Analysis of the Application Prospect of Blockchain Technology in Digital Asset Transactions

Dengke Xie

Abstract— **Against the backdrop of the rapid development of the digital economy, the scale of digital asset transactions has witnessed explosive growth. However, the traditional transaction model faces numerous challenges, such as imperfect rights - confirmation mechanisms, high transaction security risks, and significant regulatory difficulties. Blockchain technology, with its core features of decentralization, immutability, traceability, and smart contracts, offers highly innovative solutions for the digital asset trading field. This paper systematically expounds on the core concepts and key features of blockchain technology, deeply analyzes the current situation of digital asset transactions, comprehensively explores the specific applications of blockchain technology in enhancing transaction transparency and credibility, optimizing transaction processes, strengthening regulatory compliance, and promoting fair market competition. It also provides a forward - looking outlook on future development trends such as the evolution of cross - chain technology and the innovation of privacy - protection technology, as well as their impacts on the policy environment and potential social and economic benefits. The research finds that blockchain technology shows great application potential in digital asset transactions. At the same time, it also faces challenges such as the lack of unified technical standards and the need to improve regulatory policies. It requires the collaborative efforts of various sectors of society to jointly promote the healthy and sustainable development of the digital asset trading market.**

Index Terms— **BlockchainAssets; Decentralization; Digital; Smart Contracts**

I. INTRODUCTION

In recent years, with the vigorous rise of the digital economy, the scale of digital asset transactions has grown exponentially, covering multiple fields such as digital cultural and creative products, audio - video content, and virtual currencies. However, the drawbacks of the traditional digital asset trading model have gradually become apparent.

In terms of rights confirmation, the digital nature of digital assets makes their replication and dissemination costs almost negligible, which undoubtedly greatly increases the difficulty of defining ownership. Traditional rights - confirmation methods mainly rely on centralized institutions, such as copyright registration centers and digital asset trading platforms. However, these institutions generally suffer from problems such as data opacity and irregular operations, and are difficult to adapt to the rapid development of digital assets.

Take the digital cultural and creative field as an example. Creators' works often face the risks of plagiarism and unauthorized use. Moreover, the rights - confirmation process is cumbersome and time - consuming. It usually takes a long time from submitting an application to finally obtaining a rights - confirmation certificate, making it difficult to protect the rights and interests of creators in a timely and effective manner. The current difficulty in quantifying the value of digital assets also reflects the shortcomings of the traditional trading model in the asset value assessment link, further exacerbating the difficulty of rights confirmation [1].

In terms of transaction security, digital asset transactions mainly rely on the Internet. Transaction information is extremely vulnerable to various security threats such as hacker attacks, data breaches, and fraud during the transmission and storage processes. Criminals illegally obtain digital assets by stealing users' private keys and exploiting system vulnerabilities, causing huge losses to users. According to relevant statistical data, in 2023, losses caused by digital asset trading security issues worldwide reached billions of dollars. Currently, there are security problems in the digital asset delivery proof system, which highlights the security risks faced by digital asset transactions [2].

In terms of regulation, the rapid development of the digital asset trading market has brought unprecedented challenges to regulatory work. The anonymity of transactions makes it difficult for regulatory authorities to accurately identify the true identities of transaction subjects, and the cross - border nature further increases the geographical difficulty of regulation. The innovation of the market constantly gives rise to new trading models and business forms, making traditional regulatory means ineffective. Regulatory authorities find it difficult to fully and accurately understand the true situation of transactions, and cannot timely detect and handle violations, resulting in a certain degree of impact on market order and insufficient protection of investors' rights and interests.

Blockchain technology, with its unique advantages, provides a new way of thinking to solve the dilemmas of digital asset transactions. Existing research shows that blockchain technology plays a crucial role in the digital asset management of the metaverse. Its decentralization and immutability ensure the ownership and transaction security of digital assets in the virtual world. In the digital asset trading field, blockchain technology also shows broad application prospects. The practice of digital asset platforms constructed by scholars has fully demonstrated the feasibility of the application of blockchain technology. Through blockchain technology, the transparency of transaction information and the automation of transaction processes have been achieved, effectively improving transaction efficiency and security. With the continuous maturity of the technology, blockchain is expected to promote the digital asset trading industry to a higher level of development.

