

# Exploration of the Transformation of University State-owned Asset Management under the Background of Big Data

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**Abstract:** As big data technology is applied, the management of state-owned assets in colleges and universities must continually enhance its standards, shift management approaches, and appropriately optimize the existing resources of state-owned assets to continuously increase their application value. In the era of big data, the execution of state-owned asset management in colleges and universities must have a thorough understanding of the application status of big data technology. The utilization of big data technology can fully realize the value of state-owned assets within colleges and universities, and enhance the efficiency of asset management to some degree, perpetually diversifying the methods and tools of state-owned asset management. This represents the primary direction and trend in the development of state-owned asset management in colleges and universities. This paper aims to further elevate the level of state-owned asset management in colleges and universities by elaborating on and analyzing the reforms in this area under the backdrop of big data, thereby providing a solid foundation for the sustainable development of China's higher education cause.

**Keywords:** Big Data, Higher Education Institutions, State-owned Assets, Management Methods, Specific Transformations, Reflection and Analysis.

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## 1. Introduction

In the current era, China has comprehensively embraced the age of big data. Against this backdrop, every sector of society is encountering unparalleled opportunities for development. This is no different for the field of higher education within China. State-owned asset management stands as a critical component within the administrative framework of institutions of higher learning. To fully integrate big data technology into the management of state-owned assets, it is imperative to gain a thorough and comprehensive grasp of its practical application. It is essential to continuously harness the value and impact of state-owned assets, enhance the level and quality of management, and unlock the potential of these assets to drive improvements in the quality and efficiency of state-owned asset management in colleges and universities. Fixed assets in these institutions constitute nearly 60% of their total assets. The key to bolstering the operational capabilities of colleges and universities lies in the rational reorganization of resources and the continuous optimization of their allocation. This paper primarily discusses the principal challenges encountered in the practical execution of state-owned asset management in the big data era and puts forward effective solutions to these issues. It seeks to advance the establishment of a robust state-owned asset management system in domestic colleges and universities, create a management platform that resonates with the unique cultural essence of these institutions, and lay the groundwork for their stable, healthy, and enduring development.

## 2. Overview of State-owned Asset Management

As China's higher education sector advances, the economic operations of its universities and colleges are becoming more

diverse, transcending the historical pattern of exclusive state control over educational institutions. The emerging model is predominantly state-driven, with auxiliary involvement from across societal sectors and public welfare entities, creating an integrated framework. Within this framework, the strategic, reasonable, and effective utilization of state-owned assets is vital for bolstering the financial performance of higher education institutions, lightening their fiscal loads, and more adeptly serving the objectives of education, instruction, and scholarly research.

### 2.1. Meaning

The management of state-owned assets fundamentally involves the delineation and allocation of ownership rights and management permissions by the state over such assets, including the supervision of asset preservation and appreciation, as well as the enjoyment and disposal of profits. Concretely, it involves the state's administration of the control, utilization, and disposition of state-owned assets, with the core aim being to ensure the utmost preservation and enhancement of their value.

There are two primary connotations to the concept of state-owned asset management. Firstly, it refers to the collective exercise of rights by government entities at various levels in their capacity as owners of state-owned assets. Secondly, it describes the comprehensive range of business activities carried out by those authorized to manage state-owned assets, which are conducted in accordance with relevant laws, regulations, and the authority delegated by the state.

### 2.2. Content

The main content of state-owned assets includes asset allocation, usage, disposal, and evaluation. It also encompasses the definition of property rights, dispute mediation and registration; asset inventory, statistics, reporting, and supervisory inspections.

### 2.3. Tasks

The core mission of state-owned asset management is fundamentally to establish and refine a robust and equitable regulatory framework, to drive the scientific and judicious allocation and utilization of state-owned assets, to guarantee the security and wholeness of these assets, and to facilitate the preservation and appreciation of their value.

### 2.4. Characteristics

Society is a shared domain that concerns each of us. The stability, security, and economic health of the nation have a direct and profound impact on the daily lives and work of every citizen. Although we may not all be able to make grand contributions to national development, we can initiate change through small actions, such as protecting national property. By engaging in scientific and judicious collaboration with academic institutions to manage state-owned assets, we contribute to the greater good. The management of state-owned assets is characterized by the following features: (1) It operates under the premise of state ownership of assets. (2) Its management objective is to preserve and enhance the value of the assets. (3) It involves comprehensive management across all aspects. (4) Asset management is marked by diversification. (5) It upholds a principle of democratic management (Xiong Wei, 2021).

