

# Research on Optimization Measures for Management of Higher Education in the Era of Big Data

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**Abstract:** With the development of information technology construction in Chinese universities, the traditional educational management system is no longer satisfied with the needs of university development. However, the application of big data technology in university educational management can help innovate educational management concepts and have certain positive significance in optimizing educational management. Therefore, how to apply big data technology in educational management and optimize university education has become a key focus that universities need to pay attention to, and it is also a current focus of attention in the field of education. This paper mainly analyzes how universities can further optimize educational management in the era of big data.

**Keywords:** The Era of Big Data; University Management; Work Optimization

## 1. Introduction

In the current era of rapid development of information technology, big data technology is a very important task for various industries, and it is also been valued and applied in the field of education. Under the influence of social and learning environments, traditional educational management methods are no longer able to meet the needs of educational management. Therefore, it is necessary to further optimize the management of higher education and fully utilize big data technology to deeply explore the information, in order to provide valuable data information for educational management, promote the optimization of higher educational management, and lay the foundation for the sustainable development of universities.

## 2. The significance of Applying Big Data

### Technology in Management of Higher Education

With the rapid development of information technology, both life and study have been affected to a certain extent. In the current era, the Internet has been closely linked to the learning and life of college students. Under the influence of the Internet, the speed at which students receive information is also constantly improving, such as Weibo, WeChat, etc., which not only have rich content, but also have innovative forms and convenient operations, which to some extent leads to students relying too much on electronic devices such as mobile phones and computers. It brings both challenges and new opportunities to the management of student education. Educational management workers can use big data to timely understand the latest management information and further improve the effectiveness of educational management. In actual management, managers can accurately and quickly find the information they need through big data, continuously improve their comprehensive literacy, pay attention to the needs of students in a timely manner, and promote the smooth development of educational management. It requires universities to recognize the importance of big data in educational management, fully leverage the advantages of big data, continuously innovate management models, and bring about new changes in educational management. In addition, traditional educational management often draws on previous experience and data in decision-making, lacking certainty and subjectivity. However, the use of big data technology can deeply analyze data information, so that universities can understand the actual needs and preferences of teachers and students, provide scientific support for decision-making in management work, and make decision-making information more objective

and accurate. Meanwhile, as an important gathering place for educational resources, universities also face challenges in the rationality of resource allocation [1]. In the era of big data, the integration and analysis of various resources enables managers to comprehensively coordinate the efficiency of resource utilization, allocate resources reasonably, and further improve resource utilization efficiency. In addition, big data technology can not only analyze the needs of groups, but also analyze individual needs, which has a good promoting effect on carrying out personalized education. Big data can further analyze students' academic performance and behavior, help managers fully understand students' learning situation, and take targeted measures for teaching assistance, as well as improving the efficiency and quality of educational management work.

### **3. Optimization Measures for Management of Higher Education**

#### **3.1 Improving Big Data Management Institutions**

In the management of higher education, big data centers are an important measure to improve management efficiency and also a key driver of decision-making. Therefore, universities can use big data technology to establish big data management institutions and assign personnel to be specifically responsible for data collection, analysis, and management. Through big data centers, teachers can analyze the learning status of students based on their academic performance data, help teachers take corresponding measures in a timely manner, and effectively improve the quality of teaching. In addition, big data centers need to integrate data from various aspects such as students, teachers, and courses. It requires universities to ensure the security, stability, and efficiency of the platform when creating big data management institutions, in order to achieve data standardization. At the same time, big data centers are more visual compared to traditional data processing methods, allowing managers to have a more intuitive understanding of the data situation and quickly identify hidden dangers and opportunities among numerous data information [2]. Universities should actively establish data security protection mechanisms

to closely control data through information technology, and regularly train employees to improve their security awareness and prevention skills to ensure the accuracy of big data information. In addition, universities should evaluate the quality and credibility of data, help managers timely identify quality issues of the data, and quickly take corresponding measures to solve the issues, ensuring the availability of information. What's more, big data centers can also integrate and verify the data, which effectively improves the accuracy of data. By establishing a big data center, the accuracy of educational management work can be achieved, the scientificity of decision-making can be ensured, reliable data support can be provided for the development of universities, and the efficient operation of educational management work can be further promoted.