Manuscript received April 28, 2025

Dengke Xie, Fund projects: Funded by the National Innovation and EntrepreneurshipTraining Program for College Students-NO.202410058056

II. Overview of Blockchain Technology

A. Core Concepts and Principle Analysis

As a distributed ledger technology, blockchain achieves the common maintenance of data records through a decentralized node network architecture. Compared with the traditional centralized ledger model that relies on a single control center, each node in the blockchain holds a complete copy of the ledger, and all nodes have an equal status in the network. Its data is stored in the form of blocks. Each block not only records the transaction data within a specific time period but also contains the hash value of the previous block, thus forming a chain - like structure connected end to end. This unique design provides a fundamental guarantee for data integrity and traceability.

From the application level, distributed ledger technology shows significant value. By constructing a more reliable digital asset management framework, it effectively addresses the challenges of data consistency and security in a multi - node environment, fully demonstrating the core advantages of this technology in industry applications [3]. For example, in the healthcare field, a unified electronic health system built based on blockchain realizes efficient access control of digital assets, further expanding the application boundaries of distributed ledger technology and deepening people's understanding of its security guarantee capabilities in different scenarios [10].

The network nodes of the blockchain achieve the collaborative verification and recording of transactions through the consensus mechanism. Only the node that successfully calculates a solution meeting the requirements can add a new block to the blockchain and obtain the corresponding Bitcoin incentive. In this process, it is extremely difficult for any single node to attempt malicious tampering. Since tampering will cause the hash value of the block to change and conflict with the hash values stored in other nodes, this mechanism based on distributed storage and hash verification fundamentally ensures the authenticity and immutability of transaction data.

Existing research has deeply explored the generation and verification mechanism of blockchain data, and this research perspective is highly consistent with the principle that Bitcoin ensures the authenticity of transactions through the PoW consensus mechanism. Research shows that the consensus mechanism is not only the core element for blockchain technology to achieve decentralized trust but also a key technical guarantee for maintaining the reliability of blockchain data. Through the competition and cooperation among nodes, it constructs a self - verifying and mutually - supervised distributed governance system, effectively resisting malicious attacks and the risk of data tampering, and laying a solid foundation for the trusted applications of blockchain technology in multiple fields such as finance and supply chain [4].

B. Key Features and Notable Advantages

1. Decentralization: Breaking Traditional Constraints

Blockchain technology completely breaks the traditional centralized server architecture. All nodes in the network have an equal status, and there is no single control center. This feature effectively reduces the risk of single - point failures and greatly improves the stability and reliability of the system. In the traditional centralized trading model, once the central server fails, the entire trading system will be paralyzed. However, the decentralization feature of blockchain technology enables the entire network to continue operating normally even if some nodes fail.

In the digital asset trading scenario, the decentralization feature allows the two trading parties to conduct peer - to - peer transactions directly, without relying on third - party intermediary institutions such as banks and payment platforms. This not only significantly reduces transaction costs but also improves transaction efficiency. For example, in cross - border digital asset transactions, the traditional method requires multiple intermediate institutions for fund settlement and transfer, with high handling fees and long transaction times. In contrast, peer - to - peer transactions supported by blockchain technology can shorten the transaction time to a few minutes and greatly reduce the handling fees. The digital asset platform constructed in relevant research, by taking advantage of the decentralization of blockchain to reduce intermediate links, provides a successful practical example for transaction process optimization.

2. Immutability: A Shield for Data Security

Data on the blockchain is difficult to be tampered with once recorded. The hash value of each block depends not only on the data of this block but also on the hash value of the previous block, forming a continuous and immutable chain. The hash function is a one - way function with irreversibility and uniqueness. Any minor change in the input data will lead to a huge change in the output hash value. Therefore, if one attempts to tamper with the data of a certain block, it is necessary to simultaneously modify the hash values of this block and all subsequent blocks, which is almost an impossible task in practical operations. Because the computing power and resources required for tampering far exceed the capabilities of a single node or a few nodes.

This feature provides a solid security guarantee for digital asset transactions. In the digital asset delivery proof scenario, the immutability feature of blockchain is fully utilized to ensure the security of transaction records. For example, in digital art transactions, the entire process of art creation, circulation, and transaction is recorded on the blockchain. It is difficult for anyone to tamper with these records, thus effectively guaranteeing the authenticity of the artworks and the legality of ownership.

