Journal of Education and Educational Research
ISSN: 2957-9465 | Vol. 16, No. 2, 2025

Dilemmas and Breakthroughs in Digital Technology Empowering the Management of Higher Education in China

Qiucheng Yu

Yancheng Teachers University, Yancheng Jiangsu, 224007, China

Abstract: The integration of technology and educational management is not a simple superimposition of tools, but a complex systematic project involving conceptual reshaping, structural adaptation, and institutional innovation. In the process of practical implementation, the inertial force of traditional management thinking, structural barriers in the original institutional mechanisms, practical constraints in the application of technology itself, and the implicit shortcomings in the digital literacy of stakeholders have become multiple real-world obstacles on the path to empowerment. Many digital projects incur significant costs but fail to touch the core of management, with their expected benefits not fully realized. Therefore, accurately identifying the deep-seated factors behind these dilemmas and systematically exploring feasible breakthrough paths are of extremely important and practical significance for guiding the digital transformation of higher education management in China steadily and profoundly, and for truly turning its historical inevitability into tangible results.

Keywords: Digital Technology; Higher Education Management; Dilemmas; Breakthroughs.

1. Introduction

Contemporary society is situated within a new era defined by digitalization and intelligence, in which technological advancements are fundamentally reshaping social structures and operational mechanisms across all domains. Against this macro-background, China's higher education sector confronts the dual imperatives of deepening its connotative development and modernizing its governance systems and capabilities. Digital technology, distinguished by its inherent strengths in data processing, workflow optimization, and intelligent decision-making, is increasingly regarded as a pivotal force for driving qualitative, efficient, and dynamic reform in higher education management. The potential of such technological empowerment is substantial and multifaceted. Indeed, the benefits of integration are widely recognized across numerous dimensions from enhancing managerial precision and ensuring the scientific rigor of decision-making processes to optimizing resource allocation and promoting equity in educational service delivery. Nevertheless, the pathway to achieving this transformation remains complex and fraught with challenges.

2. Navigating the Digital Imperative

2.1. The Engine for Efficiency and Scientific Decision-Making

Digital technology has become a powerful force driving a qualitative leap in higher education management. Its significance lies in transforming traditional management methods reliant on personal experience and habitual processes into a new stage driven by data and intelligence. In terms of management efficiency, technological applications facilitate in-depth improvements in administrative processes and enable automated restructuring, freeing human resources from repetitive tasks and significantly reducing internal organizational friction. More importantly, it shifts decision-making from subjective judgment to objective fact-based approaches. Through the aggregation, mining, and analysis of vast amounts of teaching, research, and administrative data, managers can accurately predict internal operational patterns, identify potential issues, and seize development opportunities, enabling forward-looking and scientific planning [1]. This data-driven insight allows organizations to dynamically and precisely allocate resources (such as faculty, facilities, and funding) that maximizing the comprehensive benefits of limited educational resources. These profound internal and external changes collectively form a solid foundation and continuous driving force for higher education management systems to address future complexities and achieve connotative development.

2.2. Forging a Path to Governance Modernization

Digital technology provides a pathway to modernize the governance system and capabilities of higher education. Its key role lies in fundamentally addressing issues such as fragmentation, information barriers, and slow responses in traditional governance structures, thereby injecting strong momentum into the creation of a collaborative, efficient, transparent, and standardized modern governance framework. By breaking down data silos between departments, technological applications establish a solid foundation for information sharing and business synergy. Previously isolated management processes can now be integrated into an organic whole, significantly improving cross-departmental collaboration efficiency and macro-level coordination. In terms of governance capabilities, digital technology makes management processes more precise and transparent. Through dynamic collection and analysis of data across all operational processes, governance entities can monitor overall performance in real time, enabling quantitative evaluation and management of key areas such as resource allocation, teaching quality, and academic development. This greatly enhances risk prediction and scientific decision-making. This data-driven governance approach not only

makes management rules and operational processes visible but also establishes effective internal supervision and accountability mechanisms. Ultimately, digital technology is gradually transforming the governance ecology of higher education, transitioning from a state dominated by experience and administrative means to a new governance paradigm supported by data, collaboration, and institutional rules, thereby laying a stable foundation for the long-term sustainable development of higher education

3. Confronting the Digital Dilemmas

3.1. The Conceptual Chasm

A profound conceptual inertia constitutes a fundamental barrier to the digital transformation of higher education management. Many administrators remain entrenched in traditional paradigms, perceiving advanced technology merely as electronic substitutes for manual tasks rather than as strategic enablers of governance model transformation. This cognitive gap leads to substantial investments in hardware and software systems without corresponding evolution in management philosophies and operational approaches, resulting in superficial technological implementation. More fundamentally, managers accustomed to experience-based, linear decision-making instinctively resist the uncertainties, collaborative demands, and rapid iterations inherent in data-driven environments. Their tendency to equate digitalization with mere computerization of existing processes reflects a failure to recognize the necessary underlying reengineering of workflows and paradigm shifts. A fragmented perspective, marked by the divorce of technological tools from managerial transformation, reduces digital initiatives to mere electronic replicas of conventional workflows. These digital facades consequently fail to penetrate core governance systems or unleash technology's potential for fostering collaboration, optimizing resources, and stimulating innovation, thereby fundamentally impeding the modernization of higher education management.

