

Data Governance in Chinese Higher Education: A Systematic Literature Review

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DOI Link: <http://dx.doi.org/10.6007/IJARBSS/v15-i12/27267>

Published Date: 16 December 2025

Abstract

This study conducts a systematic literature review of 135 Chinese-language journal articles on data governance in higher education published between 2015 and 2024. Applying the PRISMA framework and Snyder's methodology, the review examines publication trends, research methods, and thematic focuses. The findings indicate that while scholarly attention to data governance has increased—driven by policy reforms, digital transformation, and institutional demands—existing research remains largely conceptual and system-oriented, with limited empirical analysis and insufficient attention to user participation. Five major challenges are identified: data quality inconsistencies, limited faculty data literacy, siloed data systems, underdeveloped data culture, and weak security mechanisms. Compared to international studies that emphasize behavioral engagement, trust, and integration, Chinese research still lacks user-centered perspectives. This review contributes by mapping the current research landscape, revealing critical blind spots, and offering practical implications for improving governance effectiveness in Chinese universities, particularly through more inclusive, integrated, and behaviourally responsive approaches. This review also forms the basis for a separate conceptual modeling paper submitted to the same conference.

Keywords: Data Governance, Higher Education, Systematic Literature Review, Chinese Universities, Data Literacy

Introduction

In the era of digital transformation, data has become a strategic asset for higher education institutions (HEIs) worldwide. Universities are increasingly embedding data into teaching, research, administration, and strategic planning to enhance decision-making and institutional effectiveness. Internationally, the use of data analytics and learning management system (LMS)-driven interventions—such as predictive modeling, personalized feedback, and content accessibility tools—has demonstrated significant improvements in student engagement and institutional responsiveness (Ifenthaler & Yau, 2020; Almufarreh et al., 2021; Herodotou et al., 2020). These advancements illustrate how data-driven ecosystems are reshaping

governance frameworks in higher education through integrated platforms and user-centered strategies.

In China, the development of data governance in HEIs has been strongly guided by national policies such as the Education Informatization 2.0 Action Plan (2018) and Education Modernization 2035, which emphasize smart campus construction, platform integration, and digital empowerment of educational management. Alongside this top-down digital agenda, Chinese universities have adopted a wide range of institutional mechanisms to manage data quality, improve data sharing, and safeguard data security. However, with the rapid expansion of data volume and complexity—especially unstructured and cross-departmental data—Chinese HEIs are also facing challenges including fragmented systems, data silos, limited user participation, and inconsistent data standards.

While Chinese scholars have explored various aspects of data governance—from policy design to technical architecture—existing research tends to focus on macro-level structures and institutional capacity. There remains a lack of comprehensive synthesis that evaluates how Chinese HEIs are addressing core governance challenges such as data literacy, data integration, and user engagement. Moreover, compared to international studies that increasingly emphasize the role of stakeholder behavior, trust, and digital readiness, Chinese research has underexplored the human and cultural dimensions of data governance.

To address this gap, this study conducts a systematic literature review (SLR) of 135 peer-reviewed journal articles published between 2015 and 2024, focusing specifically on the Chinese higher education context. Drawing on the PRISMA framework and Snyder's (2019) methodology, this review aims to map the current state of data governance research, identify key thematic concerns, and examine persistent institutional challenges. This review is guided by the following research questions:

RQ1: What are the dominant themes and concerns in Chinese-language studies on data governance in higher education between 2015 and 2024?

RQ2: What methodological approaches have been used to study data governance in Chinese HEIs, and what are their limitations?

RQ3: What critical challenges—such as data quality, culture, literacy, and security—are repeatedly identified in the literature?

RQ4: How does the Chinese data governance landscape compare with international research trends in terms of user participation and institutional responsiveness?

Methodology

Following the review methodology of Snyder (2019), this study ensures academic rigor by adopting the PRISMA framework. The detailed structure of this paper is illustrated in the corresponding Figure 1.

