

Challenges in the Development of Blockchain Finance

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Abstract

The development of digital technology is promoting profound changes in the financial field, and blockchain, as the pioneer of this change, is becoming a powerful tool to solve traditional financial problems with its decentralization and automation, and is gradually finding applications in the fields of banking, insurance, securities and credit information. As an emerging technology, the application of blockchain in the financial field faces both the risks of the technology itself and the challenges of the institutional level. In order to address these challenges, it is necessary to improve the blockchain financial regulatory system, which includes updating the regulatory concept, broadening the scope of supervision, and improving the regulatory mechanism.

Keywords: Blockchain Finance, Financial Technology, Financial Risk

Since 2017, blockchain finance has attracted a lot of attention around the world. Blockchain technology has developed from the 1.0 version of digital currency, to the 2.0 version of smart contracts, and then to the 3.0 version of the Internet, which is gradually changing the face of the financial industry. However, the decentralization and anonymity of blockchain pose new challenges to the traditional financial regulatory system and contain many potential risks. In view of this, this paper aims to discuss the basic operating principles, existing risk types and application scenarios of blockchain finance, in order to provide reasonable suggestions for the development and application of blockchain technology in the financial field.

The basic characteristics of blockchain finance

1. Decentralization: In the digital age, people are increasingly relying on online information. Traditionally, information sharing and cooperation in networks have relied on a central authority to maintain the authenticity and consistency of information. However, blockchain technology achieves consensus through a distributed network without the need for a centralized control authority. In a blockchain system, multiple participants can independently verify, accept, or reject transactions, and power and control are distributed across multiple nodes in the network, reducing reliance on a single central authority [1].
2. Automation: Compared to traditional cooperation models, blockchain technology has automation as one of its core features. In this model, machines, rather than humans, become the subject of cooperation, reducing the need for human intervention. This automation not only reduces the risk of human error, but also improves processing efficiency, making information exchange faster, more cost-effective, and more reliable.
3. Immutability of data: This feature is the key to the adoption of blockchain in the financial sector. Once verified information is uploaded to the blockchain, it is stored for a long time and is difficult to tamper with. Normally, unless more than half of the nodes in the system are attacked, the modification of a single or a few nodes will not affect the authenticity of the information in the database.
4. Trustlessness: In a blockchain, transactions between nodes are automatically executed by the system, based on specific rules and protocols. Once the trading conditions are met, the trade is carried out automatically without human intervention. This means that even if there is no

mutual trust between the two parties to the transaction, the transaction can be completed smoothly. In addition to encrypted information, the data in the blockchain system is extremely open and transparent, and anyone can query the data on the chain through the interface, thereby reducing the cost of trust and ensuring the reliability of transactions.

5. Anonymity: Blockchain makes it possible for nodes to transact securely in the absence of a foundation of trust. This shows that both parties to the transaction do not need to establish trust by disclosing their identities, but only need to provide the necessary transaction information, effectively protecting the privacy of both parties.

Application of blockchain finance

1. Banking: Blockchain technology has a wide range of applications in the banking industry, covering supply chain finance, trade finance, and transaction clearing. In supply chain finance, blockchain promotes the transparent circulation of credit information, reduces the cost of cooperation, and improves the efficiency of performance, especially through smart contract technology, which accelerates the speed of capital flow and effectively alleviates the financing problems of small and medium-sized enterprises. At present, the most extensive impact of blockchain technology on the banking business is the payment and settlement business. Since blockchain technology can rely on the P2P network platform to achieve peer-to-peer network payment, the technology of encrypted data transmission also ensures the security of payment, and the transaction data is stored in each participating node, without data loss, which greatly reduces the security risk of transaction data storage. At the same time, with the support of P2P network technology, blockchain technology can effectively help the transaction party reduce payment costs, improve payment efficiency, be safe and convenient, accelerate the efficiency of capital circulation, and greatly promote the transformation and upgrading of bank settlement business.

2. Digital currency: On January 3, 2009, the birth of Bitcoin created a precedent for encrypted digital currency, and also marked the advent of the first generation of blockchain technology. This new form of money subverts the traditional transaction model of material exchange and national monetary intermediary, reconstructs the credit system through encryption technology, and breaks the centralized trust mechanism that previous exchanges relied on. Thanks to the

support of Internet technology, digital currency not only brings more convenient and fast payment methods for consumers and business transactions, but also enhances the government's ability to supervise currency circulation due to its controllable digital circulation characteristics, so it has been widely recognized by global financial institutions. Today, digital currencies have developed into one of the most widely used and mature blockchain-based financial products^[2].

