

Examining the Role of Big Data and Block Chain Technology in Advancing High-Quality Development within the Sports Industry's Digital Economy

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Abstract

In the ever-evolving landscape of the global economy, big data, the new generation of artificial intelligence, and block chain technology have risen as pivotal drivers of the data economy. These technologies are playing an increasingly vital role in catalyzing transformative changes within the sports industry and the broader digital economy. As the world economic patterns continue to shift and Internet technologies advance, the digital economy, particularly within the sports sector, faces higher demands and opportunities for innovation. In the context of China's economic development, the digital economy has emerged as a primary pathway to achieving high-quality economic growth. This paper embarks on a theoretical exploration of the profound impact of big data and blockchain technology within the sports industry, examining their current applications and potential. The research presented here seeks to unravel the intricate mechanisms through which big data and blockchain technology drive high-quality development within the sports sector's digital economy. By shedding light on these dynamics, this paper contributes valuable insights to guide and optimize the future of China's economic development, with a strong emphasis on the sports industry as a critical focal point for innovation and growth.

Keywords: Big data; Block chain technology; The digital economy; Sports Technology; Sports Innovation; Sports Industry

1 Introduction

On October 24, 2020, the Political Bureau of the CPC Central Committee convened its 18th learning session, centering on the development of blockchain technology within the sports industry and its future trajectory. This session emphasized the imperative for relevant sports organizations and government bodies to prioritize blockchain technology. The objective is to stimulate technological innovation and the creation of innovative sports products while aligning with principles of scientific development. A call was made to allocate more resources and talent to advance key technologies and actively drive the industrial application of blockchain technology in the sports sector (Andreevich, Ivanovich, & Ivanovich, 2018). In an era characterized by rapidly evolving sports dynamics and economic competition, blockchain technology has emerged as a transformative force within the sports industry. It offers a means of achieving low-cost, high-efficiency computer operations and secure information transmission. The trust infrastructure established by blockchain addresses the trust deficit and information distortions that have historically challenged sports technology.

As the epicenter of blockchain innovation within the sports industry, the scope of cryptocurrency applications continues to expand, promising significant future prospects for the sports sector.

The rapid ascent and development of the data economy, underpinned by big data, next-generation artificial intelligence, and blockchain technology, have become instrumental in propelling transformation within the sports industry's digital landscape. This transformation aligns with China's recognition of the vital importance of the sports digital economy, with high-quality development within this domain being a key component of its national development strategy (Fabrizio & Alessandro, 2018).

This paper focuses on big data and blockchain technology in the sports industry, aiming to explore their mechanisms and pivotal role in shaping the future of high-quality digital economy development within sports.

2 Theoretical Basis

2.1 Concepts and characteristics of blockchain technology in sports sector

The first blockchain-based System was Electronic Cash System, where the token name was identified by the code

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BTC. Due to its decentralized characteristics, the system will be continuously improved and developed over time, so far it has become a widely recognized peer-to-peer trading system. Block refers to a single transaction record that is consolidated into a group. A blockchain is a distributed database system in which nodes participate (Andreevich et al., 2018). Based on the existing literature, it is believed that Block chain can be understood from two levels. One level is the sequence of events to form a chain to construct a group of information packets, and then packaging verification encryption to make it cannot be tampered with, so all the code will be merged to form a decentralized system. On the other level, Block chain is regarded as an innovative social experiment. For example, Bitcoin, Ripple, Hyper ledger and other block chain systems have had a huge impact on the traditional financial industry. In particular, block chain technology has been applied in sports sector. These include financial asset clearing and settlement, which can reduce costs and risks in sports sector. Blockchain technology is a distributed ledger that offers participants the opportunity to build credit consensus on a set of shared facts without using mutual trust such as encryption mechanisms and consensus algorithms. As nodes of the block chain, participants can provide evidence for transactions and quickly disseminate it to the whole network, thus proving the authenticity and validity of transaction records without the need for third

parties and central intermediaries to maintain a ledger without the need for privileged parties (Fabrizio & Alessandro, 2018). In addition, block chain can be classified based on its properties, which can be divided into public chains that are fully decentralized and can accept access from any node; It can also be classified as an affiliate chain that requires permission for nodes to access the network.

The so-called block chain technology, in fact, is built on the basis of time sequence on the data storage, put it in the block space, at the same time for the block space to connect, so that it constitutes the corresponding chain structure. In principle, the basic principles of cryptography are used to encrypt data to improve data security. The analysis of block chain shows that it plays two roles in information storage and compilation in the specific application process (Amirova et al., 2021). Therefore, it can be regarded as a data storage platform. Because of the correlation between blocks, each block can form a complete data line, as long as the associated transaction information, can be searched. For each point on the block chain, there is actually a high level of equivalence, which can also be seen its fairness, which is helpful to improve the security of information storage.

