

Analysis on the Informatization Construction of Financial Management in Colleges and Universities under the Background of Big Data

Yu Pang*

Guangdong University of Business and Technology, Zhaoqing 526000, Guangdong, China

*Author to whom correspondence should be addressed.

Copyright: © 2025 Author(s). This is an open-access article distributed under the terms of the Creative Commons Attribution License (CC BY 4.0), permitting distribution and reproduction in any medium, provided the original work is cited.

Abstract: With the development of the current era, China's Internet and computer technologies are constantly updated and improved. Under the application of information technology, great changes have taken place in the financial management work of schools. At present, the content of school financial management work is constantly increasing. In order to meet the needs of school management, it is necessary to improve the level of financial management, strengthen the informatization construction of financial management, so as to realize the modernization of school financial management and improve the efficiency of financial management. Big data technology and information technology can realize the rapid collection and preprocessing of information, achieve in-depth mining of data value, assist staff in quickly identifying problems in their work, and further improve work efficiency. Based on this, this paper conducts in-depth analysis and research on the informatization construction of financial management in colleges and universities on the basis of big data, for reference.

Keywords: Big data; Financial management in colleges and universities; Informatization construction

Online publication: December 8, 2025

1. Introduction

In recent years, China's higher education has achieved leapfrog development. The scale of colleges and universities has been continuously expanded, and the sources of funds have become more diversified. The traditional financial management model, mainly based on manual accounting, can no longer meet the current management needs and is difficult to adapt to the transformation requirements of education digitalization. As a core technology with massive data processing functions, big data technology can inject new vitality into the financial management work of colleges and universities, improve the efficiency of financial management, and enhance the ability of risk prevention and control.

2. The value of informatization construction for financial management in colleges and universities under the background of big data

2.1. Promoting the healthy development of colleges and universities

For the sustainable development of colleges and universities, the implementation of all work requires financial support. However, colleges and universities may also encounter various types of financial risks during their operation. At this stage, common financial management risks in colleges and universities include unbalanced budget recovery and irrational capital structure. These issues not only directly affect the utilization of resources in colleges and universities but also impact their long-term development ^[1]. Therefore, reducing financial management risks is particularly crucial. In the era of big data, strengthening the informatization construction of financial management can integrate all financial data and information. Through overall integration, hidden problems can be presented in a more concrete manner, which helps school leaders understand the status of financial management in a timely manner and make decisions accordingly ^[2].

2.2. Ensuring data security

In traditional financial management, paper and pen are mainly used to handle basic accounting and reimbursement businesses. This method is prone to the loss or leakage of information and data. Additionally, the storage process is challenging, with a high risk of loss or damage. More importantly, traditional paper documents still need to be stored after reimbursement is completed, making it difficult to retrieve them again when needed ^[3]. Strengthening the informatization construction of financial management helps realize electronic office work. By presenting all data and information in an electronic form, it can ensure longer storage time, and relevant information can be found quickly through search functions. Against the backdrop of increasing public security awareness, encryption technology has emerged. The application of this technology facilitates better storage, enables information backup, and ensures effective information management through multiple measures ^[4].

2.3. Improving financial management efficiency

Financial management is not merely the summarization of school-related financial information, but the effective integration of financial resources. The financial data of colleges and universities are relatively large in volume and cover multiple aspects. If data processing relies on manual work, it may take several days, which easily leads to the waste of human resources. Moreover, excessive dependence on human resources may result in deviations in accuracy. However, leveraging information technology helps improve management accuracy. Through the informatization construction of financial management, complex problems can be addressed, labor costs can be reduced, and the quality and efficiency of work can be enhanced ^[5,6]. Strengthening informatization construction allows staff to have more time and opportunities to engage in financial management, thereby promoting the transformation and upgrading of the school's financial management work and demonstrating the overall effectiveness of financial management.

3. Strategies for the informatization construction of financial management in colleges and universities under the background of big data

The rapid development of network information has also changed the management environment of colleges and universities, which puts forward higher requirements for the financial informatization management of colleges and universities. For the financial management work of colleges and universities, in the actual implementation

process, it is necessary to systematically collect, process, and organize information. However, in this process, information still faces the risk of leakage. Therefore, it is necessary to do a good job in basic screening and filtering, focus on systematic construction, and solve problems in the construction process.

