

# **Big Data Analysis on Behaviors of Students of Hainan College of Economics and Business: Data Accurately Support the Double - High Construction of Vocational School**

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**Keywords:** Higher vocational school, Students' behaviour, Management, Big data

**Abstract:** In order to build high-level vocational schools and majors with Chinese characteristics, higher vocational colleges should take the first-class school management system as the strong support. Through the mining and analysis of school administration data and the accurate portrait of students, the school can provide accurate services to students, such as academic early warning, accurate employment guidance, accurate funding, and personalized growth plan. Compared with the traditional service mode, the data-based service mode is more objective, efficient and accurate, which can better serve the double-high construction of vocational schools.

## **1. Introduction**

In order to improve the development level of higher vocational education in China, the state has successively issued the Implementation Plan of National Vocational Education Reform, Opinions of the Ministry of Finance and the Ministry of Education on the Constructing High-level Higher Vocational Schools and Specialties with Chinese Characteristics, Measures for the Selection and Management of Plans for the Construction of High-level Higher Vocational Schools and Specialties with Chinese Characteristics (for Trial Implementation), and Notice of the General Office of the Ministry of Education and General Office of the Ministry of Finance on the Application of Projects Constructing High-level Higher Vocational Schools and Specialties with Chinese Characteristics. These documents are of great significance to increase the core competitiveness of national vocational education. The Ministry of Education and the Ministry of Finance also jointly launched the plan for the construction of high-level vocational schools and specialties with Chinese characteristics, namely the "Double High Construction Plan". It focuses on the new requirements of vocational school running in the new era, and focus on the construction of about 50 high-level vocational schools and about 150 high-level professional groups in China. The aim is to build a platform for technical and skilled personnel training and a service platform for technical and technological innovation, so as to support the development of national key industries and regional pillar industries, and lead the high-quality development of vocational education in the new era.[1]

Hainan College of Economics and Business is a state-owned public university which mainly trains high-quality technical talents in finance and economics. It is a national key vocational college, a charming campus among national vocational colleges, a demonstration school of employment competitiveness among national vocational colleges, and a school with typical experience of graduate employment. To build a high-level vocational school and major with Chinese characteristics, Hainan College of Economics and Business must rely on the first-class school management system.[2] The accurate service of school affairs management based on big data provides an effective way to achieve this goal. Through the analysis and mining of school affairs data, the efficiency and level of school management can be effectively improved.

## **2. The Construction of Big Data Platform for School Affairs**

### **2.1 Huge Amount of Data on School Affairs Generated by the Information System**

After years of information construction, all functional departments of the Hainan College of

Economics and Business have completed the construction of information systems, including the personnel system, the scientific research system, the financial system, the educational administration system, the campus card system, as well as the teaching resource platform. These systems can meet teachers' working demands and improve the working efficiency; they also generate a large amount of data. Data on students include the student number, school and specialty, native place, grade, contact information and other basic information; canteen dining, consumption and other life information; as well as course selection, book borrowing, performance and other academic information.[3]

## **2.2 Establishment of Data Standards**

With the rapid development of information technology, “Information Isolated Island” brings about management and technical problems in the construction of digital campus in colleges and universities. The so-called “information isolated island” refers to relatively independent information with different types of resource systems. All systems are closed and cannot carry out smooth information exchange, like scattered and independent islands. The essential problem is that data generated by these independent systems cannot be shared with each other and the data is inconsistent, which results in a large number of redundant data generated by different systems due to independent management. Moreover, data association between systems cannot be carried out; in the era of big data, the data cannot be scientifically analyzed. Schools cannot scientifically manage relevant affairs and make decisions based on these data.

There are many kinds of campus behaviour data, which are very complex. It is difficult to integrate them accurately and establish the correlation between various kinds of data. Usually, schools do not have enough experience to process this kind of data. In order to eliminate “data isolated islands” of all information systems, ensure the consistency and unity of data, and realize the standardized management, connection and smooth circulation of data, the network center of Hainan College of Economics and Business conducts practical research on all information systems of the whole school. The officer enters the system to observe data, establishes a big data platform, and prepares to realize the collection of source data into the big data platform to form three basic kinds of information: the teaching management information standard, the set of book management information standards and the set of campus card management information standards.[4]

## **2.3 Data Acquisition and Update**

According to the standard, basic information about school affairs is collected regularly to update the data from the source system to the big data platform. Different synchronization frequency and synchronization time are adopted according to different information systems. Efforts have been made to realize the exchange, storage and sharing of data in the school's business systems, which greatly facilitate the work of all departments.

