

# The Impact of Digital Currency Development on the Global Financial Market and Regulatory Strategies

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## Abstract

With the continuous advancement of technology, digital currency has gradually become a new hotspot in the global financial market. The rise of well-known digital currencies such as Bitcoin and Ethereum has sparked great expectations for the future of digital currencies. However, the development of digital currency is not without its challenges, as it presents both opportunities and obstacles. Digital currency is characterized by decentralization, which can reduce transaction costs and improve transaction efficiency. Traditional financial systems often require intermediaries for transaction verification and recording, while digital currency, through blockchain technology, achieves decentralized transaction verification and recording, significantly reducing transaction costs and time. Moreover, digital currency facilitates more convenient cross-border payments and settlements, which helps to enhance the efficiency of the global financial market. However, the use of digital currency is also prone to misuse, such as for money laundering, drug trafficking, and other illegal activities, which have raised concerns about the legality and credibility of digital currency. In response to the opportunities and challenges posed by the rise of digital currency, it is essential to strengthen regulation and technological risk prevention while actively promoting the development and application of digital currency. Only by doing so can we fully leverage the advantages of digital currency and inject new momentum into the development of the global financial market.

## Keywords

Global Financial Market; Digital Currency; Regulatory Strategies.

## 1. Characteristics of Digital Currency

### 1.1. Decentralization of Digital Currency Technology

The adoption of decentralized blockchain technology is the most fundamental characteristic of digital currency, enabling a peer-to-peer transaction model. Digital currency uses blockchain as its underlying technology, functioning on a P2P framework where each network node is directly connected to one or more similar nodes. The transaction information of digital currency is distributed across the entire network, and each node owner, i.e., the digital currency account holder, is responsible for their own node, independent of the traditional master-slave structure of the internet where one central node supervises and guarantees other nodes[1-2]. Furthermore, decentralization allows currency to be transferred directly from one node to another, forming a "trader-to-trader" transaction chain, achieving a cash-like peer-to-peer transaction model.

### 1.2. Anonymity of Digital Currency Transactions

Digital currency transactions are renowned for their unique anonymity, which is achieved through the application of asymmetric cryptography in blockchain technology, ensuring

account security. Traditional symmetric cryptography uses a single password to protect the content of a conversation between two parties, with the same algorithm used for both encryption and decryption, shared openly between the parties. Building on traditional symmetric cryptography, asymmetric cryptography splits a password into a pair of corresponding algorithms—one for encryption and the other for decryption[3]. The encryption algorithm is shared openly between the parties, while the decryption algorithm, or private key, is kept secret by the receiving party and not disclosed to others. The private key and public key are non-reversible, meaning that the private key can derive the corresponding public key algorithm, but the public key alone cannot determine the corresponding decryption key. As a result, by using asymmetric cryptography, digital currency transactions only require knowledge of the other party's public key, eliminating the need to confirm the other party's account information.

