

Research on Management Decision-making Innovation of Higher Education under the Background of Big Data

Huang Muqian, Chen Wanjun

South China Institute of Software Engineering, Guangzhou University, Guangzhou, 510990, China

Keywords: Management decision-making innovation; Higher education; Big data

Abstract: Education big data is a collection of educational data that guides the development of education and has potential value for education application, including all education-related data collected during teaching and education processes, education management services; it has the characteristics of large amount of data, fast flow, many types, and great potential value. Higher education is a practical process involving multiple factors and complex relationships, which needs to draw on big data-driven data management concepts, introduce data management techniques, reform traditional management decision-making models, and improve the accuracy, sensitivity, and forward-looking of higher education management decisions. On the basis of summarizing and analyzing previous research works, this paper expounds the connotation, characteristics, functions and application value of education big data and the development status and challenges of higher education management decision-making, analyzes the profound influence of big data on higher education management decision-making, and proposes the practical approaches of higher education management decision-making in the context of big data. The study results of this paper provide a reference for further research on the innovation of higher education management decision-making under the background of big data.

1. Introduction

The emergence of big data stems from the rapid development of network information technology, which is the creative product of the combination of modern digital information and network. Big data has the characteristics of massive storage information, diversified data types, efficient data processing, and time-sensitive data. In the context of big data, higher education management should be deeply aware of the impact of big data on the traditional education management model, actively respond to the innovation of management models, and constantly explore effective reform paths, thus truly promoting the uniqueness extensiveness and sharing development of higher education management. Big data has an important impact on the education management decision-making environment, which has transformed the decision-making elements such as the collection of educational information, the formulation of educational decision-making programs and their selection and evaluation, and promoted the transformation of traditional education management decision-making methods. The value characteristics of big data make the public's demand for education more complicated and the expectation of the value of educational services higher. Realizing the transformation from educational data to social public value requires education administrators to have a deeper understanding of the public's educational needs, understand big data and its characteristics, and create efficient and controllable big data processing processes and analysis methods, which requires education managers to have more For comprehensive and comprehensive quality and ability [1].

In the era of big data, big data technology is increasingly infiltrating into management decision-making processes in industries such as business, finance, and sports, because of its advantages in handling large amounts of data and complex data. Higher education is a practical process involving multiple factors and complex relationships. The amount of data involved is large, complex and changeable. The intrinsic value of these data is explored. The tracking data reflects the development dynamics and laws of things. It is necessary to draw on big data-driven data. Management philosophy, the introduction of data management technology, reform of traditional

management decision-making mode, improve the accuracy, sensitivity, forward-looking and broad vision of higher education management decisions, enhance the well-being of teachers and students, and improve the quality of higher education [2]. Big data has continuously extended the depth, breadth and subdivision of data collected by educational administrative organizations, and educational data has become more and more multi-layered, diversified and unstructured. In the field of education, we must actively explore the impact of big data on change education and improve the quality of education. Under the background of higher education informationization, education management is one of the core contents of higher education development. As a progressive technology that seeks to combine quantification and quality, big data provides new technical tools for education management, and proposes new solutions to improve the shortcomings of traditional education management.

On the basis of summarizing and analyzing previous research works, this paper expounds the connotation, characteristics, functions and application value of education big data and the development status and challenges of higher education management decision-making, analyzes the profound influence of big data on higher education management decision-making, and proposes the practical approaches of higher education management decision-making in the context of big data; the study results of this paper provide a reference for further research on the innovation of higher education management decision-making under the background of big data. The detailed chapters are organized as follows: Section 2 introduces the influence of big data on higher education management decision-making; Section 3 proposes practical approaches for higher education management decision-making in the context of big data; Section 4 is conclusion.

2. Influence of big data on higher education management decision-making innovation

With the continuous penetration and rapid development of the Internet and the Internet of Things, various industries have accumulated massive amounts of data, and big data technology has been widely accepted and applied (Figure 1). The application value of big data is not big, but it is through the technical processing of mining, categorizing and analyzing big data, and finally can provide users with decision-making suggestions. The core of big data technology is data analysis, including data acquisition, data architecture, responsiveness analysis, diagnostic analysis, strategic analysis and predictive analysis. It is mainly used in the industry's intelligent services, innovation management, precision decision-making, risk management and strategic management. In order to reduce costs, improve efficiency, and improve service levels. Big data technology has changed the mode of traditional education management decision-making mainly based on experience, regulation, linearization and simplification, and driven management decision-making with its timeliness, precision, sensitivity, synergy, predictability and wide vision to the modernization process of refinement, democratization and scientific advancement [2].

