

Research on the Judicial Expertise of Electronic Evidence Based on Blockchain

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Abstract. Give full play to the advantages of blockchain technology, guarantee the consensus of public credit institutions with the help of hierarchical nodes, and form a judicial alliance chain, so that the public can participate in the data verification activities of electronic evidence in the form of organizations, promoting the socialization and development of judicial activities. By using the credible time-stamp evidence, the judicial block chain presents the extremely formidable application superiority, the node verification based on the block chain consensus mechanism, is helpful to form the block chain judicial system which has the extremely application prospect. Through the analysis of the practical application and application prospect of the judicial block chain, the author makes a complete analysis of the idea of the electronic evidence judicial appraisal based on the block chain.

Keywords: Blockchain, electronic evidence, forensic science, Applied Research.

The "participatory" judicature under the block chain structure makes the public become the joint verification node, which makes it possible for the society to share the risk of judicial perjury, this kind of brand-new judicial mode shows the bright banner of the rule of law of socialism with Chinese characteristics in the new era through the institutionalization of public participation in the national governance mechanism.

1 Definition of blockchain evidence

In the new judicial environment, a large number of civil, criminal and administrative cases are also involved in electronic evidence. Facing the severe reality, in recent years, China has accelerated the revision of the relevant laws and confirmed the electronic evidence as a new form of evidence, thus laying a solid foundation for effectively combating crime. Strictly speaking, the blockchain itself is not evidence, but a way to store, carry and fix the electronic data evidence. At the legal level, article sixty-three of China's civil procedure affirms the legal effect of "electronic data" as evidence in civil proceedings. On this basis, in October 2019, the newly revised regulations on Supreme People's Court evidence in civil proceedings (hereinafter referred to as the regulations on evidence in civil proceedings) detailed the scope, judgment methods and admissibility standards of "electronic data" evidence, although there is no mention of "blockchain" evidence as a clear classification of "electronic data" evidence, but article 14 "other information that can prove the facts of the

case stored, processed and transmitted in digital form" provides support for the application of new information technologies such as "blockchain" in civil litigation evidence.

For the first time, the data on the blockchain is clearly defined as the type of evidence in civil proceedings, is in 2018, the entry into force of the Supreme People's Court on the Internet Court to hear the case of a number of issues (hereinafter referred to as the "Internet Court Rules"). Eleven of them is clear, "the Internet Court shall confirm the authenticity of the electronic data submitted by the parties, which can be proved by such technical means as electronic signature, trusted time stamp, hash value verification, blockchain and other evidence collection, fixation and tamper-proof, or by the authentication of the electronic evidence collection and deposition platform. "blockchain evidence" refers to the electronic data evidence that can be effectively tamper-proof, authenticity, and provable through the use of blockchain technology or through the use of the technology's evidence platform to collect, store and fix facts. At present, this kind of evidence has been accepted by judicial interpretation in our country, and it is widely used in the case of Internet court.

The reason why blockchain data can be used as litigation evidence is that the blockchain itself is a way to carry electronic data, on the other hand, it is based on the basic principle of blockchain. According to the white paper on the use of blockchain forensic evidence, it is generally considered that blockchain is a kind of bookkeeping technology, also called distributed bookkeeping technology, which is maintained by many parties, uses cryptography to ensure the security of transmission and access, can realize the consistent storage of data, is difficult to tamper with, and can prevent repudiation. The so-called "blockchain technology", can be understood as a series of existing technology combination application, mainly including: P2P network. Different from the traditional centralized network structure, P2P network refers to the peer-to-peer status of each node in the system, can act as a server. The resources and services in P2P network are scattered on all nodes, and the information transmission and service implementation are directly between the nodes. Consensus mechanism. Blockchain authentication relies on consensus algorithm to achieve consensus rules, node selection and data consistency verification. The independent nodes of the phase chain can send, read and transmit data information to each other. P2P network and consensus mechanism also constitute the decentralization and information disclosure of blockchain technology. Digital signature technology. Digital signature technology uses public-key cryptography to encrypt (form signature) , decrypt operations, and verify that the message forming the signature has not been tampered with. Therefore, digital signature technology can verify the integrity of information. Chain storage. Chaining is a linked list constructed by cryptographic algorithms such as Hasche pointers, and the latter block contains the characteristic information of the previous block, so if you want to modify the data in one of the blocks, then the sequential block data in the chain-like storage structure must be completely modified. The storage structure effectively improves the difficulty of modification and the ability of anti-tamper and anti-forgery of the stored data. In addition, the blockchain authentication platform also uses other information technologies, including trusted timestamps, secure storage, cloud services, and so on. These technologies, together with blockchain technology, ensure the efficient and safe operation of the platform system.