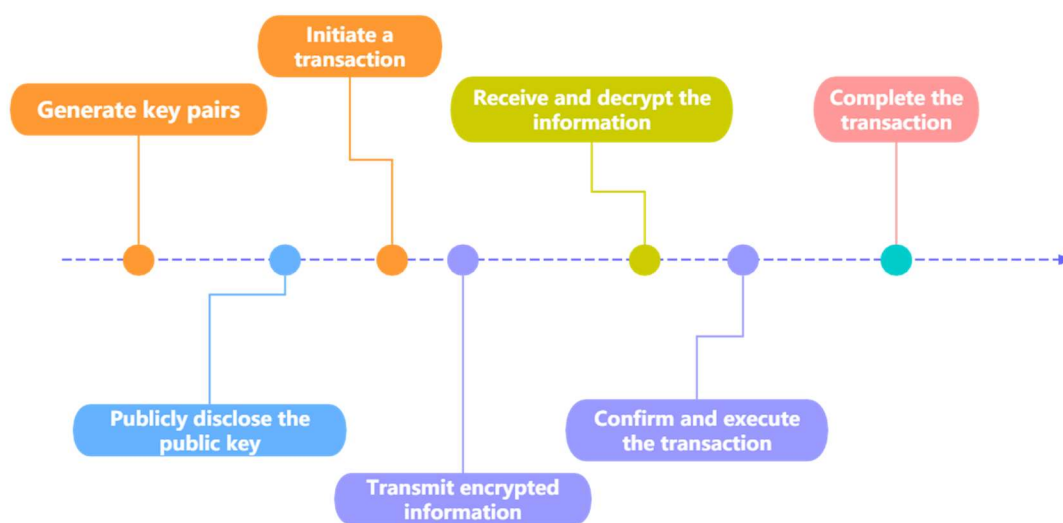


**Figure 1.** The Process of Achieving Anonymity in Digital Currency Transactions

### 1.3. Global Circulation of Digital Currency

Digital currency, with its global circulation advantage, is gradually reshaping the landscape of financial transactions[4]. As an extension of internet technology, the widespread adoption of blockchain allows digital currency transactions to transcend geographical and national boundaries, seamlessly integrating on a global scale and creating an unrestricted transaction network. This gives digital currency an inherent global trading characteristic. Additionally, under the existing fiat currency system, national currencies are backed by their respective governments, and transactions between different national currencies involve exchange rates and sovereign issues, leading to additional costs and time for cross-border transactions. Digital currency, being independent of the fiat currency system and without borders, can be used for transactions at any time and place as long as the user has a digital currency transaction terminal software, reducing the cost and time of cross-border payments.

## 2. The Impact of Digital Currency on Global Financial Market Development

### 2.1. Enhancing Financial Transaction Efficiency

The most notable impact of digital currency on the financial market is its significant improvement in transaction efficiency, among other aspects, as shown in Table 1. In traditional financial systems, transactions require multiple intermediaries such as banks, clearinghouses,

and payment processors, each adding time and cost. Digital currency, relying on blockchain technology, enables direct transactions between participants in a decentralized manner, eliminating the need for intermediaries, thereby greatly increasing transaction speed. Moreover, blockchain technology allows transaction records to be stored immutably in a distributed ledger, significantly reducing transaction confirmation times[5-6]. The efficient transaction mechanism not only reduces transaction delays but also lowers transaction costs. Smart contracts, which are self-executing agreements, automatically enforce contract terms once predefined conditions are met, without the need for manual intervention, reducing human error and operational risk in financial transactions, and ensuring transaction accuracy.

**Table 1.** The Most Notable Impact of Digital Currency on the Financial Market

| Aspect of impact           | Traditional financial system                            | Digital currency system                                          |
|----------------------------|---------------------------------------------------------|------------------------------------------------------------------|
| Transaction efficiency     | Go through multiple intermediaries                      | Rely on blockchain technology, decentralized transactions        |
|                            | Each link adds time and cost                            | Conducted directly between participants without mediation        |
| Transaction record storage | Centralized storage, vulnerable to attack and tampering | Application of blockchain technology, distributed ledger storage |
|                            | Complicated documentation and verification process      | Transaction records cannot be tampered with                      |
| Transaction cost           | Multi-link intermediary costs are high                  | Remove intermediary links and reduce costs                       |
|                            | The delay time increases the cost                       | Reduce latency and reduce costs                                  |

## 2.2. Enhancing Cross-Border Payment Convenience

Digital currency is profoundly changing the landscape of modern financial market cross-border payments, significantly enhancing convenience. Compared to the cumbersome and costly traditional cross-border payment systems, digital currency stands out with its unique advantages. Through blockchain technology, digital currency can achieve fast, secure, and low-cost cross-border payments directly between the transacting parties, significantly shortening transaction times. Its security and low-cost features are also highly favored[7]. Unlike traditional cross-border payment systems, which involve exchange rate differences, fees, and intermediary costs, digital currency transactions only require miner fees or network fees, reducing the cost of cross-border payments and providing a more economical and efficient cross-border payment solution for individuals and businesses, thereby promoting seamless global economic connectivity and integrated development.

## 2.3. The Rise of Decentralized Finance (DeFi)

Decentralized Finance (DeFi) refers to the creation of financial services systems without traditional financial institutions, using blockchain and smart contract technology. Unlike traditional financial systems, DeFi is characterized by decentralization, transparency, and permissionless access, making financial services more inclusive. In traditional financial systems, many financial services are difficult to extend to all global populations due to geographical, identity, and credit limitations. However, in DeFi platforms, anyone with a digital wallet can participate, regardless of location or identity restrictions, greatly expanding the coverage of financial services, especially providing new financial opportunities for those marginalized in traditional financial systems[8]. DeFi is not only a promoter of financial inclusion but also an accelerator of financial innovation. Compared to the numerous regulations in traditional financial systems, DeFi leverages the flexibility of blockchain and the automation of smart

contracts to rapidly experiment and promote innovative financial products, achieving seamless asset exchanges.

