

Research on Strategies for Digital Asset Management in Chinese Universities

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ABSTRACT

At present, in the process of informatization in universities, the in-depth application of high-quality data resources has become a core driving force of educational reform. Digital assets have become an important asset for universities across China. However, there are still issues in the management of digital assets in Chinese universities, such as the lack of unified standards and regulations, as well as relatively fragmented management. In response to these problems, this paper proposes strategic suggestions from several perspectives, including digital asset management policies or systems, digital asset sharing mechanisms, digital asset information security mechanisms, and the application of digital assets.

KEYWORDS

Universities; Digital Asset Management; Problems; Strategies

1. INTRODUCTION

With the development of emerging technologies such as artificial intelligence (AI), blockchain, and big data, China's advantage in the scale of data resources continues to expand. The volume of data generated by digital platforms in higher education institutions—such as online teaching platforms, simulation labs, and smart campus systems—has also been steadily increasing. University digital assets refer to various types of digitized resources accumulated during educational instruction, scientific research, administrative management, and campus cultural activities. These digital resources are considered economic assets that are expected to provide service potential or generate economic benefits. They include electronic textbooks, online courses, databases, multimedia materials, and web-based resources.

In 2024, the Chinese Ministry of Finance issued the Notice on Strengthening the Management of Data Assets in Public Institutions, which clearly states: “All departments must effectively enhance the management of their data assets and establish sound data asset management mechanisms for public institutions. “As key components of the public institution system, universities—where digital asset management remains in its early stages—are also facing the challenge of how to strengthen internal data asset management practices. With the rapid advancement of information technology and the deepening of digital transformation in higher education, digital assets have become core resources in the informatization of universities (Chen, 2024).

2. THE CONCEPT AND SCOPE OF DIGITAL ASSETS IN UNIVERSITIES

2.1. The Concept of Digital Assets in Universities

In 2024, the Ministry of Finance of China issued the Notice on Strengthening the Management of Data Assets of Administrative and Public Institutions, which clearly defines data assets of such institutions. According to the notice, data assets of administrative and public institutions refer to data resources that are held or controlled by institutions at various levels during the lawful performance of their duties or the provision of public services, and that are expected to generate potential for management and service or bring in economic benefits. Based on this definition, digital teaching resources in universities can be interpreted as various data resources held or controlled by universities, used for teaching, research, or administrative activities, and expected to provide service potential or generate economic benefits for the institutions. These data resources may be generated during teaching or research activities conducted by universities, such as classroom activity data resulting from student participation in interactive teaching, or research outcomes owned by the university. Some data resources may also be acquired by universities to support teaching, research, or administrative purposes, such as various software programs or virtual simulation training platforms. Yuan et al. (2013) defined digital assets in universities as various types of information resources owned and controlled by universities, accumulated through teaching, research, and administrative activities conducted by the institutions or their members. These are digital information contents and their clusters that have been processed and managed through information workflows, and possess value for preservation and utilization. In summary, digital assets in universities are a type of data asset, primarily serving the purpose of supporting teaching, research, and administrative activities carried out by universities or their members.

2.2. Scope of Digital Assets in Universities

The scope of digital assets in higher education institutions encompasses five major categories: instructional digital assets, research digital assets, administrative digital assets, campus digital infrastructure assets, and cultural and communication digital assets.

Instructional digital assets include open online courses, micro-lectures, teaching resource repositories, and digital textbooks. Research digital assets consist of academic papers and research outputs, experimental data, and research project information. Administrative digital assets refer to data from academic affairs systems, personnel and financial data, as well as digital resources from libraries. Campus digital infrastructure assets include systems such as campus cards, digital identity authentication platforms, and cybersecurity centers. Cultural and communication digital assets cover school newspapers, content from official WeChat accounts, and digitized archives of university history. These digital assets are characterized by their ownership or control by the institution, their digital form, and their capacity to serve the functions of teaching, research, and administration, making them valuable and manageable resources.

3. PROBLEMS IN THE MANAGEMENT OF DIGITAL ASSETS IN UNIVERSITIES

3.1. Lack of Unified Standards and Norms for Digital Asset Management in Universities

As the recognition of data as digital assets in China has only emerged in recent years, the development of digital assets is still at an early stage. Currently, there is a lack of unified institutional norms and technical standards for the scientific and rational management of digital assets in higher education institutions. This has resulted in significant discrepancies among universities in the recognition,

classification, and measurement of digital assets. Some assets are not fully recognized or accurately measured, making it difficult to comprehensively reflect the asset status of universities and affecting the objective evaluation of their input-output efficiency.

At present, digital asset management in many universities has not received sufficient attention. Consequently, some digital assets have not been included in asset reports or recorded in any official system, leading to a state of disorder. For example, micro-course resources or teaching resource libraries created by individual teachers on internal platforms have not been recognized as assets in some institutions and have not been incorporated into a unified asset management system.