With the help of blockchain technology, litigants can record the whole process of submitting electronic contracts and protecting their rights in the chain of electronic evidence, each organization node carries on the whole process tracking. The platform can verify the contents of certificates, electronic signatures, party information and hash values. Open the "judicial electronic evidence cloud "electronic evidence preservation and authentication certificate"(hereinafter referred to as the certificate) to verify the identity of the parties, confirmed that the parties have passed the real name authentication. Through the multi-party evidence verification platform, the electronic data submitted by the parties

is confirmed to be the electronic data in the certificate, thus ensuring the originality of the electronic data. The recognition of blockchain evidence can not be separated from its own technical characteristics.

2 The effective path of electronic evidence judicial expertise based on blockchain

The rapid development of the information age has not only brought culture shock to our life, but also changed our life rhythm, and with the increasing number of cases of information technology crime and the diversification of criminal means, electronic evidence emerges as the times require, and the collection of electronic evidence has become the focus of providing important clues and solving cases. As for the judicial determination of blockchain evidence, it should closely conform to the civil procedure and the relevant judicial interpretation, and neither should the standard of evidence determination be raised because it belongs to a new and complicated technical means, also can not give up because this technology has the characteristic that tampers with hard, delete to set necessary standard. The Internet court rules, which came into force in 2018, focus on the authenticity of blockchain evidence, and the Supreme People's Court 2021 on January 21 released the draft regulations on certain issues concerning the online handling of People's Court cases (draft for soliciting opinions)(hereinafter referred to as draft for soliciting opinions) , between fourteen and 17[7] , the standards for the judicial determination of blockchain evidence are proposed in terms of the validity of blockchain evidence, the rules for the examination of blockchain evidence, the examination of the authenticity of data prior to the uplink of blockchain, and the determination of the reinforcement of blockchain evidence.

Blockchain technology is constantly integrated into the field of enabling justice. China's judicial practice departments have already explored in various fields, and have also formed a system platform with judicial practicality, for example, "block chain evidence" chain, "block chain appraisal" chain, "Block chain notarization" chain, "block chain arbitration" chain, "judicial chain intelligent contract" to enhance the binding force and enforcement of pre-litigation mediation agreement, and the local department of justice to explore the "block chain legal services" chain around the rule of law and the distribution of judicial administration. To verify the credibility time in the certificate verification of the multi-party evidence verification platform, after submitting the trusted time credential number and hash value (digital fingerprint) verification, the result of "time and event correspondence are clear, and time is certified as authentic, authentic, authentic, and authentic from the Time in Taiwan" is obtained, to confirm the parties to submit electronic evidence of a reliable source of time, traceable and verifiable. The platform supports functions such as evidence verification, electronic evidence storage, electronic evidence collection, blockchain public notice, etc. , focus on the settlement of Internet copyright, internet finance, electronic contracts and other areas of dispute types. In order to reduce the cost of judicial proceedings, improve the efficiency of dispute resolution, and prevent data tampering, the data of the internet evidence platform and the block chain established by the Court should be merged and shared in the stage of trial and execution of cases, we will promote litigation services and the establishment of a public trust system.

