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The Future of Blockchain Technology in the Sports Industry

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ABSTRACT
With the continuous development of blockchain technology and the rise of the digital process, various industries, such as my country's sports industry, have made extensive applications in the application of blockchain technology. By measuring and collecting athletes' health and performance information, the athlete's past and future can be evaluated quantitatively. Blockchain technology offers a new opportunity for the development of the sports industry. The decentralized structure, security, reliability and traceability of the data collection system are highly compatible with the development of the sports industry. As an innovative technology, blockchain has given new impetus to the development of the sports industry. It also pioneers new technological developments and visual experiences. Blockchain is a chain data structure that combines blocks of data sequentially in time order and is a cryptographically guaranteed, immutable and immutable distributed ledger. Research on the future of Blockchain Technology in the Sports Industry.

1. INTRODUCTION

Sports are more than performance competitions; It is a thriving and changing industry that employs more than seven million people and generates an estimated $600-700 billion in revenue when infrastructure, events, hospitality, education, manufacturing and retail sales of sporting goods are taken into account [1]. Despite the prosperity of sports, one should not ignore the fact that the sports industry is considered one of the most traditional and conservative industries, and this is done with the aim of keeping competition between athletes at a healthy level and preventing monopolistic behavior [2].

However, in order to be successful in increasingly digital business environments, sports organizations need to see it as an evolutionary way to keep up with technological change. Therefore, there is a paradigm shift in which technology is starting to play an important role in the sports industry [3]. Athletes in particular are increasingly turning to new technologies to improve their performance and gain a competitive advantage [1]; These technologies include performance tracking sensors, smart pills and implants.

This intersection of sports and technology, or sports technology as it is commonly known [3], impacts many areas of the sports industry beyond enhancing the performance of athletes discussed above; Sports technology also has an impact on various other aspects of the sports industry such as sports broadcasting "sports sponsorship, event management, smart stadiums and fan engagement".

Technology has also made it easier to comply with sports rules, thanks to innovations such as goal line technology in football, shot clock in basketball, hawk eye and video-assisted referee in tennis. These lucrative opportunities offered through Sportstech attracted the attention of investors and academics; It was reported that more than 12 billion dollars were invested between 2014 and 2019, and the world's largest technology companies such as Apple, Cisco and IBM are rapidly entering this field. While it continues at an increasing pace in the academic world, it is reported that research on sports technologies has increased significantly over the years [4,5].

Blockchain technology, with its unique features, has the potential to be a transformative force that solves various challenges and

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inefficiencies in the sports industry. This technology increases transparency and auditability, paving the way for the transition from current globally fragmented centralized systems to a decentralized peer-to-peer network. The process of timestamping, encrypting and linking data on a blockchain ensures the immutability of data, which significantly increases the ability to track, trace and certify within the industry. Moreover, blockchain offers numerous benefits, including reducing cybersecurity concerns and enhanced data protection through cryptographic techniques and encryption. It also eliminates central points of failure and reduces dependence on intermediaries in centralized systems, thanks to its decentralized nature and implementation of automation through smart contracts.

1.1. Blockchain technology

Blockchain technology is a brand new distributed infrastructure and computing method that uses blockchain data structure to verify and store data, create and update data, and use cryptography to secure data transmission and access [6,7]. The first is mainly connected to the main chain and the next block, and the second is mainly used to store all kinds of information data. Each block produces and saves all kinds of information to be processed in time order. As a new information data processing module, it greatly improves computing speed and storage space, and not only saves labor cost but also reduces time cost.

At the same time, the system will automatically create timestamps and tag data information when blocks and chains are formed. In this way, information can be easily shared with relevant users. The blockchains we are familiar with today are divided into three categories, and we can choose different types of blockchains according to different situations. These three types of blockchains are public blockchains, community blockchains, and private blockchains, and each has its own advantages and disadvantages [8].