Big data is the technical force for the reform and development of education management mechanism. It can influence the education management mechanism by promoting the optimization of university functions. There is not only a simple application and application relationship between the education management system and big data, but also a symbiotic development relationship that promotes and restricts each other. Big data will share high-quality educational resources through the development of computers and networks, and the accumulation of data, so as to gradually realize education fairness and personalized learning. Big data provides environmental support for the development of modern education through the development of information technology. In turn, the reform of higher education management mechanism is promoted. Big data continuously enhances the science of educational teaching management practice through the valuable data information contained in it, combined with the thinking model of big data problem solving, through the empirical application of higher education management innovation.

The supply-side reform of higher education refers to structural adjustment from the supply side, eliminating backward production capacity, improving the quality of educational products, and meeting the needs of society. This requires the use of actual data to analyze the problems in higher education, and the big data thinking provides a scientific paradigm for the supply-side reform of

higher education. Guided by social needs, decision maker will lead the reform of the supply side of higher education with big data thinking, and then produce products that meet social needs. There are two phenomena in the disciplinary structure of higher education, namely structural loss and structural wastes. When colleges and universities recognize that the market lacks such professionals, they do not conduct sufficient argumentation and blindly carry out the establishment of new types of majors. As a result, a large number of talents of the same type face the society in a few years, which makes the supply of talents duplicate and causes structural waste. Therefore, it is necessary for all institutions to fully investigate and demonstrate the needs of society in the process of transformation and development, and actively optimize and adjust the discipline structure of higher education so that the disciplines of colleges and universities are in line with the structure of the social industry [3].

The decision-making in the modern sense is different from the individual decision-making in the traditional sense. Especially in the management of higher education, many major decisions of the school must be carried out through multiple steps and multiple angles such as investigation, analysis, solicitation of opinions, group discussion, and pilot argumentation. Weighing and judging, the final important decision-makers will discuss it again and finally make major decisions. The procedure is more complicated, the judgment is more scientific, and the process is more rigorous. This not only makes the decision-making more ecological, but also makes the decision-making process more democratic and ecological. Therefore, the dynamic decision-making process, while containing the ecological decision-making genes, is detailed. In the process of comprehensive complex procedure argumentation, it gradually moves towards a more ecological decision-making end point. This process has distinct group, procedural and scientific characteristics. This is also an objective requirement of modern higher education management. But if all problems It is necessary to go through complicated procedures to judge and judge, which will cause the lag of decision-making, thus missing the best implementation reality and bringing certain influence to the final result.

3. Practical approaches of higher education management decision-making innovation

In the big data environment, the data structure is complex, the scale is large, and the data is more and more chaotic. The traditional education data information management system has been unable to adapt to the requirements of the development of the big data era. To manage these large-capacity and complex data and explore their potential value, the education department must re-evaluate the original education information infrastructure and strengthen the construction of storage facilities, which is the basis of education data management in the big data environment. The main task of the leader is to discover problems, ask questions, effectively mine data hidden in complex educational phenomena, analyze and calculate at any time, generate the information needed for decision making in real time, and discover new knowledge from educational big data analysis. Excavated value, using the results of big data analysis to implement and optimize education management decisions; using big data to drive differentiated education development strategies, so that educational data can play a greater value. Education managers need to focus more on using big data technologies and methods to gain real-time insight into the real needs of educational service providers, proactively understand which needs are prioritized, and eliminate unforeseen obstacles (Figure 1).

Education is the social activity of cultivating people. Whether it is teaching and educating people or managing people, it is to achieve the goal of educating people. Management methods without education significance can not enter educational practice activities; education management decision-making is a normative activity on the behavior of educational management activities. It determines that any decision-making must have an educational significance to cultivate talents as the core value. Therefore, in the decision-making of education management, a scientific and rational educational concept can correctly understand the subjective status of students, grasp the direction of education development, promote the smooth development of educational management activities, and promote the vigorous development of education. In education management, no matter what position the education administrator is in the education management organization, decision-making is inevitable, and with the improvement of the status of the manager, the importance of

decision-making is continuously improved. Therefore, better, more reasonable, more effective, and more scientific decision-making has become an important issue for education management decision-making [4].