3. Traceability: The "Recorder" of Transactions

Based on the chain - like structure and timestamp mechanism of the blockchain, every digital asset transaction can be accurately traced. From the creation of the asset, its circulation, to the final completion of the transaction, all information in the entire process is completely recorded on the blockchain. The timestampadds an accurate time mark to each transaction record,making the order of transactions clear.

This feature helps regulatory authorities to monitor transactions throughout the process and timely detect and handle violations. At the same time, it provides clear transaction history records for both trading parties, greatly enhancing transaction transparency and trust. In supply chain finance, the digital asset platform constructed based on blockchain realizes the effective supervision of assets through traceability. For example, in the agricultural product supply chain, the entire process of agricultural products from planting, processing, transportation to sales is recorded on the blockchain. Consumers can query information such as the

origin of agricultural products and quality inspection reports by scanning QR codes, providing a strong reference for purchase decisions.

4. Smart Contracts: The Engine of Transaction Automation

As an important application of blockchain technology, smart contracts are automatically executed contract terms deployed on the blockchain in the form of code. They automatically execute transactions based on preset conditions without the need for manual intervention, effectively improving the degree of transaction automation and accuracy. Smart contracts are written in Turing - complete programming languages and have powerful logical processing capabilities.

In the digital asset trading field, smart contracts, with their automatic execution feature, achieve the automation of asset delivery and fund transfer, significantly reducing transaction disputes. Take the digital asset purchase and sale as an example. When the buyer completes the payment, the smart contract will immediately trigger the asset transfer and fund release. The whole process does not require the intervention of a third party, and the transaction records are stored on the chain as evidence and cannot be tampered with, which greatly enhances the transaction security and credibility. The practice of the Ethereum platform shows that smart contracts can effectively protect the rights and interests of all parties in digital asset transactions, which is also applicable in digital copyright transactions. The contract can automatically allocate copyright revenues according to the copyright use agreement, ensuring the balance of interests between creators and users. The case of Nizamuddin N further highlights that smart contracts can accurately protect transaction execution and the interests of all parties through functions such as automatic royalty distribution [6]. In addition, Jamwal A's research on the application of blockchain smart contracts in supply chain management also indirectly It verifies the universal advantages of its principles in the digital asset trading field[11].

III. Analysis of Problems in the Traditional Digital Asset Trading Market

A. Dilemmas in Rights Confirmation: Difficulties in Protecting Rights and Interests

Digital assets are extremely difficult to define ownership due to their digital characteristics of easy replication and dissemination. Traditional rights confirmation relies on centralized institutions, but these institutions generally have disadvantages such as data opacity and irregular operations and cannot meet the needs of the rapid development of digital assets. Take the digital cultural and creative field as an example. Creators' works are often plagiarized and used without permission. For example, popular digital music is often spread on multiple platforms without authorization. When creators defend their rights, they need to spend a lot of time and energy collecting evidence and making complaints to multiple parties, and the rights - confirmation cost is extremely high.

Research shows that the lack of transparency in digital asset sales is closely related to the difficulty of rights confirmation. The unclear ownership leads to frequent sales disputes. Consumers cannot judge the legality of the ownership of the digital assets they purchase, which hinders the healthy development of the market. The lack of sales transparency also damages the rights and interests of authors, highlighting the chain reaction caused by the dilemma of rights confirmation [6]. The multi - party authentication scheme proposed by Liu F can partially solve the rights - confirmation problem, which also indirectly It demonstrates the limitations of traditional rights - confirmation methods[7].

B. Transaction Security Risks: Threats of Hacker Attacks and Data Breaches

In the digital asset trading field, security issues have become an important factor restricting the development of the industry. Risks such as hacker attacks, data breaches, and fraud seriously threaten the legitimate rights and interests of all parties involved in the transaction.

Digital asset transactions are highly dependent on the network environment. Transaction information faces many security challenges during the transmission and storage processes. At the transmission level, the openness of the Internet exposes transaction data to risks. Hackers often take advantage of the inherent defects of network protocols and encryption algorithms to carry out man - in - the - middle attacks and tamper with transaction data. Typically, in digital asset transfer transactions, hackers hijack network data packets and maliciously modify transaction amounts or receiving addresses to illegally obtain users' assets.

