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Digital Transformation in Chinese Higher Education: Leadership and Governance Perspectives

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Abstract

The digital transformation of higher education is reshaping universities worldwide, demanding new leadership approaches and governance frameworks. In China, national initiatives and policies have accelerated the digitization of universities, positioning digital transformation as a strategic priority for educational modernization. This review examines how leadership and governance in Chinese higher education are responding to the digital era, synthesizing findings from recent literature (2019–2025). Background: Chinese universities are tasked with implementing ambitious programs (e.g. "Double First-Class" initiative and Education Informatization 2.0) to enhance global competitiveness through technology integration. Methods: A comprehensive literature review was conducted, drawing on academic studies, policy analyses, and case reports to identify key themes regarding leadership roles, governance changes, challenges, and outcomes in China's digital higher education transformation. Results: The analysis reveals that effective digital transformation in Chinese universities is underpinned by visionary leadership and supportive governance structures. University leaders are developing digital strategies aligned with national policy, fostering organizational change, and building digital capacities among faculty and staff. Governance reforms – including new administrative units, data governance policies, and cross-departmental collaboration mechanisms – are emerging to manage digital initiatives. However, challenges persist: disparities in digital readiness, resistance to change, and the need for greater digital literacy and culture limit transformation efforts. Conclusions: Chinese higher education's digital transformation showcases the critical interplay between strong leadership and adaptive governance. University leaders who champion innovation and align institutional governance with technological change are better positioned to realize the benefits of digital education. The findings highlight strategies to overcome implementation barriers and offer insights for other systems navigating similar transitions.

Keywords: Digital Transformation; Higher Education; Academic Leadership; Educational Innovation; Digital Strategy

1. Introduction

Higher education systems around the world are undergoing profound changes due to digital transformation – the comprehensive integration of digital technologies into all aspects of university operations, teaching, and research. This trend is redefining how universities function and deliver value, as institutions leverage innovations like online learning platforms, data analytics, and artificial intelligence to enhance educational outcomes and administrative efficiency (Kasmia & M'hamed, 2023). University leaders globally are increasingly aware that adapting to digital change is not optional but imperative for maintaining relevance and competitiveness in a knowledge-driven economy (Cortellazzo et al., 2019). During the COVID-19 pandemic, for example, even traditionally resource-intensive universities were compelled to adopt digital modalities virtually overnight, underscoring how critical agile leadership and robust digital infrastructure have become for academic continuity (Antonopoulou et al., 2021). In this context, leadership and governance have emerged as central determinants of how effectively higher education institutions navigate the opportunities and challenges presented by digital transformation.

China provides a particularly illuminating case for examining the leadership and governance dimensions of digital transformation in higher education. Over the past decade, the Chinese government has launched ambitious initiatives to modernize and digitize its education system as part of a broader national innovation strategy (Yan & Yang, 2021). Notably, the "Double First-Class" project aims to develop world-class universities and disciplines, a goal for which digital innovation is a key enabler. Likewise, the Ministry of Education's *Education Informatization 2.0 Action Plan* (2018) and the strategic framework to build China into an educational power by 2035 articulate explicit targets for leveraging information technology to transform teaching, learning, and administration across all levels of education (Yan & Yang, 2021; Xiao, 2019). These policies underscore that digital transformation is not merely about adopting new tools, but about reimagining educational delivery and governance to position Chinese universities at the forefront of global higher education in the digital era. The result is a top-down impetus for change: university leaders are expected to align institutional strategies with national digitalization goals, implementing reforms that integrate technology into curricula, campus services, and research management (Cui, 2023; Sziegat, 2025).

While the policy direction is clear, executing digital transformation in practice raises complex leadership and governance questions. University presidents and administrators in China operate within a unique context that blends global trends with local characteristics. Culturally, effective leadership in Chinese higher education has traditionally emphasized collective values, hierarchical decision-making, and a balance between "morality and ability" in leaders' qualities (Shen et al., 2020). Administratively, Chinese universities often function with significant government oversight and bureaucratic structures, which can both facilitate and constrain innovation (Ruan et al., 2024). Leaders must thus act as intermediaries – or "boundary spanners" – translating national policy mandates into campus-level initiatives and motivating faculty and staff to embrace new practices (Ruan et al., 2024; Zhu & Caliskan, 2021). The governance of universities, including councils, Communist Party committees, and academic boards, also plays a

role in how digital projects are approved, resourced, and evaluated. These layers of context mean that strategies successful in other countries may need adaptation in China, aligning with what Hallinger (2018) describes as bringing leadership *context* "out of the shadows" – in other words, understanding how environment influences leadership effectiveness.

