

Blockchain Technology and Intellectual Property Law

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Abstract:

Artificial intelligence has succeeded in creating important methods and ideas that have greatly influenced various sciences, as it has multiple goals in addition to other technological means that appeared in the second half of the twentieth century, and it has had a social impact on performing many intellectual tasks.

Furthermore, perhaps the Blockchain Technology has emerged as an effective technology in trying to block some data whose owner needs to protect from several operations, such as theft or piracy. Thus, it has become used to protect all types of data and transactions.

This technology has also had a significant impact on intellectual property rules, which calls for the necessity of understanding this relationship, as well as how to practice and protect it.

key words:

Intellectual Property - Blockchain - Protection Technology - Private Law - Digital Transformation

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introduction:

The Fourth Industrial Revolution is considered as one of the topics that had been the focus of all studies and specialties; thanks to its divergence in every field of study. Furthermore, it has impacted these fields significantly either directly or indirectly. One of this revolution's applications may be the Blockchain Technology, which is built on the basis of storing information, data, and different transactions, as well as encrypting them in order to ensure their protection and grant credibility to these fields. Moreover, and one of the new dimensions of the Blockchain Technology we state "The Property Law Preservation in an Open Source World". This is the transformation source in the clearest image that can be ever visualized.

To analyze that, it was necessary to touch on the Blockchain Technology definition and characteristics; in order to understand the content of the operation and how it was capable of becoming the technology of the future in ensuring the protection of all types of transactions as well as storing different types of data. In addition to that, this technology had a great impact on the Intellectual Property Rules, which requires the necessity of understanding this relationship as well as how to practice and protect it. For that reason, we pose the following problematic: **How can the Blockchain Technology be used in the context of the Intellectual Property rules and path?**

Furthermore, this research aims to know how credible the Blockchain Technology is in ensuring the rights related to intellectual property, and if it can be adopted with no harm caused to the innovator or the inventor, which can lead him to lose his right to protect his intellectual properties; especially since this technology has greatly impacted different transactions through its special characteristics, such as the traditional protection methods.

In order to clarify that, we adopted a descriptive analytical method, and we divided the study into two fundamental axes. We devoted the first one to talk about the concept of the Blockchain Technology. In the second one we will touch on the applications and uses of this technology generally and on the intellectual property in particular.

Section I: Blockchains as Infrastructure of Intellectual Property in the Digital Era

Blockchains are considered as the future technology. They were the infrastructure of electronic currency, especially the Bitcoin. Thus, their usage field has expanded to reach different types of data rather than the world of finance, business and administration. Consequently, they involved photos, videos and design documents in order to ensure the protection of these data and information, which added a great force to this technology and protected it against piracy.

What is then this technology and what makes it more special than the traditional protection tools?

A) The Concept of Blockchain Technology:

Without a doubt, the Blockchain Technology has broken into several fields as it is interested in protecting different data and transactions. For that reason, it was necessary to set an accurate definition of this technology and to state its characteristics that make of it a unique technology in developing artificial intelligence and its different applications.

1- Definition of the Blockchain Technology

The Blockchain Technology is considered as a virtual database that is stored in a network, where every user inside this network has a copy of the database. Moreover, the decentralized structure is ensured using encryption procedures and the impossibility of treating information inside the database by the user in a secret way. In addition to that, every transaction has to be sent, as a block that is protected by encryption, to the entire network in order to be verified¹.

From a more accurate perspective, the real innovation of the Blockchain Technology is that it ensures the safety of this latter; through the collective supervision on the transactions that eliminate the need to a centralized authority. In other words, the transactions,

¹ Achraf Muhammad Zidan, Seif Assouidi, "The World beyond Traditional – Meta Verse", 1st edition, "Arid" Scientific Platform Publications/The Scientific Institute of Advanced Training and Studies, Turkey - Istanbul, 2022, p. 59.

and how true they are, are verified by means of the various computers. Therefore, they are visualized as anti-piracy¹.

Furthermore, and because this technology creates a safe, time stamped and unchangeable information chain, it actually finds applications that are capable of protecting the different fields that need to be protected, such as the trademark, marketing, the consumer participation... and many cases of use that appear in a very fast way, which made this technology used out of the finance and encrypted currencies' field.

It may be due to the fact that this operation is based on digital encryption and codes, which gives it a bigger credibility in preserving privacy and ensuring transactions.

In addition to the fact that the database is distributed on all the members inside the network, and it cannot be modified in a way that makes all the data decentralized and transparent, which are the two fundamental elements through which the force of the Blockchain Technique or Technology appears².

The previously noted point has encouraged some Arab countries to apply such a technology in their transactions, such as the government of Dubai in the UAE³.