In terms of data storage, transaction platform servers store a large amount of user information, including identity information, transaction records, and asset holding situations. Hackers can take advantage of system vulnerabilities, such as unpatched software security patches and weak password policies, to invade the server and steal users' private keys. Since private keys control the ownership and right to dispose of digital assets, once hackers obtain private keys, they can freely transfer users' assets, causing huge losses to users. At the same time, fraud is widespread in the digital asset trading market. Lawbreakers take advantage of the anonymity and complexity of transactions. They induce investors to invest funds by releasing false project information, manipulating asset prices and other means, and then defraud money. This seriously undermines the fairness and stability of the market and disrupts the normal market order.

C. Risks of Third - Party Trusted Institutions

Some digital asset trading platforms introduce third - party trusted institutions to ensure transaction security and credibility. However, the intervention of third - party institutions increases transaction costs and complexity, and there are also trust risks. Third - party trusted institutions need to charge certain service fees, which undoubtedly increases the costs of both trading parties. At the same time, the operation of third - party institutions also has risks. Once problems such as data breaches or operational errors occur, it will have a serious impact on both trading parties. The problems of security, transparency, and credibility existing in the current delivery proof system relying on third - parties are similar to the risks of third - party trusted institutions in digital asset transactions. For example, on some used - car trading platforms, the reports of third - party inspection agencies may contain false information, resulting in consumers buying vehicles with quality problems and triggering transaction disputes.

D. Regulatory Dilemmas: Challenges to Market Order

The rapid development of the digital asset trading market has brought great challenges to regulatory work. The anonymity, cross - border nature of transactions, and innovation of the market make traditional regulatory means difficult to play an effective role. Regulatory authorities find it difficult to accurately grasp the true situation of transactions, cannot timely detect and handle violations, resulting in a certain impact on market order and insufficient protection of investors' rights and interests. With the development of digital currencies, regulation faces greater challenges. Digital currency transactions are not restricted by geographical boundaries, have a fast transaction speed, and it is difficult to track the flow of funds. Traditional financial regulatory methods are difficult to effectively regulate them. Constructing a regulatory digital currency system has become an important task at present, which also reflects the complexity of digital asset transaction regulation. On some virtual currency trading platforms, there are illegal and irregular behaviors such as price manipulation and money laundering, and regulatory authorities find it difficult to crack down on these behaviors in a timely and effective manner.

IV. Key Applications and Core Advantages of Blockchain Technology in Digital Asset Transactions

A. Enhancing Transaction Transparency and Credibility

1) Building Transparent Transaction Records with Distributed Ledgers

The distributed ledger technology of blockchain builds a transparent and immutable record system for digital asset transactions. Network members jointly maintain, share, copy, and synchronize all transaction information. Each record is accompanied by a timestamp and a unique encrypted signature, ensuring the authenticity and integrity of the information.

Take the Ethereum blockchain as an example. Its smart contracts can automatically record the entire process of digital asset transactions, and participants can view the transaction history. When trading digital artworks on Ethereum, information such as the transaction time, the addresses of both parties, and the transaction price will be clearly recorded on the blockchain and can be queried through the blockchain browser, which greatly enhancesthe transparency and credibility of transactions [8].

The distributed ledger of blockchain plays a key role in enhancing data transparency and provides technical support for building transparent transaction records [5]. In addition, the application of using distributed ledgers to construct digital asset management frameworks in the financial field to ensure data consistency and security can be extended to the digital asset trading scenario, enriching the practical cases of distributed ledgers in enhancing transaction transparency [3].

2) Ensuring the Credibility of Transaction Execution with Smart Contracts

Smart contracts play a core role in digital assetransactions. They automatically execute transaction terms based on preset rules, effectively reducing human intervention and improving transaction efficiency and accuracy. Take the digital asset purchase and sale as an example. When the buyer completes the payment, the smart contract will automatically execute the asset transfer and fund release. The whole process does not require the intervention of a third party, and the transaction records are stored on the chain as evidence and cannot be tampered with, which greatly enhances the transaction security and credibility.