#### **3.2 Strengthening Management Awareness**

With the advent of the big data era, big data has been widely used in educational management, which has greatly improved the work of university educational management. Therefore, in practical management work, managers should clarify the complementary relationship between big data and educational management, fully utilize big data to make up for the shortcomings in current educational management work, and further improve educational management work. In addition, the popularization of information technology has enabled most teachers and students to have electronic devices, including mobile phones, tablets, computers, etc., which can timely obtain the latest data information. The use of big data technology as the main means of information collection can help educational management personnel to timely understand the actual situation of students, provide guarantees for the scientific decision-making of educational management, and provide certain references for educational management personnel in the process of carrying out their work. For example, in the autonomous borrowing system of university libraries, librarians can accurately grasp which type of books students prefer by analyzing the browsing records and borrowing situation of the system. By understanding students' reading preferences, librarians can improve the allocation of book resources and provide

students with rich book resources.

### 3.3 Creating a Big Data Protection System

The information of students and faculty involved in the management of higher education is too vast. Only with a sound data security protection mechanism can the security and accuracy of data be guaranteed. Therefore, educators should classify data based on its importance and sensitivity, and take double strict protection measures for important and sensitive information to ensure the security of data. In addition, while big data technology improves the efficiency of university management, it also poses certain security risks. To ensure the security of data information, university educational management systems should have a certain level of security [3]. In order to avoid the exposure of information, universities should establish a big data protection system to enhance the effectiveness of educational management. Only by establishing a complete data security guarantee system can personal information leakage of university teachers and students be prevented. In the process of creating a big data protection system, universities can use related technologies such as protective walls, information encryption, and virus detection, to protect information, optimize information protection measures, and further improve the security and reliability of data with the support of big data technology.

### 3.4 Optimizing Information Management

In order to fully leverage the role of big data technology, universities should actively build a higher educational management information system. Based on actual needs, targeted measures should be taken to address the shortcomings of the current educational management model, so as to ensure the smooth progress of educational management work. In addition, universities should focus on improving educational efficiency and how to apply measures in practice to expand the scope of education radiation, in order to achieve efficient educational management work [4]. And universities should actively improve communication platforms, share data, and supplement them with monitoring systems to further support the operation and development of data platforms. At the same time, it is necessary to strengthen the security protection

mechanism and fully utilize information technologies such as protective walls to encrypt data to improve the security and reliability of data.

### 3.5 Cultivating Professional Talents to Enhance Teaching Staff

In the context of big data, universities should keep up with the trend of the times, actively cultivate professional talents, expand the teaching staff, and optimize the comprehensive quality of university management personnel. Firstly, it is important to optimize talent training institutions. As the leaders of big data, teachers should actively improve their skills [5]. Universities should start from the actual needs of teachers and develop scientific and comprehensive training plans based on the current situation of big data technology, to help teachers improve their knowledge and skills. For example, professionals can be invited to give lectures for teachers and to answer questions and clarify doubts for teachers, so that teachers can have a deeper understanding of the concepts, characteristics, and other aspects of big data. And under the guidance of professionals, teachers can fully grasp the key points in the process of using big data, which helps to further enhance teachers' ability to use big data [6-7]. After training, teachers can have a deeper understanding of big data, accurately apply big data knowledge and skills to educational management work, and thus improve the quality and efficiency of higher educational management. In addition, universities can encourage teachers to carry out exchange activities, provide a platform for teachers to exchange academic knowledge, share educational management experience and the effects of big data applications, strengthen cooperation and communication among teachers, and further improve their professional knowledge and skills.

## 4. Conclusion

From the above, it can be seen that in the context of the big data era, the management of higher education has faced new challenges and opportunities. It not only provides scientific and effective decision-making support for educational management, but also promotes the

sustainable development of universities. In order to better apply big data technology to educational management work, universities should keep up with the trend of the times and scientifically use big data technology to further optimize educational management work and promote the improvement of educational work quality and management efficiency.

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