



المعهد القومي للملكية الفكرية
The National Institute of Intellectual Property
Helwan University, Egypt

المجلة العلمية للملكية الفكرية وإدارة الابتكار

دورية نصف سنوية محكمة يصدرها

المعهد القومي للملكية الفكرية

جامعة حلوان

العدد الرابع

يوليو ٢٠٢١

الهدف من المجلة:

تهدف المجلة العلمية للملكية الفكرية وإدارة الابتكار إلى نشر البحوث والدراسات النظرية والتطبيقية في مجال الملكية الفكرية بشقيها الصناعي والأدبي والفني وعلاقتها بإدارة الابتكار والتنمية المستدامة من كافة النواحي القانونية والاقتصادية والإدارية والعلمية والأدبية والفنية.

ضوابط عامة:

- تعبر كافة الدراسات والبحوث والمقالات عن رأى مؤلفيها ويأتي ترتيبها بالمجلة وفقا لإعتبارات فنية لا علاقة لها بالقيمة العلمية لأى منها.
- تنشر المقالات غير المحكمة (أوراق العمل) فى زاوية خاصة فى المجلة.
- تنشر المجلة مراجعات وعروض الكتب الجديدة والدوريات.
- تنشر المجلة التقارير والبحوث والدراسات الملقاه فى مؤتمرات ومنتديات علمية والنشاطات الأكاديمية فى مجال تخصصها دونما تحكيم فى أعداد خاصة من المجلة.
- يمكن الاقتباس من بعض مواد المجلة بشرط الاشارة إلى المصدر.
- تنشر المجلة الأوراق البحثية للطلاب المسجلين لدرجتى الماجستير والدكتوراه.
- تصدر المجلة محكمة ودورية نصف سنوية.

ألية النشر فى المجلة:

- تقبل المجلة كافة البحوث والدراسات التطبيقية والأكاديمية فى مجال حقوق الملكية الفكرية بكافة جوانبها القانونية والتقنية والاقتصادية والإدارية والاجتماعية والثقافية والفنية.
- تقبل البحوث باللغات (العربية والانجليزية والفرنسية).
- تنشر المجلة ملخصات الرسائل العلمية الجديدة، وتعامل معاملة أوراق العمل.
- يجب أن يلتزم الباحث بعدم إرسال بحثه إلى جهة أخرى حتى يأتيه رد المجلة.
- يجب أن يلتزم الباحث بإتباع الأسس العلمية السليمة فى بحثه.
- يجب أن يرسل الباحث بحثه إلى المجلة من ثلاثة نسخ مطبوعة، وملخص باللغة العربية أو الانجليزية أو الفرنسية، فى حدود ٨ - ١٢ سطر، ويجب أن تكون الرسوم البيانية والإيضاحية مطبوعة وواضحة، بالإضافة إلى نسخة إلكترونية Soft Copy، ونوع الخط Romanes Times New ١٤ للعربى، و١٢ للانجليزي على B5 (ورق نصف ثمانيات) على البريد الإلكتروني: ymgad@niip.edi.eg
- ترسل البحوث إلى محكمين متخصصين وتحكم بسرية تامة.
- فى حالة قبول البحث للنشر، يلتزم الباحث بتعديله ليتناسب مع مقترحات المحكمين، وأسلوب النشر بالمجلة.

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المراسلات

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**The Effectiveness of Using Blockchain Technology in
Protecting and Managing Intellectual Property Assets
in Egypt**

Farag Ahmed Mohamed Abulhoda

The Effectiveness of Using Blockchain Technology in Protecting and Managing Intellectual Property Assets in Egypt

Farag Ahmed Mohamed Abulhoda

Introduction:

In the digital era, the illegal copying and unauthorized use of digital intellectual property rights (IPRs) became an unprecedented problem especially with the advent of file sharing technologies. Digital IPRs, such as movies, songs, books, electronic games and computer programs are more vulnerable to be stolen or at least used without authorization of their owners. Acts of piracy over the internet and cyber-attacks have negative impacts on consumers, producers, and the economy as a whole.

Due to the widespread use of the internet and globalization, traditional methods of protecting digital IPRs have become insufficient or inadequate to provide the necessary protection. Digital products are easily copied and disseminated through the internet and sites of social media. This is considered an infringement of creators' rights with loss of revenues. Therefore, there is a need for alternative means for protecting digital IPRs from internet piracy or cyber-attacks. This necessitates the use of the power of technology to protect the creative work of innovators. This research focuses on demonstrating the possibility of using blockchain technology in the field of registering, protecting and managing IPRs and the types of challenges facing adopting such revolutionary technology in the field of IP in Egypt.