In the actual application process, block chain technology has these six characteristics: decentralized network, traceability, co-recognition mechanism, security, high availability and invariance, as shown in Table 1.

Table 1

Characteristics of block chain technology in in sports sector

The characteristics of	The content description
Decentralized network	There are no central servers and control centers in the block chain network at all; It's up to the network to make its own decisions and thus control itself
traceability	As a non-centralized data storage system, the transaction behavior in the system can be recorded in detail, and the effective tracking of the capital chain and data chain can be realized
Consensus mechanism	An algorithm for forming a decentralized consensus through the application of block chain technology in in sports sector. Due to the decentralized characteristics of block chain nodes, it is not a centralized authority to make decisions, which requires all nodes to make decisions together, so as to determine the authenticity of the block chain database
security	Block chain uses a decentralized database and uses hashing and algorithms to secure data. Security is created collectively in the network, no one party is responsible for security, and security is jointly granted by participants
High availability	Block chain is 24*7 all day operation, no permission restrictions, content cannot be tampered with, no matter what time and where anyone can use
invariance	Any information that is put on the block chain doesn't disappear, it stays on the block chain forever.

2.2 Block chain technology foundation in in sports sector

Block chain is actually a continuous linked block of data, the principle of the link is the block header hash value

generated by the binary algorithm processing of the block header using the hash algorithm, which is extremely important in Western cryptography. For each block of data, there is a corresponding hash (Jose et al., 2022). Therefore,

if the information in the data block changes, it will cause the hash value to change. In other words, when analyzing the data changes, or verifying its authenticity, the hash value plays a very important role. Because of this feature, it is possible to change the value of any block, which will

make the whole piece of information cannot be used again, at a glance can distinguish between true and false. This also shows that this technology makes block chain technology more secure for use in sports enterprises, as shown in Figure 1 below

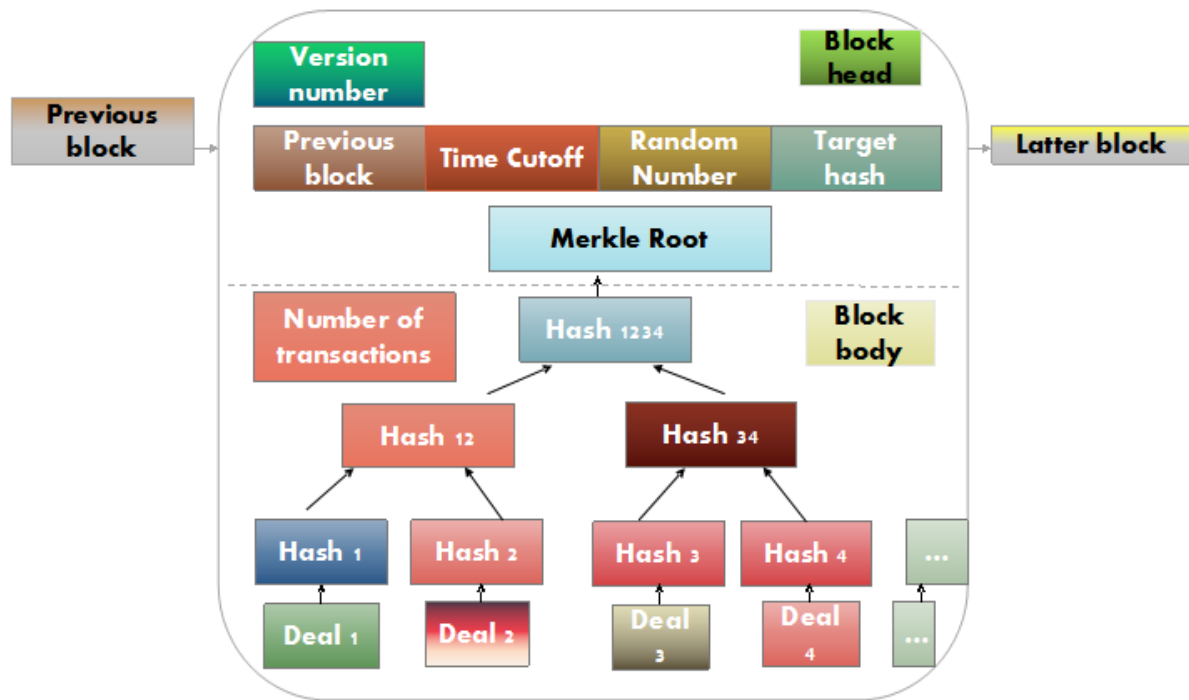


Figure 1. Diagram of how block chain works

Based on the analysis of block chain technology, we can see that the use of peer-to-peer network, and there is no restriction on membership. After users enter the network, they will be recognized by the block chain platform, and obtain information from it. After verification under certain conditions, they can realize transactions.