3.2. The Structural Inertia

The institutional barriers faced by digital technology in empowering higher education management have become structural contradictions difficult to overcome in the transformation process. Long-standing departmental segmentation and functional barriers under traditional management models directly lead to the decentralized construction of information systems and disparate data standards. Vast amounts of business data are trapped within closed systems, unable to interconnect or share, making "data silos" a common phenomenon. This fragmented structure hinders cross-departmental business integration, resulting in complex communication processes and significant coordination resistance for matters involving multiple units. A deeper issue lies in the contradiction between the holistic governance paradigm required in the digital era and the organizational forms primarily reliant on bureaucracy. Existing approval procedures and accountability models fail to meet the flattened, networked, and rapid response demands of technological applications. Moreover, the top-level design and coordinated management mechanisms needed to support systemic change are often lacking, with no sufficiently authoritative institution to uniformly plan and strongly coordinate digital resources, data standards, and construction specifications across the institution [2]. Additionally, institutional support for deep digital scenarios is severely inadequate, with regulations on data ownership, open sharing, security management, and business process reengineering yet to be established. Many innovation attempts cannot proceed due to the lack of clear institutional support. These institutional constraints fundamentally inhibit the full transformation of technological potential into governance effectiveness.

3.3. The Application Paradox

In terms of technological application, the integration of digital technology and higher education management faces numerous practical obstacles. Existing information systems, often developed independently by different vendors at different times, result in diverse platforms, architectures, and data standards, creating a large number of incompatible heterogeneous systems. This fragmented infrastructure inherently complicates cross-platform data exchange and business process connectivity. When new technologies are introduced, compatibility issues with legacy systems often arise. The most troublesome aspect is that the specific operational processes within many intelligent algorithms are opaque, making it difficult for general managers to understand and review their decision-making processes and outcomes. Like a "black box," this leads to a lack of trust in algorithmic decisions and low acceptance rates. Furthermore, technological investments tend to prioritize hardware over software and emphasize initial construction over subsequent maintenance. Many systems do not receive continuous technological updates and functional improvements after deployment, leading to a gradual decline in their effectiveness over time. The cultivation of the application ecosystem is also relatively weak, with training for managers and frontline teachers on the use of technological tools often superficial. Many advanced functions remain unexplored and underutilized. The disconnections and obstructions in the technological application process largely determine the reach of digital technology in higher education management by governing which areas it can touch, the depth of its penetration, and its overall sustainability.

4. Charting the Breakthrough Pathways

4.1. Mindset Shift: From Analog to Digital

To truly advance higher education management toward digital transformation, the primary task is to fundamentally change the mindset of management subjects, elevating the application of technology from a tool to a governance philosophy. This means not merely viewing digitalization as an auxiliary tool for improving efficiency but as a strategic pivot for leading organizational change and reconstructing operational rules. This shift in thinking requires managers to adopt a holistic systemic perspective, transcending existing departmental limitations and examining the value logic and implementation paths of technological integration from the standpoint of the institution's overall development. Equally important is establishing a service orientation centered on the experience of teachers and students, basing the starting and ending points of technological design on the real needs of teaching, research, and learning processes, and ensuring that digital construction consistently revolves around the fundamental mission of education [3-4]. On this basis, an

open and shared data culture should be cultivated within the organization, integrating data asset awareness into daily management and making fact-based, data-driven decision-making a work habit. It is particularly crucial to actively adapt to new institutional innovations and process reengineering in the digital environment, proactively breaking the inherent path dependence of bureaucratic systems, and actively building a new form of flattened, collaborative, and intelligent governance. Only when such profound cognitive changes take root across the entire system, and only when digitalization transitions from jargon to a shared language and mindset, can technological empowerment truly reach the nerve endings of management and lay a solid ideological foundation for cultivating a new paradigm of higher education governance in the digital age.

