

# Research on the Reform Prospect of Blockchain Applied to Sports Industry

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**Abstract:** Blockchain technology has caused global technological innovation, and it is bound to bring profound changes in China's sports industry. Sports industry is a new sunrise industry in China. It is of great strategic significance to promote the transformation of sports industry mode and promote the high-quality development of sports industry by means of block chain technology. Based on the transformation and upgrading of China's modern sports industry, this paper explores the advantages of blockchain technology, and takes trust mechanism, sports IP value, intellectual property protection and market vitality development as the breakthrough point to objectively analyze the practical pain points of sports industry. From the three dimensions of technology, policy and market, this paper discusses the feasibility of applying blockchain technology to sports industry, the advantages of solving sports industry problems and the potential threat of future industry development. In addition, this paper first examines the change of sports industry mode brought by blockchain technology, and discusses the specific application scenarios of team salary system under the background of encrypted digital currency technology, product consumption mode under intelligent anti-counterfeiting system, and venue operation process in intelligent contract scenarios, so as to further provide reference for the introduction and development of blockchain technology in China's sports industry.

**Keywords:** blockchain, sport industry, cryptocurrency, intelligent anti-counterfeit

## 1. Introduction

Blockchain appears to be slowly integrated into people's lives in 2018. It is gradually known by the public. Most people are no longer unfamiliar with cryptocurrency and blockchain technology. Now this disruptive technology is changing more industries, including the world's largest sports - football, and even the whole sports industry. In fact, the place where blockchain technology exists is not single in the sports industry, even the sports industry is actively applying blockchain, and some real-world sports industry people are showing strong curiosity about how to integrate blockchain technology into the sports industry.

## 2. Initial Prototype of Global Block Chain

### 2.1 Blockchain Technology Reverse Innovation

Blockchain is essentially a decentralized database with a new application mode of computer technology such as distributed data storage, P2P transmission mode, consensus mechanism and encryption algorithm. Generally speaking, blockchain is a shared and untamperable book that can record the history of all transactions on a network. As a distributed ledger, it has the advantages of distributed, decentralized, secure, and non-tamperable. Using these excellent characteristics can make transactions safer and supervision more transparent. Through the permanent and distributed recording of each transaction, time delay, cost and artificial errors can be reduced, and it has the core application value of non-tamperable, traceability, multi-party consensus maintenance, decentralization, openness and transparency, consistency of state and strong dependence on cryptography.

**2.2 Blockchain Application Industrialization will usher in Two New Climaxes**

Blockchain technology is considered to be a reverse innovation after interconnection, which will lead to new technologies and new industries in the global scope. In addition to the fusion field, the block chain should be extended to many fields, such as intelligent manufacturing, supply chain management, digital asset trading and so on. Technology is always developed with acceleration rather than uniform speed. The wheel is the basis for innovation, various platforms, and companies that gradually replace the existing business system; another round is the field of innovation, which provides block chain services and should accelerate the formation of industrial scale. Digital currency will no longer be the pronoun of blockchain technology, and it is the end-result of blockchain that digital currency should go to each industry.

**3. Blockchain and Sports Industry Mode Change**

**3.1 New Team Settlement Mode in Encryption Digital Currency**

Blockchain digital currency encryption technology can bring new changes to the salary model of athletes in the sports industry. The traditional salary mode of the team mostly adopts the mode of "monthly," "quarterly" or "year-end." This traditional salary model is the same as most traditional industries, but it is not suitable for modern emerging sports industry. The contradiction is reflected in the 'salary adjustment,' 'salary punishment' and 'salary incentive'. First of all, the sports industry is not a fixed income industry, the industry personnel income has stage volatility, and has a direct correlation with the season, schedule, etc. The salary distribution mode with a long interval is not conducive to adapting to the fluctuation of industry income, and can not achieve timely 'salary adjustment' for team players. Secondly, the training and competition period of athletes in the sports industry is cyclical, long-term interval fixed salary payment system and irregular attendance assessment system, making the athletes' training and competition attendance is difficult to be linked with salary, resulting in the absence of athletes' salary punishment. Finally, the problem of players' salary arrears in the sports industry is relatively serious. The long-term interval salary payment system is difficult to achieve effective "salary incentives" for players, which is not conducive to the training and play of athletes.