This study focuses on data governance in Chinese higher education institutions (HEIs). The primary databases used for the literature search are CNKI and Wanfang Database, with the search language restricted to Chinese. The publication period is set between 2015 and 2024. To ensure search comprehensiveness, Boolean logic was applied as follows: ("data

governance") AND ("China" OR "Chinese") AND ("HEIs" OR "university" OR "higher education")

For the initial screening, the EasyScholar online plugin was used to filter the retrieved articles, resulting in a preliminary selection of 150 papers. The inclusion criteria were defined as follows:

- a. **Published in journals indexed by CSSCI or recognized Chinese core journals.**
- b. **Exclusion of duplicate studies identified across databases.**

For document management, Zotero was used to organize the selected articles. The abstracts and introductions of all 150 papers were carefully reviewed, and studies that were irrelevant to the research topic or did not meet the inclusion criteria were excluded based on the following exclusion criteria:

- a. **Studies that merely mention "data governance" without treating it as a primary research focus.**
- b. **Conference papers, book chapters.**

After applying these criteria, a final set of 135 papers was included in the study. The detailed screening process is presented in the corresponding figure 2

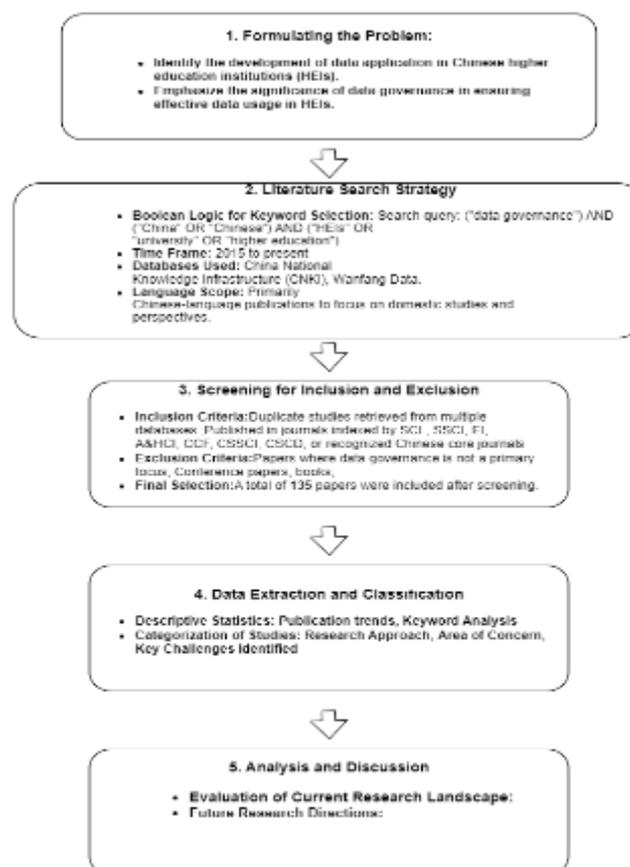


Figure 1. Flowchart

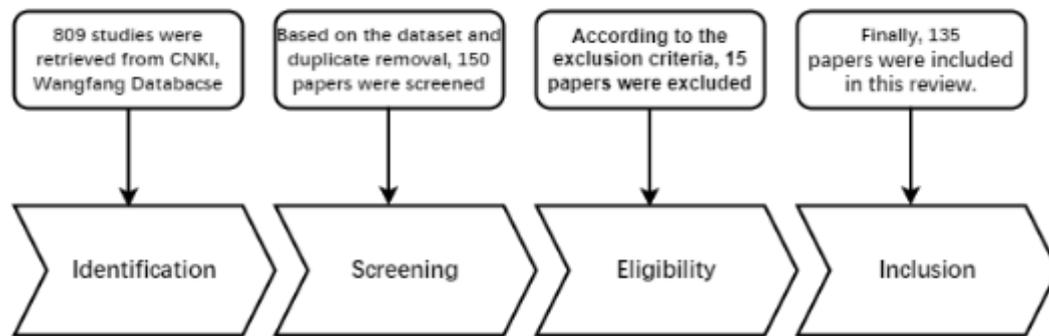


Figure 2. PRISMA Flow

Descriptive Statistics of the Reviewed Literature

Publication Trends by Year

A total of 135 articles were included in the final analysis. As shown in Figure 3, the number of publications on university data governance in China has increased steadily since 2020, reflecting the field's growing prominence. This upward trend is primarily driven by three factors:

