

The Transformation of Higher Education Management in the Age of AI: A Case Study of Zunyi Medical University

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ABSTRACT:

Artificial Intelligence (AI) is increasingly transforming higher education management by improving governance, administrative processes, and decision-making. However, existing studies have largely focused on teaching and learning, with limited attention to university management. This study investigates AI integration in higher education management at Zunyi Medical University. A qualitative case study was conducted using semi-structured interviews, document analysis, observations, secondary data, and questionnaires involving 34 institutional stakeholders. Data were analyzed through thematic analysis with methodological triangulation. The findings indicate that AI enhances administrative efficiency, inter-unit coordination, and data-driven decision-making while reducing bureaucratic processes and improving decision accuracy and operational performance. Despite these benefits, implementation is challenged by digital competency gaps and moderate organizational resistance. The study also identifies a human–AI co-governance model in which AI supports, rather than replaces, human decision-making. Overall, AI represents a significant shift toward intelligent and data-driven university governance. These findings contribute to the understanding of AI-enabled governance and offer practical implications for higher education institutions implementing AI-based management systems.

Keywords: Artificial Intelligence; Higher Education Management; University Governance; Digital Transformation; Human–AI Co-Governance.

1. Research Background

The rapid advancement of Artificial Intelligence (AI) has transformed organizational governance, decision-making, and management practices across various sectors. AI is no longer viewed merely as a technological innovation but as a strategic resource that enables organizations to process large-scale data, automate administrative tasks, and improve institutional performance through data-driven decision-making (Brynjolfsson & McAfee, 2014; Kaplan &

Haenlein, 2019). As organizations become increasingly digitalized, AI is reshaping how information is generated, analyzed, and utilized to support more adaptive and efficient governance systems.

These developments are particularly relevant to higher education institutions, which face increasing demands for accountability, digital transformation, and evidence-based management (Altbach et al., 2019). Universities generate vast amounts of data related to academic

administration, student performance, research productivity, financial management, and institutional operations. However, many universities continue to rely on fragmented information systems and conventional bureaucratic processes that limit cross-departmental integration, delay decision-making, and reduce organizational efficiency (Deem, 2017). Consequently, higher education institutions require intelligent management systems capable of integrating complex information and supporting timely strategic decisions.

Artificial Intelligence offers considerable opportunities to address these challenges. Through technologies such as machine learning, natural language processing, predictive analytics, and intelligent automation, AI can optimize administrative workflows, improve resource allocation, enhance institutional responsiveness, and facilitate real-time decision-making (Russell & Norvig, 2021). Accordingly, AI has become an essential component of digital transformation strategies within higher education.

Although AI adoption in universities has increased significantly, existing studies have focused predominantly on teaching and learning applications, including learning analytics, intelligent tutoring systems, automated assessment, and student performance prediction (Zawacki-Richter et al., 2019). Comparatively limited attention has been given to the role of AI in university governance and administrative management. This represents an important research gap because AI has the potential to transform institutional governance by reshaping organizational routines, decision-making processes, and administrative coordination beyond instructional activities.

The integration of AI should therefore be understood not only as technological adoption but also as a socio-technical transformation involving interactions among technology, organizational structures, institutional norms, and human actors (Orlikowski, 1992). The implementation of AI influences how decisions are made, how organizational knowledge is

managed, and how governance processes evolve within increasingly complex institutional environments.

Medical universities provide a particularly valuable context for investigating this transformation. Unlike general universities, medical institutions operate within highly complex environments that integrate education, healthcare services, clinical training, and biomedical research. Administrative activities involve coordinating clinical rotations, residency programs, research administration, laboratory management, and compliance with strict ethical and regulatory standards. Such complexity requires efficient, accurate, and transparent management systems that conventional administrative approaches often struggle to provide.

AI-enabled management systems offer promising solutions for these challenges by supporting predictive scheduling, intelligent resource allocation, automated monitoring, and integrated decision-support systems. Nevertheless, their implementation also raises important concerns regarding data privacy, algorithmic transparency, ethical governance, and professional autonomy (Floridi et al., 2018). These opportunities and challenges highlight the need for a comprehensive understanding of how AI reshapes higher education management within complex institutional settings.