2.3 The development process of block chain

According to the White Paper on the Development of Block Chain Financial Applications, the development of block chain can be divided into three stages: block chain 1.0, block chain 2.0 and block chain 3.0, as shown in Figure 2 below.

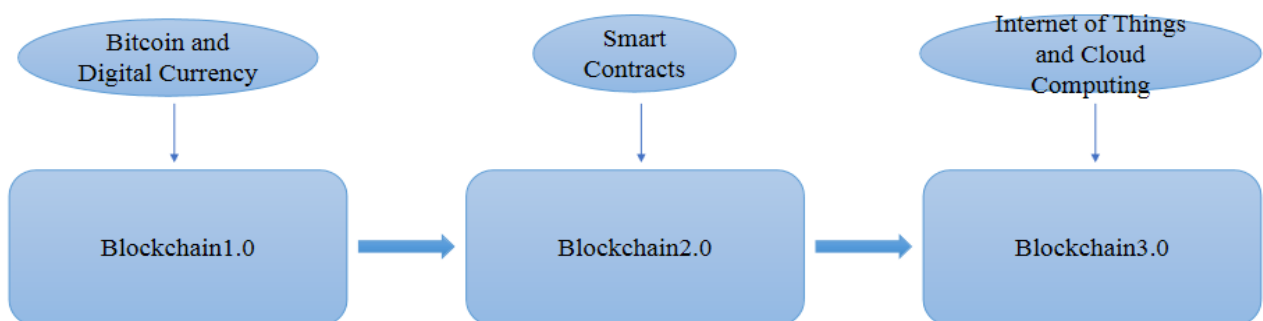


Figure 2. Block chain development stage

Block chain 1.0: Bitcoin and digital currencies. Although in the field of network block chain is regarded as the

important objects of scientific research, however, because of it is put forward by the Japanese technical personnel,

and the developers of the COINS digital currency, at the early stage of its operation has been building up a relatively perfect block chain framework, therefore, appear to block chain technology in the currency in sports sector, According to the relevant theory of Coin Insider, many technical personnel at home and abroad still believe that block chain technology is likely to be compatible with digital currency, and it will greatly speed up the circulation of digital currency. In its initial stages, block chain establishes the basic premise of a shared public ledger that supports a cryptocurrency network. Satoshi's blockchain idea leverages 1 Megabyte (MB) blocks of Bitcoin transaction information. Fast information is based on a "constant chain" built by a thriving and complex cryptocurrency verification process. Even in its original guise, blockchains build systems that have a lot in common, and the blockchain that Bitcoin is built on has a lot in common with the original block of information.

Blockchain 2.0: Smart contracts. With the change of times, many technologists realize that blockchain can not only serve as an information carrier. At the same time, it can also be used as the basis for signing asset and credit entrustment agreements. The most typical one is Ethernet, which is known as the second generation blockchain technology (Six, Herbaut, & Salinesi, 2022). Generally speaking, there need to be two or more agreements signed for business activities. Participants will also have some

supervision and management personnel to intervene, while smart contracts are established on the basis of inter-blockchain digital maintenance and update, only when the object has a demand, adjustment does not need others to intervene. To this end, many developers and technologists point out that smart contracts can be a lot of development space to explore.

Blockchain 3.0: Scalability. At present, the most intractable problem facing block chain technology in the application process is scaling up. As the most typical digital currency, Bitcoin still needs to face transaction processing nodes and difficulties (Biswas et al., 2022). Many digital currencies have tried to adjust the established blockchain to better deal with these issues, but with varying results. In the near future, improving the malleability of blockchain technology is an important trend and direction of its development in sports sector.

In the development process of blockchain, it has penetrated into various industries and provided a huge growth dynamic for the industry development, as shown in Figure 3 below. In addition, the new application of blockchain technology is still in development and process leading to the future development of cryptography is unpredictable. From the perspective of blockchain developers and operation, it is difficult to determine the development speed and space of blockchain technology in the future.