3.2. Decentralized Management of Digital Assets in Universities

Digital asset information sharing among departments within universities is insufficient. Many institutions operate multiple information platforms—such as academic affairs systems, research systems, and teaching resource platforms—where data is siloed and difficult to share due to the lack of a unified data-sharing platform or resource integration interfaces. As a result, digital assets are stored in a decentralized manner, making cross-platform access inconvenient. Data must often be exported and imported manually, leading to low efficiency in information sharing and increasing the risk of redundant system development and severe data silos.

At the same time, digital asset management involves multiple functional departments—such as academic affairs, research, IT services, and finance—but lacks a clearly designated leading unit. This results in poor coordination, unclear responsibilities, and frequent cases of passing the buck. The fragmented management of digital assets across departments also hinders unified archiving, real-time supervision, and dynamic updates. On one hand, outdated or obsolete digital assets are not cleared in a timely manner, resulting in wasted resources. On the other hand, newly created digital assets are not promptly incorporated into the management system, leading to issues such as “asset sinking” or “invisible assets.” This management approach, which relies heavily on individual responsibility, can easily result in missing asset information, irregular usage, and difficulties in sharing, maintaining, or updating assets—ultimately limiting the effective use and value realization of digital assets.

3.3. Challenges to the Security of Digital Asset Information in Universities

With the development of technologies such as the Internet of Things, incidents of data breaches have become increasingly frequent. According to reports released by the National Computer Network Emergency Response Technical Team/Coordination Center of China (CNCERT), the number of data breach incidents in China has shown a rising trend in recent years, involving billions of pieces of personal information. Universities are not exempt from this risk, as they also face potential leaks of personal information related to faculty and students—especially sensitive data such as names, phone numbers, ID numbers, and bank account details. Once such information is acquired and exploited by malicious actors, it can lead to harassment and even financial losses for students, such as telecom fraud.

Moreover, it is common for faculty and students to use their own devices, such as USB drives, in computer labs or on electronic whiteboards. The diversity of terminal devices and the difficulty in centralized control further increase the risk of malware, viruses, and other security threats. At the same time, hacking techniques are becoming more diverse and sophisticated. Hackers may exploit system vulnerabilities or use malicious software to gain unauthorized access to data—for example, by stealing research data, student management information, or financial records from universities. In some cases, ransomware may even be used to extort individuals. Therefore, the security of digital asset information in universities is a matter that demands serious attention.

3.4. Limited Practical Application of Digital Assets in Universities

Many universities, in their efforts to advance digital transformation or to meet project evaluation requirements, have invested substantial resources in building teaching resource repositories, training platforms, and information systems. However, due to poor student feedback and a lack of awareness among faculty and students on how to utilize these resources, the actual usage rates remain low. Some systems have even become underutilized or forgotten.

Moreover, the absence of adequate support or incentive mechanisms in some institutions has resulted in a weak willingness among faculty members or departments to engage with digital resources. A lack of effective tools and personnel for data mining, analysis, and visualization hinders the conversion of data into actionable insights. As a result, data-driven decision-making in management, research innovation, and teaching improvement has not been fully established.

At the same time, teaching resource repositories and online open platforms in some universities lack sufficient promotion. High-quality resources often remain confined within a single discipline and fail to reach a broader audience, such as other institutions or the public. Consequently, many digital assets in universities suffer from being built but not used, or used only superficially. This issue is particularly pronounced for management-related data assets and certain teaching digital assets, where effective utilization remains a significant challenge.

4. STRATEGIES FOR MANAGING DIGITAL ASSETS IN HIGHER EDUCATION INSTITUTIONS

4.1. Establishing or Improving Digital Asset Management Policies or Systems

Although China implemented the Provisional Regulations on the Accounting Treatment of Enterprise Data Resources in 2024, which specifically addressed the inclusion of enterprise data resources in financial statements, the unique characteristics of digital assets in higher education institutions—such as high sensitivity, non-monetary value creation, multi-source heterogeneity, original generation, and value co-creation (Ma, 2025)—differentiate them from enterprise digital assets. Therefore, it is necessary to develop unified regulations or specialized standards for the recognition, measurement, and disclosure of digital assets in universities. This would help ensure that financial statements accurately reflect the institutions' asset conditions and facilitate supervision and management, thereby preventing the loss of digital assets.

Meanwhile, universities can refer to the provisions of the Notice on Strengthening the Management of Data Assets in Administrative and Public Institutions (Cai Zi [2024] No. 1) to formulate their own digital asset management systems. These systems should address key management areas such as ownership confirmation, allocation, utilization, disposal, revenue generation, security, and confidentiality of data assets. They should be implemented through specific departments and responsible personnel, with requirements for operability, traceability, and standardization.

In addition, it is essential to establish data quality assessment standards, including the development of technical specifications for assessing digital asset quality. These should clearly define evaluation methods, indicator systems, and implementation procedures, providing standardized guidelines for the compliant and efficient circulation and value transformation of data elements in universities. This also facilitates regular inventory checks or evaluations of the true value of digital assets and helps prevent overvaluation.

Finally, to ensure the quality of digital asset management, the effectiveness of digital asset management should be incorporated into the performance evaluation policies of university departments. This ensures that digital asset management is effectively implemented and enforced.