3.1. Emphasizing financial data construction and realizing information sharing

The informatization construction of financial management is an important way to promote the long-term development of colleges and universities. It helps to promote the development of schools and society, further improve students' competitiveness, and realize the effective utilization of resources. Moreover, since all work of the school requires financial support, the informatization construction of financial management has a closer connection with various departments of the school. Therefore, colleges and universities should pay attention to the construction and application of financial data, make full use of the characteristics of current big data technology, integrate the school's data and information, compare it with the original data, and ensure that under the premise of guaranteeing the authenticity and validity of information, analyze the use of funds for the school's specific business and quickly find problems in independent projects ^[7,8]. In the past, the use of funds for specific businesses was of great value. It could serve as a reference for similar projects in the future, thereby ensuring the accuracy and effectiveness of budgeting work and improving the management capacity of colleges and universities. In addition, other departments of colleges and universities also need to actively cooperate with financial personnel to complete relevant work, transmit the department's data to the platform in the form of electronic information, build an integrated information platform, ensure the correctness of information, realize the effective sharing of data resources, and give play to the value of informatization management technology ^[9].

3.2. Strengthening the construction of management systems and implementing specific responsibilities

The management system is the basis for ensuring the implementation of specific work. Therefore, before carrying out the work of financial management informatization construction, it is necessary to start from the level of the management system, take the characteristics of informatization construction as the core, and integrate a new system to further ensure the informatization level of financial management. In order to avoid the absence of responsibility, when formulating the system management system, a more complete management framework system should be constructed according to the work content and requirements of the staff themselves. This avoids overlapping jurisdiction of financial management work by leaders at all levels, truly achieves a clear division of powers and responsibilities, effectively implements individual responsibilities, and further accelerates the modernization of financial management in colleges and universities ^[10]. For example, the financial management of colleges and universities is mainly handled by the school's financial person in charge. In the process of formulating the management system, it is necessary to emphasize the responsibility of the school leader in charge and clarify that leaders at other levels have no right to manage financial affairs. The development of financial management work requires continuous adjustment. At this stage, the application time of big data technology in colleges and universities is relatively short, and it is still in the stage of exploration. The occurrence of system problems is inevitable. Therefore, when staff encounter problems in management work, they still need to provide their personal opinions to the direct leaders, and then the school leadership will study and solve the problems to further improve the system of financial management in colleges and universities ^[11].

3.3. Enhancing staff quality and competence to better address challenges

In the modern information age, the application of information technology enables resource integration and helps break down barriers between industries. This has consequently driven an increasing demand for interdisciplinary talents. The implementation of financial management informatization in colleges and universities also requires financial staff with comprehensive qualities and mastery of key technologies. Therefore, colleges and universities need to attach importance to staff recruitment and subsequent training.

In the staff recruitment phase, colleges and universities should establish more targeted selection criteria and channels, breaking the traditional limitation of only screening talents with a single financial background ^[12]. On one hand, combine financial professional competence with information technology literacy as core selection factors. Candidates are required to have solid professional knowledge in accounting, auditing, and budget management, as well as the ability to use and operate big data analysis tools. On the other hand, expand talent recruitment channels. In addition to campus recruitment and social recruitment, establish school-enterprise cooperation-oriented training mechanisms with university majors related to finance and information technology to identify in advance fresh graduates with interdisciplinary potential.

In staff training, schools should focus on improving the financial management staff's awareness of informatization construction. Financial management staff should fully understand the value of informatization construction, master knowledge of financial management informatization and related management, and give full play to their initiative, enthusiasm, and innovative awareness. This will further enhance their understanding of financial management informatization and continuously advance the effectiveness of informatization construction for college financial management. Schools should expand the scope of staff training, providing training in areas such as information technology, data analysis, and risk analysis. This helps staff build a more diversified knowledge structure, broaden their learning horizons, and improve their ability to apply knowledge and skills to better meet the challenges of the current era. Additionally, traditional staff training methods have certain limitations, as they lack reasonable training objectives, leading to unclear assessment mechanisms ^[13]. Therefore, before training, schools should formulate more scientific and reasonable training objectives and analyze the achievement of these objectives through assessments to ensure the quality of training. For staff who fail the assessment, schools can arrange multiple re-examinations; if they still fail, their positions should be adjusted in a timely manner.

3.4. Realizing intelligent management transformation and strengthening data support

The development of financial management informatization construction must be integrated into the overall informatization construction and cannot be separated from other work. Moreover, the design of financial informatization should be based on data and information generated through different channels, and classified according to the actual needs of information users and the importance of information, so as to ensure the informatization construction of financial management in colleges and universities.

With the application of information technology and multimedia in financial management, financial management has gradually achieved an intelligent transformation. This includes the establishment of a basic data layer covering elements such as staff basic information, school asset information, and project funds. Through various methods and channels, big data is analyzed to fully grasp the data of the school's various inputs and outputs, and comprehensive comparison and data processing are conducted to ensure high accuracy and effectiveness of management work. During the budget and final accounting management process, colleges and universities should conduct more comprehensive and systematic analysis through data analysis and

comparison, and truly achieve pre-event, in-event, and post-event control. Through online conversion and query of various data, it can provide more targeted references for college leaders to make decisions and offer more detailed data support for the sustainable development of colleges and universities^[14]. For example, through the informatization of business processes, during the reimbursement application, applicants can standardize each content according to the instructions in the system, and review documents through intelligent approval, which further speeds up the processing efficiency of financial processes.