Blockchain technology is applied to the sports industry, and its unique digital currency encryption technology can be used to construct a new 'daily' salary payment system in modern sports industry. The specific process is as follows. The first step is to build the "pay pool" of players in each club and team as the source of funds for daily service, which is conducive to the encryption of technology to ensure the security of fund flow data. The second step is to establish a daily updated data of the player's personal salary booklet, the player's personal training attendance records, the number of leave requests, game attendance points and injuries, directly linked to personal salary, to build a 'pay zero arrears', 'injury subsidies' humanized, digital team salary system. The third step, the player's individual payroll with the 'salary pool' organic linkage, in daily units, regular payment of individual salaries.

In addition, blockchain technology can address cross-border settlement challenges. Funds and personnel in the sports industry have strong mobility. Blockchain encryption digital currency technology can not only ensure the safety and reliability of cross-border settlement, but also greatly improve the convenience of cross-border settlement, which can greatly promote the cross-border investment and financing of the sports industry and the signing of transnational athletes.

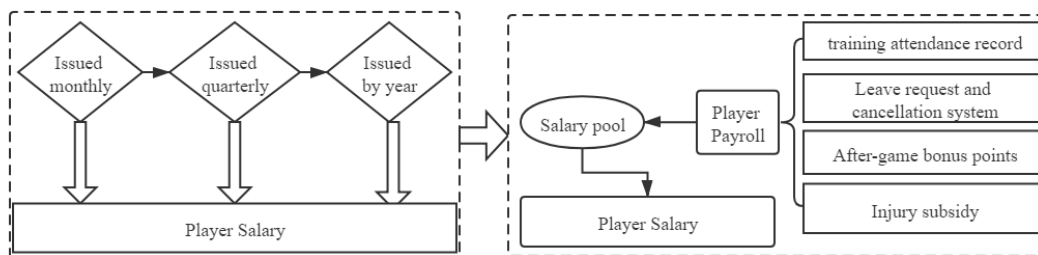


Figure 1: Blockchain and sports industry team salary settlement mode change

### 3.2 Consumption Mode of Sports Products under Intelligent Anti-counterfeiting System

The precise and intelligent anti-counterfeiting system of block chain technology can inject greater security and certainty into the consumption of sports products and avoid the consumption risk of sports industry. Taking the most common consumer products in the sports industry, such as tickets for large events and sports souvenirs, as an example, in the traditional sports industry, 'cattle' and 'piracy' prevails, and event organizers often lack the motivation and means to manage industry chaos. The purchase channels of 'unofficial' tickets and souvenirs violate not only the interests of consumers, but also the reputation and image of the organizers. In addition, the sports industry consumption common membership system, such as registration of a gym, sports venues members after the consumer personal information leakage phenomenon, is also common.

After the application of blockchain intelligent anti-counterfeiting system in the sports industry, the consumer products in the industry will have two major advantages. First, consensus mechanisms balance efficiency and security. The consensus mechanism of blockchain technology can guarantee the uniqueness of anti-counterfeiting 'identity' of consumer products in the sports industry, and greatly improve the safety of product and consumer information. Second, the application of symmetric encryption and authorization technology makes the transaction information public, but the account identity is highly confidential. The technology allows access to account information only when authorized by data owners, and data security and personal privacy are highly confidential.

