

# Research on Innovation of University Educational Administration under the Background of Big Data

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**Abstract:** At present, while enjoying the great convenience brought by big data in all aspects, workers in the field of education are also scrambling to try to strengthen the deep integration with big data technology to improve or enhance management efficiency. As the core link of talents training in colleges and universities, educational administration management produces a large number of high-value data in its operation. Whether such data can serve teaching scientifically and effectively has a direct impact on teaching quality and school development. From the perspective of the basic characteristics of big data and relevant data of educational administration, this paper intends to analyze the main problems existing in educational administration under the background of big data, and try to explore the innovation path of educational administration.

**Keywords:** Universities; Big data; Educational administration; Innovate

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## 1. Research background

### 1.1 The importance of big data

As early as 2015, the State Council proposed in the "Notice on Issuing the Action Plan for Promoting the Development of Big Data" that big data should actively explore and play a supporting role in transforming educational methods, promoting educational equity, and improving educational quality.

In recent years, with the continuous improvement of teaching informatization methods and the widespread application of large-scale online open courses, the role of big data in the field of education has further become prominent. Many experts point out that big data will ignite a new educational revolution. The author believes that educational administrators should fully understand the importance of big data in the management process, actively carry out research on the application of relevant data in education and teaching management. On the one hand, it can provide effective data support for university decision-making, and at the same time, it will play a good role in improving the quality of education and teaching.

### 1.2 The Connotation and Characteristics of Big Data

According to Baidu Baike, big data refers to a large and massive dataset. Generally, it refers to the large-scale and long-term measurement, recording, storage, statistics, and analysis of data. Victor Mayer Scheenberg and Kenneth Cooke wrote "The Age of Big Data", which clearly explains the meaning of big data, that is, using all data for analysis and processing without random analysis (sampling surveys). The results obtained in this way are more realistic and reliable. At present, big data has entered the highway and become the infrastructure in various scenarios.

IBM proposes that the big data can be summarized into five V characteristics, namely Volume (large volume), Velocity (high speed), Diversity (diversity), Value (value), and Verity (authenticity).

## 2. The characteristics and importance of educational management data

In the era of big data, the role of big data talents in driving the innovation and development of big data driven frameworks is becoming increasingly significant. Cultivating excellent big data talents is an urgent requirement for achieving a talent and technology powerhouse. The work data of academic management in higher education institutions is related to various aspects of teaching work, and its work content involves the entire process from organizing teaching plans in talent cultivation plans to graduation review. During

the management process, a large amount of data such as student information, teacher information, course information, classroom information, grade information, and graduation information are intertwined and influenced by each other; At the same time, it involves the vital interests of every teacher and student, and requires accuracy and truthfulness. This is very consistent with the diversity, abundance, value, and authenticity of the five V characteristics of big data proposed by IBM, which means that the data generated in the educational management process has big data characteristics.

The national university teaching basic status database system reporting work initiated by the Ministry of Education is precisely based on collecting basic data from various universities, analyzing the logic behind each data to achieve monitoring of their teaching quality. The data generated in the process of academic management is an important foundation and prerequisite for scientific management and decision-making in universities. On the basis of ensuring its authenticity and reliability, academic management workers must further explore the logic and teaching laws hidden behind the massive data. On the one hand, effective data analysis can quantitatively reflect the basic state of teaching in schools, to predict the trend of teaching management and future teaching behavior; On the other hand, schools can make timely adjustments based on data analysis and feedback, and establish an internal quality monitoring mechanism to continuously improve teaching quality. Especially at present, the evaluation system for education and teaching in the country is becoming more and more complete. Links such as qualification evaluation, audit evaluation, and supervision bureau verification all use a large amount of data analysis to measure whether the educational indicators of each evaluated institution meet the standards. Therefore, it is necessary to adopt big data analysis and research in academic management.

### **3. The main problems currently existing in academic management**

#### **3.1 The functionality of the academic management system needs further improvement**

Due to the popularity of smartphones and 5G networks, as well as the increase in user volume, more and more offline scenarios are being transferred to the online, and the amount of data is also increasing day by day. Especially in 2020, the epidemic brought significant changes to the development of education. Under the call of "no suspension of classes", many offline classrooms were moved to the cloud overnight. At that time, various teaching platforms showed their respective abilities and used various data analysis methods to help schools collect and analyze various teaching data, effectively providing a data basis for conducting online teaching quality evaluation and teaching effectiveness for teachers and students, and even forming portraits of teachers and students. The huge dividends generated have shown educators the benefits of data analysis and the development direction of teaching management. However, the relevant functions of the educational management system are still at the basic stage of input, save, query, and export, making it difficult to conduct in-depth data processing, which is in stark contrast to the rapidly developing related teaching platforms. With the reform of educational management and the deepening and continuous improvement of the level of educational management, the academic management system still faces great challenges in how to handle the massive amount of educational data generated during the teaching process; All management functions need to be further improved.