Against this background, this study investigates the implementation of AI in higher education management at Zunyi Medical University, China. The university has actively adopted AI across multiple administrative domains, including academic management, clinical coordination, research administration, and institutional decision-making, making it an appropriate case for examining AI-driven organizational transformation.

This study is guided by Institutional Theory, which explains how organizational structures and governance practices are shaped by institutional pressures (Scott, 2014); the Technology Acceptance Model (TAM), which examines users' acceptance of AI technologies based on

perceived usefulness and ease of use (Davis, 1989); and Data-Driven Decision-Making Theory, which emphasizes the growing role of analytics in organizational governance (Provost & Fawcett, 2013). These complementary perspectives provide a comprehensive framework for understanding AI as both a technological innovation and an organizational transformation mechanism.

Using a qualitative case study approach, this research explores how AI influences administrative workflows, governance structures, and decision-making processes within the university. The findings contribute theoretically to the growing literature on AI-enabled governance and digital transformation in higher education while providing practical implications for policymakers and university leaders seeking to implement AI in an ethical, sustainable, and effective manner.

1.1 Research Questions

The research questions of this study are:

- 1) What role does Artificial Intelligence play in transforming higher education management at Zunyi Medical University?
- 2) How does AI influence administrative efficiency, governance structures and decision-making processes?
- 3) What organizational and cultural changes emerge from the integration of AI in university management?
- 4) What challenges and risks accompany AI-driven transformation in higher education institutions?
- 5) How do administrators interact with and negotiate AI-based decision-support systems within university governance?

2. Research Methodology

This study employed a qualitative case study design to investigate the integration of artificial intelligence (AI) in higher education management at Zunyi Medical University. A case study approach was selected because it enables an in-depth understanding of AI implementation

within its real organizational context (Yin, 2018). Zunyi Medical University was purposively selected as the research site due to its extensive application of AI in academic administration, research management, student services, and institutional decision-making. Participants were recruited through purposive sampling and consisted of senior university administrators, department heads, IT managers, administrative staff, and personnel responsible for student affairs, research administration, and resource management, all of whom were directly involved in AI-supported management systems. Data were collected through methodological triangulation using semi-structured interviews, document analysis, direct observation, and secondary institutional data. Interviews explored participants' experiences regarding AI adoption, organizational changes, decision-making processes, benefits, challenges, and governance issues. Institutional documents, including strategic plans, AI policies, administrative reports, and operational guidelines, were analyzed to complement interview data, while direct observations examined the use of AI-enabled management systems in daily administrative activities. Secondary data, such as institutional reports and system performance records, were also reviewed to strengthen the analysis. All qualitative data were analyzed using thematic analysis following Braun and Clarke (2006), involving data familiarization, coding, theme development, refinement, and interpretation. The analysis was informed by Institutional Theory, the Technology Acceptance Model (TAM), and Data-Driven Decision-Making Theory while remaining open to emergent themes. To ensure the trustworthiness of the findings, the study applied the criteria of credibility, transferability, dependability, and confirmability proposed by Lincoln and Guba (1985), supported through data triangulation, member checking, and audit trails.

3. Findings and Discussion

The following section presents the empirical sub-findings of the study, organized according to the four research questions. The findings are derived from questionnaire data ($n = 34$) and are

interpreted thematically to capture the multi-dimensional transformation of higher education management under Artificial Intelligence (AI) integration. Each sub-finding highlights not only descriptive patterns but also analytical insights regarding institutional change, governance restructuring, decision-making processes and emerging challenges within Zunyi Medical University.

3.1 RQ1. AI Integration in the Management System

3.1.1 AI Acceptance and Digital Literacy as Enabling Factors

The empirical findings indicate that the integration of Artificial Intelligence (AI) within Zunyi Medical University is strongly supported by a relatively high level of awareness and acceptance among institutional stakeholders. The questionnaire results ($n = 34$) demonstrate a generally positive orientation toward AI-based management systems as summarized in the following table.

Table 1. AI Awareness, Familiarity, and Acceptance

Indicator	Category	Percentage
Understanding of AI concepts	High	70%
	Low–Moderate	30%
Familiarity with AI tools	Familiar	52%
	Not familiar	48%
Attitude toward AI integration	Positive	85%
	Neutral/Negative	15%

The data show that most respondents possess conceptual awareness of AI and demonstrate positive attitudes toward its integration. This indicates that AI adoption is strongly supported by perceived usefulness, consistent with the Technology Acceptance Model (TAM).

