Practical Value of Blockchain Technology in Building Digital Copyright Ecosystems for Libraries: Post-Print

Authors: Ji Yukuan

Date: 2023-04-01T00:00:00+00:00

Abstract

[Purpose/Significance] Utilizing blockchain technology to construct a digital copyright ecosystem holds significant practical value for safeguarding libraries' copyright interests. [Method/Process] Previously, overly complex work transaction processes affected libraries' efficiency in acquiring copyrights; adopting smart contracts to omit these processes can improve libraries' copyright acquisition efficiency. Additionally, difficulties in locating copyright holders and infringers, identifying infringements, and calculating damages previously compromised the security of libraries' copyright transactions and the fairness of compensation; blockchain technology addresses these issues by enhancing transaction security and ensuring fair compensation. [Results/Conclusion] The digital copyright ecosystem constructed using blockchain technology can resolve issues related to libraries' copyright acquisition, transaction security, and compensation fairness.

Full Text

Preamble

Volume 64, Issue 19 October 2020

The Practical Value of Blockchain Technology in Building a Digital Copyright Ecosystem for Libraries

Ji Yukuan

Institute of Documentation and Information, Henan University, Kaifeng 475001

Abstract:

[Purpose/Significance] Utilizing blockchain technology to construct a digital copyright ecosystem holds significant practical value for safeguarding the copyright interests of libraries. [Method/Process] Previously, overly complex work

transaction processes affected libraries' efficiency in acquiring copyrights. By employing smart contracts to streamline copyright transactions, the goal of improving libraries' copyright acquisition efficiency can be achieved. In the past, difficulties in locating copyright holders and infringers, challenges in establishing infringement, and problems calculating infringement losses affected both the security of library copyright transactions and the fairness of damage compensation. Blockchain technology addresses these issues, enhancing the security of library copyright transactions and ensuring fairness in damage compensation. [Result/Conclusion] The digital copyright ecosystem built with blockchain technology can resolve problems related to library copyright acquisition, transaction security, and compensation fairness.

Keywords: blockchain digital works library copyright transaction
Classification Number: D923.41
DOI: 10.13266/j.issn.0252-3116.2020.19.003

Introduction

Due to its technical characteristics of decentralization, immutability, strong traceability, high scalability, and transparency, blockchain technology is exceptionally well-suited to the core demands of digital copyright protection and safeguarding the interests of copyright consumers, making it a viable technological choice for digital copyright work creation, dissemination, use, and infringement control [1]. As the European Parliament stated, frontier applications of blockchain technology have attracted considerable industry attention, with major countries worldwide accelerating their deployment of blockchain development [2]. "Bitcoin" and "Ethereum" are open-source blockchain public service systems with smart contract functionality that have already been applied to numerous fields including insurance, land title registration, mortgages, finance, copyright registration, and transactions [2]. President Xi Jinping has noted that blockchain technology applications have extended to digital finance, intelligent manufacturing, digital asset trading, and other domains. China possesses a solid foundation in blockchain technology and must accelerate the integration of blockchain with economic and social development, enabling blockchain to play a greater role in building a cyberpower and supporting economic and social development [3].

Currently, research on the practical value of blockchain technology for libraries remains limited. Across databases including EBSCO, Springer, CNKI, Wanfang, ProQuest Ebrary, Oxford Scholarship Online, and Elsevier e-books, I found only papers and research reports, but no monographs. Specifically, there were 2 foreign research reports, 1 foreign paper, and 9 Chinese papers, primarily examining the value of blockchain technology for library copyright protection [3-4]. However, research on copyright management and transactions under blockchain is relatively more abundant, with 123 foreign papers and 75 monographs, alongside 70 domestic papers. Although these studies are not library-specific, they provide valuable references for exploring the value of blockchain-built copyright

ecosystems for libraries. S. Alexander [6] examined the opportunities and challenges of blockchain for copyright protection; Chen Weichao [7] studied copyright licensing issues supported by blockchain; Li Yue et al. [8] focused on the functional value of blockchain in building digital copyright transaction systems; Yuan Yili and Lu Shan [9] researched blockchain technology' s role in curbing copyright infringement.

