Exploration of the Application of Blockchain Technology in the Field of Cultural Industry

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Abstract

Blockchain technology is an information technology with the decentralization, distributed storage, peer-to-peer transmission, consensus mechanism, and encryption algorithms as the Bitcoin emerged. Since this technology came out, it has continuously attracted the attention of all walks of life. As the 1.0 era of Blockchain technology which takes virtual currency applications as the principal thing gradually evolves to the 3.0 era with more widely used scenarios, this technology will have an important impact on people's production and lifestyle; in particular, it will affect all links in the cultural industry from production to sales. This paper starts from the essence of Blockchain, focuses on talking about the advantages and disadvantages of this technology, analyzes existing application examples in the field of cultural industry, and puts forward some thoughts and future prospects of "Blockchain+ cultural industry" development.

Keywords

Blockchain, cultural industry, application.

1. Introduction

Since the birth of Blockchain technology for more than 10 years, it has been fully developed and applied in the fields of finance (represented by Bitcoin) and credit system construction (represented by Ethereum). Blockchain changes people's common payment methods and credit models in the past, and triggers a series of explorations and practices on the application of this technology in a wider range of fields. Due to imbalanced development of various industries in the development process of the cultural industry, there are piracy, inefficient copyright registration, difficult cultural financing, inefficient fund settlement, complicated cultural transaction procedures, non-transparent transaction intermediary links, and art is difficult to evaluate with varying degrees, etc. The application of Blockchain technology will effectively solve the above problems and promote the healthy development of the cultural industry.

2. Connotation, Characteristics and Ddvantages of Blockchain

2.1. The connotation of Blockchain

Blockchain was first proposed by cryptographer Satoshi Nakamoto's paper " Bitcoin: A Peer-to-Peer Electronic Cash System" in 2008, we can understand it as a decentralized distributed database, this database is composed of a series of orderly data blocks generated by cryptography, Block contains data record information that cannot be tampered with in a certain period of time. Blockchain technology is not a single technology, but the integrated result of multiple technologies, and it constructs a new decentralized data recording and storage system.

2.2. Characteristics and Advantages of Blockchain

1.2.1 Decentralization

Decentralization is the most basic characteristics of Blockchain, it means that Blockchain no longer depends on the central processor node, which realizes the distributed recording, storage and update of data.

1.2.2 Open and transparent

The data recording, updating operation, and examination and tracing of the operating rules of Blockchain system are transparent to the nodes of the whole network, the extremely high transparency is also the trustworthy foundation of Blockchain system value.

1.2.3 Openness

In Blockchain system, except the private information of the parties directly related to the data is encrypted, the Blockchain data is open to everyone; and anyone or participation nodes can inquire about Blockchain data records or develop related applications through open interfaces.

1.2.4 Autonomy

Blockchain adopts standards and protocols based on consensus to make all nodes in the whole system freely and securely exchange data, record data, and update data in a trustless environment, and change the trust of individuals or institutions into the trust of the system, the intervention of anyone will not work.

1.2.5 Information cannot be tampered with

Once the information of Blockchain system is verified and added to the Blockchain, it will be permanently stored and cannot be changed (except for private Blockchain and other systems with special change requirements). Unless more than half of the nodes in the system can be controlled at the same time, the database cannot be modified on a single node.

1.2.6 Anonymity

Blockchain technology solves the problem of trust among nodes, so data exchange and even transactions can be conducted anonymously. Because the data exchange among nodes follows the fixed and predictable algorithm, their data interactions do not need to be trusted, which is based on addresses rather than personal identities, therefore, the two parties of the transaction do not need to make the other party trust without revealing identity.

2.3. Defects and Inadequacy of Blockchain

1.3.1 Own technical defects

The first is security. If people want to change the contents on Blockchain, it is necessary to master more than 51% of the hashrate in Blockchain system, at present, it is impossible to achieve through technical means. However, with the development of science and technology, hacker attacks appear continuously, the probability of contents being leaked and changed has also increased.

The second is based on the tamper-resistant characteristic of Blockchain, if the users write error messages into Blockchain, then it is difficult to modify it. As mentioned above, although the system established by Blockchain technology is honest and trustworthy, it does not mean that the information input outside the system is honest and correct. Blockchain simply records and stores information, and does not mean that the information itself is true.

Finally, as the stored volume of data in the Blockchain continues to increase, on the one hand, it puts forward higher requirements for storage space, on the other hand, repeated data storage will lead to waste of resources; the computational burden caused by the increase of data volume will also increase accordingly, it also put forward a new test on the anti-pressure capacity of the Blockchain.

1.3.2 The impossible trinity

The impossible trinity is also called the "impossible triangle" of Blockchain technology; it means that the performance in the Blockchain technology cannot meet the three requirements of "scalability", "decentralization" and "security" at the same time. The pursuit of "decentralization" and "security" cannot achieve "scalability", the pursuit of "scalability" and "decentralization" cannot achieve "security", and the pursuit of "scalability" and "security" cannot achieve "decentralization".

3. Application of Blockchain in Cultural Industry

With the continuous development and application of Blockchain technology, its applicable fields have gradually expanded from the financial field and the credit field to the whole industry and various fields. The unique advantages of Blockchain technology can make up for the shortcomings and deficiencies of the existing cultural industry in the development process. Related applications have begun to appear in copyright protection, music industry, game industry and art market.

