

# Research on the Innovation of Higher Education Management Model Based on the Big Data Era

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**ABSTRACT.** *How to adapt the management of higher education to the development of the times is an arduous task. The application of advanced technology and ideas is an eternal topic for the management of higher education. Improving the management of higher education is an inevitable requirement of the development of the times. The key point is to make full use of modern information technology to build a higher education management platform to achieve precise and efficient management of colleges and universities students. Therefore, in the context of big data, this article analyzes education big data through the use of literature research methods and logical deductive research methods, expounds the innovation direction of higher education management models in the context of big data, and proposes targeted the corresponding measures have served as a reference and reference for improving the management level of higher education.*

**KEYWORDS:** *big data, higher education, education management*

## 1. Introduction

Education management refers to the overall management of resources such as manpower, time, space, funds, equipment, etc. through the reasonable application of management techniques and management methods in the education process, so that the utilization of educational resources can be effectively improved in the education work, to better complete the education work [1]. At present, with the advent of the information age, the management of college education has become more convenient and faster in China. The use of big data in college education can accomplish many tasks that could not be completed before, and at the same time, it can also improve education management under big data efficiency, which is very important for modern higher education management. Education management is essentially a process of collecting, sorting, rationally planning, interacting, and transforming internal and external resources in education. The level of education management determines the level of education to a certain extent [2-3]. In the context of big data, because big data can efficiently process massive and complex information resources,

it can effectively improve the management level of education information data in higher education management, thereby promoting the reform of higher education management mode. But from another perspective, in the era of big data, many colleges and universities have also discovered the deficiencies and deficiencies of their own education management systems in China. If they want to further improve education management, they must adapt to the times to develop innovative education management methods, and be carry out a series of treatments to solve the problems of colleges and universities, so as to achieve stable and sustainable development of university education management, and cultivate high-quality talents for the society.

## **2. Problems in higher education management under big data**

### ***2.1 Poor data mining***

Data mining mainly refers to the acquisition of potentially valuable data in the database through effective algorithms. The application of big data is to mine the data, and the results of data analysis are used to further improve the learning situation of students and the teaching situation of teachers in higher education [4]. Through detailed investigations, useful data can be obtained, and the overall characteristics and learning situation of students can be mastered. In a fundamental sense, the data itself can make higher education reforms and decision-making more convincing. The mining and application of the surveyed data can enable them to think about the issues that higher education managers need to think about in the context of big data. From the actual situation and conditions shown, the lack of professional talents in universities makes universities feel the process of data mining lacks a certain depth, and the process of data analysis remains at a relatively simple level, which makes it difficult to provide universities with a deeper basis for decision-making [5].

### ***2.2 Insufficient data research***

The improvement of the management level of higher education is far away from data acquisition and data research. From the analysis of the status quo of university education, the current data research in universities is mainly concentrated on the government. As a higher administrative unit, the government has the right to statistics and collection of data. As early as 2013, the Ministry of Education of China issued a notice stating that regions with better conditions can entrust other parties to evaluate data, and continuously promote social demand, employment, and talent training through various methods interaction [6]. Since then, a third-party evaluation mechanism has been proposed to make the data more objective, and to make the data more comparable and credible. From the perspective of the third-party evaluation mechanism, the domestic institutions for data analysis and data research are relatively small, and the higher education management system, as an important subject of data collection, has not been able to improve the development process of big data within universities and is in the process of data acquisition. Relatively weak,

there are only relatively fragmented and one-sided data in universities, and there is no way to obtain complete data [7].

### ***2.3 Management process is behind***

Higher education management is inseparable from the application and construction of information platforms. From the current situation, first of all, colleges and universities are relatively behind in the construction of basic alms, and there are still many universities that have not yet made preparations for the application of big data. The construction of the management platform is relatively insufficient, and the update speed of higher education data is even slower. All the data are scattered in different departments, and there is a lack of integration between the data. Some colleges and universities have not yet established higher education management data platform [8]. Nowadays, colleges and universities have greater difficulty in the construction of data platforms, and they lag behind in terms of talent training and talent reserve. In the context of big data, although the way to obtain data is important, it is necessary to pay more attention to the in-depth exploration of data. The implementation of data model innovation, data algorithm, data search, data analysis and data sorting, etc., comprehensively process the data and make the data more scientific in nature. At present, colleges and universities are relatively backward in the construction and training of professional talents, which has greatly affected the development of college informatization construction.