China' s blockchain-based copyright ecosystems, such as "Xiaoxi Copyright Chain," "Yishu," "Copyright Home," "Yinglian," and "Ant," are flourishing, providing authors and resource providers with new pathways for work creation, publication, storage, copyright registration, and transactions, while also offering libraries—the world' s largest information consumption institutions—a new platform for obtaining copyright authorization. Previous research has concentrated on how blockchain-built copyright ecosystems can increase licensing opportunities, enhance transaction security under smart contracts, and facilitate copyright registration and infringement evidence collection. However, virtually no attention has been paid to safeguarding libraries' interests in sharing copyright benefits. Therefore, this paper' s focused investigation into whether blockchain-built digital copyright ecosystems can protect library copyright interests holds important practical value.

2. Blockchain-Based Copyright Ecosystem

Most technology service providers choose to build digital copyright ecosystems using private or consortium chains.

2.1 System Design

According to the "China Blockchain Technology and Application Development White Paper," blockchain technology refers to a new distributed infrastructure and computing paradigm that utilizes block-chain data structures to verify and store data, distributed node consensus algorithms to generate and update data, cryptography to ensure secure data transmission and access, and smart contracts composed of automated script code to program and operate data [10]. Based on application mode, blockchains can be categorized into private chains, consortium chains, and public chains [11]. Public chains allow any organization or individual to join without exclusivity and without limiting user expansion, but they cannot effectively exercise copyright protection. Private and consortium chains, by contrast, serve specific organizations or individual businesses with relative closure and exclusivity, which benefits copyright protection. Private and consortium chains can control anonymous users' access to works while allowing verified users to sell or purchase copyright usage rights in the market. They can monitor and record smart contract execution within their service systems, enabling backend managers to obtain relevant copyright information and broadcast it in real-time to various block nodes for secure sharing of confidential information. Therefore, most technology service providers opt for private or consortium chains to build digital copyright ecosystems.

A blockchain-based digital copyright ecosystem is an infinitely expandable and stable community. Authors, publishers, digital resource providers, libraries, and public users can all become members of this special community, providing a domain for the creation, dissemination, and management of various digital works. The system establishes a technical trust mechanism through consensus protocols to verify all participants, including copyright holders and libraries, enabling all participants to share information about other users and copyright resources. No information asymmetry exists among system users; all user and copyright resource information is public and transparent. All community members engage in corresponding labor and receive appropriate rewards: authors can create, publish, register, and trade their copyrighted works; resource providers can store and sell legally obtained digital copyrighted resources; libraries can acquire needed copyrighted works; and backend managers and judicial authorities conduct copyright identification, provide ownership and similarity proofs, monitor copyright circulation, and furnish infringement evidence. This forms a sound and efficient copyright ecosystem with participation from authors, publishers, resource providers, libraries, and judicial authorities. The system design is illustrated in Figure 1 [Figure 1: see original paper].

2.2 System Design Explanation

2.2.1 Work Creation, Publication, and Storage Within the system, authors can create works and, upon completion, submit them to digital publishers for formal publication or directly publish and store their original works in the system. Digital resource providers can also store legally obtained digital copyrighted works in the system for libraries to select, preparing for copyright transactions with libraries. The system supports the publication, storage, and transaction of multi-type digital works including text, images, and audio-video. It stores digital works' feature values on the blockchain platform to ensure works remain tamper-proof and permanently verifiable [12]. Work content is stored on system nodes to form blocks, enabling comparison with similar works to identify infringing works and prevent copyright disputes, thereby creating conditions for libraries to safely acquire works.

2.2.2 Copyright Registration Leveraging blockchain' s immutability and credible algorithmic mechanisms, the system provides digital copyright registration with functions including automatic registration, automatic review, certificate download, and copyright inquiry. After registering and logging into the system, authors can self-register their digital copyrighted works. The system conducts detailed reviews of uploaded works through a combination of automatic and manual review, issuing electronic certification certificates upon approval. The ability to query work certificates through the system provides libraries with assurance in accurately locating genuine authors.

2.2.3 Copyright Transaction The system' s copyright transaction module utilizes blockchain' s decentralization mechanism to build a secure and reliable

digital copyright transaction market and environment through smart contracts. The system features functions including monetized pricing, digital copyright malls, online payment, automatic transactions, and transaction chain traceability [12]. Authors or digital resource providers can transfer rights and license usage of successfully reviewed and confirmed copyrighted works through smart contract models. Libraries can read relevant copyright licensing or transfer contracts in the system' s digital work blocks and purchase needed copyrighted works. Throughout the transaction process, copyright circulation information is recorded on the blockchain as a detailed component of copyright works for sharing and verification.