4.2. System Overhaul: Institutional Restructuring

To establish a governance system that safeguards digital transformation, it is necessary to fundamentally change the existing organizational structure, power distribution, and institutional arrangements, creating a rigid framework that supports the comprehensive and deep integration of technology. The key to building this system is forming a strong coordination mechanism, establishing specialized institutions with actual decision-making power and resource allocation capabilities to break down long-standing departmental barriers and professional divides, and implementing unified planning and standard setting for digital infrastructure construction, data resource management, and application system development across the institution. Closely related is the need to deeply reform traditional organizational operation modes, promoting a shift in management structure from vertical and closed to flat and open, clearly defining new power-responsibility relationships and collaboration processes for various departments in the digital environment, and providing organizational support for cross-domain data sharing and business collaboration. In terms of institutions, there is an urgent need to form a complete data governance system, clarifying the responsible parties and operational norms for various stages such as data collection, storage, use, and disclosure, and maximizing the value potential of data elements while ensuring data security and personal privacy. It is also necessary to systematically promote the revision or creation of existing regulations, ensuring that the operational rules of core businesses such as personnel management, financial reimbursement, teaching evaluation, and research services all align with the new requirements of digital governance. Particularly important is establishing an evaluation guidance mechanism that incorporates digital transformation achievements into performance assessments, using appropriate indicator design to encourage management units and personnel at all levels to spontaneously embrace change and actively participate. Only by building such a multi-layered, step-by-step, mutually supportive governance system can higher education management steadily and smoothly move toward a digital future, providing the necessary stability and security for various digital innovations, and enabling continuous and in-depth development within stable, reliable, and predictable institutional tracks.

4.3. Technology Foundation: Platform Integration

Building an integrated, intelligent, and secure digital platform is a necessary technical condition for supporting the holistic transformation of higher education management. The focus of this platform's construction is to completely abandon the previous fragmented and isolated system-building approach, replacing it with the creation of a unified digital base that can penetrate all business links. By constructing an institution-wide data mid-platform and business mid-platform, the scattered data resources and general business capabilities of various departments are centralized and standardized, forming a technical core that can provide unified services to various applications across the institution, fundamentally solving the problems of information silos and redundant construction. After achieving comprehensive interconnection, the platform must also integrate intelligent analysis and decision support capabilities, using advanced computational models to conduct in-depth mining and real-time analysis of large amounts of collected management data, actively identifying operational patterns, predicting development trends, and detecting potential issues, thereby providing comprehensive, detailed, and forward-looking bases for various management decisions from macro-strategy to micro-operation [5]. At the same time, the platform must treat security, reliability, and controllability as a lifeline running through its entire existence, establishing a multi-dimensional protection system covering infrastructure, data flow, and application access. Strict identity verification and detailed permission control mechanisms should be used to ensure that sensitive information is not accessed beyond authority or illegally used. It is particularly important to form clear algorithm operation rules and data usage ethics norms, ensuring the reliability of intelligent processes and the comprehensibility of decision outcomes, thereby gaining the widespread trust of teachers and students. Such a platform architecture, integrating unified support, intelligent drive, and security protection, can not only provide a stable, efficient, and elastically scalable digital environment for various business scenarios such as education and teaching, scientific research, and administrative office work but also change the operational logic of management businesses at the technical level, promoting higher education management to enter a new realm of modern governance driven by data guidance, intelligent collaboration, and secure controllability.

5. Conclusion

Digital technology driving the development of higher education management in China is an important but complex, realistic, and long-term systematic project. As discussed in this article, it is not a smooth, linear process where introducing a technological tool solves everything, but rather a governance reform. We must recognize the enormous potential of digital technology to enhance management efficiency, improve governance systems, and promote educational equity, while also facing the practical difficulties it encounters in conceptual understanding, institutional mechanisms, technological application, and stakeholder capabilities. Various dilemmas are intertwined and mutually influential, collectively constraining the degree and scale of technological empowerment. Faced with these difficulties, piecemeal improvements are ineffective. Only by adopting systematic breakthrough paths, treating conceptual reshaping

as the guide, institutional innovation as the guarantee, platform construction as the foundation, and capacity strengthening as the pillar, and achieving comprehensive, multi-level coordinated advancement, can we break through the impasse. Looking ahead, the digital transformation of higher education management in China aims to achieve a new governance paradigm led by data, centered on the experience of teachers and students, and characterized by intelligence and efficiency. This requires managers to have forward-looking vision and a spirit of reform, continuously exploring and experimenting in the integration of technology and education, thereby revitalizing China's higher education cause with new vitality and energy in the digital era.

References

[1] H.R. Ma. Exploration of Graduate Education Management Models Based on Innovation Ability Cultivation. Science and Education Interaction, Vol. 20 (2025), p.77-81.

[2] R. Luo. Problems and Optimization Strategies in Higher Education Management under the Background of Big Data. Journal of Suzhou Vocational University, Vol. 36 (2025) No. 3, p.81-85.

[3] J. Li, Y. Zhao. A Humble Discussion on the Path of Higher Education Informatization Promoting Teaching Management Reform. National Common Language Teaching and Research, Vol. 8 (2025), p.7-9.

[4] L.Y. Wang. Value Examination, Basic Follows, and Action Directions of Artificial Intelligence Empowering Higher Education Reform. Road to Success, Vol. 23 (2025), p.13-16.

[5] China Higher Education Association Higher Education Management Branch. Journal of National Academy of Education Administration, Vol. 8 (2025), p.97-98.