Thanks to intelligent distribution, interference and technical gaps are reduced and the authenticity and reliability of information is guaranteed. In the transmission and distribution process, blockchain technology can also determine whether the target user's information is correct, provide alert function for abnormal account, and prevent user deception and property loss. Blockchain technology was first applied to the use of passwords. The interconnection has been removed to ensure point-to-point communication, realizing direct trade between the two parties, and making the trade channel more seamless and secure.

1.2. *Characteristics of blockchain*

Blockchain is a type of chained data structure in which blocks of data are sequentially linked in chronological order, a distributed ledger that cannot be tampered with and is guaranteed by cryptography [9]. Simply put, blockchain technology refers to a way for all people to participate in accounting. In the blockchain, each node can keep an account, and the system judges the fastest and best node during this time and records its contents in the ledger. At the same time, the system sends the contents of the ledger to other nodes in the system for backup, so that every node in the system has a complete ledger [10]. This method, which we call blockchain technology, is also the origin of blockchain decentralization.
This method can ensure the security of the notebook. By compiling existing studies, the features of blockchain are summarized below:

First, since there is no central ledger, it cannot be destroyed. In the past, there was always a pair of "big hands" behind the accounting system that controlled all the information in the background, and the input and output of information had to go through these "big hands", allowing "hand turning". clouds and covering hands like rain". However, each node in the blockchain is part of the system and each has equal rights and the exact same ledger, so destroying some of the nodes has no impact on the entire system [11].

Second, blockchain technology guarantees the authenticity of the ledger. Since it cannot be tampered with unless you can control and change the computers of most people in the system, the system will consult the opinions of most people to determine the actual result [12]. Moreover, there is no point in changing one's own notebook because others do not accept it. Blockchain technology can improve public records management in many ways. When users add content to the chain, it can automatically prove its authenticity [13].

Third, since there is no central intermediary, everything is carried out automatically through pre-determined procedures; This not only greatly reduces transaction costs but also improves transaction efficiency [14]. The advantages of the central system can only be demonstrated within the system itself. Efficiency cannot be increased when other systems are involved [15]. However, as long as they are on the same blockchain, different institutions only need smart contracts to realize the connection between value and equity. In

addition, since everyone has the same ledger, openness and transparency of the ledger recording process is ensured [16].

2. APPLICATION OF BLOCKCHAİN IN THE SPORTS INDUSTRY

As a new mode of computer application, the main functions of blockchain are distributed data storage, point-to-point transmission, consensus mechanism, encryption algorithm, etc.; Its technical mode and main work focuses on building trust and security in the process of data storage and transmission. Increasing the efficiency of datasets and increasing the confidentiality and security of data transmission. Therefore, the big data era we are entering urgently needs the implantation and application of blockchain technology to improve the work efficiency and security factor of the big data platform and promote the innovation and application of data information technology, including sports big data. The four target groups of sports big data services, such as professional clubs, sports media, sports fans and sports gambling employees, are expected to benefit from faster, more secure and privacy-guaranteed data services in the process of embedding sports big data in blockchain technology. To increase the efficiency and impact of their participation, gaming viewing, news and gambling activities. On this basis, the supply-side innovation plan of sports big data will appear on paper; In particular, the main areas and aspects of the sports industry, such as professional sports big data, national fitness and national health connection big data, and sports industry's key element resource big data, will become the main source of providing core databases. The possibility of transmission, analysis and use will be very important [17]. Figure 1 shows the application of blockchain in the sports industry.