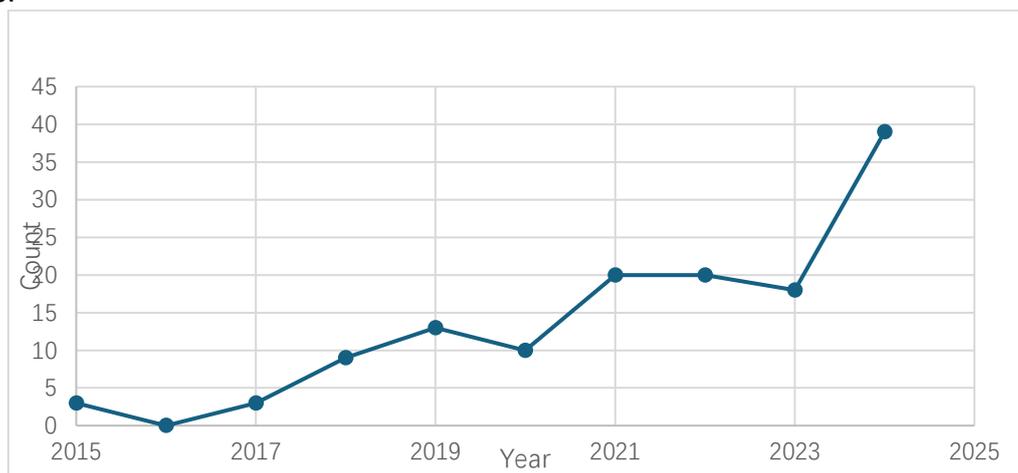


Figure 3. Publication Trends by Year

Technological Drivers: Advances in big data, artificial intelligence, and smart campus initiatives have expanded the application of data governance in university operations (Li & Wan, 2023; Song, 2023).

Managerial Demand: Growing needs for data value realization, resource optimization, and digital transformation of educational infrastructures such as libraries and laboratories have intensified the focus on governance frameworks (Zhou, 2023; Li & Wan, 2023).

Policy Guidance: National strategies on education informatization and digital transformation have further catalyzed universities to strengthen their data governance mechanisms (Jiang, 2023).

These drivers have collectively reinforced data governance as a critical theme within China's broader educational digitalization agenda.

Word Cloud Analysis

To identify key concepts across the reviewed studies, this research employed the online tool WordClouds to visualize recurring keywords. Figure 4 presents the resulting word cloud.

Some studies have focused on data governance in specific university functions. In the field of library data governance, Song Lingchao et al. (2024) conducted a content analysis of the data governance solutions provided by five library service companies. By integrating findings from six university libraries, they identified key data governance objects, goals, functions, and models, offering recommendations for improving library data governance in higher education institutions. In the domain of financial management, Liao Qing (2024) examined how universities can leverage digital technologies to enhance financial governance, optimize business processes, and improve data governance capabilities to modernize and streamline financial management. In student records and archive management, Wang Ke et al. (2024) developed a data governance framework for student records that aligns with the demands of the digital era. Their study addressed key challenges such as data aggregation, data quality, data security, and data coordination, proposing governance strategies to improve efficiency and achieve intelligent management of student records.