### **3. Challenges Brought by Digital Currency Development to the Global Financial Market**

#### **3.1. Difficulty in Data Security Protection**

Due to the transaction characteristics of digital currency, it has become increasingly challenging to protect personal privacy and data security. The anonymity and decentralization inherent in digital currency transactions make it difficult to identify the parties involved in a transaction. Typically, transactions only require a digital wallet address and no personal information needs to be provided. This anonymity makes it extremely complex to trace and confirm the identities of users, particularly when illegal activities are involved, as it becomes difficult to ascertain the true identity of criminals. Additionally, the diversity and decentralization of digital currency trading platforms complicate this further. Although some large platforms implement KYC (Know Your Customer) policies requiring users to provide identity verification, many decentralized and smaller exchanges do not demand detailed identity information from users, allowing criminals to conduct anonymous transactions and evade regulation. Globally, legal regulations vary by country and region, with differences in regulatory standards and enforcement strength, presenting significant obstacles for global regulatory bodies in tracking and verifying user identities.

#### **3.2. Increased Risk of Money Laundering**

The anonymity and decentralization of digital currency provide opportunities for criminals to launder money, complicating the tracking of fund sources and destinations, and increasing the difficulty of monitoring illegal activities. Firstly, money launderers can exploit digital currency to perform multiple transactions, using complex transaction paths and converting between different digital currencies to conceal the true source of funds[9]. Money launderers can easily transfer funds to different countries and regions, thereby avoiding local regulations. Secondly, terrorists can use digital currency to raise and transfer funds anonymously. Since digital currency transactions do not require intermediaries, terrorists can conduct direct peer-to-peer transactions, bypassing the scrutiny of banks and other financial institutions, making it easier for them to covertly raise and distribute funds, thus increasing the challenge of regulation. Due to the global circulation of digital currency, funds can be quickly dispersed in a short period. Even if regulatory authorities detect abnormal transactions, it is difficult to trace and freeze the funds.

#### **3.3. Pressure of Technological Updates**

The rapid development of digital currency and the underlying blockchain technology continuously exerts pressure on financial institutions and regulatory bodies to update their technology and processes. Financial institutions must adapt to the evolving landscape by integrating new technologies, ensuring their infrastructure can support digital currency transactions, and safeguarding against new forms of cyber threats. Regulatory bodies face the challenge of keeping pace with technological innovations to develop effective oversight mechanisms that can respond to the unique features of digital currencies, such as smart contracts and decentralized finance (DeFi).

## **4. Regulatory Strategies for the Global Financial Market under Digital Currency**

### **4.1. Establishing Rights Protection Mechanisms**

The lack of a clear supervisory mechanism and insufficient transparency in digital currency are the primary issues in protecting the rights of digital currency users. This is evident in risks related to systems, speculation, intermediaries, services, fraud, and the irreversibility of transactions. To address these issues, it is essential to establish a rights protection mechanism for digital currency users that increases awareness of risk prevention among investors and users and clarifies relevant legal frameworks. This includes setting up comprehensive digital currency access systems that clearly define market entry restrictions while ensuring safe competition, excluding non-compliant operators to protect fair competition and prevent monopoly formation, thereby avoiding interference from interest groups during decision-making processes. Strengthening the market entry mechanism for digital currency and rigorously reviewing the operating qualifications of all platforms are crucial steps for achieving effective global digital currency regulation[10].

### **4.2. Strengthening Infrastructure Construction**

With the rapid development of blockchain technology, digital currency's influence in the global financial market cannot be ignored. Due to its convenience, efficiency, and decentralization, digital currency is altering the methods and patterns of financial transactions. However, the anonymity and cross-border fluidity of digital currency provide opportunities for illegal activities such as money laundering and terrorist financing, posing potential threats to the security of financial markets. In this context, it is necessary to enhance digital currency regulation in the global financial market through international cooperation among governments and regulatory bodies to develop a regulatory framework that adapts to the characteristics of digital currency, ensuring market transparency and compliance. At the same time, it is essential to strengthen infrastructure construction, including building efficient and stable digital currency trading platforms, improving data monitoring and analysis systems, and enhancing cross-border payment regulation capabilities. These measures will improve the security and stability of the digital currency market and promote the healthy development of the global financial market.

