

# The Innovation and Development of University Management Shared Service Model Based on the Trend of Internet of Things

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**Abstract:** *With the development of Internet of Things (IOT) technology, this technology can fully integrate and share student information resources and work experience in university management. In the process of the construction of educational management informatization in colleges and universities, pay attention to the establishment of a perfect college management shared service model. This management shared service model can play an important role in the school's teaching, scientific research, talent training, social services, and foreign exchanges. Therefore, this article mainly focuses on the analysis and research of the university management work platform based on the IOT. Firstly, it introduces the current social and economic development in my country, the status quo and existing problems of informatization construction, and the trend of market demand changes in the education industry in the next ten years. Secondly, it is proposed to apply the IOT technology to build a modern informatization management model based on the concept of IOT. Use the questionnaire survey method to analyze the evaluation of the current college management shared service model, and design the college management shared service model based on the survey data results to realize the integration and sharing of student information resources and work experience.*

**Keywords:** *Internet of Things, University Management, Shared Services, Model Innovation*

## 1. Introduction

The third industrial revolution entered the "information age", and a new technological revolution represented by computerization was in the ascendant. At the same time, the development of computerization in colleges and universities has greatly promoted the development of the education system, and has caused tremendous changes in teaching methods, education concepts and education systems. This change is both an opportunity and a challenge. Colleges and universities should adapt to the needs of the times and establish a more efficient and brand-new mode of integration of education, scientific research, and educational resources. It must cover innovations in management concepts, management methods, management content, and management organizations. For universities, management goals must also be innovative. Innovation of various positions and management objects in universities is necessary [1-2].

There have been a large number of research results at home and abroad in terms of innovation research on the management and shared service model of colleges and universities. Due to various reasons, the development of information technology in industrialized countries is earlier, the application of information technology in education in industrialized countries is earlier, and the research on higher education management under the big data (BD) environment is earlier than in our country. Take the United States as an example: computers were used for education in the 1960s, creating a new era of modern computer education [3-4]. In terms of management, the launch of the US "Campus Information" project has continued to this day. It is the longest and largest educational technology research project in the United States. The project mainly examines the development of information technology and the feasibility of applying these information technologies to higher education [5-6].

With the continuous development of the IOT technology, based on the Internet, integrating and innovating the management platform with the help of the IOT trend is a new challenge facing the management of colleges and universities. This article puts forward relevant suggestions after analyzing the current development status and existing problems of management shared services in our country's

colleges and universities. First, it explains the current domestic and foreign applications and applications; secondly, it points out that building a modern education information network platform based on the Internet is of great significance to promote our country's higher education; finally, from a technical point of view, it is applied to teaching based on the IOT. Resolve information sharing and resource integration and other aspects to conduct research and give conclusions.

## **2. Theoretical Research**

### ***2.1 The Connotation of the IOT***

The concept of the IOT was first proposed by Kevin Ashton of the Massachusetts Institute of Technology (MIT) Automatic Identification Center and his team in 1999. They proposed that the IOT is a network based on radio frequency identification technology. Let all elements realize intelligent identification and form the IOT. This is an advanced concept in the early development of the IOT, but this concept only applies to physical networks based on RFID technology. With the development of technology and applications, the meaning of the IOT has undergone tremendous changes. At present, the development of the IOT is in its infancy, and developed countries are using their traditional advantages to consolidate their position in the development and application of the IOT. The first is to determine the overall direction of the development of the IOT in a country or region through the introduction of a comprehensive national strategy, and occupy the pinnacle of the overall development strategy of the IOT. The second is to determine the direction of capital investment in the research of the IOT technology, continue to increase investment, attract relevant companies to participate from the perspective of profitability, and never give up the development of basic technologies. The third is to formulate development strategies and launch pilot projects aimed at improving the quality of life of the whole society in specific areas, focusing on making large investments in areas that enhance competitiveness through strengthening applied research [7-8].