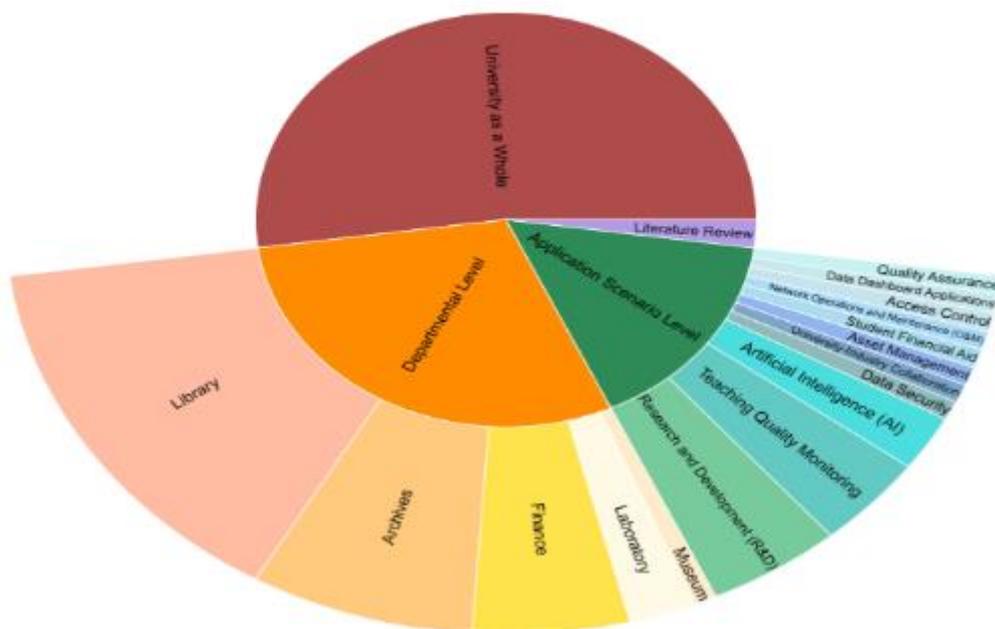


Figure 5. Research Themes

Other research focuses on specific operational processes. For instance, Tu Wei (2017) investigated the data analysis of university campus card systems, highlighting the central role of data governance in improving data analysis. The study proposed strategies to optimize campus card data governance, enhance data quality and application value, and promote data sharing and decision support. Meanwhile, Hu Shuixing et al. (2023) focused on teaching quality monitoring, constructing teacher evaluation indicators based on a literature review. Through questionnaire surveys, they examined how various factors influence faculty satisfaction with data governance in teaching quality management and proposed practical pathways for improving teaching quality data governance.

Research Methods

As shown in **Figure 6**, most reviewed studies adopt a theoretical approach, relying primarily on literature analysis to identify governance challenges and propose conceptual frameworks. For instance, Dong Jingxiang (2024) examined dark data governance in university libraries, while Yuan and Lin (2022) analyzed the value logic of big data in higher education to derive policy recommendations.

With the rise of institutional-level digital initiatives, case studies have emerged as a common method. Qiu Kun et al. (2022) analyzed laboratory data governance at Nanjing University of Posts and Telecommunications, and Jiang Guangxue et al. (2024) investigated institutional governance strategies at Peking University. Similar explorations include Mao Wenhui et al. (2022) on data sharing practices at Huazhong University of Science and Technology.

Some studies adopt a comparative perspective, drawing on international practices to inform domestic reforms. Fu Shuqiong (2019) reviewed U.S. federal open data strategies, and Peng Xuetao et al. (2017) highlighted how American universities integrate technology and management in their governance frameworks. Liu Xiaotong et al. (2020) analyzed Vanderbilt University's strategic use of data governance to enhance institutional decision-making.

In recent years, empirical methods—though still limited—have gained traction. Liu Guifeng et al. (2022) conducted expert interviews on research data use, and Su Zhifang et al. (2024) combined web surveys and interviews to assess library data governance in Chinese universities.

A few scholars have begun to employ quantitative and mixed-method approaches. For example, Fang Dandan et al. (2024) used the TOE framework to examine the impact of technological, organizational, and environmental factors on governance performance. Wang Shouzhong (2024) conducted a multi-university survey on student data archives and proposed a multi-stakeholder governance model.