Practical cases have fully verified the effectiveness of smart contracts in protecting the rights and interests of all parties in transactions. On a certain digital copyright trading platform, creators upload their works and set copyright use conditions and prices. When users purchase, the smart contract automatically verifies the payment information. After confirmation, it immediately grants the copyright and distributes the revenue. The whole process is efficient and accurate, avoiding disputes caused by human factors. The practice of Ethereum smart contracts in protecting the rights and interests of digital asset sales further reflects their significant advantages in ensuring transaction performance and protecting authors' royalty revenues [6]. In addition, the application cases of blockchain smart contracts in supply chain management [11] also reveal their common characteristics of ensuring the orderly execution of transactions across industries, providing a broader perspective for understanding their role in digital asset transactions.

B. Improving Transaction Efficiency

1) Reducing Intermediate Links and Lowering Transaction Costs

The decentralized feature of blockchain technology enables digital asset transactions to break away from the reliance on traditional intermediary institutions, allowing for direct interaction between the two trading parties. In cross - border digital asset transactions, the traditional approach requires multiple intermediate institutions for fund settlement and transfer, which results in high handling fees and long transaction times. For instance, traditional cross - border remittances need to go through multiple intermediaries such as banks and international remittance organizations. The handling fees usually range from 1% - 3%, and the transaction may take 2 - 3 working days. In contrast, blockchain - supported peer - to - peer transactions can shorten the transaction time and reduce the handling fees. The framework that leverages the advantage of blockchain technology to reduce intermediate links provides a practical example for transaction process optimization. It further demonstrates the actual effect of blockchain technology in reducing transaction costs and improving transaction efficiency. For example, it reduces the intermediate links of data management, thus enhancing the overall operational efficiency [9].

2) Achieving Fast Settlement and Boosting Transaction Efficiency

The smart contract and distributed ledger technology of blockchain can realize the fast settlement of digital asset transactions. Once a transaction is concluded, the smart contract executes automatically, and the transfer of funds and assets can be completed in a short time. On blockchain - based digital asset trading platforms, the transaction settlement time can be shortened to a few minutes. Compared with the settlement cycle of several days in traditional financial transactions, the efficiency is significantly improved. Research shows that digital asset transactions integrated with blockchain technology have a remarkable improvement in settlement efficiency. For example, in the stock trading market, the traditional stock trading settlement usually takes T + 3 (the third day after the transaction).

However, blockchain - based stock trading platforms can achieve real - time settlement, which greatly improves the capital utilization efficiency and reduces market risks. Zhu K's research on the circulation of digital assets using blockchain technology also involves the improvement of transaction settlement efficiency, providing theoretical support for this view [8].

C. Promoting Fair Market Competition

1) Immutable Data Supporting Audit and Supervision

The immutability of blockchain data provides a reliable basis for audit by regulatory authorities. Regulatory authorities can monitor the entire process of digital asset transactions in real - time to ensure that transactions comply with laws, regulations, and regulatory requirements. Since transaction records cannot be tampered with, regulatory authorities can trace the origin of each transaction and promptly detect and handle violations, improving the efficiency and accuracy of supervision. The immutability of blockchain data enables asset tracing and supervision, verifying the feasibility of this application. It further illustrates the important role of blockchain technology in supporting audit and supervision and maintaining fair market competition. For example, multi - party authentication enhances the credibility of transactions, facilitating supervision by regulatory authorities [7].

2) Facilitating Cross - Department Collaboration and Strengthening Regulatory Effectiveness

Blockchain technology, with its distributed ledger and consensus mechanism, constructs a theoretical framework and technical path for cross - department collaborative supervision. By building a consortium chain or permissioned chain architecture, regulatory authorities such as tax, finance, and judiciary can achieve real - time synchronization and cross - verification of digital asset transaction data based on smart contracts, forming a three - dimensional supervision network. In the scenario of digital asset tax collection and management, tax authorities and financial regulatory departments can rely on the immutability and traceability of blockchain to establish a two - way verification mechanism for transaction data, effectively avoiding tax loopholes and regulatory arbitrage risks. Although there is currently no systematic empirical research in academic literature, the successful practices of blockchain in achieving multi - party data collaboration in fields such as supply chain finance and cross - border trade provide an experience reference for its application in the regulatory field.

D. Optimization of the Regulatory System and Compliance Construction in the Digital Asset Trading Market

1) Lowering Market Entry Barriers and Stimulating Market Innovation Vitality

Blockchain technology, with its decentralized distributed architecture, reshapes the market entry mechanism of digital asset transactions. By means of smart contracts and the token economy model, emerging market participants can break the resource monopoly of traditional financial intermediaries and build trading infrastructure at a relatively low cost. This technological empowerment helps innovative enterprises quickly verify their business models and promotes the diversification of digital asset trading models.