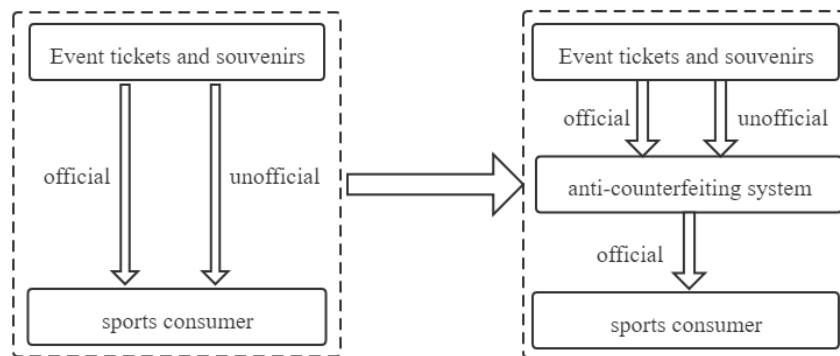


Figure 2: Blockchain and Product Consumption Pattern Change in Sports Industry

### 3.3 Operation Mode of Sports Venues under Intelligent Contract System

As a core technology of block chain technology, intelligent contract can greatly optimize the operation mode of sports venues and realize the new change of sports venues management mode. The existing sports venues in China are mostly funded by national or local finances. It is difficult to meet the needs of all-round high-quality development of venues by adopting the enterprise management mode. On the one hand, the operation of high-quality venues involves many aspects such as facility maintenance, security, activity planning, intangible asset development, franchise, and crowd management, and there are many stakeholders. Under the traditional operation mode, a large number of professional organization and management personnel are required to act as contacts and intermediaries. On the other hand, in the current talent market, the corresponding professional talents are scarce, it is difficult to fill the gap of talent demand in the operation of sports venues. The low management efficiency caused by talent problems also directly causes the dilemma of less profit and high maintenance cost of venues. Therefore, the idle phenomenon of domestic sports venues is very common.

The intelligent contract can fundamentally solve this problem. After meeting certain preset conditions, the system automatically triggers and operates the intelligent contract composed of computer code. It only needs the connection between the two sides of the transaction, and replaces the intermediaries. It can promote the decentralization of the operation of sports venues, greatly optimize the business process, improve efficiency and reduce costs. Taking the construction, acceptance and payment of agreed remuneration during the construction and maintenance of venues as an example. The construction party introduces the implementation process of the project into the block. From the initial construction material selection to the final construction completion, the whole process will be recorded on the block chain. Once the system receives the information completed under the preset conditions, it automatically initiates an acceptance application to the venue operator. After the acceptance of the project by the venue operator

is qualified, the qualified information enters the block chain system and automatically pays the construction party the remuneration. The whole process only requires the construction party to connect with the venue, and no intermediary is needed.

Under the operation framework of intelligent contract, the reform of this model can not only be applied to the construction and maintenance of sports venues, but also can be extended to many aspects of sports venues operation, such as the matching of different scale events and venues, the bidding of stores in venues, and the matching of security system and personnel.

#### 4. Conclusion

With the maturity of blockchain technology, blockchain will inevitably occupy an indispensable position in the future Internet industry. The integration and development of blockchain and various industries is an inevitable trend, which can not only bring about technological revolution, but also reshape production relations and business models, reconstruct social value system, and redefine the value system of sports industry. It is undeniable that based on the immature technology development and imperfect industrial standards of blockchain itself, the application of blockchain is still in the exploratory stage. There are still many risks and challenges to truly play the application value of blockchain, but the trend is clear. In the near future, blockchain technology will bring new industrial changes to the sports industry and improve the social value and influence of the sports industry. This paper discusses the application of blockchain technology, the pain points of sports industry and the feasibility and specific application scenarios of blockchain technology in sports industry. While clarifying the problems, it hopes to attract the attention of academia and industry, and jointly promote the cross-border integration of blockchain technology and sports industry.

#### References

- [1] Chen Po, Liu Bo. *Innovation Research on Financing Mode of Sports Goods Manufacturing Enterprises in China Based on Blockchain Technology [J]. Sports Research, 2020, 34 (01): 12-20.*
- [2] He Pu, Yu Ge, Zhang Yanfeng, Bao Yubin. *Overview of block chain technology and application prospects [J]. Computer science, 2017, 44 (04): 1-7 +15.*
- [3] Huang Daoming, Guo Menglin, Yang Qunru. *Application selection and implementation path of blockchain technology in sports industry [J]. Sports science, 2019, 39 (08): 22-28.*
- [4] Lin Xiaoxuan. *Application of blockchain technology in the financial industry [J]. China Finance, 2016 (08): 17-18.*
- [5] Shao Qifeng, Jin Qingqing, Zhang Zhao, Qian Weining, Zhou Aoying. *Blockchain technology: architecture and progress [J]. Journal of Computer Science, 2018, 41 (05): 969-988.*
- [6] Su Jianzhen, Chen Xi. *Platform architecture, application prospects and practical challenges of student physical health test blockchain [J]. Sports research, 2020, 34 (01): 21-26 + 32.*
- [7] Yang Lin, Ayingga. *'Blockchain+Sports' application field and its operation guarantee [J]. Sports research, 2020, 34 (01): 27-32.*
- [8] *Research on the influence of block chain technology on the development of sports industry in China [J]. Contemporary sports science and technology, 2018, 8 (19): 188-189.*