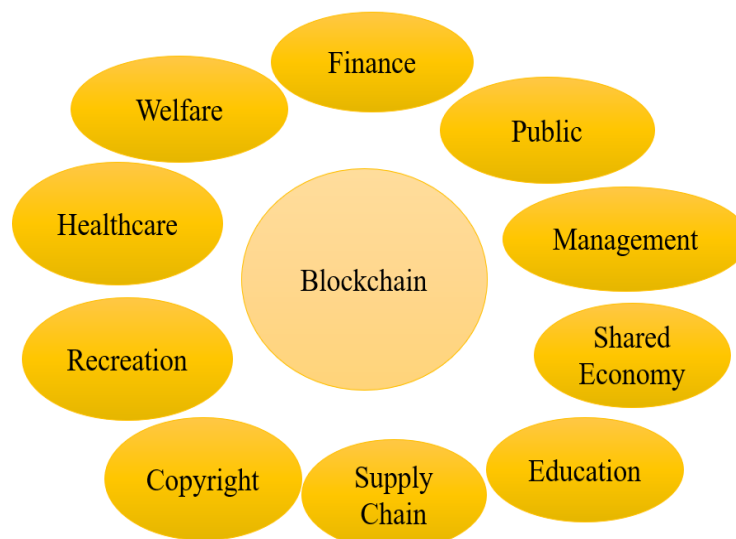


Figure 3. Application field of blockchain technology

2.4 Digital Economy development model in sports sector

According to the relevant theories of economics, the national economy can be divided into several major sectors, and on this basis, two-sector economics and three-sector economics have been developed.

1) Two-sector Economics

Two-sector economics refers to the reduction of all sectors involved in the national economy of sports sector: producers and consumers of all sports product (Zvyagin, 2019). In two-sector economics, since there are only two sectors, sports enterprises and residents, the aggregate

demand under this model mainly includes the consumption demand of residents and the investment demand of sports enterprises. Here, we use consumption expenditure and investment expenditure respectively to represent consumption demand and investment demand, so aggregate demand is equal to the synthesis of consumption and investment, which is expressed by the following formula:

$$AD = C + I \quad (1)$$

In this formula, AD represents aggregate demand, C represents consumption, and I represents investment. By the above formula, the aggregate supply is the sum of labor, capital, land and sports enterprises, the supply of production factors combined can use the sum of wages, interest, rents, and profits, in this will be the income is divided into two different parts consumption and saving, and then give a total and synthesis of consumption and saving the use formula to show as follows:

$$AS = C + S \quad (2)$$

In Equation (2), AS represents aggregate supply, C represents consumption, and S represents saving. The identity of aggregate demand and aggregate supply is as follows.

$$AD = AS \quad (3)$$

From Equation (3), we can derive the following formula:

$$C + I = C + S \quad (4)$$

Then eliminate C from both sides of equation (4), then:

$$I = S \quad (5)$$

That is, investing equals saving.

2) Three-sector economy

Three-sector economy is a government sector added to the two-sector economy. It mainly refers to three different economic units, namely producers, sports enterprises, consumers and residents, and the government that regulates and controls the economy. In the three-sector economy, the main responsibility of the government is to create a relationship with producers and consumers through taxation and fiscal expenditure (Tovma et al., 2020).

In the three-sector economic model, aggregate demand is the sum of consumption, investment and government expenditure, which can be expressed as follows:

$$AD = C + I + G \quad (6)$$

In this formula, G denotes government spending. In this model, the supply of the government is mainly to provide the basic guarantee of economic operation for the society (Altiyev, 2019). On the one hand, the government provides public goods for economic development, so it also needs to

obtain a certain income, namely tax. From this perspective, government tax is government supply, which can be expressed by the formula:

$$AS = C + S + T \quad (7)$$

In this formula, T is the government tax revenue. From the above explanation, we know that aggregate supply and demand are equal. Then:

$$AS = AD = C + I + G = C + S + T \quad (8)$$

Formula (8) is simplified and sorted out to obtain:

$$I = S + (T - G) \quad (9)$$

In this formula, the left side is investment and the right side is savings. Assuming that the government's income and expenditure are balanced, the conditions for balanced macroeconomic development can be expressed by the following idealized formula:

$$I = S + (T - G) = S \quad (10)$$

It can be concluded from equation (10) that investment = saving.

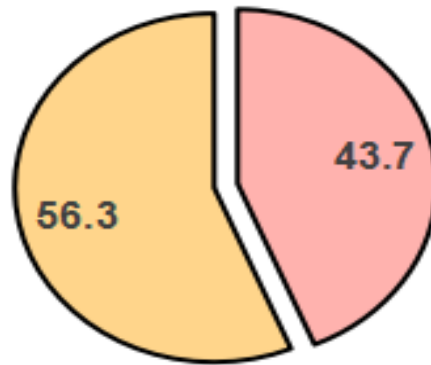
3. Analysis of the development status of China's digital economy in sports sector

Data, as a new kind of property, has been called "the new oil of the future" by the media. Various sports enterprises and related institutions recognize the effectiveness of data in improving the efficiency of industrial decision-making, predicting the trend of industrial development in advance and better serving users, etc., and have devoted themselves to the field of data mining, processing and utilization, and developed data products (Alabbasi & Sandhu, 2019). The big data transactions at home and abroad have also emerged. Compared with the development level of big data in foreign countries, the development of data trading in China is slightly behind that of foreign developed countries, but it has also established a number of big data trading platforms in Guiyang, Shanghai, Xi 'an, Hong Kong and other places, and the trading scope covers all aspects of society.