2.2.4 Copyright Authentication and Judicial Services To strengthen transaction security and resolve copyright infringement identification challenges, the system designs a copyright authentication module to provide credible admissible evidence for judicial protection, primarily including time stamps, existence proofs, ownership proofs, and similarity proofs. Copyright holders can log into the system to automatically calculate original works' feature values for comparison with suspected plagiarized or similar works, generating similarity reports and, if similarity is confirmed, issuing similarity certificates [12]. The system can also directly integrate judicial services. When libraries or readers use others' works without authorization, judicial authorities can utilize blockchain' s reverse tracking function to obtain complete evidence chains of infringement facts, establishing that libraries or readers have infringed others' copyrights.

2.2.5 Backend Management Personnel from national intellectual property management agencies can monitor all operations by work authors, digital resource providers, and libraries within the system, review the operating status of the copyright ecosystem, and audit all copyright information. They also supervise and conduct secondary confirmation of important proofs including existence, ownership, and similarity proofs. Strictly speaking, copyright authentication and judicial services constitute important components of backend services.

3. Value of the System in Safeguarding Library Copyright Interests

3.1 Improving Library Copyright Acquisition Efficiency

3.1.1 Factors Affecting Library Copyright Acquisition Efficiency Before implementing this system, libraries' copyright acquisition process was overly complicated. First, libraries had to locate and select relevant copyrighted works based on teaching, research, discipline construction, or reading needs. Second, after locating work authors, libraries needed to verify their authenticity. Third, after identifying and verifying authors or resource providers, libraries negotiated copyright transaction prices, often requiring multiple rounds without reusable

pricing. Fourth, libraries demanded condition guarantees from copyright holders, such as delivery time, work quality, and after-sales service. Fifth, copyright licensing agreements were signed, sometimes with multiple explanatory attachments. Sixth, libraries paid usage or transfer fees and fulfilled other obligations. Seventh, copyright holders completed authorization to libraries, enabling readers to access authorized works. Throughout this process, numerous links—including work searching, copyright holder identification, price negotiation, condition negotiation, and obligation fulfillment—increased the complexity of copyright acquisition, raised marginal costs, reduced acquisition efficiency, and affected work dissemination efficiency.

3.1.2 System Improvements to Library Copyright Acquisition Efficiency The blockchain-based digital copyright ecosystem forms a collaborative copyright operation platform where all members—including authors, resource providers, and libraries—join as nodes. All copyrighted works are stored on system nodes, with transaction licensing, transfer, and rights management information being publicly transparent and tamper-proof. All libraries in the system can quickly and easily query this information, eliminating the difficult search for works and copyright holders and reducing associated costs.

In the system, authors or resource providers create smart contracts to authorize work usage or transfer property rights [8]. The smart contract creation process encapsulates preset terms for specific work usage as code within blocks under current copyright law rules, enabling automatic work transactions without human intervention. When libraries select and click on desired works, the system automatically triggers smart contract terms. The usage terms for specific copyrighted works—including usage methods, territories, duration, payment amounts, and methods—are reusable. If a library seeks authorization for a work, the system' s work storage block back-links based on the library' s address. If the link matches usage terms, the system automatically executes the function of opening usage to the library. If no block containing the library' s record is found, the system requires payment according to work usage terms. Payment automatically redirects to the currency wallet system, where transaction information is created, specifying the work' s usage price as the payment amount, with the copyright holder' s public key as the receiving address and the library' s private key signing the transaction to authenticate identity [7].

This record containing transaction information, the copyright holder' s public key, and the library' s private key propagates through the system to achieve information transformation and block creation, thereby validating the copyright transaction. Validation primarily includes verifying the library' s authenticity and whether its account contains the required currency amount by reviewing the blockchain related to the library' s daily transactions to verify currency flow and balance authenticity. If validated by at least 51% of participating nodes, the smart contract rules automatically transfer the specified currency amount to the copyright holder' s account address, completing the library' s purchase of usage

rights and the system' s copyright authorization to the library. Simultaneously, the system timestamps the newly created block containing copyright transaction information to ensure the legality of the library' s usage of specific copyrighted works.

Through blockchain-based smart contracts, the system automatically completes verification of library information, purchasing power, and usage fee payment, eliminating numerous manual links—including price negotiation, fee payment, and usage condition negotiation—completing online copyright transactions at near-zero marginal cost. This enables libraries to rapidly acquire copyrighted works, allows readers to utilize them, and ensures rapid work dissemination.