## **3. Innovative methods of higher education management based on big data**

### ***3.1 Establish early warning data for higher education management***

Find out the general laws of higher education management through education big data. If there is an abnormality in the education management data, by analyzing the data and comparing with the general laws, the problem can be found more accurately, so that targeted solutions can be taken and effective to avoid problems. When using educational big data, critical points can be established for various key data. When the information data exceeds the acceptable range, a warning is issued to the higher education management, and reasonable measures are taken to correct it. The content of correction is not only limited to the academic performance of college students, but also pays attention to managing the physical, mental, and mental health of college students, and comprehensively analyzes college students' attendance, classroom enthusiasm, interpersonal skills and other data, so as to be more effective discover hidden dangers and improve the management of higher education.

### ***3.2 Creating evaluation data for higher education management***

Early warning is to judge the occurrence of a phenomenon through the changes of some data in the education big data, and the prediction is to analyze the trend and

general laws of the development of the matter before there is no data change, so as to determine the possible future predict the problem, so as to take corresponding measures in advance. This method is widely used in e-commerce. The traces left by people after shopping can be analyzed through big data to analyze people's preferences and needs, and then push related products, which can effectively stimulate consumers' desire to buy. In education big data, by analyzing the answering time, error rate, review situation, self-learning situation, it is possible to construct an evaluation system of college students' learning situation, so as to push more appropriate learning information for college students [9]. At the same time, it can also analyze whether college students have mental health problems based on their comments on various social networking sites, so as to provide targeted psychological counseling and effectively avoid college students' wrong thoughts or excessive words and deeds.

### ***3.3 Improve personalized higher education management***

Restricted by factors such as technical level, the traditional education management model does not pay attention to the individual characteristics of college students, but regards all college students as a whole, and conducts undifferentiated education and management for them [10]. Under this kind of education management mode, the personality of college students has been suppressed, resulting in low quality of education management and not playing its due role. Through the education big data to accurately analyze the personality of each college student, it is possible to choose a reasonable education management method according to the personality characteristics of the college student, and improve the accuracy and pertinence of higher education management. For example, teachers can record and analyze data such as the method of problem solving, the idea of solving problems, and the speed of calculation by recording the performance of college students before, during and after class, so as to form a more personalized and systematic view for college students cognition, to provide reasonable learning methods for its defects, can effectively improve the learning level of college students.

### ***3.4 Form the shared data of higher education management***

Due to the rapid information transmission speed of the Internet, it can realize the transmission and analysis of massive data, so it is possible to share educational data resources based on big data. For example, "MOOCs" education is an online open course based on the Internet, which has the characteristics of openness, selectivity, autonomy and interaction [11]. In MOOCs education platform, college students can choose appropriate learning content according to their own learning needs, so as to meet their own personalized learning needs. At the same time, university education management data sharing based on big data can effectively solve the problem of unfair distribution of educational resources in current higher education, so that every college student has the opportunity to access to the best quality teaching resources, and can promote the continuous development of China's higher education as a

whole.

