://tinyurl.com/4rz2b58b> (Accessed on: 15 May 2024).

Quy HOANG: Luật Công nghiệp công nghệ số tạo môi trường thuận lợi để phát triển doanh nghiệp công nghệ số. [Digital Technology Industry Law creates a favourable environment for business to develop digital technology]. *Báo dân tộc và phát triển*, [Journal of Ethnicity and Development], (2024). <https://tinyurl.com/bdftbewt> (Accessed on: 25 November 2024).

Korean Intellectual Property Office: KIPO finds that AI cannot be a legal ‘inventor’ under the Korean Patent Act. (2022). <https://tinyurl.com/57cs359r> (Accessed on: 11 December 2024).

Korean Intellectual Property Office: Public survey regarding AI an AI inventor. KIPO. (2024). https://www.kipo.go.kr/en/HtmlApp?c=92008&catmenu=ek03_08_01> (Accessed on: 10 June 2024).

Korean Intellectual Property Office: 인공지능(AI)과 지식재산백서. [White paper on Artificial Intelligence and Intellectual Property]. (2022). <https://www.korea.kr/archive/expDocView.do?docId=39883>.

Kim Hoang Nguyen NGO – Hong Quan DOAN: Artificial intelligence and inventorship under the patent law regime: practical development from common law jurisdictions. *Vietnamese Journal of Legal Studies* 8, 1. (2023), 25–54. <https://doi.org/10.2478/vjls-2023-0002>.

Desmond Osaretin ORIAKHOGBA: DABUS gains territory in South Africa and Australia: Revisiting the AI-inventorship question. *South African Intellectual Property Law Journal* 9. (2021), 87–108. <https://doi.org/10.47348/SAIPL/v9/a5>.

János Tamás PAPP: Adapting to Change: AI’s Potential Impact on Journalism. *Pázmány Law Review* XI, 1. (2024), 17–31. <https://doi.org/10.55019/plr.2024.1.17-31>.

Young-bo SHIM – Dong-Hwan KIM: South Korea: IP Office’s DABUS Nullification Highlights Stance Towards Ai Inventors. *I AM*, (2024). <https://tinyurl.com/5e2uev64> (Accessed on: 23 November 2024).

Min SON: Can AI be named as an inventor in Korea? *Managing IP*. (2024). <https://tinyurl.com/mujzjh3s> (Accessed on: 9 June 2024).

World Intellectual Property Office (WIPO), Global Innovation Index 2024. (2024). <https://www.wipo.int/web-publications/global-innovation-index-2024/en/index.html>.

World Intellectual Property Office (WIPO): Global Innovation Index 2024: Switzerland, Sweden, US, Singapore, UK Top Ranking; China, Türkiye, India, Viet Nam, Philippines Among Fastest 10-Year Risers; Dark Clouds for Innovation Investments. (2024). https://www.wipo.int/pressroom/en/articles/2024/article_0013.html (Accessed on: 20 November 2024).

World Intellectual Property Organization (WIPO): Standing Committee on the Law of Patents: Artificial Intelligence (AI) and Inventorship [2023] Thirty-Fifth Session. (2023), 5–6. https://www.wipo.int/edocs/mdocs/scp/en/scp_35/scp_35_7.pdf.