Without a doubt, what made these countries adopt this technology as an infrastructure for their different digital transactions is its specific characteristics and its ability to ensure protection in a strong way, like what the traditional protection methods afford concerning documentation as well as data and transactions' protection, the point that we are attempting to study in the second section.

2- Characteristics and Features of the Blockchain Technology

Many fundamental features make the Blockchain Technology completely suitable to the administration of digital transactions with their various fields, in addition to preserving their security and protecting them from different transgressions. Moreover, we tried to

¹ Elie Al-Qazzi, « The Blockchain », Al-Hassala Publication, without an edition, without a publication year.

² Imran bashir, « Mastering Blockchain » ; Packt, 3rd edition, University of London, August 2020, p. 10.

³ Blockchain Fundamentals; Ravindhar Vadapalli ; Blockchainprep UAE, Edition 1.1, October 2020.

collect a set of these features, which are as follows: the Blockchain, the Mediator Cancellation, Quick, Not Expensive and Guaranteed¹.

- **The Blockchain:**

The Blockchain Technology depends on a set of blocks or pieces that are interconnected with each other in the form of a chain. Each block carries a transaction or stored digital data. This chain works in the presence of three elements, which are: **Encrypted Keys**, where each block has its own digital key, and this signature is approved through **the Peer to Peer Network** or **the Smart Contract**, and finally they are registered in **the Digital Register**.

- **The Mediator Cancellation:**

The third part that usually documents transactions as well as public and private data, and then verifies their authenticity, does not exist in the Blockchain Technology. Rather, transactions take place directly between the two parts of the transaction, and then it is updated automatically inside the network².

- **A Quicker Operation:**

Where the operations are quicker through the cancellation of the centralization of decision making and by building it on the basis of transparency in transactions. Therefore, all the participants in the network are capable of contributing in the decision making.

- **Guaranteed:**

Where they cannot be pirated because all the members of the network possess a copy of the operations. Furthermore, their information cannot be cancelled, but only updated, which is known as the centralization cancellation in transactions.

With these characteristics, the Blockchain was capable of becoming the era's technology, and it is now adopted in various fields. Moreover, the intellectual property field has taken its share from this technology in view of its nature that protects every intellectual creativity, which will be stated in the second claim.

¹ Ihab Khalifa, « The Blockchain : the Next Technological Revolution in the World of Finance and Administration », Academic Papers, Review 3, 20/03/2018, Al-Mostaqbal for Advanced Researches and Studies, p: 6-7.

² Abu Bakr Sultan, "The Blockchain Technology: what is it, how it works and what are its perspectives?" Al-Qafila Magazine, review of May 2019, p: 09.

B) The Intellectual Property between Traditional Documentation and Digital Development:

The Intellectual Property term (IP) refers us to the different creativities and inventions, including literary and artistic works, designs, codes, names and photographs that are used in commerce. In addition to that, and because the intellectual property system aims to enhance an environment where creativity and innovation can thrive, through the realization of the right balance between the innovators' interest and the public wider one, that cannot be achieved unless it was protected in virtue of legal documentation.

The intellectual property system diversity makes us wonder about how it is possible to set a digital protection through the Blockchain Technology for all its types, or for one type only. The previous point led us to touch first on the intellectual property types, and second on the technology applications in intellectual property.

1- The Intellectual Property Types

The Intellectual Property system is confined to the four fundamental types, which are: Patents, Trademarks, Copyright and Industrial Designs.

Copyright in the literary or artistic creativity is considered as a moral intangible right that touches all the human mind sources, such as books, paintings and workbooks that are related to technology, like computer programs and electronic databases¹.

Furthermore, France was the first who created this right that was the focus of attention of intellectuals, where authorship and publication were limited to Royalty; until the French Revolution broke out the laws related to this right and issued the laws related to copyright².

As for **Trademarks**, they represent any name, term, mark, design, code or a mixture of them all that aims to define products or services

¹ Bilal Mahmoud Abdullah, "Copyright in Arab laws", the Arabic Center of Legal and Judicial Researches, 1st edition, Beirut, Lebanon, League of Arab States, 2018, p: 20.

² Bilal Mahmoud Abdullah, op. cit, p : 35.

presented by different companies; in order to distinguish products and services from other similar products and services¹.

One of the other Intellectual Property types we state **Patents**, which are considered as documents released by governments, through which they grant the inventor absolute rights in an invention during a limited period of time. Moreover, the patent allows the inventor to forbid others from manufacturing the invention, selling or using it inside the country that granted him the patent².

Industrial Designs can also be considered as one of the Intellectual Property types. They are represented in every distinctive arrangement of lines and every anthropomorphic shape with a distinctive appearance that refers to a particular industry. Therefore, industrial design applies to a wild range of industrial and craft products. It also refers to the decorative and aesthetic sides in a particular commodity, including the set of lines, colors or shapes that are anthropomorphic and that give a particular appearance to the industrial or craft product³.

