

Opportunities, challenges and Countermeasures for the development of China's sports industry in the era of big data

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Abstract: In the era of big data, China's sports industry is facing opportunities: digging and analyzing big data to create more value for the sports industry; promoting the sports industry cluster to innovate and develop synergistically; speeding up the process of scientific and technological sports industry. Challenges: a shortage of senior data management and development manpower; difficulty of data storage; insufficient depth of data digging; user information and privacy leakage; foreign competence with multinational companies for the domestic enterprises. Some countermeasures are put forward, such as solving the problem of sports big data storage, improving the ability of big data processing and service, introducing advanced data processing manpower, building scientific research team, protecting personal privacy, and doing a good job of sports industry collaborative innovation research.

The industrial revolution led by steam engine in the 19th century ended the era of manual labor and accelerated the progress of human civilization. The computer-led technological revolution in the 20th century has promoted the process of network informatization and greatly changed the way of human life. Nowadays, with the popularity of mobile Internet, Internet of Things, cloud computing and other network channels, as well as the popularity of QQ, blog, Weixin, Facebook and other network communication methods as a symbol of the big data era, the massive amount of data generated every day is changing people's lifestyle and consumption experience.

1. Characteristics of big data Era

Big data, as a hot research topic, has the following 4V characteristics: (1) Volumes are huge. Large data sets jumped from the TB level to the PB level. (2) data categories (Variety) are numerous. Data comes from a variety of data sources, types and formats break through the previously defined structured data category, including semi-structured and unstructured data. The density of value (Value) is low. Taking video as an example, the data that may be useful in continuous uninterrupted monitoring is only 1~2 s.

2. Opportunities for China's sports industry in the era of big data

Big data is gradually showing influence in every field of society. The McKinsey Global Institute

reports in its Big Data: The Next New Areas of Innovation, Competition and Productivity that "big data" in the U.S. healthcare industry can create \$300 billion a year, more than twice as much as Spain spends on health care; and in European public administration, the big data is equivalent to about 2% a year. The value of 50 billion euros is higher than Greece's GDP; the use of global personal location data can create \$600 billion in consumer value; and "big data" can increase retailers' operating profits by 60%. In addition, some companies use social networks such as Facebook, Twitter, QQ, to collect a large number of relevant data, providing the possibility for product improvement, but also to achieve large data marketing.

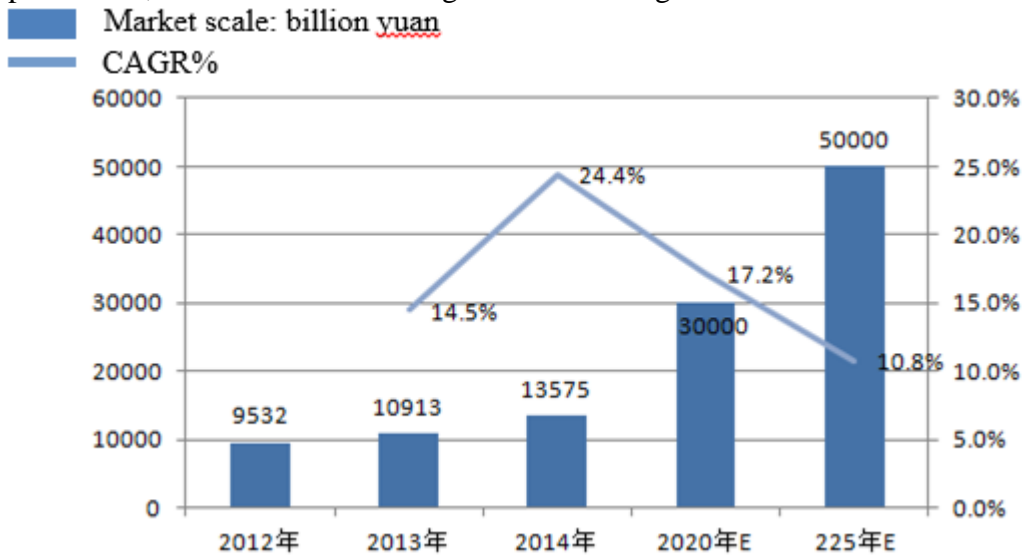


Figure 1 Prediction of China's sports industry scale and growth rate.