3.5. Establishing a risk prevention and control mechanism and improving the management system

In the context of the information age, opportunities and risks coexist. Therefore, in the process of improving the financial management system, it is also necessary to consider security issues, such as how to prevent the system from virus intrusion and ensure the security management of the system. Among them, the planning and design of hardware and software need to effectively apply technologies such as firewalls and security management, and the realization of these contents requires support and guarantee from professionals. Therefore, in the process of financial management informatization construction, colleges and universities should conduct direct management; only in this way can the validity and security of data be guaranteed^[15]. Under the background of big data, colleges and universities still need to uphold the concepts of humanization, informatization, and standardization. On the premise of focusing on basic management construction, they should take budget management as the core of management, continuously improve the management system, and establish a sound and complete risk prevention and control mechanism.

4. Conclusion

To sum up, in the era of big data, financial work is facing new development opportunities and challenges. The informatization construction of financial management in colleges and universities is not a simple technical upgrade. Therefore, colleges and universities should seize development opportunities, make full use of the advantages of big data technology, further promote the informatization construction of financial management, deeply explore the value of informatization construction, and form a more systematic, scientific, and efficient financial management model to support the sustainable and stable development of colleges and universities. It is believed that in the future, the informatization construction of financial management in colleges and universities still needs to be supported by data, continuously keep up with cutting-edge technologies such as big data and artificial intelligence, and focus on the construction of a dynamic risk early warning mechanism. This will ensure the establishment of a more complete governance system and guarantee the integrity and validity of financial information. Only in this way can the financial management of colleges and universities continuously break through bottlenecks and improve quality and efficiency under the background of informatization.

Funding

2023 Guangdong Provincial Educational Science Planning Project (Higher Education Special Program) “Research on the Talent Cultivation Path of Vocational Undergraduate Programs in Finance, Economics and Trade Based on Digital Transformation” (2023GXJK653)

Disclosure statement

The author declares no conflict of interest.

References

- [1] Jiang M, Su N, 2024, Research on the Dilemmas and Optimization Paths of Informatization Construction in College Teaching Management under the Background of Big Data. *Education Informatization Forum*, (12): 27–29.
- [2] Liu S, 2024, Research on the Path of Informatization Construction in College Financial Management under the Background of Big Data. *Economic Outlook around the Bohai Sea*, (10): 131–134.
- [3] Zhang ZH, 2024, Research on Informatization Construction of Financial Management in Public Institutions under the Background of Big Data. *China Venture Capital*, (25): 91–93.
- [4] Huang Y, 2024, Research on Informatization Construction of Financial Management in Colleges and Universities under the Background of Big Data. *Money China*, (18): 102–104.
- [5] Su YH, 2024, Analysis on the Construction of Informatization System for College Financial Management from the Perspective of Big Data. *Business 2.0*, (16): 102–104.
- [6] Guan L, 2024, Analysis on the Informatization Construction of College Archive Management under the Background of Big Data. *China Management Informatization*, 27(10): 196–198.
- [7] Chen DL, 2024, Research on Informatization Construction of Financial Management in Public Institutions under the Background of Big Data. *Accounting Learning*, (12): 1–4.
- [8] Liu LP, 2024, Exploration on the Informatization of College Financial Management under the Background of Big Data. *Caixun*, (08): 186–188.
- [9] Xie JF, 2024, Research on the Informatization Construction of Enterprise Financial Management under the Background of Big Data. *Money China*, (03): 78–80.
- [10] Tan L, 2023, Informatization Construction of Enterprise Financial Management under the Background of Big Data. *Inner Mongolia Science Technology & Economy*, (24): 67–70.
- [11] Wang CY, 2023, Discussion on the Informatization Construction of Financial Management in Public Institutions under the Background of Big Data. *Investment & Entrepreneurship*, 34(24): 52–54.
- [12] Chen MY, 2023, Research on the Path of Informatization Construction in College Teaching Management under the Background of Big Data. *Time Report (Benliu)*, (12): 140–142.
- [13] Sun TJ, 2023, Path of Informatization Construction in College Teaching Management under the Background of Big Data. *China New Telecommunications*, 25(23): 106–108.
- [14] Kang CC, 2023, Exploration on the Informatization Construction of College Archive Management under the Background of Big Data. *Time Report (Benliu)*, (08): 116–118.
- [15] Wu YP, Jin DD, Su H, et al., 2023, Research on the Informatization Construction of College Teaching Management under the Background of Big Data. *Shanxi Youth*, (09): 172–174.

Publisher's note

Bio-Byword Scientific Publishing remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.