At present, China's data industry has developed rapidly and has a huge volume, which is in the rising period of the development of data assets. In the future, the scale of data economy and data ecology will expand rapidly and progressively, and it has and will continue to have a high share in the international data industry market (Tebepah, 2020). China's digital economy in a new round of industrial revolution and technological change under the boost, there is a huge potential for development, maintain the momentum of rapid growth. According to the China Academy of Information and Communication Technology, the scale of

China's digital economy has expanded from 26,000 yuan to 39.2 trillion yuan between 2005 and 2020, ranking second in the world after the United States. Even under the impact of the pandemic, China's digital economy maintained a relatively objective growth rate -- 9.7 percent in 2020, nearly 7 percent higher than the nominal GDP growth rate during the same period. Therefore, the digital economy has helped effectively stabilize the economic downturn under the

pandemic. In addition, the contribution of the digital economy to the national economy is increasing. As can be seen from Figure 3, the proportion of the digital economy in the GDP increased from 14.2% in 2005 to 38.6% in 2020, which indicates that it plays an undeniable important role in promoting the development of the national economy. The scale of China's digital economy is shown in Figure 4 below.



■ Digital economy as a share of GDP ■ Other share of GDP

Figure 4. Scale of China's digital economy in sports sector

At the present stage, China's digital industrialization and industrial digitalization are distributed in a "28 to 80" ratio, as shown in Figure 5 below. On the one hand, thanks to technological changes and innovations such as the Internet, big data and blockchain, digital industrialization has also been improved, providing technical support for the growing potential of the digital industry (Chang, Iakovou, & Shi, 2020). By 2020, the scale of China's digital industry will reach 7.5 trillion yuan, accounting for 19.1 percent of the digital

economy and 7.3 percent of GDP. On the other hand, the emergence of new digital models, such as the platform economy, has also brought new opportunities for the development of the digital industry. By 2022, the scale of the digital industry will reach 31.7 trillion yuan (Kuznetsova & Bondarenko, 2018). The figure, up nearly 7 percentage points from 2018, accounted for 31.2 percent of GDP and 80.9 percent of the digital economy, indicating the growing central role of digital industries in China's economy in sports sector.

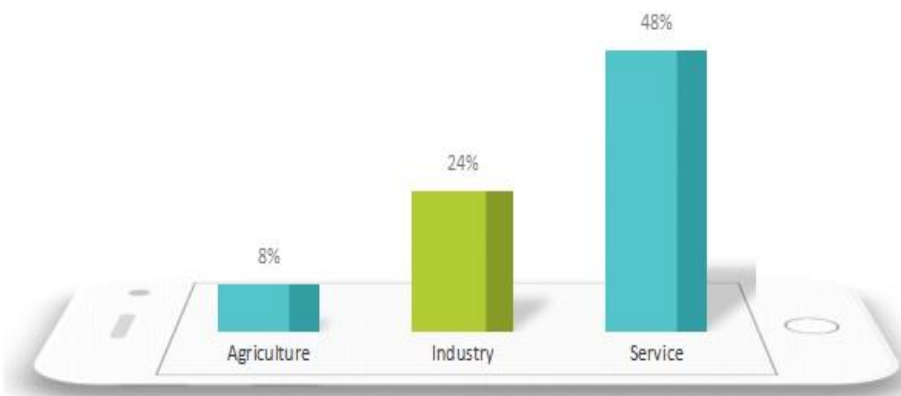


Figure 5. Internal structure of the digital economy

Digital economy is a special economic form, involving a wide range of areas, one index cannot fully reflect the development level of digital economy. The characteristics of digital economy development should be taken into account when formulating the evaluation index system (Khripunov et al., 2019). Therefore, combining with the characteristics of

China's current digital economy development and the timeliness and availability of data, the development level of China's provincial digital economy is measured, as shown in Table 2 below, which makes it possible to explore how to achieve high-quality development of digital economy from the most basic characteristics.

