

# Research and Analysis on Management Information Construction of College Students Based on Big Data Environment

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**Abstract**—With the rapid development and promotion of Internet technology and information technology, the complexity of college student management is increasing. China has stepped into the era of big data. In order to ensure the smooth implementation of college student management, universities need to actively apply big data technology, strengthen the optimization of top-level design, and improve the level of student management information. At the same time, it is necessary to introduce and cultivate management talents capable of analyzing big data. They are especially responsible for the management of college students; scientifically formulating data standards, establishing a "university engineering system", and improving the efficiency and quality of management work.

**Keywords**—big data; college students management; informationization; construction

## I. INTRODUCTION

With the development of Internet technology, the variety and quantity of various texts and videos are gradually increasing, and society is entering the era of big data. In this context, colleges and universities need to continuously optimize the management of college students to ensure the quality of management. In recent years, some colleges and universities in China expect to optimize and adjust the informationization of college students' management based on big data technology, trying to integrate big data technology with college students' management work to improve the management efficiency.

## II. CHARACTERISTICS OF COLLEGE STUDENTS' MANAGEMENT INFORMATIONIZATION AGAINST THE BACKGROUND OF BIG DATA

### A. The Informatization Degree of Data Analysis and Processing Is Not High Enough

First, some colleges and universities have developed or purchased a variety of student management information systems and platforms, and applied them in student management, such as: student scholarship application system, student independent credit management system, etc. However, due to the poor informationization level of university management work and systemic insufficiency in

China, there are shortcomings in information communication, which may even give rise to isolated information island. Some colleges and universities did not strengthen the analysis of the top-level design when constructing the student information management system. Therefore, the management system used by universities is not compatible, which will have a negative impact on the management level of colleges and universities. Second, some existing student management information systems and platforms have problems such as few upgrading, lack of research and development, poor information interaction capabilities, and insufficient information update. The management of college students will involve a variety of data information. The existing student management information system and platform cannot process this information in time or in a timely manner.

### B. Student Management Personnel's Lack of Awareness of Information Learning

With the rapid development of information technology, a large amount of information will be involved in the management of college students. The traditional management method requires a lot of time to process the information, so that the student management staff will use a lot of energy to process the information, and cannot fully exert their management role, and there is no extra time to learn advanced management information knowledge and skills. Therefore, some student management staff lack stimulation and enthusiasm to learn informatization. Their understanding of management informationization is not deep enough, and their management methods are not advanced enough.

## III. ANALYSIS OF THE PRINCIPLES OF COLLEGE STUDENTS' MANAGEMENT INFORMATIONIZATION CONSTRUCTION AGAINST THE BACKGROUND OF BIG DATA

Today, with the continuous development of Internet technology and information technology, big data technology has been widely used in various industries and departments, which in turn has a certain impact on the quality of operation and management of these industries and departments. Against the background of big data, colleges and universities need to strengthen information construction to improve the

management level of college students, and at the same time ensure that teaching activities can be carried out normally and promote the sustainable development of colleges and universities. From a macroscopic perspective, using big data technology to establish university students' management informationization can ensure that university management staff accurately understands student status and development direction, and scientifically formulates management systems and policies; from a micro perspective, using big data technology to improve college students' management informationization level has a certain effect on improving the efficiency of the student management department and innovating the working methods. The following principles must be adhered to when using big data technology to improve the informationization level of college students' management.

#### *A. Top-level Design*

In the era of big data, in order to improve the information management of college students, it is necessary to master the principle of top-level design. The main reasons are that the informationization work will involve people and things, and require high investment in human resources, material resources and capital from universities. In the process of college students' management information construction, colleges and universities need to adhere to the top-level design principles while analyzing the comprehensive and holistic advantages of information system in detail, and scientifically formulating unified and complete operational standards to ensure the smooth implementation of university students' management information construction, avoid problems such as redundant construction and ineffective investment. In the course of operation, colleges and universities need to strengthen research on student management, integrate student affairs in the information process, and ensure that the information system can meet the requirements of students.