### ***2.2 The Impact of the IOT on the Management of Colleges and Universities***

The main task of the colleges and universities is to cultivate more adapt to the social development of talents. Therefore, teaching, teachers, scientific research and school management should pay attention to talent training. However, the traditional education mode based on prior education, without considering the student's individual culture. At the same time, the national colleges and universities, there is a huge gap between the teachers and students and the number is not very harmonious. Under the current classroom model, it is difficult for teachers to fully understand the actual learning situation of students. In the era of Internet of things, BD technology application in higher education management can significantly improve the quality of higher education. The United States Department of Education has carried on the analysis and research to the comic strip technology such as data mining in education. BD technology enables teachers to better understand the student's learning process, timely find problems and take effective and efficient intervention measures, timely provide students with personalized learning services, sums up the best method of teaching and classroom rules. School leadership decision-making can also use BD technology will play an important role in motivating and supporting decision-making [9-10].

### ***2.3 Problems in Contemporary University Management***

Influenced by traditional ideas, China's current internal management system of colleges and universities shows that the decision-making and management power of colleges and universities are concentrated at the school level. Many transactional tasks of the University, such as employee rights, fund allocation and use, academic evaluation, etc., are supervised by the University. As the central unit of the University, the university can only make decisions according to the university without autonomy. In reality, as the main unit of the University, the university undertakes the dual tasks of teaching and scientific research. As teachers, all kinds of problems in teaching are often the discoverers of problems. However, problem discoverers are not a substitute for problem solving. After finding out the problems, the administrative department of the college can only report the problems to the superior competent department, but it can not solve them in time due to the limitation of its own authority. On the one hand, this reduces the effectiveness of universities in dealing with teaching problems, but it also strongly restricts the enthusiasm of university managers. However, the school staff do not know enough about the situation of the University, so it is easy to rely on subjective imagination rather than going deep into

reality when solving problems. This is strongly separated from the responsibilities and responsibilities of the college, resulting in the ambiguity of responsibilities and rights between the school and the college [11-12]. In addition, China's major universities have built the prototype of digital campus. Schools have many information systems, but most are still isolated. The school does not have a comprehensive information system that can cover all aspects inside and outside the campus. The emergence of campus management information system drives the development of management informatization in colleges and universities, so that the comprehensive management information system can be implemented. However, while the informatization department gradually gives full play to its great advantages and guidance, the deviation of colleges and universities in the direction of management informatization begins to appear. Although the information department has the ability to build a number of highly efficient information systems, such as office automation system and information portal system, it does not start from the overall position of the whole university, does not fully consider the construction of comprehensive management information system, and its strategic position has not been raised to the height of the whole university. This has led to a series of problems in the development of university management informatization.

#### **2.4 IoT Technical Support**

AD HOC is also called wireless ad hoc network. It is a network with no central node and no fixed base station support. All nodes have the same state in the network. Nodes can roam the network freely, and can also join or leave the network at any time. The characteristics of the network are: no center, a high degree of autonomy, dynamic topology changes, limited energy, and limited physical security. It is now mainly used for military and emergency communications.

Suppose the initial energy is  $R_0$ , the remaining energy of each node is  $R_r$ , and the calculation formula for the local average remaining energy of the node is:

$$R_r = \overline{R_r} + \sum_{k=2} R^k / (n+1) \quad (1)$$

The average of the remaining energy of the entire network is:

$$R_{ave} = \sum_{k=2}^i \overline{R^k} / i \quad (2)$$

At the same time, the protocol sets a minimum energy warning value  $k$ . When the energy of a node on the routing path is lower than the value of  $k$ , the path will be interrupted. The source node will restart the new route discovery process; if there is a node failure in the routing path, it will automatically determine how to perform maintenance based on the hop value from the previous node of the failed node to the source node and the destination node.

### **3. Research Process**

#### **3.1 Purpose of the Investigation**

This article investigates the status quo of the management shared service model of universities, mainly in order to investigate the satisfaction of the current university management shared service model and related suggestions, and provide a basis for the research on the innovation and development of the university management shared service model based on the trend of the IOT.

#### **3.2 Investigation Process**

##### (1) Determination of survey objects

This article focuses on the innovation and development of university management shared service models based on the trend of the IOT, so the research object is university management. In order to ensure the accuracy of the survey objects, this article chooses the offline questionnaire survey method, so it is randomly selected in this city. In order to ensure the universality of the survey results, the three universities have chosen different levels.

##### (2) Determination of the number of questionnaires

The determination of the number of questionnaire is an important factor affecting the results of the questionnaire, so the paper determined the questionnaire number as 200 according to the minimum sample size and the actual situation of the survey activity, 186 questionnaires were recovered after the issue, excluding some invalid questionnaires, and finally the number of valid questionnaires was 170.