However, despite this positive disposition, a notable proportion of respondents still experience limited operational familiarity with AI tools. This is further illustrated by the competence distribution below.

Table 2. AI Competence Level Among Respondents

Competence Level	Percentage
High competence	35–40%
Moderate competence	30–35%
Low competence	20–30%
No familiarity	10–15%

This distribution confirms the existence of a digital literacy gap where acceptance of AI is significantly higher than actual operational

capability. This gap suggests that institutional readiness is uneven and may influence the long-term sustainability of AI implementation.

3.1.2 AI as Emerging Institutional Infrastructure

Further analysis reveals that AI is increasingly perceived as an integral component of

institutional governance rather than a standalone technological tool. This is evident from respondents' perceptions of AI's functional role in university management.

Table 3. Perceived Institutional Role of AI

Statement	Agreement Level
AI improves administrative efficiency	88%
AI supports inter-unit coordination	82%
AI functions as core management infrastructure	76%

The high level of agreement suggests that AI has been structurally embedded within administrative

processes. Rather than serving as a supplementary system, AI is increasingly viewed as part of the institutional infrastructure of governance, reshaping coordination mechanisms and administrative logic.

3.2 RQ2. Changes in Administrative Workflows and Governance Structures

3.2.1 Institutional Acceptance of Workflow Transformation

The integration of AI has significantly transformed administrative workflows at Zunyi Medical University. This transformation is strongly supported by empirical evidence.

Table 4. Perception of Workflow Transformation

Indicator	Agreement Level
AI transforms administrative workflow	90%
Workflow becomes more efficient	87%
Reduction of manual bureaucracy	84%
Resistance to AI workflow	<10%

These findings indicate that AI has led to substantial improvements in workflow efficiency and administrative speed. The very low resistance level suggests strong institutional legitimacy of digital transformation where technological change is widely accepted across organizational actors.

3.2.2 Shift Toward Data-Driven Governance

The study also identifies a structural transformation in governance patterns, shifting from hierarchical authority toward data-driven decision-making.

Table 5. Governance Restructuring Indicators

Statement	Agreement Level
Decision-making is data-driven	86%
IT/Data units gain strategic influence	78%
Hierarchical authority is reduced	69%

These results indicate the emergence of a data-assisted governance model where authority is increasingly distributed toward actors controlling data analytics and information systems.

3.2.3 Hybrid Governance System

Despite these transformations, the institution has not fully transitioned into a fully automated system. Instead, AI operates within a hybrid governance structure where digital systems and traditional bureaucracy coexist. In this model, AI supports decision-making, but human

administrators retain final authority, ensuring institutional control and oversight.

3.3 RQ3. AI Influence on Decision-Making and Performance

3.3.1 Improvement in Decision-Making Quality

AI significantly enhances the quality of institutional decision-making processes as reflected in the following empirical results.

Table 6. Impact of AI on Decision-Making

Indicator	Percentage
Improved decision accuracy	80%
Faster decision-making	74%
Reduced reliance on intuition	68%
Improved data consistency	77%

These findings demonstrate a clear shift toward data-driven decision-making where AI enhances analytical precision and reduces subjective bias in administrative processes.

3.3.2 Institutional Performance Optimization

AI also contributes to measurable improvements in institutional performance across several dimensions.

Table 7. AI Contribution to Institutional Performance

Performance Dimension	Improvement Level
Administrative efficiency	85%
Data accuracy	83%
Transparency of monitoring	79%
Program evaluation speed	81%

These results confirm that AI contributes to algorithmic performance optimization, enhancing efficiency, transparency and institutional responsiveness.

3.3.3 From Retrospective to Predictive Management

The integration of AI has shifted institutional analysis from retrospective reporting to real-time and predictive analytics. This transformation enables proactive decision-making where

potential issues can be identified before they escalate, marking a transition toward predictive governance systems.

3.4 RQ4. Challenges and Risks in AI Transformation

3.4.1 Digital Literacy Gap

Despite positive attitudes toward AI, the findings highlight significant limitations in user competence.