4.2. Establishing a Mechanism for Sharing Digital Assets in Universities

Realizing the sharing of digital assets in higher education institutions can significantly enhance the utilization of information related to teaching, research, and finance. It improves communication efficiency between departments and the effectiveness of data usage, avoiding "information silos" and advancing the digitalization of teaching, research, and administration. Therefore, it is necessary to establish a digital asset sharing mechanism.

First, before sharing digital assets, each department within the institution must establish uniform data standards, clearly defining resource storage formats, update frequency, lifecycle management standards, and standardized data sharing procedures to ensure the authenticity and reliability of data assets. A responsibility system should be set up, designating specific departments or individuals accountable for maintaining and sharing each category of resources.

Second, a unified digital asset management platform should be established. Institutions can adopt technologies such as data interfaces, data warehouses, and data exchange platforms to enable interconnectivity and interoperability among departmental digital assets. At the same time, appropriate access permissions for different types of resources should be implemented during the sharing process. Incompatible job responsibilities should be separated to prevent data tampering or loss, thus ensuring security during data transmission and storage.

Finally, an incentive and assurance system for data sharing should be constructed. For example, incentives can be offered for sharing curriculum resources or developing online courses, with annual awards for the best shared databases or open online courses. Additionally, a data assurance system should be put in place, such as allocating dedicated technical personnel to promptly address challenges encountered in the data sharing process.

4.3. Improving the Security Mechanism for Digital Asset Information Management in Higher Education Institutions

To enhance the security mechanism for digital asset information management in universities, it is essential to prevent risks such as information leakage, misuse, and cyberattacks, thereby ensuring the compliance, integrity, and controllability of teaching and research data. The improvement of digital asset security management in universities can be approached from the following aspects:

First, encryption, authorization, and other technical measures should be adopted during data storage, transmission, and sharing processes to strengthen data security and privacy protection. A classification and desensitization mechanism for sensitive data should be established, allowing for tiered management based on data attributes. For instance, confidential information involving personal privacy, patents, or financial matters should be subject to strict control and shared only after desensitization. On the other hand, data such as online open courses and public resource libraries can be shared nationwide, with appropriate maintenance and regular updates as necessary.

Second, an access behavior auditing and log monitoring system should be implemented. University internal audit departments can use specialized auditing software to monitor internet activities of staff and students in real time, filter inappropriate content, and record details such as screen operations and USB usage. This enables full-process monitoring of digital asset usage to prevent tampering and data leakage. At the same time, a log management policy should be established, specifying the scope, content, retention period, and access control of log records.

Finally, a data backup and recovery mechanism should be developed. The scope of data backups should be clearly defined to include both business data and configuration files. Backup frequency and duration should be determined based on the importance and update frequency of the data. A recovery plan should be prepared in advance, detailing the recovery procedures and designating responsible personnel.

4.4. Accelerating the Application of Digital Assets in Universities

The application of digital assets can help activate their value and enhance teaching and administrative efficiency. Therefore, higher education institutions should actively formulate relevant measures to guide and promote the use of digital assets.

First, institutions should improve their information infrastructure, including the construction of network facilities, computing facilities, and storage systems, to empower and support digital applications.

Second, it is essential to strengthen training on the application of digital resources. Specialized training should be conducted for faculty members and students on the use of digital resources and platforms, enhancing their understanding, acceptance, and practical use of digital technologies. Faculty members should be encouraged to explore innovative data application scenarios, allowing digital tools to serve the entire teaching process and ensuring that both teachers and students benefit from digitalization. At the same time, secondary departments within institutions should actively summarize their experiences, identify exemplary application cases, and promote these successful practices.

Finally, it is crucial to attract and cultivate digital talent, as the application of digital assets relies heavily on skilled professionals. Currently, many institutions face challenges in attracting and retaining digital talent. Therefore, they should develop corresponding policies or systems to attract and retain this group of professionals to meet the needs of digital development in higher education. For example, they may establish special recruitment programs for digital talent, offer competitive salaries, research start-up funds, housing subsidies, and clear promotion pathways.

5. SUMMARY

Currently, in the process of informatization in higher education institutions, the in-depth application of high-quality data resources has become a core driver of educational reform. Digital assets have emerged as an important asset for universities across China. However, due to the relatively late development of digital assets in higher education, they have only recently attracted attention from universities and scholars with the rapid growth of the digital economy. At present, the management of digital assets in Chinese universities is still in the exploratory stage and faces several challenges. This paper identifies the following main issues in the management of digital assets in Chinese universities: (1) Lack of unified standards and regulations for digital asset management. (2) Fragmented management of digital assets. (3) Challenges in ensuring the security of digital asset information. (4) Insufficient application of digital asset information. In response to these problems, this paper proposes the following countermeasures: (1) Establish or improve policies and systems for digital asset management. (2) Develop a digital asset sharing mechanism within universities. (3) Strengthen the security management system for digital assets in higher education institutions. (4) Accelerate the application of digital assets in universities.

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