### **4.3. Improving Relevant Laws and Regulations**

Considering the current development landscape, the regulations formulated globally mainly focus on managing and issuing fiat currencies. Digital currency differs significantly from fiat currency in terms of issuance, circulation, and storage, as it is not backed by national credit and relies mainly on online platforms for transactions. Therefore, it is crucial to clarify the nature of digital currency and the legality of its trading platforms, and then establish and improve laws and regulations suitable for digital currency, along with ensuring their enforcement. Today, digital currency has evolved into a virtual commodity, with its trading platforms functioning as a type of commodity exchange used to facilitate the issuance and trading of currency on the platform. However, due to the lack of dedicated supervisory bodies for these platforms, the legality of the business transactions conducted cannot be confirmed. Governments and international organizations need to collaborate closely to explore legal frameworks and regulatory mechanisms that align with the characteristics of digital currency to ensure its healthy development, maintain financial order and security, and promote global economic prosperity and stability.

4.4. Enhancing the Application of Innovative Technologies

Although digital currency can inject vitality into the global economy, it also presents regulatory challenges. With the continuous development of technology, traditional regulatory methods are no longer sufficient to meet the needs of the current digital currency market. Enhancing the application of innovative technologies is key to improving the regulatory efficiency of the global financial market. For this purpose, regulatory agencies can leverage cutting-edge technologies such as big data, artificial intelligence (AI), and blockchain to build intelligent and precise regulatory systems (see Figure 2). Big data analysis can be used to monitor digital currency transaction behavior in real-time, identify abnormal transaction patterns, and provide early warnings of potential risks[11]. AI can assist regulatory agencies in automating audits and decision-making, improving regulatory efficiency and accuracy. Blockchain technology can ensure the transparency and immutability of transaction data, providing a solid technological foundation for regulation. Additionally, encouraging the integration of financial technology companies with innovative applications, and promoting the deep integration of regulatory technology and digital currency, are important directions for strengthening global financial market regulation.