### ***3.5 Improve the big data literacy of the teaching staff***

The management and application of big data in colleges and universities mainly rely on teachers. To improve the literacy of data in the teaching staff of colleges and universities internally requires the managers of colleges and universities to reform the education management of colleges and universities. This work is of great significance. In the context of big data, if you want to improve the data quality of the teaching staff, you must start from the direction of scientific research, teaching, and technical teachers. Such teachers need to be correctly guided and let them understand the big data awareness and big data. The combination of data concepts continuously improves the professionalism of teachers. In the process of college education management, it is necessary to sequentially manage from the aspects of curriculum knowledge, statistical literacy, information literacy, and evaluation literacy, and to manage the synchronic information data, diachronic information data, school climate data, impression data, behavior data and evaluation Interpretation, analysis and concentration of data, etc., transform the data into an operable teaching practice and teaching knowledge, thereby further assisting teaching and determining the teaching steps. Colleges and universities need to provide accurate guidance to teachers and allow them to consciously apply big data to realize teaching practice and teaching reform. Teachers also need to arouse the importance of using big data in teaching evaluation, and collect a large amount of feedback in the data in turn Information to continuously improve their own teaching work. For the talents engaged in big data research in universities, universities also need to increase the training of technical and professional talents, and deep learning and mining teaching data, so as to focus on the cultivation of comprehensive analytical talents in universities. Colleges and universities can use methods such as international visits, advanced studies, and cooperation and exchanges to send big data research talents to countries with better big data development for learning, so as to strengthen the training of talents.

## **4. Exploration of higher education management mode under the background of big data**

Western developed countries attach great importance to education management. As early as the 1950s, the education management model has been reformed. From the traditional formal model to the college model, and then through many reforms and development to the current cultural model. Each education management model has its own unique theoretical basis. Although Chinese educators have conducted in-depth research on Western education management models, most of them stay at the level of theoretical research and rarely conduct practical operations [12]. Nowadays, promoting the reform of higher education management model and building a modern education system has become one of the important tasks of China's higher education. Therefore, in the context of big data, higher education

management can be combined with education big data to build a management system with objects, subjects, goals, and resources as the basic framework through the education cloud. Among them, the objects mainly refer to teachers, students, principals and society, and the main body mainly refers to the government, teachers, principals and society. The goal is to build a complete education management service system, promote the personal development of college students, and enhance the comprehensive ability of college students. To improve the quality of smart education, resources are only financial resources, human resources, technical resources, and knowledge resources involved in education.

First of all, from the perspective of the subject of higher education management, in the context of big data, the subject of higher education management will inevitably show the characteristics of specialization and diversification. In carrying out education management work in higher education institutions, it is necessary to actively introduce third-party management agencies to achieve more professional and systematic management in certain areas of higher education management, while teachers and school administrators mainly implement the education management responsibility system and pay attention use excellent teachers to manage the school, so as to achieve the purpose of improving the level of school management. Secondly, people are the main body of higher education management all information and data in education management are generated by people. At the same time, information and data related to higher education management not only come from various educators, but also have an inseparable connection with society. Therefore, education big data must not only organize relevant information of students and educators, but also collect, organize and analyze other topics that generate education big data. This is also one of the most complicated steps in the management of higher education based on big data.

The allocation of educational resources is the focus of higher education management. The traditional higher education management model is relatively rough, the utilization rate of educational resources is low, and there is a serious waste of educational resources. Therefore, in the context of education big data, it is necessary to build a complete resource allocation system. The first is human resources, which is mainly reflected in high-quality educators, and the second is financial resources, that is, a variety of equipment and materials used in teaching, the third is knowledge resources, that is, education-related knowledge such as educational theories and methods, and the fourth is technical resources, and technologies such as big data and cloud computing that can be used in education management. Under the background of educational big data, the goal of higher education management is to build a modern education system with information technology as the core, provide each student with more appropriate educational resources, and truly achieve educational equity. At the same time, the use of big data technology to systematically analyze massive information data can effectively improve the level of university education management, realize the fundamental transformation of traditional education management, and promote the sustainable development of higher education management in China.

## 5. Conclusion

Big data is the inevitable result of the high-level development of information technology. Education management is facing opportunities and challenges, and must keep pace with the times and adapt to the development of the times. In the management of higher education in China, the application of education big data can integrate and analyze a variety of important information data, thereby effectively improving the level of school education management. In higher education management, education big data can realize early warning, evaluation and sharing of higher education management, and build a personalized higher education management system. In general, the approach of the big data era has greatly improved the management of college education in China. Only when the management of big data pays attention to the use of big data and the influencing factors of big data, big data can give full play to its practical application, in order to improve the efficiency of various management tasks in colleges and universities.

## Acknowledgements

This work was supported by the general project of philosophy and social science research in colleges and universities of Jiangsu Province in 2019(NO. 2019SJA0257)

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