### 2.5. The Advantages of Big Data in State-owned Asset Management

Initially, from a micro-level perspective, the optimization of state-owned asset supervision in higher education institutions is primarily evident in several key areas. Big data technology enables a more project-centric approach to asset management in these institutions. By offering pertinent technical support, it enhances the feedback mechanisms within the asset management evaluation system of colleges and universities, thereby elevating the degree of digitalization in asset management. This, in turn, furnishes a robust foundation for informed management decision-making. Secondly, the application of big data technology can drive further advancement in the management of state-owned assets, ensuring that their full value is realized and fostering a democratic approach. Supported by big data, managers of state-owned assets in higher education institutions can rely on extensive information and data. This technology allows them to comprehensively collect feedback from faculty and students regarding management efforts, thereby promoting a democratic process in asset management across the institution. Based on this groundwork, a thorough understanding of the actual needs of both teachers and students can be achieved, which in turn improves the quality and efficiency of state-owned asset management. This targeted and practical approach to reform and innovation in asset management can help establish harmonious relationships among various departments and refine asset management practices. Furthermore, state-owned asset management is a central element of the overall management system in higher education institutions. By leveraging big data technology, a deeper insight into the current utilization of state-owned assets can be gained, and future usage can be allocated more effectively. This ensures that the value of state-owned assets in higher education institutions is maximized to its full potential. Ending, the adoption of big data technology has the potential to markedly upgrade the full lifecycle management

of state-owned assets at higher education institutions, thereby diversifying the arsenal of asset management tools. By capitalizing on big data, institutions can maintain thorough records of assets throughout their entire lifecycle, with technological analysis and processing significantly boosting the efficiency of asset management across the campus. The approaches to managing state-owned assets in higher education require continuous enhancement and sophistication. The deployment of computer systems and databases opens an array of choices to advance the evolution of state-owned asset management within the academic realm. Big data-driven management stands to rectify numerous issues associated with conventional manual methods, paving the way for a unified information and data management platform for state-owned assets. This platform facilitates granular categorization and enhances the level of asset management in higher education institutions, fostering a more robust and nuanced approach to the stewardship of these resources.

## 3. Issues in the Management of State-owned Assets in Colleges and Universities under the Background of Big Data

The administration of state-owned assets within higher education institutions is instrumental in fostering their future health, stability, and growth. It is incumbent upon these institutions to actively employ cutting-edge scientific and technological advancements to bolster the efficacy of asset management and to extract the intrinsic value of these assets. Despite this, the integration of big data technology in managing state-owned assets within higher education institutions is currently grappling with a host of unavoidable issues.

### 3.1. Lack of Strong Big Data Thinking Concepts

During their daily management of state-owned assets, personnel at higher education institutions are cognizant of the role and value that big data can play. However, the overall concept of big data technology is still relatively weak. This is due to the long-standing absence of a data-driven mindset in the management of state-owned assets within universities. Consequently, in the organization of assets and information, there remains a reliance on traditional manual methods. As the number of state-owned assets in universities continues to grow, this directly hampers the development of asset management in terms of information technology, resulting in discrepancies between asset records and reality and contributing to the loss of state-owned assets within these institutions.

### 3.2. Lack of Technological Talent in State-owned Asset Information Management

Currently, the integration of big data in managing state-owned assets at higher education institutions is not as prevalent or profound as it could be. This is primarily attributed to the absence of specialized technical talent in information management for state-owned assets within these institutions, which limits the advancement of overall management technology and capabilities. Despite universities' proficiency in talent development, in the practical implementation of state-owned asset management, the majority of managers are not graduates from big data

information management programs. Consequently, they lack a comprehensive understanding and rich experience in applying big data technology to state-owned asset management, thereby impeding the enhancement of asset management capabilities within these institutions (Shi Shengqing, 2021).

### **3.3. Lack of Optimized State-owned Asset Management Information Platform Construction and Technical Support**

The establishment of management information platforms and technical support serves as a critical foundation in the management of state-owned assets within higher education institutions. The integration of big data technology in this context represents a novel accounting methodology, which is contingent upon the robust construction of information platforms. Moreover, the convergence of various scientific and technological disciplines, collectively known as “Big Data Cloud Computing,” has, to some extent, introduced complexities to the application of big data.

## **4. The Transformation of State-owned Asset Management in Universities Under the Background of Big Data**

Big data technology has become an integral part of the production and daily activities across societal sectors, offering higher education institutions both substantial opportunities and challenges. The strategic application of big data in the management of state-owned assets can profoundly influence the cultivation of talent and the progress of scientific research. It is imperative for universities to synchronize with the era of big data, continuously enhancing and refining their asset management strategies while standardizing the processes for utilizing big data. This approach will maximize the utility and impact of big data technology.

### **4.1. Establishing a Unified Ledger: Establishing Common Standards to Effectively Break Down Data Barriers**

In harnessing big data for the management of state-owned assets, universities are required to maintain a cohesive information platform and set up uniform standards to dismantle data partitions. A secure and efficient data transmission platform must be established to cater to the demand for interactive data. Furthermore, it is imperative to be at the forefront of understanding the data flow of university state-owned assets in real-world scenarios, to conduct a systematic and rational analysis of the collected data and insights, and to base optimization decisions on concrete analysis results. This ongoing endeavor will significantly enhance the quality and efficiency of state-owned asset management, ensuring that the utility of data and information is maximized to its full potential (Hong Guilan, 2021).