#### *B. Developing a Construction Plan*

In order to ensure the smooth informationization construction of university students' management, colleges and universities need to scientifically formulate construction plans. In this work, colleges and universities need to scientifically establish an information system based on the actual needs of the school's various management tasks, so as to ensure that the various management tasks of the university can proceed smoothly. In addition, colleges and universities need to ensure coordination and cooperation among various departments, meet the requirements of systemization and applicability to ensure the practicability and forward-looking nature of the information system when constructing college students' management informationization as informatization has its own development law, enjoys high requirements for technology and knowledge, and involves all aspects of college students' management work.

#### *C. Information Security*

In the informationization construction of college students' management, colleges and universities not only need to

ensure the practicability and perspective, but also ensure information security. The main reason is that some lawbreakers may steal and modify others' important information through the network, causing huge losses to others. College students' information management system or platform will contain many aspects of college students' information, and some of them are confidential information. Therefore, colleges and universities need to pay attention to information security. In the process of college students' management information construction, colleges and universities need to adopt advanced security technology to ensure information security. At the same time, it is necessary to scientifically formulate an information security protection system to prevent lawbreakers from invading the information system and causing huge losses to schools, teachers and students.

#### *D. Information Sharing*

In the era of big data, in order to avoid the problem of isolated information islands in the management of colleges and universities, it is necessary to pay attention to the function of information sharing when carrying out the construction of information management for college students. At the same time, information sharing is also an important principle for the informationization construction of university students' management. It is of great significance to ensure the quality of education and cultivate comprehensive students. When constructing college students' management information system, colleges and universities need to establish a perfect and high-quality integrated data service platform with "information sharing" as the core, and provide a necessary platform for information sharing between teachers and students, thus effectively improving the management level of colleges and universities.

#### *E. Unlocked Information*

In the big data environment, when colleges and universities are building the information management system for college students, it is necessary to ensure that the system can accommodate a variety of different network interaction protocols to ensure that the system is compatible and expandable. At the same time, colleges and universities need to ensure that all kinds of data can be displayed in the information system to ensure that they are unified with the student information management system, so as to ensure that information can be transmitted and updated in a timely manner.

### IV. THE PATH OF COLLEGE STUDENTS' MANAGEMENT INFORMATIONIZATION CONSTRUCTION AGAINST THE BACKGROUND OF BIG DATA

#### *A. Optimizing Top-level Design Measures*

*1) Establishing and improving information management system:* A complete university information management system needs to be composed of a variety of hardware devices and campus network systems. At this stage, the hardware equipment used in the establishment of

information management system in some universities in China is not advanced enough, and the campus network system is not perfect. In order to improve the university information management system, the following points must be taken: First, universities need to actively introduce advanced hardware equipment. In order to ensure the construction of university information management system and ensure the smooth implementation of student management, colleges and universities need to strengthen investment in hardware equipment and select advanced hardware equipment. Secondly, universities need to strengthen the construction of campus network system and enhance the capacity and big data processing capability of network system. Colleges and universities can improve student management efficiency and management quality by constructing student management information system, which at the same time has a certain effect on improving management development and system integration efficiency. The student management information system can meet a variety of user requirements, and can also provide users with diversified value-added services. Therefore, when building student management information system, colleges and universities need to pay attention to the investment of hardware equipment, and development and utilization of information resources.

2) *Establishing the student management information department:* In order to ensure the smooth construction of the student management information system, and to improve the efficiency and quality of student management, colleges and universities need to actively establish a specialized student management information department with a supervisor. The main responsibilities of this department are: to strengthen the informationization work of college students and improve the efficiency and level of student management.

3) *Scientifically developing information management mechanisms:* In order to successfully complete the construction of student management information system and improve the efficiency of student management, colleges and universities need to scientifically develop information management mechanisms to ensure that student management can be carried out in an orderly manner. In order to achieve this goal, the following points must be taken: First, colleges and universities should pay attention to the participation of teachers and students when establishing a student management information system based on big data technology. At the same time, it is necessary to establish a professional management team to strengthen the management and maintenance of the student management information system. The management team is mainly composed of school leaders, counselors, class teachers and other faculty members. Secondly, universities need to use information technology to establish an information management system to scientifically formulate and implement a responsibility system, which has a certain

effect on ensuring the timeliness and authenticity of data collection. Universities need to develop data entry and management systems to ensure the standardization of data collection, storage, transmission and use.