3.2 Enhancing Library Copyright Transaction Security

3.2.1 Factors Affecting Library Copyright Transaction Security Generally, to acquire work usage rights, libraries must first locate work authors or relevant rights holders. However, confirming authors as genuine creators and granting them copyright in the network environment is not straightforward. Authors must provide rights proof and sometimes require technical support from network service providers to determine publication times or provide backend data support. Yet, due to privacy protection needs, network service providers often do not provide backend data support, resulting in many authors publishing works under virtual names without real-name authentication. Some "authors" even plagiarize others' works or falsely claim authorship [14], making it difficult for libraries to verify authors' true identities.

Since copyright registration is voluntary rather than mandatory under national copyright laws, many authors are unwilling to register. Previous copyright registration procedures were cumbersome, costly, and time-consuming (requiring 30 working days), further reducing authors' enthusiasm [6]. For instance, only 10% of authors register with the U.S. Library of Congress, and China' s registration ratio is similarly low. Consequently, it is nearly impossible for libraries to verify all works'true authors through copyright registration agencies, making it difficult to rely on registration to resolve all copyright disputes and provide preliminary evidence, and reducing the likelihood of ensuring transaction security.

Rights management information—information added to works to identify authors, rights holders, and usage conditions—represents another important path for libraries to confirm rights holders and understand usage terms. Under China' s Copyright Law Article 48 [16] and the "Regulations on the Protection of Information Network Transmission Rights" Article 15 [15], intentionally deleting or altering rights management information without authorization constitutes illegal behavior. Despite legal deterrence, unauthorized deletion and modification remain widespread, undermining the reliability and integrity of rights management information and shaking libraries' confidence in using it to confirm copyright ownership. Particularly in collaborative creation models where original and subsequent co-authors are all copyright holders, modified or deliberately

deleted rights management information makes copyright holders unclear, often preventing transactions, hindering libraries from obtaining authorization, and even causing infringement disputes. In the copyright licensing contract dispute between Suning Procurement Center and Beijing Yuefu Times Media Technology Co., Ltd., the plaintiff Suning (the licensee) learned during the contract' s use of the involved musical work that the work was managed by the China Music Copyright Association. Due to unclear copyright holders, Suning sued Beijing Yuefu (the licensor), demonstrating how unclear rights management information complicates transactions.

3.2.2 System Enhancements to Library Copyright Transaction Security Blockchain-based copyright registration enables simultaneous work creation and copyright registration, greatly simplifying previous cumbersome procedures and saving time costs. Copyright registration aims to determine work ownership, enabling libraries to timely understand specific works' copyright 归属 (ownership) and providing legal guarantees for obtaining licenses and signing contracts. When copyright disputes arise, it also provides preliminary evidence protection for libraries' copyright transactions.

Additionally, blockchain technology can protect works' rights management information. Since authors are the first to access their created works, their identity is thereby proven. Works registered and stored in the system must generate two special addresses containing SHA values, and valid transfers between these addresses can prove the work' s existence at that time. Rights management information is stamped with tamper-proof timestamps, providing unique proof of creation time and ownership [17]. Both resource providers and creators can conveniently use blockchain to record rights management information, helping libraries quickly locate genuine copyright holders and safely conduct transactions.

Notably, copyright transactions under blockchain leave traces at every stage. Copyright holders can record copyright and transaction information on the blockchain to ensure any system node can query and track it. When libraries conduct copyright transactions with copyright holders, miners with powerful computing capabilities use algorithms to decrypt and verify transactions, creating new blocks to record them. Through complex public and private key settings, the blockchain system broadcasts transaction ledgers in real-time, allowing other libraries, authors, and resource providers to see data and transaction address information, and distributes transaction records to every user terminal for supervision of the transaction process and post-transaction usage by library readers. These features facilitate transaction monitoring, constrain unauthorized transfers under exclusive licenses by copyright holders and secondary dissemination behaviors by libraries requiring re-authorization [18], effectively reducing copyright disputes and preventing infringement, thereby enhancing security in copyright transactions between libraries and copyright holders.

3.3 Ensuring Fairness in Library Copyright Infringement Compensation

3.3.1 Factors Affecting Fairness in Library Copyright Infringement Compensation With widespread application of deep linking, video aggregation, cloud storage, and other new technologies, copyright infringement inevitably occurs during digital work dissemination and utilization. As libraries hold dual identities as work users and disseminators, two infringement scenarios may arise: first, libraries may infringe copyright holders' interests during usage and must compensate them; second, library readers may directly infringe copyright holders' interests during dissemination, requiring libraries to bear joint liability. If libraries disseminate self-owned copyrighted works and readers infringe them, readers must compensate libraries. However, difficulties in confirming copyright holders' authenticity and establishing infringement may prevent libraries from locating compensation targets, affecting compensation fairness.