The research problem:

The ultimate aim of the law of intellectual property rights (IPRs) is to encourage innovation and creativity, through providing

protection for intellectual property.¹ The underlying question of this research is whether blockchain technology can contribute to achieving that goal? The research problem lies in finding a proper technological method of protecting IPRs especially digital rights from piracy, cyber-attacks, illegal copying or unauthorized usage. The research tries to find answers to the following questions:

- ١- Could blockchain technology provide an adequate protection and anti-infringement method to IPRs in general and to digital IPRs in particular?
- ٢- Could blockchain technology be used in managing IPRs and collecting royalties?
- ٣- What are the benefits of applying blockchain technology by Egyptian IP offices and what are the challenges facing the adoption of such technology?

The Purpose of the research:

This research tries to achieve the following objectives:

- Determining the possibility of applying blockchain technology for the protection and management of IPRs in Egypt.
- Identifying the benefits and challenges facing applying blockchain technology in the field of IP in Egypt.

The Significance of the research

The significance of the research is twofold:

Theoretically:

- The newness of the blockchain technology as it appeared a decade ago and its ability to be applied to several fields including IP.

¹ Gürkaynak, Gönenç, (and others), "Intellectual property law and practice in the blockchain realm" Computer Law and Security Review, ٣٤ (٢٠١٨), Elsevier Ltd, p ٨٦١.

- There is a scarce in the previous literature in the subject matter of the research in general and in the Arabic literature in particular.¹ As such, the research may contribute to the existing knowledge and literature and open the door for future studies in the field.

Practically:

The results of this research might encourage the decision makers to change the legal framework in order to facilitate the recognition of such beneficial technology by the judiciary which will accelerate the adoption of blockchain in Egypt, not only in the field of IP, but in other fields as well.

Research Hypothesis:

There is a positive correlation between using blockchain technology by IP offices and the protection and reservation of IPRs in Egypt.

Research methodology:

The researcher followed the descriptive analytical approach in addition to the comparative approach to conduct this research.

Research structure of contents:

Section One: The Nature and characteristics of blockchain technology

Section Two: The Application of blockchain technology in the field of IP in Egypt.

Section Three: Blockchain Challenges in the field of IP in Egypt.

Research results and recommendations

List of references

¹السفري، عبد الله الحسن، استخدام تقنية البلوكتشين في حفظ حقوق الملكية الفكرية، شبكة المؤتمرات العربية، اسطنبول، تركيا، ٢٠١٩، ص ٥٦٧.

Section One

The Nature and Characteristics of Blockchain Technology

A- The blockchain technology as a distributed ledger:

The world knew about Blockchain technology in ٢٠٠٨ by a white paper written by “Satoshi Nakamoto” titled “Bitcoin: A Peer-to-Peer Electronic Cash System.”^١ Blockchain technology can be defined as "an open distributed ledger or database with peer-to-peer communication that allows for the transfer not only of information but of value as well. Transactions are recorded in blockchain database as blocks with time-stamps and protected by encryption so that those blocks cannot be modified after they are verified by all nodes participating the blockchain network. Each verified block is added to the other blocks in the form of chain. In blockchain, each block is attached to the previous one and to the next one by a hash forming a chain of blocks (blockchain)".^٢

In blockchain, the distributed ledger is maintained by all network participants (nodes) which makes it tamperproof where any change or any subsequent transaction cannot be done without the consensus of these participants.^٣ Each block has a cryptographic key that acts as a digital identification and is connected to the block before it, forming a chain.^٤ Blockchain can be used to record several

^١ Nakamoto, Satoshi, Bitcoin: A Peer-to-Peer Electronic Cash System, <https://bitcoin.org/bitcoin.pdf>.

^٢ Singh, B P, (and others), Blockchain Technology and Intellectual Property Rights, Journal of Intellectual Property Rights Vol ٢٤, The Patent Office, New Delhi, India, January-March ٢٠١٩, p ٤١.

^٣ Shairwal, Sakshi, (and others), Blockchain & IPR a breakthrough collaboration, <https://www.lexology.com/library/detail.aspx?g=ac٥٤cb٤d-٩b٤٧-٤٦ad-٨١a٤-٥٥ef٢٨bd٠f٩٦>, last accessed on March ١٤, ٢٠٢١.

^٤ Michigan Technology Law Review, Can Blockchain Technology Change How IP Rights are Granted and Sold? <https://mttlr.org/٢٠١٩/٠٩/can-blockchain->

types of data such as data files, photographs, images, designs, transaction data, as well as data related to transfer of ownership.^١

B- Characteristics of Blockchain technology:

Blockchain technology has some distinctive characteristics which include the following:^٢

- ١- The elimination of the role of third parties (e.g., banks, public registries, etc.) in the transfer of value.
- ٢- It provides the parties involved in the transaction with absolute confidence in the validity and security of the transaction due to the cryptographic proof of authenticity provided by the blockchain technology.
- ٣- It creates immutable data by storing transactions in a timestamped way that even the slightest manipulation to its content is noticeable via hashing.