## **2.4 Establishment of the School Affairs Big Data Accurate Service Framework**

The data collected from each information system to the big data platform is pre-processed, then the model is constructed. Afterwards, students can be described from multiple dimensions, multiple directions and multiple angles; the student label system is established. Then, the label system is basically mined and calculated.[5] In this stage, similarity calculation, regression analysis, clustering analysis, association analysis and other algorithm models are usually used to form personal portraits (such as students' personal portraits), group portraits (such as college portraits and professional portraits) and overall portraits (such as subject portraits and school portraits). Finally, the system analyzes, evaluates, predicts and visualizes the results of portraits to provide accurate services for the college, schools and students.

## **2.5 Establishment of the Student Data Label System**

The system depicts students' portraits from various angles and provides guidance for students' educational management. It labels and collects student data (including basic data, academic data, life data and social data). The labels include label of basic characteristics, academic labels, life

labels and social labels. Among them, basic data includes basic information of students, such as family members, communication information, student loan information and so on; academic data mainly includes course selection information, student's performances, book borrowing, online course learning, second classroom learning and other information; life data mainly includes campus card consumption information, access card information, work-study information and accommodation information; social communication data includes the information of online time and second class participation of the student.[6]

The system then makes statistical analysis of basic data to produce fact labels, such as the gender, age and political students of students. Model labels need to define rules and build models to generate. They can build the poverty model, students' performance model, the employment model and the social model. On the basis of fact labels, we can predict whether students need to be funded, as well as their academic performances, employment orientation and social situations through predicted labels. After above process, we can get the label system architecture of students.

### **3. Big Data Precise Service Situations in the School**

#### **3.1 Promote the Improvement of Students' Self-Cognition and Individual Development**

In the past, students' self-awareness was subjective and perceptual. Now, supported by the big data technology, through the analysis and mining of data, we can accurately portray students, so that students can recognize themselves more objectively and comprehensively. It is helpful for students to discover factors affecting their self-development, and to make correct self-adjustment. At the same time, teachers can guide students' personal development scientifically and realize their individual development as well as sustainable development.

#### **3.2 Provide Accurate and Personalized Services for Teachers and Students**

Based on student portraits, the school can provide accurate management and guidance services for students including performance early warning, employment guidance, accurate financial support, student guidance, and personalized learning resources services. The system helps teachers to comprehensively grasp students' learning and living conditions, so as to take well-targeted steps and make all student management more effective.

Through big data analysis of user demand changes, teaching managers and students can become closer.[7] At present, there is less communication between students and teaching managers; their relationship is not close enough. For example, most students seldom take the initiative to communicate with counsellors or full-time teachers about their curriculum choice and career planning; only when they fail the exam or be punished can they passively ask for help. Students' portraits can actively provide suggestions for students according to the comprehensive information, and students' suggestions can also be fed back to the teaching manager, thus realize the dynamic interaction and improve the relationship between the teacher and students.

#### **3.3 Lay the Foundation for the School's Macro Decision-Making and Management**

Accurate portraits of students can serve for decision-making and intelligent management of the school at the macro level. Through these portraits, we can find the behaviour rules of students in study and life, formulate corresponding strategies from the management level, pay attention to potential problems and guide students actively, so as to improve the overall students' performance from all aspects. Through analyzing and mining the enrolment data, the data of students' performance in school and the alumni data, we can find the rules of the distribution of high-quality students in areas, schools, and selection methods, which can provide reference for adjusting the enrolment policy of our school.

Based on the school affairs data, Hainan College of Economics and Business constructs the student analysis model. It can predict students' academic performance, analyzes students' social situation, economic situation and achieves early warning (learning, life and loss of contact) based on school affairs data. The model helps college counsellors, student offices and other student

management workers to understand student's academic situation and life situation. Supporting student management with data, the system provides students with refined academic guidance and life services, and can make education big data play a role in the management of colleges and universities.

#### **4. Conclusion**

The era of data is the main feature of human society towards the era of information technology. The emergence of big data technology has subverted people's traditional understanding of the use of data resources. In the current education industry, the effective use of big data technology can help us better analyze resources and obtain valuable content. All information can be integrated into the big data processing technology; the school can obtain objective information through relevant systems. This kind of information has very high application value. Therefore, the application of big data technology is of great help to the innovation of teaching activities in the school, and it can also improve the current concept of educational administration management. Colleges and universities can use big data technology to build up the model and do better in the work of student management. With the big data technology, a new college management platform can be built, which can provide more efficient, safe and the comprehensive services, and make the decision-making process more scientific and accurate. It can be said that this service model meets the needs of the current society for talent development, and better enables colleges and universities to keep pace with the times and constantly cultivate excellent talents.

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