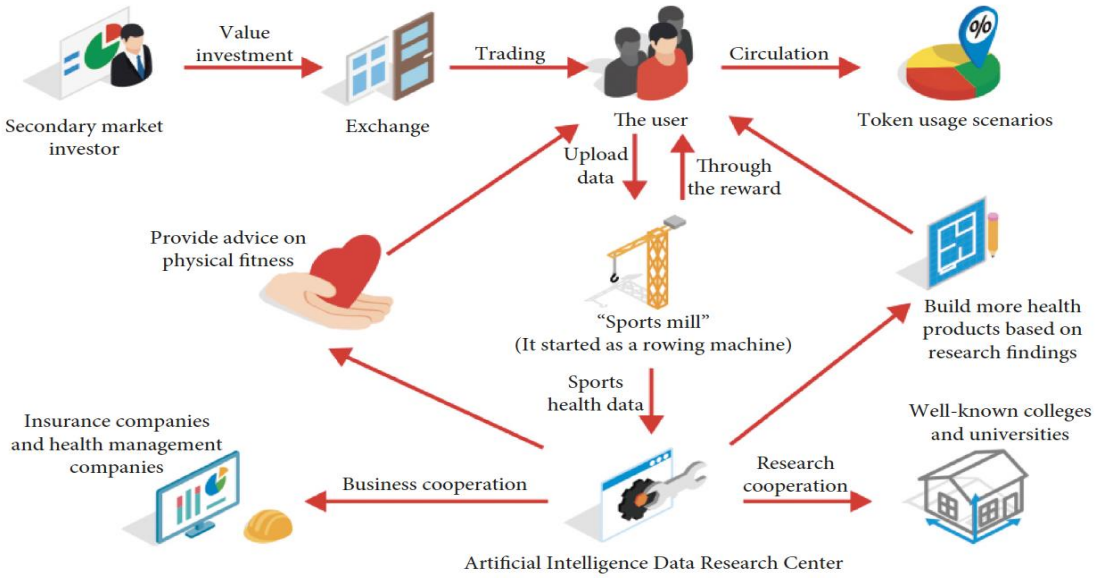

Figure 1. Application of blockchain in the sports industry in the future.

Many sports companies are collaborating with top clubs and players to offer blockchain-based applications including fan tokens, Non-Fungible Tokens (NFT) collectibles, sports tickets, sports gambling and much more [18]. The first sports blockchain "BraveLog" was introduced by technology giant Microsoft in 2017. This solution aims to securely record athletes' performance data using blockchain, creating a sports resume that will help athletes understand their abilities and manage their individual skills efficiently. education [19]. Another example is Blocksport, a company that provides clubs and leagues with blockchain-based technical solutions such as ticketing, voting and loyalty programs. Other examples include Chiliz, which helps top football clubs sell fan tokens to fans, while Bethereum, 1XBit and Decent are companies that offer blockchain-based sports betting platforms. Even major sports governing bodies such as FIFA are starting to use blockchain to manage major Football events [20]. However, despite the widespread theoretical advantages attributed to it, the adoption of blockchain in the sports industry remains limited. The practical use and real-world impact of blockchain in the sports industry remains relatively unexplored. Although there are two reviews examining the integration of blockchain technology in sports, we argue that these reviews do not comprehensively address the topic and its potential applications.

Schillinger et al. [21], the authors successfully identified and categorized blockchain

use cases in sports. However, technical implementation details and practical aspects of blockchain use are covered in a limited way in this field. Conversely, Lopez et al. [22], the role of blockchain in sports is extensively discussed, albeit only in the context of a single application area (athlete data management).

3. Conclusion

Although the application of Blockchain in the sports industry is still in its infancy, we have identified many application areas, including the management of Athlete data, anti-doping, sports financing and crowdfunding, management of sports events and sports collectibles and merchandise. As e-sports and sports gambling, it targets different stakeholders, primary clubs, clubs, athletes, fans and sports regulators.

Blockchain has significant potential to solve many challenges and limitations in the sports industry, such as managing the training and recruitment of athletes, combating doping, blocking counterfeit sports tickets and collectibles, and protecting sports copyrights by providing a transparent, decentralized and tamper-proof platform for sports data. management and sharing.

The integration of blockchain technology and the sports industry not only promotes the transformation and development of industrial business models, but also promotes the transformation of industrial business operation logic and production relations.

Although the combination of blockchain technology and the sports industry is still in its infancy, from the perspective of current enterprise applications, blockchain technology can help solve the main pain points of the sports industry ecosystem and will definitely reshape the trust mechanism of the entire process.

Conflict of Interest

No conflict of interest is declared by the authors. In addition, no financial support was received.

Ethics Committee

No need for Ethics Committee approval for this study.

Author Contributions

This work was prepared by the author

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