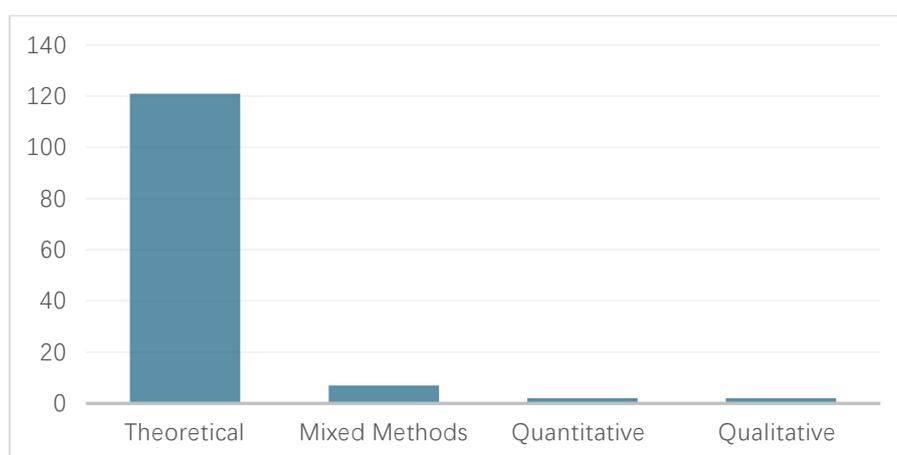


Figure 6. Research Approach

Key Challenges of Data Governance in HEIs

Despite increasing attention to data governance in Chinese higher education institutions (HEIs), several persistent issues limit its effectiveness. These challenges primarily include data quality, data literacy, data silos, data culture, and data security.

Ensuring High-Quality Data

Data quality forms the foundation of effective governance, yet many HEIs face problems such as inconsistencies, incompleteness, and outdated records (Han, 2019; Li Ruihua, 2022). Fragmented data standards across departments—often shaped by divergent software systems and administrative practices—hinder integration (Qiu, 2024). For example, research databases emphasize publication outputs while overlooking interdisciplinary and student-driven work (Li Xiaojie, 2020), and student data systems fail to capture learning behaviors or extracurricular engagement (Cui & Que, 2020). The absence of data lifecycle management further leads to redundancy, limited historical access, and low system trust (Chen, 2023; Alzahrani, 2023), weakening faculty confidence in using data for academic decisions.

Strengthening Data Literacy

Faculty data literacy remains insufficient for supporting data-driven teaching or administration (Dong, 2024; Lin Yanmei, 2023). Many educators view data as mere administrative records rather than pedagogical tools (Qiu, 2022). Tasks such as data cleaning or integration add workload burdens, lowering motivation to engage with data systems (Mao et al., 2022). Disparities in digital proficiency are evident, with some instructors relying on paper records and lacking training in analytics tools (Zheng, 2020). Limited institutional support for faculty development exacerbates these gaps.

Overcoming Data Silos

Data silos arise from a lack of centralized planning and standardized processes, causing departmental fragmentation (Xu et al., 2019; Mao, 2022). Departments often treat data as proprietary, resisting interdepartmental sharing due to concerns over autonomy or misinterpretation (Zhang Fang, 2022; Zhou Wei, 2021). Additionally, unclear access policies and bureaucratic procedures deter faculty from using institutional datasets (Wang Jian et al., 2024; Yang, 2024). Without clear governance mechanisms, collaboration and data integration remain limited.

Cultivating a Data-Driven Culture

A weak data culture constrains the institutionalization of governance. Academic and administrative units rarely promote open data sharing (Zhang Jun, 2020), while governance efforts often prioritize evaluation and rankings, eroding trust (Zhou, 2022; Zheng, 2020). Faculty may dismiss insights that contradict experience, and institutional resistance persists due to misaligned incentives and limited governance support (Li Bin & Hu, 2021; Cai et al., 2023). Policy and technology mismatches increase user burden and reduce engagement (Yang, 2024; Wang, 2024).