All these types do not exclude the necessity of protecting them from all forms of theft or illegal quote, so that the person would preserve the property of his innovation or invention. However, this protection calls for the existence of legal texts that ensure the continuity of this protection; through the existence of another part that is adopted for that purpose.

2- Traditional Protection of Intellectual Property

The legal protection of Intellectual Property varies depending on its previously mentioned types, between internal laws and international agreements⁴.

As for the protection settled at the national legislations, countries attempt to set the suitable legal environment in order to protect the Intellectual Property with all its types; by providing the

¹ Amer Mahmoud Al-Kiswani, « Intellectual Property », Al-Jaib Publication House, Oman, 1998, p: 14.

² Bin Dris Halima, « Protection of Intellectual Property Rights in the Algerian Legislation », a Ph.D. Dissertation in Private Law, Abu Bakr Belkaid University – Tlemcen, Faculty of Law and Political Sciences, 2013-2014, p: 114.

³ Nouri Hamad Khater, “Explanation of the Intellectual Property Rules”, Industrial Property, Wael Publication House, Oman, 2005, p: 65.

⁴ Al-Aybi Muhammad, Haiba Kniwa and Awatif Doudi, “Intellectual Property and Copyright under the Information Revolution and Technological Development”, Al-Ielam wa Al-Mojtamaa Magazine, vol 02, review 01, March 2018, p. 64-65.

organizational frame of protection. In this field, there is a collaboration between Arab countries through the Arab Unity Charter, which acknowledges the necessity of having a united convention to protect the Intellectual Property, especially Copyright¹.

As for the International level, the World Intellectual Property Organization (WIPO) was capable of ensuring the administration of the Intellectual Property affairs. Moreover, its tasks had expanded to handle the following ones²:

- To align between legislations and procedures of Intellectual Property at the National level.
- To present services for International demands concerning the industrial property rights.
- To exchange the Intellectual Property information.
- To provide training as well as legal and artistic aids for developing countries and others.
- To facilitate the decision making for the special parts that are conflicted about Intellectual Property; through the WIPO System that concerns mediation during the settlement of the trade international conflicts between the special parts in the field of Intellectual Property. These procedures are alternative solutions in order to avoid litigation before courts.
- To work on organizing the information technology as a tool of information saving, retrieving and taking advantage of in the field of Intellectual Property.

We refer here to the existence of several conventions that are administrated by the WIPO and related to the Copyright and the industrial property protection, specifically in the following fields: patents, trademarks, industrial models as well as the indications of origin and source³.

¹ Al-Aybi Muhammad, Haiba Kniwa and Awatif Doudi, "Intellectual Property and Copyright under the Information Revolution and Technological Development", op. cit, p: 66.

² Official website of the World Intellectual Property Organization (WIPO) : www.wipo.int

³ The official WIPO website : www.wipo.int

Furthermore, and with the emergence of Blockchains, the protection of Intellectual Property in general has directly affected the research of new mechanisms of Intellectual Property digital protection, which was affected in turn by the Artificial Intelligence uses, especially the Blockchain Technology.

Section II: The Effects of the Blockchain Technology on Intellectual Property

After touching on a simple definition of Blockchain Technology, and demonstrating its characteristics, which made it adopted in many uses inside the countries that adopt this technology, it is now necessary to touch on the different general uses before citing their employments in the field of Intellectual Property.

A) Different Uses of the Blockchain Technology:

The Blockchain Technology is considered as the era's technology that will be surely applied in all the digital transactions and in the protection of all types of digital data. Therefore, its uses will be numerous and include all the fields of life. We tried, however, to limit them to two types of uses: financial uses and administrative uses.

1- The Financial Uses of the Blockchain Technology

The first use of the technology was in the creation of the encrypted electronic currency named the Bitcoin, then the Ethereum electronic currency. It is constantly evolving, and it was adopted by many international establishments and companies while dealing in these encrypted currencies. Moreover, exchanging services and properties through digital currencies is now common and recognized in some countries¹.

The Blockchain Technology was also used in exchanging properties with their different types, including money and cars, as well as intellectual, real estate and movable properties.

¹ Heba Hamda Mahmoud Abu Arab and Abdulrahmane Muhammad Rashwan, "Impact of the Use of the Digital Records Chain Technology "the Blockchain" on the Accounting Transactions' Environment", Jubhan University Magazine – Erbil for Human and Social Sciences, vol 05, review 02, 2021, p: 122.

This technology has also affected transactions in Banks and different financial establishments, especially in the accounts' administration and the market trading via internet networks.