#### **3.2 Managers lack strong awareness of big data management and lack professionalism in data processing**

Big data management requires professional talents and skills, and currently, academic management staff in various universities are more responsible for administrative management functions. On the one hand, due to the complexity and triviality of routine work tasks, a large number of academic administrators mainly focus on processing daily data, neglecting or lacking sufficient energy to explore the laws behind the increasing amount of academic data; On the other hand, due to the complex professional background of academic management personnel, the lack of incentive mechanisms, the unstable team of academic management personnel, and the lack of time to further improve their academic qualifications and comprehensive abilities, their overall data processing and information management abilities lack professionalism. Especially in newly established private universities, there is high personnel mobility, untimely and incomplete handover, and continuous data observation and analysis cannot be formed. The relevant management personnel are tired of familiarizing themselves with and dealing with daily chores, and lack sufficient sensitivity to academic management data. From this, it can be seen that the overall awareness of big data among academic management personnel is lacking, and their professionalism is insufficient, which leads to the inability to mine the deep-seated information hidden in the massive data.

### **4. Exploration of Innovation in Academic Management under the Background of Big Data**

#### **4.1 Improve the functions of the academic management system and connect with the intelligent teaching platform**

Building a complete educational management system is the foundation for implementing big data educational management. Academic management staff should further propose improvement requirements for the academic management system based on the needs

of academic data management, improve various functions of the academic management system, build a more advanced, efficient, and practical academic management system, meet the needs of data mining, and achieve a qualitative leap in academic management level.

At present, online and offline blended teaching models are widely promoted and popular; Many data on teacher-student interaction are preserved on the teaching platform. Academic administrators can try to explore and deepen the cooperation between academic management systems and relevant teaching platforms, achieve data integration, and further utilize the big data of teaching platforms to provide data support and rational judgment for teachers' classes and students' elective quality courses. For example, teachers can adjust the teaching content and offer online elective courses based on the key topics that students interact with online; Students can determine their course selection direction based on the number and evaluation of previous course selection students.

## **4.2 Enhance awareness of big data management and enhance professional ability cultivation**

The cognitive level of educational management staff towards big data directly affects their role and effectiveness in the teaching management process. Therefore, in order to fully utilize the practical value of big data, educational management personnel must fully recognize the advantages of big data technology, form big data management thinking, guide planning and exploring new educational management models with the concept of big data educational management, promote the advancement of educational management with the times, and apply it to management practices.

Big data management is not just about data collection and storage, but also requires management personnel to continuously track and analyze teachers, students, and teaching activities, fully integrate and sort out various information, and transform it into data information that is helpful for improving teaching quality and school development. This requires professional big data technology support. Therefore, on the one hand, universities should enhance the professional ability training of academic management personnel at all levels on big data technology through various channels, such as establishing a fast and smooth communication platform, actively organizing them to participate in superior business training, actively communicating with colleagues in the same department of sister universities, and conducting training for relevant staff on campus; On the other hand, universities should also increase investment and actively introduce more professional big data technology talents to better serve the school's big data management.

## **4.3 Breaking information silos and building a data resource sharing platform**

Considering the current situation of dispersed and difficult to share data from different systems within the school, as well as the large and real-time updating characteristics of academic management data, it is recommended that the school level do a good job in top-level design, integrate system data from various aspects of school management, and build a data resource sharing platform. On the one hand, it can provide a good communication platform for relevant work managers to facilitate data sharing and dissemination; On the other hand, more detailed and accurate data can be used to analyze the teaching status of teachers and students, providing more comprehensive and scientific data support for school decision-making; At the same time, provide more timely and effective data feedback for the teaching front line.

In addition, decision-making authorities should further clarify the need for standardized information construction based on the sharing of data resources in universities, and require all departments to strengthen coordination and cooperation in data resource sharing, breaking information silos and laying the foundation for deep data mining.

## **5. Conclusion**

In the context of the big data era, mastering big data technology is essential and an inevitable trend. Academic management workers must break through the scope defined by traditional academic management, enhance data management sensitivity, be good at big data practical application, provide good data support for school management decision-making with massive data, and improve the scientific and rational nature of management decision-making. Only in this way can we improve the quality of teaching while effectively promoting the high-level development of the school.

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Huimin Feng (1989 -), female, born in Qingdao, Shandong Province, Qingdao Hengxing University of Science and Technology Director of the Academic Affairs Section of the Academic Affairs Office, Master, lecturer, mainly engaged in work units and departments, titles, academic qualifications, mainly engaged in education management research.