Table 2

Measurement indicators of digital economy development in sports sector

Level indicators	The secondary indicators	Level 3 indicators
Digital infrastructure construction	Proportion of IPv4 addresses (%) Number of 10,000 domains (per 10,000 people) Length of long-distance optical cable (km) Number of digital economy access ports (10,000)	Indicates the allocation of IP address resources at provincial level Describes the status of domain name resource allocation at the provincial level It reflects the construction level of provincial optical fiber infrastructure Measure provincial Internet external hardware ownership
Digital economy penetration	Number of Internet users (10,000) Number of mobile phone users (10,000 households)	Characterizing the demand for digital services at provincial level Reflect the number of provincial digital economy terminals
Network Information Resources	Number of Web pages (per) Average number of bytes per web page (KB)	Describe the breadth of provincial digital economy information resources Describe the depth of provincial digital economy information resources
Digital economy is commercialized	Total express delivery business (10,000 pieces) Number of people in information transmission, software and information technology services (10,000)	Characterizing the prosperity degree of provincial e-commerce, Reflect the development level of the upstream and downstream industries of the provincial digital economy

Based on the above, the development level of China's digital economy is analyzed as a whole. The results show that the overall level of digital economy is on the rise, which is mainly due to the further acceleration of network infrastructure construction in China in recent years. As the country moves toward digitalization, informatization and industrialization, the penetration rate of "4G network construction", "broadband universal technology", mobile phone, Internet and other related indicators has increased significantly. In the field of social digitalization, Internet +, e-commerce and other popular applications in recent years have also led to the belief

that the rapid growth of the express delivery industry is closely related to online consumption, which has also shown a high growth rate. With the rapid development of the digital economy, this paper also focuses on the inter-provincial gap between inland regions in China (Buchanan & Naqvi, 2018). By analyzing the data, the study found that there are always great differences in the level of digital economy development among provinces in China. At the same time, this paper also draws the digital development trend chart of the eastern and western provinces, as shown in Figure 6, Figure 7 and Figure 8 below.

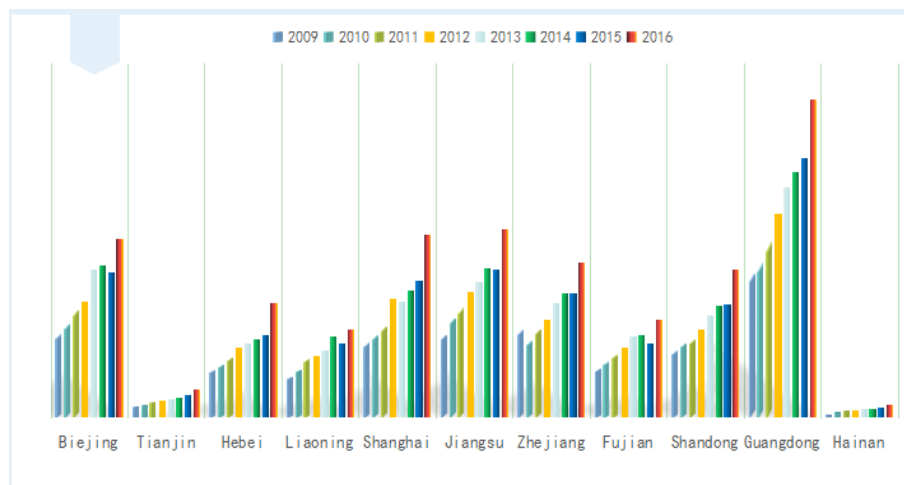


Figure 6. Trend chart of digital economy development level in eastern provinces

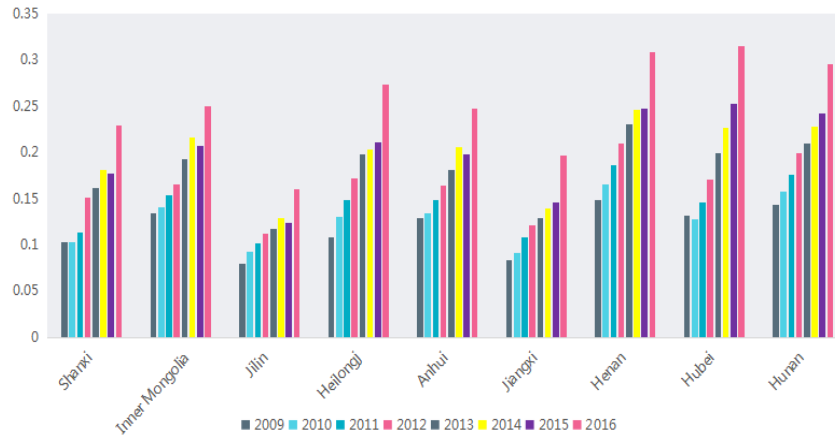


Figure 7. Trend chart of digital economy development level of provinces in the central region