3 Suggestions on the improvement of electronic evidence extraction in judicial practice

The electronic evidence appraisal is a new type of judicial appraisal in the judicial practice, which is facing two important issues: technical improvement and legal regulation. In the

aspect of legal regulation, it mainly involves the core issues such as the definition of electronic evidence identification, the scope and types of electronic evidence identification, the basic procedures, technical norms and basic principles of electronic evidence identification. In the Digital Age, the judicial trust system needs two aspects to strengthen: strengthening the tamper-proof of the judicial information, enhancing the transparency and supervisability of the judicial procedure. The integration of blockchain smart contracts can change the way judiciary collaborate and interact with information, and enable data sharing in an automated and intelligent, holistic and collaborative manner, this can not only reduce the uncertainty, randomness and complexity caused by human factors, but also improve the efficiency of judicial cooperation and rapid response capacity. The essence of blockchain is a new type of database software integrated with distributed network, encryption technology, intelligent contract, etc. , it promises to solve trust and security problems in cyberspace. From the technical point of view, blockchain is not only a technical innovation, its wide application also means a change in governance, is expected to develop into a new information infrastructure to realize value interconnection, and rebuild social trust pattern, this will revolutionize the industry and create new forms of business.

Block chain evidence and its rule preliminary formation. The scope of application is not limited to civil and administrative cases, but also includes criminal cases of speedy trial procedure, commutation and parole cases, as well as criminal cases that are unsuitable for offline trial for other special reasons. This not only means the integration of block chain technology and litigation rules, but also opens the way for the development of block chain judicial model.

As an information technology, blockchain is the result of human intelligence and human behavior. Therefore, the law on blockchain refers to a set of behavior rules system which is created and applied by human beings. So cross-blockchain is like using the Internet, with huge initial dividends, especially in areas of multi-disciplinary integration. Whether it is Blockchain + law, blockchain + AI, or Blockchain + any industry, how to combine the blockchain with the original industry has become a matter of great concern to everyone. This year, whether looking globally or at our country, the area of blockchain and digital currency has entered a period of rapid development. While the technological basis and business model are constantly innovating, the trend of legal policy and supervision is becoming clearer, it also provides an important foundation for the further application of blockchain technology.

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At present, in the judicial cognizance of blockchain evidence, the most concerned problem is the judgment of the authenticity of evidence. According to the current judicial precedent, the court generally reviews the facts concerning blockchain evidence from two aspects, namely, the conformity of the platform of blockchain evidence and the authenticity of blockchain evidence. When using the blockchain authentication platform for fact fixing, should choose a well-known platform with important qualifications, such as block chain information service registration and filing, etc. , and CA certificates issued by state-authorized third-party electronic certification bodies, etc. , the authenticity of pre-deposition evidence should be ensured as much as possible.

4 Conclusion

Under the condition that the rule of block chain evidence is not clear enough, the authenticity of block chain evidence can also be proved by applying for judicial expertise. Of course, the ultimate goal of blockchain evidence is to provide a convenient, tamper proof bearing and fixing way for the People's Court to judge and restore the facts by means of decentralization. As for the rule and standard of the block chain evidence, the detailed standard should be issued as soon as possible, so as to be better applied in the judicial practice.

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References

1. Zhang Yujie. The judicial application, system problems and evidence law innovation of blockchain technology [J]. East Law, 2019, (3): 99-109.
2. Zheng Guan, Fan Ketao, Wu Hong. The path to determine the authenticity of blockchain electronic evidence [J]. People's Justice, 2020, (4): 106-111.
3. Bai Xuotong, Wang Qiuyun, Chen Ying. Research on the Application of Electronic Evidence Platform Based on Blockchain Technology [J]. Cyberspace Security, 2020, (10): 104-109.
4. Chen Wei, Zhang Mingyang. The application and development of blockchain in Internet justice - an empirical analysis based on the judicial blockchain platform of Hangzhou Internet Court [J]. People's Justice, 2020, (31): 4-8.
5. Yi Ran. The application exploration and practice of blockchain technology in the judicial field - an empirical analysis based on the Beijing Internet Court Tianping Chain [J]. China Applied Law, 2021, (3): 20-34.