3. Securities industry: Blockchain technology has had a significant impact on the traditional securities market, not only reshaping the transaction process, reducing the cost of trading, but also significantly improving the success rate of transactions. Taking advantage of the decentralized nature of blockchain and the difficulty of data tampering, enterprises can issue securities through blockchain, thus getting rid of the traditional centralized transaction model. This innovation reduces the involvement of traditional intermediaries, realizes direct transactions between investors and instant liquidation, greatly reduces the cost of securities issuance and improves the efficiency of issuance. Since December 2015, when the blockchain trading of private securities was first realized, the model of "blockchain + securities" has been opened, demonstrating the broad prospects of blockchain technology application in the securities industry.

4. Credit reporting industry: For the credit reporting industry, the application of blockchain technology is expected to break down data silos and achieve information sharing and transparency. By establishing a blockchain-based credit reporting platform, credit data can be shared openly and transparently, and each node can be provided with equal opportunities to obtain data, thereby reducing the problem of information asymmetry. In addition, blockchain technology can be used to establish an effective blacklist and whitelist system, share bad customer information to reduce transaction risks, and set up access rights to protect the interests of financial institutions.

Risks of blockchain financial operation

1. Technology dependency risk: In the fintech sector, blockchain innovation comes mainly from existing financial institutions and tech start-ups. While traditional financial institutions are investing more to strategically respond to emerging competitors, they are inevitably

affected by technological constraints in the face of technological challenges, whether they choose to compete or cooperate. In order to stand out in the field of blockchain finance, it is essential to master key technologies, otherwise, the lack of trust between partners will hinder the further development of blockchain finance [3].

2. Data risk: A major problem in the blockchain finance sector is the extreme dependence on data, which leads to the resourceization, power, and ideology of data, and can lead to automation bias. At the same time, the limitations of financial big data such as insufficient data, untruthfulness, non-objectivity, and insufficient structure have emerged. In addition, the data silos in the financial industry and the lack of information interoperability between blockchain networks limit the user's choice, and although the blockchain can ensure the immutability of the data, it cannot ensure the authenticity of the input data.

3. System security risks: Although blockchain technology is known for its security, there are still vulnerabilities in the system code. No system can achieve absolute security, and the immutability of the blockchain is actually "difficult to tamper with", because if someone controls more than half of the node's computing power, it is theoretically possible to tamper with the blockchain. In fact, it is not uncommon for blockchain platforms to be hacked, and several well-known platforms have suffered significant losses as a result [4].

Suggestions for the development of blockchain finance

1. Development Strategies of Practitioners: In the process of continuous growth in the field of blockchain finance, optimizing the construction of practitioners has become the key to improving development efficiency. This includes strengthening the in-depth research on the underlying technology of the blockchain, based on the existing technology platform and development goals, and breaking through the restrictive challenges encountered one by one to ensure the reliability of the technology, so as to improve the defense against risks. At the same time, it is important to select the right application scenarios to ensure that the security, functionality and performance of blockchain technology can meet the needs of specific financial environments. The key is to select application scenarios according to business characteristics, avoid blind application of blockchain technology, and ensure its compatibility and adaptability in the financial field.

2. Role of Government Regulators: For government regulators, the first task is to improve the policies and standards of blockchain financial supervision, avoid the abuse of technology, and ensure the health, safety and stability of blockchain financial activities. Regulatory principles should take rationality, effectiveness and proportionality as the primary considerations, and improve the standardization of regulatory work. Regulatory strategies should be rational about the innovation and application of blockchain, and use its technological advantages to improve the quality and efficiency of financial services, while avoiding excessive intervention and "one-size-fits-all" policies, emphasizing the flexibility of supervision, and preventing risks such as runaway innovation and excessive investment^[5].

3. Support from national policies: At the national policy level, stronger support should be provided for the research and development and application of blockchain technology, intellectual property rights should be protected, the formation of a fintech industry chain with blockchain finance as the core should be promoted, and a new financial ecosystem should be built. This includes vigorously supporting technological innovation, nurturing leading enterprises with technological leadership and the potential for wide application, and ensuring that these enterprises are well versed in the laws of finance. At the same time, we will provide more cultivation and support for relevant science and technology enterprises, create a good development environment through industrial parks, expand financing channels and optimize policy support, and cultivate small and micro enterprises with strong innovation and high professional level. In addition, we will strengthen talent training, cultivate high-quality compound talents in the field of blockchain finance through higher education institutions, and provide more professional human resources for the development of the industry.

Conclusion

As blockchain finance continues to advance, the financial industry's fragility and trust issues have been significantly mitigated. However, blockchain technology is still in the process of continuous development and maturity, facing a series of development challenges. In view of this, it is necessary to further promote the growth of blockchain technology, strengthen comprehensive management capabilities, effectively improve the ecological environment of

the industry, and ensure that the application of blockchain technology in the financial field is more standardized and safer.

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