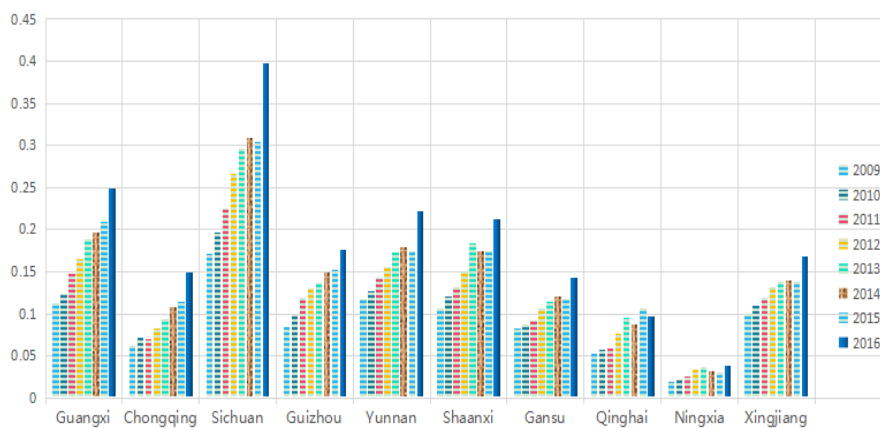


Figure 8. Trend chart of digital economy development level of provinces in the western region

The horizontal analysis of the development level of digital economy across provinces in China shows that the development level of digital economy in eastern provinces is significantly higher than that in central and western provinces, and the gap of digital development level in central and western provinces is not obvious. In addition, it can be clearly seen from the figure that the central and western regions are narrowing the gap with the eastern regions at a relatively fast development speed, especially Sichuan Province.

Within the scope of national policies to support digital transformation, local governments are also vigorously promoting overall communication as well as the comprehensive application of digital technologies to unleash the huge potential of the digital economy to lead industrial upgrading and high-quality economic development (Xiangyan, 2022). According to the White Paper on the Development of China's Digital Economy in 2022 by the China Academy of Information and Communications Technology, the scale of the digital economy in 12 provinces, including Guangdong and

Jiangsu, will exceed 1 trillion yuan by 2022; In terms of proportion, Beijing and Shanghai, which lead the country in economic development, are also leading in digital economy, accounting for more than 50 percent of the total. Other provinces with higher economic development level, such as Zhejiang, Guangdong and other provinces, the proportion of digital economy in GDP is also above the national average level; From the growth point of view, some provinces (Fujian, Guizhou, Chongqing) growth rate is very rapid, more than 15%, the rest of the province's digital economy growth rate is basically more than 5%. While China's digital economy shows great development potential, it also needs to be noted that there are still problems of coordination and development balance between regions and industries. Therefore, according to the different characteristics of each region, give full play to its advantages and enthusiasm, lead sports enterprises to independent innovation, step by step, complement the lagging development of the digital economy, and achieve high-quality development of the digital economy.

4 Analysis of the impact of blockchain technology on the digital economy

With the unceasing change of world economic development pattern, big data and application of block chain has been the attention of the sports enterprises and institutions at home and abroad, vigorously promote large data and chain blocks in application with the development of the digital economy and exploration, and based on the basis of large data with block chain also promotes the development of digital economy aspects have made great progress. However, the current development status of relevant technologies meets the requirements of the rapid development of modern economy on the digital economy: First of all, the main transmission channel of the current Internet is still HTTP protocol, users download data through a centralized server, which is its characteristic -- centralized, but because of this feature will make access in the state of high concurrency, data transmission speed will be limited. Secondly, with the rapid development of information technology accompanied by the development of modern economy, higher requirements for data storage are put forward, which also brings new challenges to the development of the traditional Internet, the HTTP protocol for web pages, there are relatively short life cycle, high storage cost, file cannot be permanently retained and other problems. Finally, due to the need to ensure the security of data, the traditional Internet needs layers of protection of data, and it is because of this measure that the data has a high degree of anonymity, resulting in user behavior is difficult to track. However, the development of information technology shows an explosion, which also leads to the decentralization becomes a hard demand and the future development trend. There is an urgent need for a new technology with distributed storage, tamper-proof, and data consistency to adapt to the development of digital economy in today's society. Based on the above analysis of the characteristics of blockchain technology, it can be analyzed that blockchain technology exactly meets this demand, can provide a secure and trusted decentralized data exchange network, and can use asymmetric encryption technology to transmit data, to achieve data rights confirmation and the value of data assets (Novikov, 2020). Based on the analysis of the development characteristics of this technology, this paper will discuss the mechanism of action of big data and blockchain technology on the high-quality development of digital economy from the following perspectives.