### **4.2. Building a Repository: Optimizing Hardware Infrastructure to Ensure Data Stability and Reliability**

As university asset management scales up, the corresponding data volume swells. This escalation demands a perpetual refinement of hardware infrastructure to construct a comprehensive database, thereby ensuring data integrity and

reliability while enhancing precision. The retention of original asset records must be complemented by the integration of innovative concepts and keywords within asset management strategies. Universities are called upon to harmonize and systematize data information, meticulously recording procedures such as state-owned asset access, depreciation, and the implementation of present value methodologies, all under a framework of dynamic supervision. By reinforcing the bond between supervision and documentation, universities will establish a robust platform for future fiscal budgeting, asset distribution, and strategic decision-making regarding state-owned assets, facilitating the transition to holistic lifecycle and digital management. Embracing this progressive model, universities can inject a higher degree of dynamism and precision into the management of state-owned assets, securing the stability and trustworthiness of data generated throughout the process, amplifying the efficacy of asset utilization, and ultimately securing a durable hardware foundation to support the stable progression of academic and research initiatives at the institution.

### **4.3. Crafting a Blueprint: Advancing Data Mining and Analysis to Enhance Data Governance Capabilities**

The utilization of big data offers higher education institutions both novel opportunities and challenges in the management of state-owned assets. As they navigate this process, universities must swiftly adapt their mindset to harness the full potential of big data technology. It is crucial to ensure that the management of state-owned assets aligns with the advancements of the big data era. By tapping into the unique features of big data, the management capabilities of these assets can be substantially upgraded. Big data technology allows for the rapid processing of vast amounts of data and facilitates the establishment of meaningful connections across diverse datasets, thereby transitioning the management of state-owned assets from a static to an interactive endeavor. With the application of big data technology, universities can significantly enhance their capacity for data mining and analysis, refine their data management proficiency, accurately identify the underlying patterns within the data, and develop a scientific and rational management framework for state-owned assets. This includes synthesizing the evolving landscape of the university's current state-owned assets and proactively implementing measures to strengthen the university's proficiency in overseeing and managing these assets. In the routine management of state-owned assets, the principles of big data should serve as a navigational guide, underpinning data mining and analysis efforts, and thereby fostering an environment conducive to the educational, teaching, and scientific research activities of higher education institutions (Wang Yuhua, 2021).

### **4.4. Spreading a Net: Strengthening Network Security to Ensure Asset Information Safety**

The deployment of big data technology in the management of higher education institution assets confers a multitude of benefits, yet it also introduces vulnerabilities, given the relentless advance of science and technology that has led to recurrent data breaches. State-owned assets are integral to the smooth functioning of universities, and any compromise in

information security could severely impair educational and teaching activities. Therefore, it is of paramount importance to fortify network security measures to protect the integrity of asset information. In alignment with the application of big data technology, a robust network security infrastructure must be developed, encompassing all facets from software to systems and the data they contain. This infrastructure should incorporate stringent early warning systems to counteract privacy violations, data leaks, and the spread of malicious discourse. Utilizing advancements such as cloud computing for information management, the distinct characteristics of the asset management information platform in the age of big data must be given due consideration, with a sharp focus on the security of asset information. To elevate the management of state-owned assets within higher education institutions, it is essential to execute a thorough and holistic approach to network information security management, to perpetually refine and enhance the cybersecurity framework for state-owned asset information management, and to reinforce the robustness of data content. By tapping into the full potential of cyberspace, the security of asset information can be guaranteed, propelling the continuous advancement of state-owned asset management practices in higher education institutions (Wang Yaxiong, Zhang Yong, Li Chunjing, Wang Xingsheng, 2021).

## 5. Conclusion

In essence, the continuous expansion of the national economy has catalyzed progress in science and technology, particularly in recent times, as the era of big data unfolds, the integration of big data technology has become a pervasive and deeply ingrained practice across all sectors, realizing its full potential. The blossoming of domestic higher education has led to an increase in the scale of universities, with the

management of state-owned assets emerging as a cornerstone of their administrative functions. In this transformative period, state-owned assets within higher education institutions must be aligned with the stride of progress, leveraging big data technology in a manner that fosters innovation in asset management strategies. However, as institutions deploy big data technology, they must remain attuned to the complexities that arise in the management process and, in light of practical situations, articulate clear strategies to address these challenges. It is crucial for universities to enhance their capabilities in managing state-owned assets continuously, ensuring that the assets' value is fully realized and contributing to the robust, sustainable, and enduring growth of domestic higher education.

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