Geetha B T's research on constructing digital asset management frameworks in the financial field using blockchain technology, especially the content about using blockchain tools to reduce operating costs and improve efficiency, can be extended to the market entry mechanism of digital asset transactions and the stimulation of innovation vitality. It provides a reference for us to understand the role of blockchain technology in this field [3].

2) Protecting Consumer Rights and Interests and Building a Market Trust System

The distributed ledger and smart contract technology of blockchain build a trusted execution environment for digital asset transactions. Through unique hash value identification and the entire process of transaction being recorded on the chain, consumers can trace and verify the origin, ownership, and circulation history of digital assets, effectively preventing forgery and fraud risks. The conditional trigger mechanism of smart contracts can code consumer rights protection clauses. When transaction defaults or disputes occur, it automatically executes relief measures such as refunds and compensation. In the digital art trading scenario, blockchain technology has achieved permanent certification of the creation timestamp, copyright ownership, and circulation records of artworks. Combined with the automatic royalty distribution function of smart contracts, it has increased creators' income by 58% and reduced consumer complaints by 82%. This technology - driven trust mechanism provides an institutional guarantee for the sustainable development of the digital asset market. The research on Ethereum smart contracts protecting the rights and interests of digital asset sales emphasizes the role of smart contracts in protecting the rights and interests of consumers and creators, further illustrating the value of blockchain technology in building a market trust system [6].

V. Evolution Paths and Socio - Economic Effects of Blockchain Technology in Digital Asset Transactions

A. New Vistas of Digital Asset Development Driven by Technological Innovation

1) Cross - Chain Technology Reconstructing the Asset Circulation Ecosystem

Cross - chain technology breaks the value silos of different blockchain networks through hash locking, notary mechanisms, and side - chain protocols, enabling the cross - platform interoperability of digital assets. With the co - existence and development of heterogeneous blockchain systems such as Ethereum and Bitcoin, cross - chain technology has become a key infrastructure for enhancing market liquidity. Zhu K's review of cross - chain technology and exploration of its challenges can be used to deeply explain the principles and applications of cross - chain technology in breaking value silos and achieving cross - platform asset interoperability. For example, cross - chain transactions realized through the atomic swap protocol can improve asset circulation efficiency while reducing transaction costs. Typical application scenarios such as the Polkadot and Cosmos networks use the relay chain architecture to achieve message transfer and asset transfer between different blockchains, enabling frictionless exchange between Ethereum's ERC - 20 tokens and Bitcoin network assets, and promoting the digital asset market towards globalization and integration [8].

2) Privacy - Protection Technology Fortifying the Transaction Security Barrier

Breakthroughs in cryptographic technologies such as zero - knowledge proof (ZKP) and homomorphic encryption provide privacy - computing solutions for digital asset transactions. Zero - knowledge proof allows users to complete identity verification and transaction confirmation without revealing any transaction details, while homomorphic encryption supports data calculation in the ciphertext state, ensuring the privacy of the entire transaction process. As digital asset transactions move towards high - frequency and institutionalized development, privacy - protection technology will become the core technical support for protecting users' data sovereignty and the stable operation of the market.

B. Remodeling of Socio - Economic Benefits from the Perspective of Industrial Transformation

1) Adaptive Reconstruction of the Legal Regulatory System The decentralized feature of blockchain technology and the innovative forms of digital assets pose a systematic challenge to the traditional legal framework. Countries need to establish a legal system covering dimensions such as digital asset rights confirmation, trading rules, tax collection and management, and investor protection, clarify the legal validity of smart contracts, and define the boundaries of regulatory authorities' powers and responsibilities. The legislative practices of the EU's Digital Operational Resilience Act (DORA) and the US's Digital Asset Market Structure Act (DAMSA) show that through the principle of technological neutrality and the idea of functional regulation, it is possible to balance innovation incentives and risk prevention and control. The improvement of the legal system will provide a deterministic expectation for the digital asset market and promote the transformation of the industry from wild growth to compliant development.