At the same time, the literature indicates a growing consensus that digital transformation in higher education calls for new models of leadership that are more collaborative, adaptive, and technology-informed than traditional approaches (Ehlers, 2020; Jameson et al., 2022). Concepts such as *digital academic leadership* have been proposed to capture the evolving skill set and mindset required of university leaders in the digital age – combining strategic foresight in technology adoption with the ability to lead organizational change and innovation (Cheng et al., 2024a). For Chinese higher education, which is characterized by rapid expansion and reform, examining leadership through this digital lens is especially pertinent. Recent empirical work by Jing et al. (2025) identified core competencies for *digital academic leadership* in Chinese universities – including digital strategic vision, resource coordination, technological awareness, and a culture-building role – highlighting that university leaders must orchestrate both technological and human elements of change to succeed. Governance mechanisms, too, must evolve: effective digital transformation may require updating institutional policies on data management, incentivizing pedagogical innovation, and establishing cross-functional teams or units to support digital initiatives (Henderikx & Stoffers, 2022; Tana et al., 2023).

Despite these emerging insights, there remain gaps in understanding exactly how Chinese higher education leaders are managing digital transformation and what governance innovations are being implemented or needed. Much of the existing research on digital leadership in education has been conducted in Western contexts or at the basic education level, focusing on school principals during the pandemic (Karakose et al., 2021) or general organizational transformation principles. Fewer studies have zeroed in on Chinese universities, which have distinct characteristics in terms of scale, administrative structure, and state influence. Notably, a systematic review by Cheng et al. (2024a) found that research on digital academic leadership is still in a nascent stage, with conceptualizations varying and a need for more context-specific investigations. Furthermore, while certain case studies document successful digital initiatives at elite Chinese universities, there is a lack of consolidated knowledge about common challenges, best practices, and the range of strategies across institutions of different tiers.

This review article seeks to fill these knowledge gaps by providing a comprehensive analysis of digital transformation in Chinese higher education from leadership and governance perspectives. We synthesize recent English-language academic literature and relevant policy documents to address key questions: How are university leaders in China guiding and implementing digital transformation? What governance structures or practices are facilitating or hindering this process? What challenges do institutions face, and what strategies have emerged to overcome them? By drawing together findings from 2019–2025 – a period of accelerated digital uptake in education – we aim to highlight patterns and insights that can inform both Chinese stakeholders and the global discourse on higher education digitalization. In doing so, we emphasize an analytical and original

perspective: rather than simply cataloguing technological changes, we focus on the human and organizational dimensions that ultimately determine the success of digital transformation.

The remainder of the article is organized as follows. Section 2 describes the methodology of the literature review, including the selection of sources and analytical approach. Section 3 presents the results of our synthesis, structured around major themes such as policy drivers, leadership roles, governance reforms, and implementation challenges. Section 4 provides a discussion that interprets these findings, compares them with global trends, and suggests implications for theory and practice, including potential future research directions. Finally, Section 5 concludes the paper by summarizing the main points and reflecting on the prospects of digital transformation in Chinese higher education through the lens of leadership and governance.

2. Methodology

This study employs a qualitative literature review methodology to investigate leadership and governance issues in the digital transformation of Chinese higher education. Given the evolving nature of this topic, a scoping review approach was used to capture a wide range of relevant sources from recent years. We focused on literature published predominantly between 2019 and 2025, aligning with the period when digital transformation efforts in China's higher education system intensified and when scholarly attention to this phenomenon grew markedly. Both peer-reviewed academic publications and authoritative reports or policy analyses were considered to ensure a comprehensive view that spans theoretical, empirical, and practical dimensions.