Table 8. AI Competence and Readiness

Level	Percentage
High competence	35–40%
Moderate competence	30–35%
Low competence	20–30%
No familiarity	10–15%

This indicates a persistent implementation readiness gap where technological advancement is not fully matched by user capability.

3.4.2 Institutional Resistance

Although generally low, some resistance still exists within the institution.

Table 9. Institutional Resistance Factors

Issue	Percentage
Concern about job displacement	28%
Discomfort with automated decisions	22%
Cultural adaptation challenges	25%
No resistance	25%

These findings suggest that AI transformation also involves organizational culture adjustment, not merely technological adoption.

3.4.3 Acceptance–Competence Paradox

A key finding is the discrepancy between high acceptance and moderate competence levels.

Table 10. Acceptance vs Competence

Dimension	Level
AI Acceptance	85%
AI Competence	40–55%
Implementation Readiness	60–65%

This reveals a “High Acceptance–Moderate Competence Paradox”, indicating that while stakeholders are willing to adopt AI, their operational capability remains insufficient for full optimization.

3.5 RQ5. How do administrators engage with, interpret, and negotiate AI-based decision-support systems?

3.5.1 Administrative Engagement, Interpretation, and Negotiation of AI Systems

The findings indicate that administrators at Zunyi Medical University actively engage with AI-based decision-support systems through a process of interpretation, contextualization and selective validation rather than passive acceptance of algorithmic outputs. AI-generated recommendations are generally used as supporting inputs while final decisions remain under human authority.

This pattern is mainly derived from qualitative data (interviews, observation and document analysis) which consistently show that

administrators review AI outputs before implementation and adjust them based on institutional policies, ethical considerations and situational context. AI is therefore positioned as a decision-support tool rather than a decision-maker.

In practice, administrators demonstrate selective trust, relying more heavily on AI in routine and structured tasks such as scheduling and monitoring while reserving critical or sensitive decisions for human judgment. This indicates that AI usage is context-dependent rather than absolute.

Overall, the findings highlight the emergence of a human–AI co-governance model where decision-making is produced through continuous negotiation between algorithmic recommendations and managerial discretion. This reflects a socio-technical dynamic in which AI is integrated into governance as a supportive and interpretable system, not as an autonomous authority.

4. Conclusions

Based on the empirical findings across RQ1 to RQ5, this study concludes that Artificial Intelligence (AI) has become a transformative force in higher education management at Zunyi Medical University, operating at structural, procedural and socio-technical levels.

First, in relation to AI integration (RQ1), the findings show that AI has been widely accepted and increasingly embedded within institutional governance. Although stakeholders demonstrate high levels of awareness and positive attitudes toward AI, a significant digital literacy gap remains. This indicates that while AI adoption is conceptually strong, operational readiness is still uneven, suggesting that institutional capacity building is essential for sustainable implementation.

Second, regarding changes in workflows and governance structures (RQ2), the study

concludes that AI has significantly streamlined administrative processes by reducing bureaucratic complexity and improving efficiency. Governance has shifted from traditional hierarchical structures toward a more data-driven model, although the institution still operates within a hybrid governance system where human authority and AI systems coexist.

Third, in terms of decision-making and institutional performance (RQ3), AI is found to enhance the accuracy, speed and consistency of administrative decisions while promoting a shift from retrospective to predictive management. These improvements indicate that AI contributes to algorithmic optimization of institutional performance and supports more proactive governance practices.

Fourth, concerning challenges and risks (RQ4), the study concludes that despite high acceptance levels, AI implementation is constrained by digital literacy limitations, moderate institutional resistance, ethical concerns and a notable gap between acceptance and competence. This highlights that technological advancement alone is insufficient without parallel human capacity development and organizational adaptation.

Finally, in relation to administrator engagement with AI systems (RQ5), the findings reveal that administrators do not passively follow AI outputs but actively interpret, negotiate and contextualize them within institutional norms and ethical considerations. This results in a selective trust mechanism and the emergence of a human–AI co-governance model where AI functions as a decision-support tool while final authority remains with human actors.

Overall, the study concludes that AI-driven transformation at Zunyi Medical University represents a complex and ongoing socio-technical transition, characterized by improved efficiency and decision quality, alongside persistent challenges in competence, governance adaptation and ethical management.

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