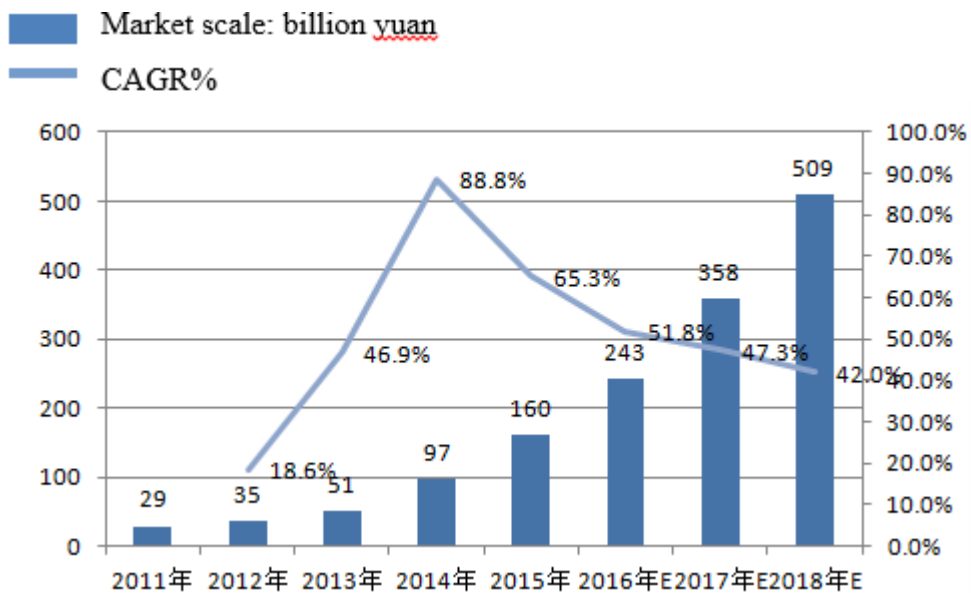


Figure 2 Market scale of China's big data in 2011-2018 years.

2.1 Create more value for sports industry

Unlike cloud computing and Internet of Things (IOT) data storage and acquisition, the focus of big data is how to mine valuable data, integrate and analyze relevant data information, and ultimately make it a valuable resource for enterprises or managers. In addition, timely access to

these valuable data information can enable enterprises and managers to timely grasp the current market demand situation, understand consumer demand hobbies and consumer trends, market segmentation more accurately, so as to produce products in line with consumer wishes. It can be imagined that in the near future, it will be possible to produce "privately tailored" products for consumers.

2.2 Promoting the coordinated development of sports industry

At present, China has set up six national sports industrial bases, and the sports industrial clusters have basically formed. However, in the clusters, sports and related enterprises lack cooperation and communication with universities, scientific research institutions, professional social network analysis companies, and so on. Under the background of large data, sports enterprises can not only reduce investment in scientific research, but also obtain information from other enterprises. Universities and scientific research institutions can transfer talents for them, so that the theoretical results can be directly applied to sports enterprises, and enhance the ability to transform their scientific research results. More orders, expand their own business, so collaborative innovation is a mutually beneficial and win-win process. For example, IBM has acquired SPSS, Netezza, Open Pages and Algorithmics in the past three years to better develop sports events. Therefore, collaborative innovation is an inevitable choice for sports enterprises in the context of large data.

3. Challenges to China's sports industry in the era of big data

3.1 Storage of big data

With the rapid development of mobile Internet, Internet of Things and cloud computing, all kinds of unstructured and semi-structured data such as video, audio, social and so on are growing rapidly, and TB data may be produced every day. According to Teradata's statistical analysis, Boeing 737 aircraft can produce 240 TB of sensor data in a six-hour flight, which poses a higher challenge to the management of traditional databases (traditional databases can not handle TB-level data, let alone high-level data analysis). According to the IDC research report: by 2020, the global information database capacity will reach 40 ZB, nearly 15 times the 2012 2.8 ZB, the existing storage technology has been difficult to cope with. Take the sports competition performance market as an example. There are thousands or even tens of thousands of spectators in every game. There are also viewers watching the live broadcast on TV.

3.2 Deep analysis and mining of data

The key to using large data is not how to store massive data, but how to analyze and process massive data information. In the field of sports industry, it is how to use scientific and technological means to analyze and mine the valuable data from a large number of video, audio and dynamic unstructured data information. In the Internet age, the application of social network analysis technology is more important to the real-time analysis and acquisition of large data of sports industry, that is, flow processing. Unlike traditional batch processing, stream processing is real-time; storing a large amount of information while doing stream processing is the key to using large data. Timely access to useful information and feedback to users, will have a huge impetus to the development of the sports industry, but also put forward higher requirements for sports enterprises.

4. Countermeasures for the development of China's sports industry in the era of big data

4.1 Solve sports big data storage problem

(1) The government should take the lead in formulating relevant planning and development policies as soon as possible in view of the characteristics of large sports data, encouraging scientific research institutions or enterprises to carry out relevant research and develop storage equipment. (2) According to the current situation, the sports industry should strive to improve its scientific research capability and meet challenges.

4.2 Do a good job of large data processing services

(1) On the basis of collecting as much data as possible, quickly analyze and process these data and provide the information users need, such as Google software engineers through smartphones, the service will be able to understand the user location, time, personality, nearby equipment, sensors. After data processing, users will be provided with accurate information as soon as possible. (2) The analysis and processing of big data should be fast, otherwise the opportunity for users will be missed. For example, Ray Henry Berg and his team, from Both Allen Consulting, refined a data model based on Major League Baseball data, which, on the basis of multiple cross validations, can predict in real time what a pitcher is going to throw and when, with an accuracy of 74.5%.

5. Concluding remarks

Sports industry should actively take advantage of the opportunities brought by the era of big data, increase investment in science and technology, make a mutual plan about industry development, improve laws and regulations of big data service as soon as possible, expand its own business in time, strengthen collaborative innovation research of big data processing, and provide users with timely and satisfactory sports products and interest service. In addition, we should take the initiative to meet the challenges of talent, technology and information security brought to the sports industry in the era of big data in light of China's reality.

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