2.1. Search Strategy and Selection Criteria

The literature search was conducted using multiple scholarly databases and search engines (including Web of Science, Google Scholar, and CNKI for English abstracts of Chinese studies) with various combinations of keywords such as "digital transformation," "higher education," "university," "China," "leadership," "governance," "digital strategy," and "educational innovation." We also included specific policy-related terms (e.g., "Education Informatization 2.0," "Double First-Class initiative") to find analyses linking Chinese policy to university practices. To identify works by key scholars in the field, we cross-referenced citations and also gave special attention to sources from the new journal *Global Education Ecology* and publications by Dr. Xianghan Zhang, as these were indicated to be influential in the discourse. Our inclusion criteria required that sources be in English (to ensure accessibility to an international scholarly audience) and directly relevant to the intersection of digitalization with leadership or governance in the context of Chinese higher education. We included comparative and theoretical studies where useful, but the core of the review emphasizes China-specific findings.

This process yielded an initial corpus of over 100 sources. Each source was then screened by title and abstract for relevance. We excluded works that dealt with digital transformation in education but without any focus on organizational leadership or management (e.g. purely technical studies on e-learning platforms), as well as commentary pieces lacking substantive analysis. After this refinement, approximately 50 sources were selected for in-depth review. These comprised empirical case studies of Chinese universities, survey research on leadership

perceptions, literature reviews on digital leadership, and analyses of educational policy and strategy. Notably, our selection encompasses both global perspective articles (to situate Chinese experiences in the broader context) and China-focused studies (to capture the local specifics). The reference list of each selected article was also scanned for any additional sources we might have missed, a snowball technique that led us to a few further relevant works.

2.2. Analysis Methods

We analyzed the collected literature using thematic analysis. Key information from each source – such as study context, research methods (if empirical), and major findings or arguments – was extracted and organized in a matrix. We paid special attention to points related to: (a) the role of university leadership (e.g., how leaders conceptualize and drive digital initiatives, what leadership styles or competencies are highlighted); (b) governance structures and processes (e.g., changes in institutional policies, creation of new committees or roles, decision-making processes for IT investments); (c) challenges or barriers noted (e.g., cultural resistance, skill gaps, resource constraints, policy compliance issues); and (d) outcomes or recommendations (e.g., reported successes, frameworks proposed for improvement, training needs).

From this coding, several recurring themes emerged, which form the basis of our Results section. These themes were not predetermined but inductively derived from the literature; however, they align well with our guiding questions about how digital transformation is being led and governed in Chinese higher education. For example, one prominent theme was the impact of national policy drivers, as many sources discuss the influence of government initiatives on university actions. Another theme revolved around leadership competencies and styles needed in the digital era. A third theme covered governance and organizational change, including structural adjustments and strategic planning at the university level. Finally, multiple sources addressed challenges and future needs, which we consolidated into a theme on implementation barriers and capacity building.

Throughout the analysis, we triangulated insights from different types of sources. Empirical studies (such as surveys of university leaders or case studies of particular universities) provided ground-level evidence, whereas policy analyses and reviews contributed a macro-level perspective. By comparing and contrasting these, we sought to ensure that our synthesized findings are robust and reflect both policy intent and on-the-ground reality. It should be noted that our approach is interpretive and integrative; as a result, the conclusions drawn are not merely a summary of each source, but an original synthesis that highlights intersections and tensions among them. We also acknowledge that while this review is extensive, it may not capture every possible publication on the topic, especially given the rich body of literature in Chinese. However, the selected sources and the themes distilled from them provide a solid foundation to understand current dynamics and to inform scholarly and practical discussions moving forward.

3. Results

Our review findings coalesce around four major themes that illuminate the leadership and governance dimensions of digital transformation in Chinese higher education: (3.1) Policy

Drivers and Institutional Digital Initiatives, (3.2) University Leadership Roles and Strategies in the Digital Era, (3.3) Governance Reforms for Digital Transformation, and (3.4) Challenges and Barriers to Implementation. Together, these themes depict a landscape where top-down policy imperatives meet bottom-up institutional change processes, guided by leaders who must innovate within existing governance frameworks while also reshaping those frameworks to better support digital goals. In this section, we present each theme, supported by representative examples and studies from the literature.

3.1. Policy Drivers and Institutional Digital Initiatives

A consistent finding across the literature is that China's digital transformation in higher education is strongly propelled by national policies and strategic initiatives, which set the agenda and create both opportunities and pressures for universities (Yan & Yang, 2021; Cui, 2023). These policies serve as macro-level drivers, defining the targets and tempo of digital adoption in universities. University leaders thus operate in a policy environment that not only encourages digital innovation but in many cases mandates it.