C- Advantages of blockchain technology:

Blockchain provides its users several advantages which include the following:^٣

- a- It guarantees authenticity by identifying the right-holder and the time of creation of his/her rights.
- b- It allows for provenance as usage and ownership can be recorded on blockchain with a timestamp.

[technology-change-how-ip-rights-are-granted-and-sold/](#), last accessed on March ١٤, ٢٠٢١.

^١ [Prowse, Sarah, Beyond Bitcoin: A Literature Review of Blockchain Technology, MSc dissertation, Dept. of Computer and Information Sciences, University of Strathclyde, Glasgow, Scotland, August ٢٠١٧, p. ١٧.](#)

^٢ Drescher, op. cit., p. ١٥٥.

^٣ Treiblmaier, Horst, (and others), Business Transformation through Blockchain Volume II, ٢٠١٩, p ٣٢٠.

- c- It can facilitate the management of IPRs and the faster and more efficient payment of royalties directly to owners without the intervention of intermediaries.
- d- The blockchain technology is tamperproof as data put in to the blockchain cannot be tampered without being noticed.

D- Types of blockchain:

There are mainly three types of blockchain, they are:^١

- ١- Public blockchains or permissionless, in which anyone can join as a new user or node miner and all participants can perform operations such as transactions or contracts.
- ٢- Private blockchains (permissioned) in which only allowed users have access to the network operations.
- ٣- Federated blockchains which is a hybrid combination of public and private blockchains where a set of nodes, named leader nodes, is selected instead of a single entity to verify the transaction processes.

Section Two

The Different Roles of Blockchain in the Field of IP

The blockchain technology may be used throughout the life cycle of IP rights whether in registering, licensing, contractual agreements and enforcement.^٢

A- Blockchain as a registration system:

IP offices usually maintain paper or electronic records of IPRs. Blockchain technology can be used in IPRs registration, whereby IP offices can ensure the correctness of data and real time update of

^١ Casino, Fran, (and others), A systematic literature review of blockchain-based applications: Current status, classification and open issues, Telematics and Informatics, Volume ٣٦, ٢٠١٩, p. ٥٧.

^٢ Singh, B P, op. cit. p. ٤٢.

records in case of transfer of right. Due to the above-mentioned characteristics of blockchain, data verification will be much simpler as it will be totally tamperproof.^١ Blockchain can make the registration process much easier, faster and cost-effective thanks to the simplicity of verification and tracking processes of the right throughout its life cycle. The blockchain technology creates a permanent and public cost-efficient method of recording information and it provides a non-disputed method to prove its existence.^٢

Benefits of using blockchain technology as a registration system by IP offices in Egypt:

Benefits of blockchain vary according to the type of IP right whether registered or unregistered.

a) Registered IP assets

١- Patents

Blockchain technology could be beneficial in providing an evidence of first inventorship. The immutable nature of records maintained in the blockchain makes such records impossible to be changed without consensus of all participants in the network. The timestamped chronological registration of invention life cycle with a tamperproof cryptography provides strong evidence of the existence of an invention.^٣

٢- Trademarks

Blockchain provides a strong evidence of the person who has used a trademark first by generating immutable and timestamped proof of the date of usage.

^١ Singh, B P, op. cit. p. ٤٢.

^٢ Rivière, Jean-Maxime, Blockchain technology and IP: investigating benefits and acceptance in governments and legislations, Junior Management Science ٣(١), Technical University of Munich, ٢٠١٨, p. ٧.

^٣ Blockchain Use in Intellectual Property, University of Nicosia, Cyprus, <https://block.co/blockchain-use-in-intellectual-property/>, last accessed March ١٤, ٢٠٢١.

b) Unregistered IP assets:

Blockchain technology can also play an important role as an evidence of creatorship within the context of unregistered IPRs.

١- Copyright:

Under Article (٥) of Berne Convention for the Protection of Literary and Artistic Works^١, copyright is not a registrable IP right. As such, it can be disputed in courts regarding the real author or owner of such works. In this regard, blockchain can have a chief role in providing courts with a strong evidence of authorship. This can be done by the author through registering his work in the blockchain network with timestamp that will provide evidence of the creator of the work and the time it which it was created.