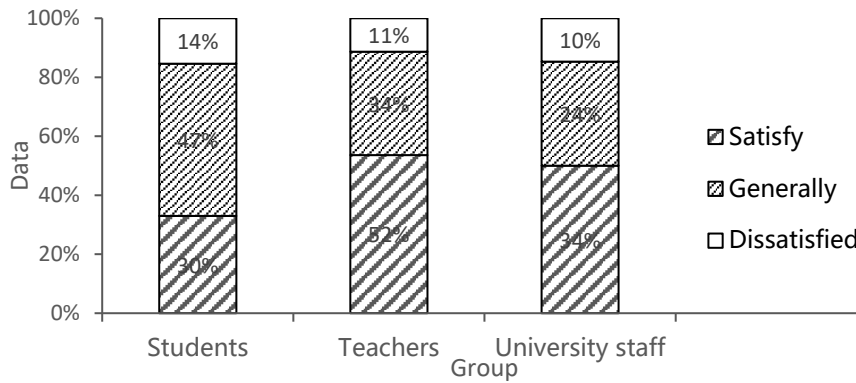
**4. Discussion**

**4.1 Satisfaction Analysis of the Current University Management Shared Service Model**

This article uses questionnaire surveys to investigate the current situation of the management shared service model in universities, and obtains data on the satisfaction of students and teachers with the current university management shared services by collating the results of the questionnaire, as shown in Table 1:

*Table1: Satisfaction of university management and sharing service mode*

	Satisfy	Generally	Dissatisfied
Students	30%	47%	14%
Teachers	52%	34%	11%
University staff	34%	24%	10%

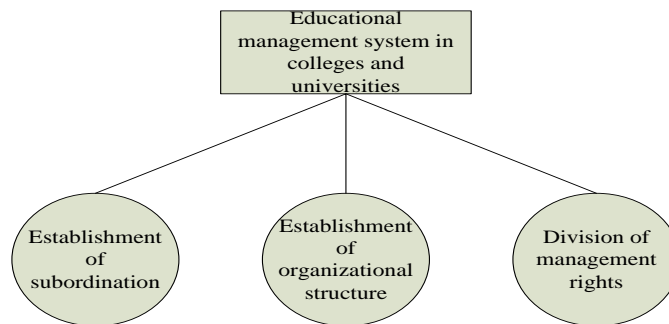


*Figure1: Comparison of satisfaction of university management sharing service mode*

It can be seen from Figure 1 that about 40% of the current university management shared service models are satisfied, 10%-14% are dissatisfied, and the others are average. From these data, it can be seen that at this stage, it is necessary to reform the management and shared service model of colleges and universities.

**4.2 Innovation of University Management and Sharing Service Mode Based Under the Trend of the IOT**

Based on the questionnaire, this article innovates the current university management shared service model. The main management model is shown in Figure 2:



*Figure2: The main structure of the university management mode*

It can be seen from Figure 2 that the management system includes three aspects: the subordination structure, the organizational structure and the division of management capabilities. The higher

education management system refers to the organizational structure and the division of ownership of higher education management power. When dividing, we must not only pay attention to the specificity of training objectives, but also reflect the level of education, and be able to follow the laws of education and teaching. It is part of the university management system. The traditional higher education management structure is a pyramid structure, which is a vertical top-down model formed. Educational institutions are representatives in this regard. It needs to change the traditional education management system and establish an education management system. In the information age, the school environment has become more complex and diversified, which requires diversification and individualization of school management methods. The traditional education management system is not flexible enough and too rigid to respond to changes in the internal and external environment in a timely manner. The new technological environment has broken the rigid layout of the original educational structure, and rigid information dissemination has formed a flexible and changeable structure and flat information dissemination channels. Therefore, it is necessary to reform the traditional campus education management system. Information technology has provided important support in the reform process, injected new impetus into the education management reform, and has been widely used in the school management organization system.

## 5. Conclusion

With the development of the IOT technology, in colleges and universities, the management shared service model is gradually being widely used, which mainly combines information collection, analysis, and transmission for resource integration and optimized configuration. This article first describes the current status of our country's current management platform based on the IOT; then conducts research on the problems that currently exist in various application fields and proposes solutions and suggestions.

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