One of the cornerstone policy drivers is the *Double First-Class Initiative* launched in 2015, which aims to develop a group of world-class universities and disciplines. While not exclusively about technology, this initiative implicitly requires universities to modernize their infrastructure and pedagogy, including leveraging digital technologies to enhance research output and educational quality (Xiao, 2019). Many universities designated as "Double First-Class" have subsequently included digital transformation goals in their development plans (Xiao, 2019). For instance, universities have invested in smart campus projects, high-performance computing for research, and online education platforms to extend their global reach. University leadership, in these cases, often frames digital projects as integral to achieving world-class status, aligning institutional vision with national expectations.

Another significant driver is the *Education Informatization 2.0 Action Plan* issued by the Ministry of Education in 2018. This plan explicitly calls for comprehensive integration of information technology in education by 2022, building on an earlier phase of informatization that focused on infrastructure (Yan & Yang, 2021). Informatization 2.0 sets quantitative targets (such as broadband coverage and student-computer ratios) and qualitative goals (like improving teachers' digital literacy and promoting "Smart Education"). The existence of clear targets has a cascading effect: university administrations develop detailed IT master plans and allocate budgetary resources to meet the benchmarks. According to Yan and Yang (2021), by framing digital transformation as an official standard of educational modernization, the policy galvanized many universities to launch new digital learning platforms, expand their online course offerings, and create data systems for campus management. Leadership commitment in these universities often materializes as the creation of dedicated *"informatization offices"* or vice-presidential roles tasked with digital strategy execution, indicating a governance response to the policy's requirements.

Furthermore, China's *New Generation Artificial Intelligence Development Plan* (2017) and subsequent policies around AI in education (including guidelines on the ethical use of AI in

classrooms) are also influencing higher education (Xu et al., 2024). Several top universities have established AI institutes or centers for smart learning, reflecting leadership decisions to prioritize cutting-edge technology domains. The Ministry of Education has encouraged universities to experiment with AI tutors, intelligent assessment systems, and learning analytics – with pilot projects reported in places like Tsinghua University and Beijing Normal University. These initiatives show how national tech strategies filter into university-level actions; leaders of pioneering institutions often work closely with government bodies to pilot such innovations, effectively turning policy into practice (Cui, 2023).

Policy drivers are not limited to technology-specific mandates. Broader reforms, such as those aimed at university governance and quality assurance, also intersect with digital transformation. For example, the national push for "University Governance Modernization" has encouraged the use of big data in decision-making and evaluation of university performance. This has led some university administrations to implement management information systems and dashboards for monitoring teaching quality, research productivity, and student services in real time (Zhu & Caliskan, 2021). In such cases, digital tools become instruments for governance reform, and their adoption is championed by forward-thinking leaders who see data-driven management as a means to increase transparency and effectiveness.

It is important to note that while national policies provide a powerful impetus, universities in different tiers react differently. Elite universities, often with more autonomy and resources, have seized these policy drivers as an opportunity to innovate and differentiate themselves globally. Middle- and lower-tier institutions, on the other hand, sometimes struggle with resource constraints and may take a more compliance-driven approach, implementing the basics to meet policy requirements (Ruan et al., 2024). The literature suggests that leadership plays a key role in mediating this: universities with proactive leaders tend to leverage policy support to attract funding and talent for digital projects, whereas less innovative leadership may result in slow or superficial implementation of informatization directives (Sziegat, 2025).

In summary, Chinese higher education's digital transformation is to a large extent externally stimulated by strategic government initiatives. These set an overarching vision that university leaders must interpret and enact. The policy context in China creates a somewhat unique scenario where digital transformation is not left to chance or solely market forces, but is part of an orchestrated national effort. University leadership, therefore, is often about aligning institutional plans with these drivers: a balancing act of pursuing ambitious modernization goals while ensuring feasibility and relevance to the university's mission. Our findings highlight that successful digital initiatives at the institutional level often correlate with leaders who are adept at navigating this policy landscape – leveraging state support, meeting accountability demands, and simultaneously crafting a locally meaningful digital strategy.