3.1. Blockchain+Copyright Protection

2.1.1 Blockchain+copyright protection

Under the traditional copyright protection mechanism, the process for affirming rights to the work are cumbersome, inefficient and costly, leading to the prevalence of piracy. Through Blockchain technology, the process of confirming rights can be simplified, the author can upload the original works' "author + creative time + content" and encrypt to Blockchain platform, timestamp and hash algorithm are used to confirm the right of the work, thus generating a unique Blockchain ID, and provide it with a unique existence proof. Once the rights are confirmed on Blockchain, subsequent transactions of the works will be recorded in real time, and the recorded information can be transmitted to the expert testimony center for record, once a copyright dispute occurs, it only need to retrieve the corresponding information in Blockchain database, Information can complete the entire process of proof, inspection, and evidence collection. In order to improve the level of copyright protection, China is also actively using Blockchain technology, and has successively launched digital copyright protection trading platforms such as ''copyrights home'' and ''China copyright chain smart safe 4.0''.

2.1.2 Blockchain + music industry

From the perspective of income distribution, traditional musicians need to release songs through record company this intermediary, even if the songs are released through the music platform; they still need to face the song copyright agency, producer, and platform, etc., in the end, the benefits to musicians are tiny. Through Blockchain technology, its "decentralization", "transparency", "smart contracts" and other characteristics can change the above phenomenon and achieve direct transactions between musicians and consumers. Musicians can upload contents to Blockchain platform and independently determine the price, etc., and the works can directly receive income after being purchased. Moreover, smart contracts and timestamp are used to accurately record each click, download, forward, and payment process of the works, which also avoids the occurrence of unfair phenomena such as black box operations in the existing system. At present, landing projects are explored based on Blockchain and music applications at home and abroad, for example, the Ujo Music platform can help musicians use Blockchain to release works, and the corresponding income will be automatically distributed to musicians.

3. Blockchain + game industry

In traditional games, virtual assets such as props and equipment are stored in the game's developer, which belongs to typical centralized operation model; first, this causes ownership in the hands of game developers rather than the players, second, In case of safety accident or game

is down, etc., these assets will disappear instantly, which is very unfavorable for players. Through Blockchain technology, players can register game assets on Blockchain platform; have the ownership of virtual assets, and record transactions of virtual assets at the same time, thus avoiding the above phenomenon. China is also actively exploring the use of Blockchain and games, and has launched many Blockchain games such as "Pony Ma" and "Let's Hurt Monsters ".

4. Blockchain + art market

In today's art market, "articles are difficult to trace", "difficult to distinguish the genuine and fake", and "transactions are transparent" and other problems generally exist, which make artworks present a greater transaction risk in the market. Through Blockchain technology, the use of features such as "information can be tampered with" and "distributed accounting" can make artists' works to obtain encrypted certification signatures, buyers can also conduct trace queries on artworks based on Blockchain technology, and moreover, they can track the trends of the work and clearly trace each transaction information, at present, many artworks such as "14 Little Electric Chairs", "The Last Bitcoin Dinner", and "Eternal Rose" have completed transactions with Blockchain technology.

4. Thinking and Prospect of "Blockchain + Cultural Industry"

4.1. Challenge and Thinking on "Trust Mechanism"

Taking the copyright field as an example, if the original content input in Blockchain platform has a copyright fraud problem, based on the "tamper-resistant" feature of Blockchain technology, it will cause the problematic copyright contents to exist in the Blockchain system, the real copyright content exists outside Blockchain system, which easily alienates the focus of copyright disputes. Therefore, how to define the true copyright contents from the source and verify the authenticity of the copyright, it is a question that needs to be considered under the trust mechanism. Therefore, for the application of Blockchain technology in the field of copyright, the author believes that it should advance in regular order, not only protect copyright, but also convert copyright application based on copyright protection.

4.2. Challenges and Thinking of "Decentralization"

Based on Blockchain technology, although music, video and other fields can directly implement peer-to-peer transactions between creators and consumers, it does not mean that real "decentralization" has been achieved at this stage. For example, music platform based on Blockchain technology, the establishment of the platform itself constitutes a center between musicians and consumers, not really "decentralization", but "weak centralization", the rest of the central platforms are weakened. Therefore, as far as the current technology is concerned, "decentralization" cannot really be achieved, and "weak centralization" may be more accurate.

4.3. Challenge and thinking of the "The Impossible Trinity"

Based on the above content, it is recognized that there is "The Impossible Trinity" defect in Blockchain technology, which cannot be changed in a certain period of time, but the impact of "The Impossible Trinity" can be minimized according to the different characteristics of different cultural industries. For example, in the field of cultural finance, "security" as one of the most basic "three properties of finance", when using Blockchain technology, we can comprehensively balance "scalability" and "decentralization" on the basis of fully ensuring "security", and reduce the impact of "The Impossible Trinity".

Technology is a double-edged sword, it is very important to eliminate disadvantages and save advantages. The application of Blockchain technology in the field of cultural industry is still in initial stage, and there is still a long way to large-scale implementation. The performance of

Blockchain technology still needs to be improved, the application areas should continue to be explored, the problem between efficiency and security still continue to be paid attention to; and the problems of data coordination and supervision should be paid great attention. Therefore, it is necessary to strengthen the guidance and standardization of Blockchain technology, strengthen the research and analysis of possible applications in the field of cultural industry, and promote the orderly development of Blockchain technology in the field of cultural industry.

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