Copyright remedies adopt homogeneous relief methods. Civil liability for infringement compensation aims primarily to restore the original state. When restoration is possible, it must be done; when impossible, property remedies—monetary compensation—apply. Under China' s current copyright system, infringement compensation calculation methods include three types: copyright holders' actual losses, infringers' illegal gains, and statutory damages. Compensation based on actual losses is most fair and reasonable. However, since actual losses are difficult to determine, statutory damages have become the most common choice in judicial practice. From 2016-2018, among 396 intellectual property infringement cases heard by Shanghai' s Xuhui District Court, only 2 cases (0.5%) used copyright holders' actual losses to determine compensation amounts, while 99.5% applied statutory damages [14]. The generalization of statutory damages and low compensation amounts seriously deviate from copyright protection' s original intent [19]. Overly low statutory damages cannot sufficiently motivate authors and resource providers to protect their rights, reducing their enthusiasm for creation and dissemination. Widespread application of low statutory damages allows infringers to profit after compensation, encouraging massive infringement.

High statutory damages application rates stem from difficulties in tracking online infringement and providing calculation bases for actual losses or illegal gains, making damages proof difficult and leading judicial practice to favor statutory damages. This manifests in two aspects: first, copyright holders struggle to prove infringed works' exact market share and the precise ratio between actual losses and infringement, resulting in low application rates for actual loss calculations; second, while illegal gain calculations are relatively simple, necessary evidence materials for litigation are sometimes held by infringers and difficult to obtain. Although adverse inferences can be drawn against evidence-hoarding infringers, restrictions such as trade secret protection prevent universal application of such inferences, causing judicial authorities to cautiously determine compensation amounts and often apply lower damages within statutory ranges,

thereby affecting compensation fairness.

3.3.2 System Safeguards for Library Copyright Infringement Compensation Fairness Blockchain technology enables rapid copyright registration, tamper-proof content, and traceable copyright transactions, allowing accurate infringement identification, effective calculation of rights holders' actual losses, and ensuring fairness in library infringement compensation.

First, blockchain facilitates rapid copyright registration. As previously discussed, all system nodes jointly record registration information during registration, completing rights confirmation in just 10 minutes through consensus mechanisms linking the earliest creation block. Blockchain systems also overcome geographical restrictions, eliminating the need for jurisdiction-based registration and facilitating copyright holders. Registration in the system requires no service or certificate fees, greatly improving authors' registration enthusiasm.

Second, for fraudulent or plagiarized works, blockchain systems can identify originals, fakes, and plagiarized works based on the simhash local-sensitive algorithm and issue certificates, making infringing works difficult to hide [20].

Third, since work content and rights management information stored in the system are tamper-proof, author authenticity is enhanced. When libraries or readers infringe others'copyrights, accurate infringement identification and rapid location of genuine copyright holders enable precise compensation.

Since all copyright circulation and work utilization scenarios leave traces at every stage, reverse tracking can identify genuine infringers when infringement occurs. If libraries infringe, they bear responsibility; if readers infringe, they are directly liable to copyright holders. This avoids situations where, due to difficulty locating infringers, libraries bear joint liability for what should be reader responsibility. Furthermore, time-stamped blocks and linking technology permanently record copyright registration and transaction information, making every transaction traceable. Since works and information stored at each node are tamper-proof, including infringement usage records sequentially recorded on the blockchain, this record provides authentic and effective evidence for infringement [21]. Such blockchain electronic evidence is gradually being judicially adopted. For instance, China has established internet courts in Beijing, Hangzhou, and Guangzhou that recognize the evidentiary 效力 (validity) of digital asset registration and circulation under blockchain. In 2016, Beijing Xiaoxi Intelligent Technology Center's "Xiaoxi Copyright Chain"integrated notarization and rights confirmation into blockchain in collaboration with intellectual property offices and notary offices. U.S. states including Arizona and Florida have enacted blockchain records and effectiveness bills, legally recognizing blockchain evidence.