Enhancing Data Security

Security concerns directly affect faculty trust in data systems. Universities face threats from cyberattacks, unauthorized access, and data leaks, often due to outdated infrastructure (Li Ruihua, 2022; Peng, 2017). Regulatory gaps exist, as national privacy laws rarely address

higher education's specific needs (Qu, 2023), particularly in research and student data use. AI applications and excessive monitoring raise concerns over misuse (Tian, 2020). The widespread outsourcing of data services further complicates oversight and raises trust issues (Kim et al., 2023; Hillman, 2023).

Discussion

International Insights into Data Governance

The findings of this review reveal clear distinctions between Chinese and international research on data governance in higher education. International studies—particularly from the United States, the United Kingdom, and parts of Southeast Asia—demonstrate a more mature integration of data governance with educational performance, user participation, and ethical accountability (Beerkens, 2022; Omar & Almaghthawi, 2020). These studies often emphasize behavioral variables such as data trust, user engagement, and institutional readiness, supported by quantitative validation and stakeholder feedback (Hillman, 2023; Hmoud et al., 2023).

In contrast, Chinese research remains largely conceptual, policy-driven, and system-centered. Most studies focus on organizational structures and data infrastructure, with limited exploration of how data governance affects actual data usage among faculty and students. Although recent publications have begun referencing international strategies, there is still a notable gap in empirical testing and theoretical modeling that incorporates individual user perspectives.

Theoretical and Practical Implications

From a theoretical standpoint, this review highlights the need to shift from a structural-institutional focus to a more user-centered, behaviorally informed understanding of data governance. Few studies in China employ established models such as TAM, UTAUT, or TOE to explore the adoption and behavioral dynamics of data use in educational settings. Addressing this gap may provide a more holistic framework for examining how governance practices influence data literacy, trust, and participation at the user level.

Practically, Chinese universities can draw on international experiences to strengthen faculty engagement and data-driven decision-making. Institutions should prioritize capacity building, including faculty training in data analytics, cross-departmental coordination, and the development of clear data-sharing protocols. Cultivating a transparent and participatory data culture may significantly enhance the effectiveness of governance strategies and facilitate long-term digital transformation in higher education.

Conclusion

This systematic review examined 135 Chinese-language studies on data governance in higher education published between 2015 and 2024. Through a structured PRISMA-based methodology and descriptive analysis, the review identified key research patterns and persistent challenges.

Findings indicate that most existing research in China remains conceptual and system-oriented, with limited empirical grounding. Thematic analysis revealed five recurring challenges: data quality inconsistencies, low faculty data literacy, siloed data systems,

underdeveloped data culture, and insufficient data security measures. While some progress has been made in areas such as institutional integration and case-based exploration, the overall governance landscape still lacks user participation and behavioral alignment.

From a practical standpoint, the review suggests that enhancing data governance in Chinese universities requires a more user-centered approach. Strengthening faculty training, promoting cross-departmental data sharing, and aligning institutional policies with teaching and research practices are key to improving governance effectiveness. Furthermore, addressing structural bottlenecks—such as data silos and unclear governance roles—can create more agile and responsive data ecosystems.

Moreover, the review highlights the importance of exploring the interactive mechanisms between institutional data governance and individual-level data usage, particularly in how governance frameworks shape user participation, trust, and decision-making behavior—an area that remains underexplored in current Chinese scholarship.

Despite its contributions, this review has several limitations. The analysis was restricted to Chinese-language journal articles indexed in CNKI and Wanfang, excluding grey literature and international sources. Additionally, the study applied a qualitative synthesis without quantitative meta-analysis, limiting the ability to compare variable effects across studies. These constraints may affect the generalizability and depth of the findings, highlighting the need for broader and more diverse research in the future.

Acknowledgments

This study constitutes the initial stage of a broader research project on data governance in Chinese higher education. A subsequent conceptual modeling paper that extends the findings of this review has been submitted separately to the same conference.

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