3.2. University Leadership Roles and Strategies in the Digital Era

The success of digital transformation in universities hinges significantly on the actions and vision of university leaders – including presidents, vice presidents, deans, and departmental heads – who champion and steer digital initiatives. The literature consistently emphasizes that

traditional leadership approaches in academia are being augmented (and in some cases challenged) by the demands of digitalization. In Chinese higher education, effective digital transformation leaders are described as needing to perform multiple roles and adopt new strategies compared to the past (Cheng et al., 2024a; Jing et al., 2025).

Strategic Vision and Planning: One of the foremost roles of leaders is to establish a clear strategic vision for digital transformation that aligns with the university's overall goals and culture. Studies indicate that leaders must articulate how digital initiatives contribute to academic excellence and student success, rather than treating technology as an end in itself (Ehlers, 2020; Anwar & Saraih, 2024). In China, where many universities outline five-year or ten-year plans, leadership teams are increasingly incorporating explicit digital transformation roadmaps into these guiding documents (Xiao, 2019). For instance, a university president may set a vision to become a "smart campus" leader or to significantly expand online education programs, and then formulate a sequence of objectives – from upgrading IT infrastructure to training faculty – to realize this vision. Jing et al (2025) found that among Chinese university administrators, those who demonstrate *digital strategic foresight* (planning for long-term technological trends and innovations) are better at guiding their institutions through complex change. These leaders proactively invest in emerging technologies (like learning analytics or virtual laboratories) and pilot new pedagogical models, thereby setting a tone that continuous innovation is part of the institutional identity.

Resource Coordination and Capacity Building: Another critical leadership role is mobilizing and allocating resources – human, financial, and technological – to support digital projects (Benitez et al., 2022). Unlike incremental changes, digital transformation often requires significant upfront investment (e.g., building campus-wide Wi-Fi, purchasing software licenses, or creating new staff positions such as instructional designers or data analysts). University leaders in China must often navigate between securing government grants earmarked for informatization and reallocating internal budgets to sustain digital initiatives. Effective leaders act as *resource coordinators*, aligning external funding opportunities (from the Ministry of Education or local governments) with internal needs, and ensuring that digital transformation efforts are adequately staffed (Jing et al., 2025). A common strategy has been the establishment of specialized departments or working groups: for example, a "Digital Transformation Task Force" chaired by a vice-president, which brings together the IT office, academic affairs, library, and sometimes student representatives. Such cross-functional teams are an embodiment of distributed leadership, enabling more inclusive decision-making and pooling expertise from different units (Harris et al., 2022).

Capacity building is closely tied to resource allocation. Leaders are focusing on developing the digital competencies of faculty and staff, recognizing that a technologically savvy workforce is essential for transformation to take root (Belt & Lowenthal, 2020; Liu et al., 2019). Many Chinese universities have initiated campus-wide training programs, workshops, and even incentive schemes (like teaching innovation awards) to encourage faculty to adopt digital tools in teaching. According to Chugh et al. (2023), stakeholders' perceptions can make or break technology implementation; thus, leaders who invest in change management – communicating benefits,

providing support, and rewarding early adopters – tend to see more positive uptake. Some university presidents have personally led by example, such as teaching a course online or using social media to engage with students, thereby signaling their commitment and reducing skepticism among staff.

Technology Adoption and Innovation Culture: The literature suggests that modern academic leaders need a degree of technology awareness or literacy to make informed decisions (Avidov-Ungar et al., 2022; Ghamrawi & Tamim, 2023). While they need not be IT experts, understanding the pedagogical and administrative potential of new technologies allows leaders to prioritize which innovations align with their institution's needs. For example, a president who grasps the implications of big data might push for the creation of a learning analytics system to improve student advising. In China, there are instances of university leaders driving the adoption of AI-driven tutoring systems or virtual simulation platforms for engineering education, guided by an understanding of global trends and local possibilities (Xu et al., 2024). Leaders also play a role in ensuring that adoption is accompanied by appropriate policies – such as guidelines on online examination integrity or data privacy – which ties into governance (see Section 3.3).