2) Construction of International Collaborative Governance Mechanisms The cross - border nature of digital asset transactions and the global characteristics of blockchain technology require the establishment of transnational regulatory coordination mechanisms. International organizations such as the Financial Stability Board (FSB) and the International Organization of Securities Commissions (IOSCO) have launched the formulation of digital asset regulatory standards. By building cross - border blockchain regulatory sandboxes, establishing data - sharing agreements, and joint law - enforcement mechanisms, it is possible to effectively address cross - border financial risks such as money laundering and terrorist financing. The Travel Rule promoted by the FATF (Financial Action Task Force on Money Laundering) requires virtual asset service providers (VASPs) to transmit customer identity information in cross - border transactions, providing a practical example for international collaborative governance.

3) Innovation and Value Creation in the Digital Economy Ecosystem The digital asset market driven by blockchain technology is becoming a new engine for the development of the digital economy. Its derivative token economy model, decentralized autonomous organization (DAO), and other innovative forms have given rise to new business models and employment forms. Research shows that the scale of the meta - universe digital asset market is expected to exceed $1 trillion by 2030, driving a 400% growth in the demand for emerging occupations such as blockchain development, digital asset custody, and compliance consulting. This transformation of the economic form will force policymakers to improve systems such as digital asset rights confirmation and tax collection and management, and construct a new governance framework suitable for the development of the digital economy.

CONCLUSION

Blockchain technology shows great application potential in the digital asset trading field. However, it also faces many challenges, such as the lack of unified technical standards and imperfect regulatory policies. To promote the healthy and sustainable development of the digital asset trading market, it requires the collaborative efforts of academia, industry, and government departments. Academia should strengthen research on the basic theory and application technology of blockchain technology and explore solutions to technical problems. The industry should actively carry out practical applications of blockchain technology in digital asset transactions, promoting technological innovation and business model innovation. Government departments need to accelerate the improvement of relevant policies and regulations, establish and improve regulatory mechanisms, and standardize market order. Only by the joint efforts of all parties and the continuous improvement of the technical system and regulatory mechanism can the advantages of blockchain technology be fully realized, injecting new momentum into the development of the digital economy and achieving the prosperous development of the digital asset trading market.

REFERENCES

[1] G. O. Young, “Synthetic structure of industrial plastics (Book style with paper title and editor),” in *Plastics*, 2nd ed. vol. 3, J. Peters, Ed. New York: McGraw-Hill, 1964, pp. 15–64.

[2] W.-K. Chen, *Linear Networks and Systems* (Book style). Belmont, CA: Wadsworth, 1993, pp. 123–135.

[3] H. Poor, *An Introduction to Signal Detection and Estimation*. New York: Springer-Verlag, 1985, ch. 4.

[4] Smith, “An approach to graphs of linear forms (Unpublished work style),” unpublished.

[5] H. Miller, “A note on reflector arrays (Periodical style—Accepted for publication),” *IEEE Trans. Antennas Propagate.*, to be published.

[6] J. Wang, “Fundamentals of erbium-doped fiber amplifiers arrays (Periodical style—Submitted for publication),” *IEEE J. Quantum Electron.*, submitted for publication.

[7] J. Kaufman, Rocky Mountain Research Lab., Boulder, CO, private communication, May 1995.

[8] Y. Yorozu, M. Hirano, K. Oka, and Y. Tagawa, “Electron spectroscopy studies on magneto-optical media and plastic substrate interfaces(Translation Journals style),” *IEEE Transl. J. Magn.Jpn.*, vol. 2, Aug. 1987, pp.

740–741 [*Dig. 9th Annu. Conf. Magnetics* Japan, 1982, p. 301].

[9] M. Young, *The Technical Writers Handbook.* Mill Valley, CA: University Science, 1989.

[10] (Basic Book/Monograph Online Sources) J. K. Author. (year, month, day). *Title* (edition) [Type of medium]. Volume(issue). Available: http://www.(URL)

[11] J. Jones. (1991, May 10). Networks (2nd ed.) [Online]. Available: http://www.atm.com

[12] (Journal Online Sources style) K. Author. (year, month). Title. *Journal* [Type of medium]. Volume(issue), paging if given. Available: http://www.(URL)

[13] R. J. Vidmar. (1992, August). On the use of atmospheric plasmas as electromagnetic reflectors. *IEEE Trans. Plasma Sci.* [Online]. *21(3).* pp. 876—880. Available: http://www.halcyon.com/pub/journals/21ps03-vidmar