

Discussion on the Optimization Development path of Science and Technology Journal Publishing under Blockchain Vision

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Abstract: The shrinking reader scale, opaque evaluation, insufficient authority and lack of credibility of evaluation cause the content of scientific and technological journal to be questioned, which has intensified the loss of readers. In order to change the status quo and achieve the goal of resource aggregation and process optimization, this paper will explore the support of block chain technology for technology journal publishing reform and optimization path, expound the difficulties in science and technology journal publishing, the advantages of block chain technology and how to apply it in the publication of science and technology journals, in order to provide reference for the optimization and development of science and technology journal publishing guidance.

Keywords: Blockchain; Technology Journal; Publishing; Optimization Path

Introduction

With the increasing number of withdrawn papers, the scientific community has paid attention to the credibility and transparency of original scientific data. Restricted by the size of the journal and other factors, it is often difficult for academic papers to use enough space to elaborate on the research process and the acquisition and verification of the original data, which is easy to produce problems such as vague content, difficulty of repetition and theft of results.

With the development of Internet technology and platforms, many network platforms have obtained many periodical resources through various means, and provided them for users through open access, making the phenomenon of piracy or infringement of scientific and technological journals increase. In the process of open access to various papers and academic achievements, many criminals also take the opportunity to make profits, and some immoral scholars even steal others' research achievements by laundering manuscripts, which makes it more difficult for the copyright certification of academic achievements^[1].

From the current situation of the science and technology journal publishing in China, there are phenomena such as difficulty in integrating publishing resources, low degree of brand influence and small distribution scale, which has greatly restricted the healthy development of scientific and technological journals.

1. The application advantages of blockchain technology

1.1 Establishing a transparent management process

The essence of block chain technology is decentralization and sharing of distributed data, which can help science and technology journals to build a unified information sharing platform for editors and authors to release scientific research outcomes, reviewers to review and readers to give feedback by combining with the real scene, and thus realize the whole process of transparency.

1.2 Building a reliable evaluation system

The application of blockchain technology can create an open, secure and untampered transaction records, providing an open

shared database for the parties involved in the transaction, to ensure the traceability and reliability of scientific research data. At the same time, constructing scholars' identity authentication and reputation evaluation system through the block chain could effectively protect and manage intellectual property rights, validate the original data timely on the basis of smart contract model, to ensure the more transparent and credible evaluation process and effectively change the recipients' trust and perception of the evaluation process.

1.3 Clarifying the rights and obligations of academic review

To ensure the quality and credibility of papers, peer review is a very important and critical link in the publication process. Through the application of blockchain technology, the review incentive mechanism can be built, in which the reviewers can realize the traceability of review through data signature and time stamp. The combination of the two can effectively witness the work and efforts of reviewers, and make targeted positive incentives. This copyright management and protection mechanism for review can encourage researchers to share more academic outcomes and to be willing to participate in peer review, jointly creating an efficient and transparent academic environment^[3].

1.4 Deepening resource-saving cooperation in scientific research

Through the application of blockchain technology, the research process and original data of various independent scientific research teams can be recorded, deepening the mutual communication about academic information, and reducing the possibility of repeated mistakes. Besides, the smart contract mode could be used to manage the test equipment and tools well, and help various teams improve their collaboration and sharing efficiency. The rapid development of science cannot be separated from the academic exchanges and knowledge sharing based on trust. Blockchain technology can help people to quickly form a favorable consensus and cooperation by reducing the intervention of third-party institutions, so as to achieve the goal of saving resources and reducing human impact.

2. Specific application of blockchain technology in the publishing of scientific and technological journals

2.1 Source traceability

Block chain technology has the best node bookkeeping function, in which the use of workload certificate mode, rights certificate mode, or authorized equity certificate mode can be tested and verified with other nodes by adding timestamp, so as to ensure that the whole scientific research process can be traced. At the same time, through the mutual verification between the accounts, the self-examination and external collaborative inspection of the research outcomes can also be realized, so as to reduce the work cost of the reviewers and the possibility of scientific research misconduct.

2.2 Academic review

In 2015, ShoCard used blockchain technology to develop a system for identity authentication, in which users can scan and sign up their identity information, and then it can automatically generate private keys to seal up the information in a distributed way. With the function of this system, the reviewer can effectively realize the identity verification, track the paper release information, and check and record the review results. At the same time, accurately matching the conclusions with the content of the paper can confirm and update the effectiveness and professional level of the reviewer.

2.3 Smart contract

Smart Contract refers to the contracts and commitments that could be represented digitally and all parties involved can read. When the agreed conditions are reached, the contract will be automatically triggered and executed. The whole process does not require the intervention and participation of additional intermediaries, which effectively simplify the work link, reduce the work cost and save

the work time. Through the embedding of Smart Contract mode, scientific and technological journals can build an efficient publishing platform. With the functions of this platform, researchers can safely upload and publish their own academic achievements, and ensure that the copyright ownership is not disputed.

3. Optimization of the development path under the blockchain vision

3.1 Authorization

The trust foundation of block chain comes from its characteristics of strong data traceability and security, where science and technology journals can implant timestamp in the process of information production and store it through the block chain, so that the published research outcomes can be tracked and verified at any time in the future. Therefore, once the paper is published through the block chain technology, it can ensure the permanence and security of the information, thus effectively improving the credibility and authority of scientific and technological journals.

3.2 Platformization

The collaborative work platform can not only improve the cooperation effect of scientific research, but also promote the professional degree of scientific research outcomes. On the one hand, through the continuous academic information exchange, different scientific research teams can form effective information interaction and error correction mechanisms to ensure the efficient resource utilization and reduce various repetitive experimental errors. On the other hand, the recording and preservation of the entire publishing process through the block chain and collaboration platform can better retain the information and data of each scientific research node, so as to be quickly traced and reused when needed. Finally, by continuously providing a large number of high-quality credible content and scientific research outcomes, it can greatly improve the work efficiency of researchers, improve the speed of their professional knowledge update, so as to enhance their scientific research level rapidly.

3.3 Copyright

The emerging models formed by digital signature and encryption technology algorithms provide the underlying technical support for the block chain that cannot be tampered, and then realize the data stability and the traceability of information. In this mode, all the data and information will be interconnected in a point-to-point mechanism, and the data will be confirmed and tested through a distributed ledger, so as to solve the problems in confirming the copyright and ownership of intangible assets often faced by science and technology journals^[5].

4. Conclusion

In order to better maintain and develop itself, the block chain technology journals can realize workflow transparency, copyright certification and protection reliability, and profit model diversification; and they should use the block chain technology to build a collaborative working platform, enhance their credibility and authority, improving the trust of readers and researchers, and finally promoting the development of science and technology.

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