

Chapter 14

Trends of Blockchain



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Abstract As an emerging technology, blockchain is developing rapidly, and has gained much achievements. However, it's still full of uncertainty. In this chapter, the characteristics and trends in industrialization, technology, application and industrial ecology aspects of blockchain are analyzed, to provide some insights for foreseeing blockchain development in the future.

Keywords Blockchain · Industrialization · Industrial ecology · Technology system

Currently, the global markets are experiencing a serious economic recession. Global trade is slowing down, and investment, consumption and exports are being greatly affected. The global economic situation may cause a contraction of blockchain technology investment and application market. The limited market resources will probably flow to more powerful large enterprises, posing greater challenges to small and medium-sized blockchain enterprises. At the same time, the economic downturn has made many businesses more hesitant about the layout of new technology, potentially affecting the industry' driving force.

In the long run, blockchain technology is expected to provide a solution to cyberspace's trust and security challenges, as well as an optional technology for Central Bank Digital Currency (CBDC) [1], and allowing the Internet to shift from sending information to transmitting value. Its importance for economic and social development has been realized by many governments and businesses, and it could become one of the most competitive technology tracks in the next years. China issued the Guidance on Accelerating the Application and Industrial Development of Blockchain Technology in June 2021. The US Senator introduced the "National R & D Strategy for Distributed Ledger Technology Act of 2022" in April 2022, aiming to promote the development of a national blockchain strategy. The concentration on blockchain technology by the governments of the two major economies is anticipated to be a substantial stimulant for the development of blockchain technology in the coming period.

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14.1 Blockchain Industrialization

From the standpoint of industrial evolution, blockchain is experiencing a process of breeding and gradually industrializing from the original software industry. A series of blockchain products have been gradually developed based on the initial technological innovation, including application solutions in the fields of product traceability, data sharing, supply chain management, evidence deposition and public services, as well as platform products like the blockchain underlying platform and BaaS. A great number of blockchain businesses, including traditional IT enterprises, Internet enterprises and blockchain startups, have been incubated. Many traditional industrial businesses have also increased their blockchain R&D and application. Meanwhile, industrial support, such as related talents, infrastructure, technical standards and industrial services has been accelerated.

From the standpoint of market incubation, the blockchain market has expanded significantly in recent years and has enormous potential for future market growth. According to a report released by Grand View Research in February 2022, the global blockchain technology market size was valued at USD 5.92 billion in 2021 and is expected to grow at a compound annual growth rate of 85.9% from 2022 to 2030 [2]. In China, the consortium blockchain market is developing rapidly. According to the blockchain filing data from the Office of Central Cyberspace Affairs Commission, more than 1000 blockchain projects have passed the filing procedure. Furthermore, several blockchain applications are steadily expanding in scale, and their effectiveness in terms of social and economic benefits has been highlighted.

From the standpoint of government direction, there is a global tendency to promote the growth of blockchain as a strategic emerging industry. With the innovative exploration and application of blockchain technology in many industries, governments all over the world are becoming increasingly interested in blockchain technology, and supporting it through policies, funds and pilots to capture the opportunity of blockchain technology and industrial development. The number of countries who have national blockchain industry policies is increasing. At the same time, governments are gradually distinguishing between prudent regulation of cryptocurrencies and encouragement of blockchain technology development. With the continued expansion of the industry, various nation's policies are expected to reinforce the layout, support the integration of blockchain with the real economy on a larger scale, and accelerate the growth of blockchain industry scale.

14.2 Technology Moves Towards Systematization

The technologies supporting blockchain are getting more systematic and diverse, however the core technologies still require improvement. The understanding of technologies such as blockchain and distributed ledger technology are gradually reaching consensus, and the advancement of these technologies continues to push past previous

boundaries. The evolution of related concepts also represents the future development direction and characteristics. Meanwhile, the underlying technologies of blockchain are continually evolving. While the fundamental technologies of consensus mechanism, data storage, privacy protection and smart contract are constantly developing, technologies like partitioning and cross-chain are also speeding innovation and development to assist blockchain technology to adapt to wider range of application scenarios. On the flip side, blockchain is still not mature enough in terms of performance, privacy protection, governance, and cross-chain interoperability. It's not yet advanced enough to carry enterprise-level applications in many sectors, especially in terms of performance and privacy protection, and the existing technology level is insufficient to enable large-scale applications in many domains. Due to storage volume and throughput limitations, blockchain requires more technical transformation and breakthrough when dealing with specific business applications, while the legal basis of smart contract technology, as well as security and privacy protection technology, are currently among the bottlenecks limiting the development of blockchain applications. The optimization and iteration of core technologies will continue to be a priority in the future years.

14.3 Applications Begin to Scale

The discovery of blockchain applications in many industries has intensified in recent years, with application fields expanding and the integration with the real economy strengthening. The application of blockchain technology aids in the digitalization of several industries, the cultivation of new business models, and even the realization of industry innovation. Blockchain is gradually becoming a significant support for the development of digital economy due to its increasingly important role in social-economic development and social governance enhancement. It's expected to be widely used for the scale coordination of human activities, especially with the arrival of blockchain 3.0 era, and is predicted to progressively evolve into the infrastructures of the digital economy. In China, many blockchain application infrastructures has been encouraged by municipal governments, and a large number of applications such as “blockchain + government” and “blockchain + people's livelihood” supported have been implemented, which will promote the growth and interconnection of blockchain applications.

However, blockchain applications as a whole are still in their infancy, with few large-scale industrial applications. In many scenarios, the business collaboration model between related parties cannot be well established, limiting the development of applications. Furthermore, due to complex scenarios and high replacement costs, there are still limited blockchain applications in several critical areas, such as industrial blockchain. The key to future blockchain industry rivalry from a global perspective, will be to achieve scale and effective applications in critical areas of economy. The introduction of supportive industrial policies and the establishment of regulatory system have established a favorable environment for the development of blockchain

applications. It is foreseeable that blockchain applications will enter an unparalleled period of development chances, and more large-scale applications will be cultivated to realize further release of the value of blockchain technology.

14.4 Further Development of Industrial Ecology

Blockchain innovation and entrepreneurship are thriving, and the industry's development ecology is improving. Mainstream financial institutions, IT enterprises and technology start-ups are currently exploring and promoting the development of blockchain technology and applications, driving a new wave of technology innovation and entrepreneurship. The future industrial development ecology will help to improve the level of collaborative innovation, reduce technical and market risks, strengthen the rationality of industrial layout, and promote the benign development of blockchain applications. In terms of standardization, the demand for standardization in terms of basic terminology and architecture, security and privacy protection, interoperability and governance has become prominent. Standard development organizations around the world are actively promoting the development of blockchain standards, and the quality of products and industrial services is continually improving. Relevant businesses have launched industrial services such as blockchain planning and consulting, testing, evaluation and talent training, as well as accelerated the construction of relevant industrial service platforms to provide the necessary industrial resources for blockchain enterprises. However, the present blockchain standard system and the blockchain industrial service system are still in the early stage of development. Providing strong development support via the creation of standardization and industrial service system, as well as continuously increasing overall competitiveness, will become an essential avenue to promote blockchain industry growth in the future.

References

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