References

[1] KIYOMOTO S, RAHMAN S, BASU A. On blockchain-based anonymized

dataset distribution platform[C] // International conference on software Engineering research, management and applications. London: IEEE, 2017: 85-92.
[2] European Parliamentary Research Service. How blockchain technology could change our lives[R]. Brussels: EPRS, 2017.
[3] The 18th Collective Study Session of the Political Bureau of the CPC Central Committee on the Current Status and Trends of Blockchain Technology Development[EB/OL]. [2020-03-30]. https://www.fx263.com/cyzx/caijingzaobao/20191026/34722.htm.
[4] DAVID E. Copyright courier: blockchain and copyright[J]. Kentucky libraries, 2018, 82(3): 4-5.
[5] Wang Qiong, Chen Wei. Research on the utility of blockchain in library copyright protection[J]. Digital Library Forum, 2019(3): 69-72.
[6] ALEXANDER S. Copyright in the blockchain era: promises and challenges[J]. Computer law & security review, 2018, 34(3): 550-561.
[7] Chen Weichao. Research on IP copyright licensing and operation mechanisms based on blockchain[J]. Publishing Science, 2018(5): 18-23.
[8] Li Yue, Huang Junqin, Wang Ruijin. DCI control model for digital works based on blockchain[J]. Computer Applications, 2017(11): 81-87.
[9] Yuan Yili, Lu Shan. Application and legal regulation of blockchain technology in copyright confirmation and transactions[J]. Journal of Xihua University, 2019(3): 19-24.
[10] What is Blockchain?[EB/OL]. [2020-03-30]. http://news.youth.cn/jsxw/201803/t20180303_{11465260}.ht
[11] Comparison of Public, Private, and Consortium Blockchains[EB/OL]. [2020-03-30]. https://wenku.baidu.com/view/6a6f50c0a88271fe910ef12d2af90242a995ab5f.html.
[12] Li Chao, Dai Bingrong, Wang Hongji, et al. Digital copyright protection and transaction system based on blockchain[J]. Modern Computer, 2018(29): 80-84.
[13] Wei Lihua. Eight rules and techniques for copyright trade negotiations[J]. Publishing Wide Angle, 2011(9): 35-36.
[14] Xia Chaoxian. Research on network copyright protection from the perspective of blockchain technology[J]. Electronic Intellectual Property, 2018(11): 110-116.
[15] Regulations on the Protection of Information Network Transmission Rights[EB/OL]. [2020-04-05]. https://baike.baidu.com/item/fr=aladdin.shtml.
[16] Copyright Law of the People' s Republic of China[EB/OL]. [2020-04-05]. http://ip.people.com.cn/n1/2019/0704/c192427-31214390.htm.
[17] Xu Mingxing. Blockchain Reshaping the Economy and the World[M]. Beijing: CITIC Press, 2016: 24-25.
[18] Berne Convention for the Protection of Literary and Artistic Works[EB/OL]. [2020-04-10]. http://tfs.mofcom.gov.cn/article/date/j/an/200212/20021200058445.htm.
[19] Liu Junjun. Research on Intellectual Property Infringement Compensation Issues[M]. Beijing: Intellectual Property Press, 2017: 31-32.
[20] MANKU G, JAIN A, SARMA A. Detecting near-duplicates for web crawling[C] // Proceedings of the 16th international conference on World Wide Web. New York: ACM, 2007: 141-150.
[21] Li Jing, Li Zhaosen. Discussion on the authenticity of electronic data

based on blockchain evidence preservation[J]. Software, 2018(6): 112-113.

The Practical Value of Blockchain Technology in Building a Digital Copyright Ecosystem for Libraries

Ji Yukuan
Institute of Documentation and Information, Henan University, Kaifeng 475001

Abstract:
[Purpose/Significance] The application of blockchain technology in building a digital copyright ecosystem has important practical value for safeguarding the copyright interests of libraries. [Method/Process] In the past, overly complex work transaction processes affected libraries' efficiency in acquiring copyrights. By employing smart contracts to streamline copyright transactions, the goal of improving libraries' copyright acquisition efficiency can be achieved. In the past, difficulties in locating copyright holders and infringers, challenges in establishing infringement, and problems calculating infringement losses affected both the security of library copyright transactions and the fairness of damage compensation. Blockchain technology addresses these issues, enhancing the security of library copyright transactions and ensuring fairness in damage compensation. [Result/Conclusion] The digital copyright ecosystem built with blockchain technology can resolve problems related to library copyright acquisition, transaction security, and compensation fairness.

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Note: Figure translations are in progress. See original paper for figures.