4.1 Features of big data and blockchain technology help the development of digital economy

As a product of the era of big data, blockchain has a lot of technical characteristics. Distributed Ledger Technology (DLT) is the core Technology of blockchain, which has the advantages of decentralization, distribution, non-tampering, traceability, security and trustworthiness (Syuntyurenko & Dmitrieva, 2019). For example, through the technology of distributed data storage, point-to-point transmission, consensus mechanism, cryptography and smart contract, the problems of data tampering, fraud and behavior cheating existing in the traditional transaction mode can be effectively solved with the addition of blockchain technology. Block chain with the consensus algorithm technology, can make the multi-source data sharing in the process of consistency, the digital economy in the process of development, because of the traditional Internet technology in the process of data exchange, lack of unified interface or multi-source heterogeneous data is difficult to storage, and the problem of sharing and consensus algorithm of block chain technology can just solve this difficult problem (Merzlyakova, Ershova, & Bridskiy, 2021). Digital encryption technology provides a very important guarantee for the security and sharing of data, which can effectively prevent data from being tampered with or forged in the process of transmission, so as to achieve a deeper level of protection for data. Also due to the distributed accounting technology chain blocks, this feature makes the block chain in the process of storage and transmission of data to generate enough processing millions of TPS level of computing power to deal, because of its data source has distributed across multiple nodes, and at the same time can make full use of the node idle equipment computation power, storage capacity and bandwidth, In this way, all kinds of complex problems in the process of centralized computing can be well simplified, so that the cost of computing and storage process can also be greatly reduced. Based on the above analysis, the use of blockchain technology can better create the future "trusted data sharing" and "trusted value Internet", etc., based on this technological development background, it can also promote the high-quality development of the digital economy, and provide important application value for the future economic development.

4.2 Big data and blockchain application characteristics contribute to the high-quality development of digital economy

Based on the above analysis of the characteristics of blockchain technology, this paper tries to analyze the impact of big data and blockchain on the high-quality

development of digital economy from the perspective of the application characteristics of blockchain technology (Lazovic et al., 2021). First, by loading the data sources generated during the operation of the devices on the Internet of Things into the blockchain network, the data sources of the Internet of Things are deeply integrated with the blockchain. The security and credibility of the data in the exchange, transmission, communication and storage process can be effectively guaranteed by using this feature of the blockchain. Second, the real economy is an important pillar to support economic development, so the combination of blockchain technology application and the real economy (decentralized cross-domain transactions and user privacy data protection and other aspects of the application) can further release the innovation vitality in the economy and further promote the development of the digital economy. Third, through the use of big data and blockchain technology, to achieve a new way of efficient data transmission of point-to-point whole-chain interconnection, so as to solve the problem of the mismatch between computing power and massive data in the transmission and storage of data mining.

4.3 The practicability of big data and block chain technology promotes the high-quality development of digital economy

Due to the continuous development of big data technology, the digital industry has been realized in the economic development, which also greatly promotes the development of the economy. As a new technology, blockchain technology can improve the innovation of products and production modes in the existing production mode, and also improve the problems of credit pain points, data tampering and loss in economic activities. At present, with the emergence of emerging technologies such as big data and blockchain, fintech is gradually emerging in the public view, and the fintech industry ecology is also

gradually taking shape (Chen et al., 2022). With the growing development of fintech, more and more new financial products and service models have emerged, such as digital currency, cross-border payment, supply chain finance, insurance, securities and so on. The application of blockchain technology in various fields can ensure the credibility and security of data in the field, and improve the credibility, security and consistency of data on the data platform or business system, enrich the financial business operation mode, and implement the application of financial business in reality. It further increases the application of big data and blockchain technology in the process of developing digital economy, gives play to the practicability of big data and blockchain technology, and promotes the high-quality development of digital economy.

5. Conclusion

In the critical phase of China's economic development and transformation, fostering the digital economy is pivotal for realizing the objectives set forth in the 19th National Congress, achieving high-quality economic development, and advancing the modernization of China's governance system. The application of information technology, with a special emphasis on big data and blockchain, holds immense potential for the sports industry. It not only enhances efficiency across various sectors within the national sports economy but also propels our sports sector towards digitalization.

Thus, it is of paramount significance to investigate how big data and blockchain technology drive the high-quality development of the sports digital economy. Such research endeavors can lead to an optimized framework for the digital economy within the sports sector and pave the way for breakthroughs in key technological advancements that underpin economic development within sports.

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