2- Difficulty of the Administrative Uses of Blockchain Technology

The Blockchain Technology application in the administrative field can be limited to the documentation of data and information as a traditional administrative work, giving a digital flair to these data and protecting them from damage or piracy. One of the most important applications may be the contracts' documentation, or what is known as intelligent contracts.

This seems easy from the first sight, because this technology is often used inside commercial companies and economic establishments. But does this seem normal, when it is related to data or information or even private transactions inside the State?

This technology is dangerous for central transactions, where the State cannot impose its control. Therefore, it is dangerous for different data and transactions that take place between parts in the absence of the traditional mediator. This latter is often one of the State's agents, so that he practices pre or post control on different documents, information and transactions.

It can be said that the State that does not control and that is ineligible in the digital field, especially in the digital decentralization, finds it difficult to apply this technology; because it needs a full control in modern technology with all the details of its programs, goals and future aspirations.

B) Uses of the Blockchain Technology in the Intellectual Property Field:

Because it is as previously mentioned, and because it contributes to protection against piracy, modifications and transgressions, the Blockchain Technology is also used in the Intellectual Property fields, including patents, trademarks... etc. which are intangible rights. In addition to tangible rights witnessed through legal documentation of different transactions.

On this basis, we outline through this element the fields of Intellectual Property in the first section, and legal documentation in the second one.

1- Impact of the Blockchain Technology on the Intangible Fields of Intellectual Property

Certainly, there are several and various fields of Intellectual Property that can include trademarks, patents, designs, copyright, vegetable varieties, and other fields that were affected in turn by the necessity of using Blockchain Technology; in order to protect them from theft or piracy of these fields, which are considered as intangible rights and very precious assets for big companies, especially their trademarks and the possibility to imitate them.

Furthermore, these rights and assets were registered traditionally amongst the concerned governmental agencies in order to prove their property. Consequently, there will be a third part that ensures this protection for the different intangible or moral fields of Intellectual Property. Documentation is considered as the unique prove of property that can be provided for the sake of the Intellectual Property owners, as previously mentioned in the first axis.

The Blockchain Technology is used in the protection of intangible Intellectual Property, through the registration of its property in the Blockchain that proves its property. Moreover, all the network's members prove that fact, without the need to the existence of another part that proves this property.

2- The Blockchain Impact on Legal Documentation

The task of Legal Documentation is assigned to one of the State agents as a third part in different types of transactions. This agent may be known in all the States by the name of "the Notary" who ensures the validity of contracts and all transactions that take place between different parts.

Moreover, the profession of the Notary, with the great importance that he beholds in different legal systems, was affected in turn by the emergence of the Blockchain Technology set on the cancellation of the mediator in transactions. Therefore, the transaction owner now stores and documents it digitally without the need to document it using the traditional method at the different State agents, especially the Notary, and this operation is also safer than traditional documentation.

In addition to that, the Blockchain Technology, with all its characteristics that facilitate and speed up the data and the transactions' registration process and guarantees their protection, will certainly be one of the digital proof tools that are authentic on their owner.

In this context, we can infer the first Court in the world with the Blockchain Technology, which is developed by the UAE State, in order to simplify judicial operations and to avoid the documents' repetition¹.

This experiment took place under a Government that was capable of imposing its full control on the components and applications of technology, where the judiciary sector cannot be vulnerable to digital transgressions if the conditions of immunity and credibility insurance were not met.

Conclusion

The insurance of rights' protection in general is guaranteed by the Constitution. Furthermore, the State is responsible for providing the necessary tools for that purpose. Amongst these rights, we cite the Intellectual Property system, which was directly affected by the Blockchain Technology, a technique that will be circulated in the future on all the transactions, in addition to preserving data from all forms of piracy. Moreover, the International indicators that study the adoption of this technology lead us to say that it is certainly the technology of the digital future.

Despite the positive points of this technology, it needs firm conditions to make its use possible in order to ensure the protection of the transactions that take place in virtue of it. The operation calls also

¹ For more details about the Court that depends on the Blockchain technology look: Rehab Fayez Ahmed Sayed, "The Blockchain Technology and the Documentation of the Arab Intellectual Production: An Analytical Evaluative Study of the (Innovation) Motor with the Placement of a Conception for the Blockchain Technology Platform for the benefit of Researchers and Academic Establishments", the Arab Libraries and Information Magazine, year 40, review 02, April 2020, p. 32.

for the combination of the States' efforts in collaboration in order to unify the standards of protection and to guarantee the proper use of this technology.

As for the future scope of the Blockchain Technology, advanced countries seek to expand the Blockchain scope of use concerning digital identity, smart contracts, decentralized finance and management of the supply chain. Generally, the Blockchain Technology is still in its early stages, with a vast set of potential applications.

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