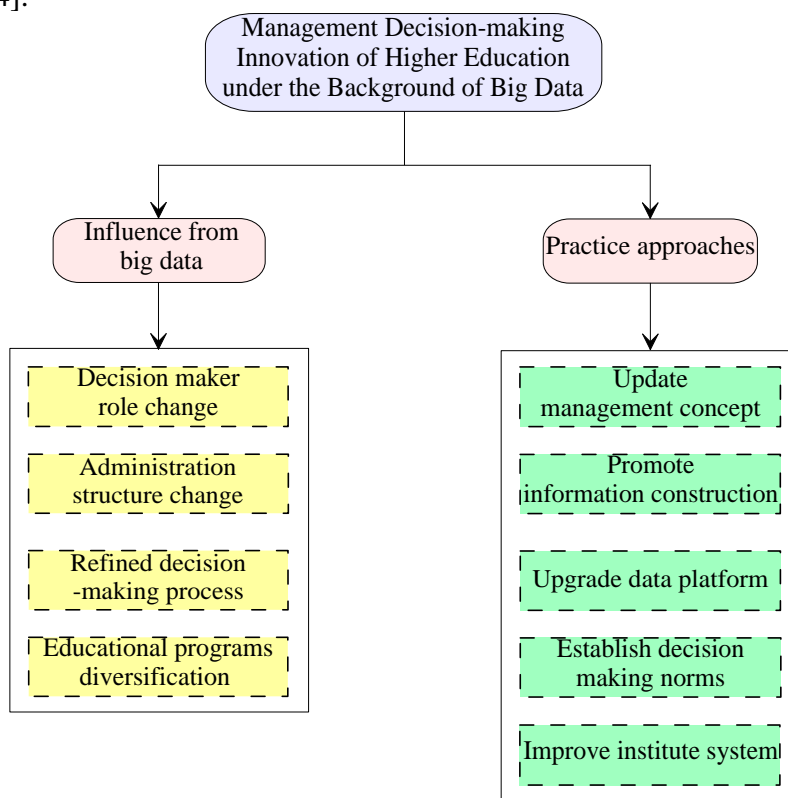


Figure 1 Influence and approaches of higher education management decision-making innovation under the background of big data

From the perspective of big data education management application practice, data mining and learning analysis technology are two core technologies; two technologies have different focuses in specific applications, but they also have many in common. Data mining and learning analysis techniques are applied in the fields of learner knowledge modeling, behavior modeling, experience modeling, domain knowledge modeling, trend analysis, adaptation and personalization. Of course, learning analysis technology and data mining also have their own application space. Among them, learning analysis technology has two fundamental functions that are reflection and prediction. Teaching staff can communicate face-to-face with students on specific issues, or automatically promote supplementary teaching resources to students through the system. Data mining technology is more focused on the analysis of various types of data in the educational context to propose relevant teaching decisions, such as intelligent analysis of curriculum design, learning models, teaching evaluation, and so on. In general, data mining focuses on the discussion of educational models, while learning analysis focuses on the study of known issues. Therefore, in the process of big data management, it is necessary to strengthen the core technology of learning and analysis and education mining two data education management applications [5].

According to the view of bounded rationality, there are often many restrictive factors in the process of educational management decision-making. Decision makers face up to the limiting factors, allow for deviations within a certain limit, and take certain auxiliary measures to compensate. For university management decision-makers, they should expand their bounded rational space from the aspects of knowledge literacy, innovation spirit, information gathering ability and predictive ability. More importantly, they must objectively face the finiteness of human rationality and strengthen organizational management. Specifically, it is to strengthen the synergy and broad social participation between different research fields in the decision-making of university education management, especially the participation of a large number of experts and scholars. Through multi-participation, we will bring together social subjects with different knowledge

structures, different subject backgrounds and different experiences, let them participate in decision-making, and use the knowledge of the people to make up for the incompleteness of decision-makers' knowledge to ensure the scientific rationality of higher education management decision-making.

4. Conclusions

On the basis of summarizing and analyzing previous research works, this paper expounds the connotation, characteristics, functions and application value of education big data and the development status and challenges of higher education management decision-making, analyzes the profound influence of big data on higher education management decision-making, and proposes the practical approaches of higher education management decision-making in the context of big data. Big data is the technical force for the reform and development of education management mechanism. It can influence the education management mechanism by promoting the optimization of university functions. There is not only a simple application and application relationship between the education management system and big data, but also a symbiotic development relationship that promotes and restricts each other. Big data has continuously extended the depth, breadth and subdivision of data collected by educational administrative organizations, and educational data has become more and more multi-layered, diversified and unstructured. In the field of education, we must actively explore the impact of big data on change education and improve the quality of education. From the perspective of big data education management application practice, data mining and learning analysis technology are two core technologies. The two technologies have different focuses on specific applications, but they also have many things in common. Decision makers need to discover new knowledge from educational big data analysis, gain unexplored value, and use the results of big data analysis to implement and optimize education management decisions.

Acknowledgement

In this paper, the research was sponsored by the Education Science Project of 13th Five-year Plan in Guangdong: "Reconstruction and exploration practice of health promotion model of college students under the background of intelligent education" (No. 2018GXJK285).

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