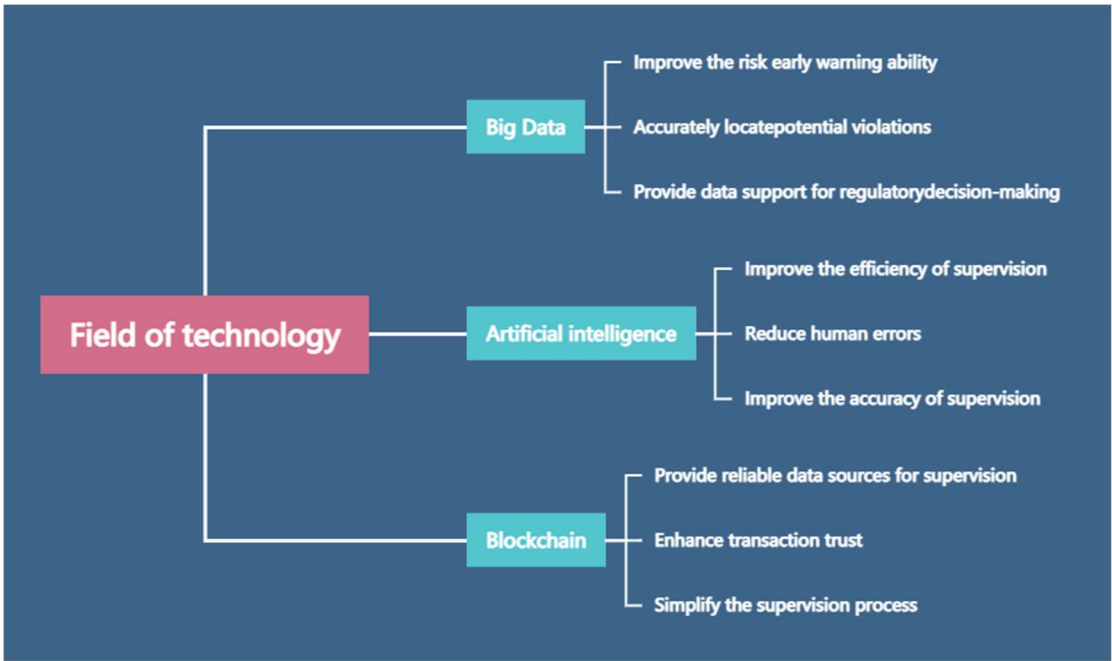


Figure 2. The Application Effectiveness of Innovative Technologies

5. Conclusion

In summary, digital currency is characterized by low transaction costs, fast transaction speeds, and high anonymity. It is a double-edged sword that can drive the application of blockchain technology in other fields but may also have a significant impact on the effectiveness of monetary policy, financial infrastructure, financial markets, and financial stability. However, with the excessive issuance of paper currency leading to aggravated inflation, frequent security issues with third-party payments, and the gradual maturity of blockchain technology, decentralized digital currencies such as Bitcoin, Ethereum, and Ripple have emerged accordingly, presenting numerous regulatory challenges. Nonetheless, by establishing rights protection mechanisms, strengthening infrastructure construction, and improving technological security levels, it is conducive to ensuring the healthy development of the digital

currency market, thereby better promoting the steady growth of digital currency within the global financial system.

## References

- [1] Raskin, Max, Saleh Fahad, and David Yermack. 2020. How do Private Digital Currencies Affect Government Policy? World Scientific Book Chapters. In *Digital Currency Economics And Policy*. Edited by Bernard Yeung. Singapore: World Scientific Publishing Co. Pte. Ltd., chap. 12. pp. 111–15.
- [2] Gorkhali, Anjee, Ling Li, and Asim Shrestha. 2020. Blockchain: A literature review. *Journal of Management Analytics* 7: 321–43.
- [3] Thomason, Jane, Mira Ahmad, Pascale Bronder, Edward Hoyt, Steven Pocock, Julien Bouteloupe, Katrina Donaghy, David Huysman, Tony Willenberg, Ben Joakim, and et al. 2018. Blockchain-Powering and empowering the poor in developing countries. In *Transforming Climate Finance and Green Investment with Blockchains*. Cambridge, MA: Academic Press, pp. 137–52.
- [4] Hasan, Fakhrul, Manaf Al-Okaily, Tonmoy Choudhury, and Umar Kayani. 2023a. A comparative analysis between Fintech and Traditional stock markets: Using Russia and Ukraine WAR data. *Electronic Commerce Research*, in press.
- [5] Osmani, Mohamad, Ramzi El-Haddadeh, Nitham Hindi, Marijn Janssen, and Vishanth Weerakkod. 2020. Blockchain for next generation services in banking and finance: Cost, benefit, risk and opportunity analysis. *Journal of Enterprise Information Management* 34: 884–99.
- [6] Gandal, Neil, J. T. Hamrick, Tyler Moore, and Tali Oberman. 2018. Price manipulation in the Bitcoin ecosystem. *Journal of Monetary Economics* 95: 86–96.
- [7] Prasad, Ramjee. 2014. *5G: 2020 and Beyond*, 1st ed. Denmark: River Publishers.
- [8] Sadiq, Misbah, Ahmet Faruk Aysan, and Umar Kayani. 2023. Digital currency and blockchain security in accelerating financial stability: A mediating role of credit supply. *Borsa Istanbul Review* 23: 1251–62.
- [9] Yermack, David. 2013. *Is Bitcoin a Real Currency? An Economic Appraisal*. Working Paper No. w19747. Cambridge, MA: National Bureau of Economic Research.
- [10] Hasan, Fakhrul, Mary Fiona Ross Bellenstedt, and Mohammad Raijul Islam. 2023b. The impact of demand and supply disruptions during the COVID-19 crisis on firm productivity. *Global Journal of Flexible Systems Management* 24: 87–105.
- [11] Duchenne, James. 2018. Blockchain and smart contracts: Complementing climate finance, legislative frameworks, and renewable energy projects. In *Transforming Climate Finance and Green Investment with Blockchains*. Cambridge, MA: Academic Press, pp. 303–17.