٢- Trade secrets:

Trade secrets are very important IP asset to their owners and as such, they should be kept secret from outsiders. Trade secrets can be stored in blockchain database and protected by cryptography to ensure they are not used by unauthorized users. Owners of trade secrets can share such information with licensed persons through blockchain and in the meantime are kept secured from infringement of third parties.^١

٣- National traditional knowledge and traditional cultural expressions:

Blockchain can be useful in preserving and recording traditional knowledge and traditional cultural expressions in the blockchain thereby preventing third parties from claiming title or even use such rights without authorization. Recording such rights on a blockchain database help in preserving them from being lost and

^١ Shairwal, Sakshi, op. cit.

preventing others from claiming any rights regarding such national cultural heritage.

B- Blockchain as a management system:

The most beneficial effect of blockchain technology concerns the management of copyright. The management of IP rights includes activities such as licensing and transferring of those rights.

The Role of Smart Contracts

Smart contracts are software codes into which contractual clauses can be embedded. The terms of the agreement between contracting parties are written directly into lines of code in the form of (if, then) which makes such contracts self-executing. The primary function of smart contracts is to automate the execution of contracts.^١ Smart contracts embedded in the blockchain could be used to establish and enforce IP agreements such as licenses and allow the transmission of payments in real time to IP owners.^٢ Smart contracts allow automatic payments for transactions between users and rights holders without the need for intermediaries, thereby reducing the fees of management.^٣

C- Blockchain as a protection and enforcement system:

Blockchain technology can be useful in detecting counterfeit products and reducing fraud in the market. By using blockchain, transaction can be recorded at each stage of the chain which will help custom authorities detect counterfeit goods and prevent their entry in

^١ Gürkaynak, Gönenç, op. cit. p. ٨٤٩.

^٢ Clark, Birgit, Blockchain and IP Law: A Match made in Crypto Heaven, https://www.wipo.int/wipo_magazine/en/٢٠١٨/٠١/article_٠٠٠٥.html#:~:text=The%20potential%20to%20use%20blockchain,into%20%E2%80%A2%9Csmart%20IP%20rights%20%E2%80%A2%9D.&text=Confidentiality%20concerns%20on%20the%20side,by%20an%20opt%20Din%20scheme. Last accessed on March ١٤, ٢٠٢١.

^٣ Blockchain Use in Intellectual Property, op. cit.

local market.^١ In addition, blockchain can help law-enforcement institutions such as police, customs and judiciary to settle IP disputes quickly. Installing a QR code on every product and registering them all in the blockchain would enable custom authorities to trace and track the products even after they have been sold.^٢

D- Blockchain as a payment system:

Blockchains can be used as a payment mechanism for IP transactions using digital cryptocurrencies. A smart contract can be used to each right be useful as well in distributing royalties and shares. A digital wallet with the agreed percentage per/holder to his. Therefore, transactions related to IPRs might be carried out in an electronic environment using blockchain technology.

Section Three

Challenges Facing the Application of Blockchain in the field of IP in Egypt

Blockchain technology faces various challenges that might hinder its adoption in the field of IP in Egypt.

A- Legal challenges

The main problem is the lack of legislative regulation and the absence of a proper legal framework with regard to blockchains. This means that judiciary will not recognize records of blockchain databases as acceptable in court of law which hinder the use and spread of this beneficial technology. In addition, for the effective use of blockchain technology, the legislature has to recognize cryptocurrencies as a legal payment system.

^١ Shairwal, Sakshi, op. cit.

^٢ Gürkaynak, Gönenç, op. cit., p. ٨٦٠.

B- Institutional challenges:

IP offices needs to install a private (permissioned) blockchain system that will be used in recording all IP data. IP office staff will need proper training on how to use the new technology in a simplified way to decrease the level of resistance of applying the new technology.

C- Technical challenges

- ١- The fundamental problem currently facing blockchain concerns the speed with which transactions can be processed through blockchain technology.
- ٢- Due to the immutable nature of data recorded on the blockchain, it is difficult to edit such data which constitute a problem when such data needs to be edited or even deleted.^١

Research Results and Recommendations

This research shows that Egypt can immensely benefit from blockchain technology in the field of registering and protecting IPRs to promote and foster its economic goals. Using blockchain technology will prevent the infringement of IPRs and will improve the competitiveness and economic growth of Egypt which will contribute positively in the realization of the Egyptian strategy for sustainable development. The research concludes that blockchain is a revolutionary technology which would be useful in providing better protection to the intellectual property.

The researcher proposes that blockchain technology could be used by IP offices in Egypt. The idea is to develop a private permissioned blockchain platform not a public blockchain platform

^١ Gürkaynak, Gönenç, op. cit., p. ٨٥٨.

as is used in the cryptocurrency market. This private blockchain platform allow only permissioned users to get access to the network and its operations.

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مراجع باللغة العربية:

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