#### *B. Introducing and Cultivating Management Talents with Big Data Analysis Capabilities*

1) *Introducing talents with big data analysis capabilities:* In the context of big data, in order to ensure the quality of student management, people responsible for student management need to have data analysis capabilities. At this stage, some colleges and universities in China lack the talents of student management with big data analysis ability. Therefore, colleges and universities need to actively hire talents in this field to improve the quality of college students' management. First, colleges and universities can set up big data talent projects to attract and hire more talents with big data analysis skills. For example, colleges and universities can hold teaching innovation activities, through which high-quality and high-level talents can be introduced and big data technology is used to estimate and determine the required talents; Second, universities need to strengthen the training of management talents, establish a long-term talent training system, and scientifically plan the development path of talents. "Talent team project" can be used to attract high-level teams and obtain project funds to improve the level of student management team construction and improve the management of colleges and universities.

2) *Strengthening the training of existing student management talents:* First of all, colleges and universities need to ensure that student managers correctly understand the opportunities and challenges faced by university management in the era of big data, improve their emphasis on information technology, and stimulate their enthusiasm for learning and mastering information technology. At the same time, colleges and universities need to organize a number of activities to strengthen communication and cooperation between teachers and enhance the ability of teachers to analyze big data. Secondly, universities need to adopt lectures, reports and other methods to enhance the professional knowledge and professional skills of the student management team, so as to improve their mastery of multimedia technology and management of student management systems. During the training process, it is necessary to strengthen the explanation of student management work rules and big data knowledge to ensure that student management personnel can master big data processing technology. In addition, colleges and universities can invite relevant experts to come to the school to give lectures or select high-level talents to other units to improve the level of student management information. In the era of big data, student managers need to change their work philosophy and actively apply big data technology to improve the management level of colleges and universities.

### C. Scientifically Formulating Data Standards

#### 1) Scientifically formulating uniform data standards:

The study found that the management of college students will involve a variety of information, and the structure and types of information are more complex, and involve more departments. In order to improve the management level of colleges and universities, it is necessary to scientifically establish a unified data platform, metadata standards and development data standards, so as to ensure the smooth construction of the student management information system. To achieve this goal, the following points must be taken: First, universities need to adopt top-level design methods to scientifically plan and construct unified data platform and metadata standards; secondly, departments of universities need to strengthen cooperation and communication; finally, an information sharing platform will be established to create an information management environment for information sharing and resource sharing according to the science of cloud computing technology, ensuring that university servers can operate stably and store massive information and information security.

2) *Establishing "university engineering system"*: In order to ensure the efficiency and quality of university students' management, all departments of the university need to strengthen cooperation and communication. In many departments of colleges and universities, relevant information of college students is preserved. Therefore, in order to improve the efficiency of student management, it is necessary to strengthen the sharing and integration of resources among various departments. This requires building a student management information platform and building a "college engineering system". First of all, colleges and universities need to do a good job in information management to improve resource utilization. In particular, it is necessary to pay attention to the collection and utilization of network information. Secondly, universities need to strengthen the application of data mining, data analysis and other technologies, and quickly explore valuable information in massive data. For example, colleges and universities can understand and master the consumption of student meal cards through the network, help colleges and universities master the economic situation of students, and thus formulate poverty alleviation policies in a targeted manner.

### V. CONCLUSION

All in all, big data technology has been widely used in various industries. In order to promote the stable and sustainable development of colleges and universities, it is necessary to strengthen the application and research of big data technology, integrate big data technology with the work of colleges and universities, and provide convenient and quality teaching and living environment for teachers and students to establish an excellent education platform. The efficiency and quality of college students' management work can fully reflect the development and management

philosophy of colleges and universities. Therefore, colleges and universities need to actively apply big data technology to strengthen the management information construction of college students and improve the management level of college students.

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