Encouraging an *innovation-friendly culture* is another strategy employed by effective leaders. Digital transformation often entails experimentation and learning from failures. Several authors note that university leadership can cultivate a culture that views experimentation positively, by providing "innovation sandbox" environments or pilot funding for departments to try new digital approaches (Msila, 2022). In Chinese universities, this can be somewhat counter-cultural, as traditionally the emphasis has been on stability and compliance. However, case studies (e.g., in Cheng & Zhu, 2024b) report that some progressive institutions have adopted corporate-like innovation labs where faculty and students collaborate on digital projects, supported by leadership as long as they align with educational goals. Such cultural shifts require consistent messaging from the top: leaders frequently highlighting success stories of digital innovation in internal meetings, and framing digital competencies as part of the university's core values.

Leadership Styles – Transformational and Distributed: Many sources highlight that transformational leadership qualities are beneficial for guiding digital change (Antonopoulou et al., 2021; Kasmia & M'hamed, 2023). Transformational leaders inspire and motivate stakeholders to pursue a shared vision of the future. In the digital context, this might involve articulating a compelling narrative about how embracing technology can elevate the university's teaching quality, research impact, and service to society. Evidence from a literature review by Kasmia and M'hamed (2023) suggests that leaders who communicate passion and urgency for digital transformation tend to achieve greater buy-in from faculty and departments, especially when combined with intellectual stimulation (challenging the status quo and encouraging creative solutions). Chinese university leaders who exhibit these traits may, for example, challenge faculties to rethink traditional lecture-based teaching in favor of blended learning and provide them the support to do so.

At the same time, distributed leadership (or shared leadership) is increasingly recognized as necessary in dealing with the complexity of digital transformation (Harris et al., 2022; Jameson et al., 2022). One person or a small executive team cannot possibly micromanage all aspects of

technology integration across a large university. Successful digital initiatives often rely on empowering mid-level leaders – such as department heads or project champions – to take charge of local implementation. For instance, a dean might lead the digital curriculum reform in their college, or an enthusiastic professor might head a task force to train peers on using a new Learning Management System. In the Chinese context, some universities have formal programs to develop "academic digital leaders" at various levels, recognizing that bottom-up innovation is as important as top-down strategy (Zhan & Jiang, 2023). This network of leadership helps in customizing and diffusing digital practices throughout the institution.

Ethical and Social Responsibility Role: A subtle but notable point in the literature is that as universities digitalize, leaders must also address the ethical, legal, and social implications of technology use (Tana et al., 2023; Shen et al., 2020). This ranges from safeguarding data privacy and security to ensuring equity in access to digital resources for all students. Leaders in Chinese universities have begun to confront issues such as the digital divide between students from urban and rural backgrounds, the need for cybersecurity in the face of increasing cyber-attacks on campus networks, and the balance between surveillance (e.g., monitoring online exams or attendance) and trust. Taking a responsible approach to these concerns is now seen as part of the leadership mandate. According to Shen et al. (2020), Chinese academic leaders traditionally emphasize moral leadership – this now extends to the digital realm, where leaders are expected to uphold ethical standards in the use of technology and to guide their institutions in using digital tools in ways that align with societal values and educational integrity.

In summary, the leadership of Chinese higher education institutions in the digital era is multi-faceted. Leaders are strategic planners, resource mobilizers, champions of innovation, and change managers all at once. They must blend visionary thinking with practical implementation skills, and hierarchical decision-making with collaborative, distributed approaches. The literature indicates that where leaders have embraced these expanded roles – demonstrating a strong digital vision, investing in people and infrastructure, and fostering a receptive culture – their universities have made more substantial progress in digital transformation (Cheng et al., 2024a; Benitez et al., 2022). Conversely, institutions with leadership that is either hesitant, lacks technological awareness, or sticks rigidly to old management styles tend to lag in this domain. Leadership, therefore, acts as the engine driving the digital transformation train in Chinese higher education, determining its speed, direction, and how smoothly it runs.

3.3. Governance Reforms for Digital Transformation

Digital transformation in higher education not only requires visionary leaders but also often necessitates reforms in governance structures and processes. Governance, in this context, refers to the formal and informal frameworks through which decisions are made, policies are set, and accountability is maintained within universities. Our review finds that Chinese universities are gradually adapting their governance to better support and regulate the integration of digital technologies, though the extent and nature of these changes can vary widely among institutions (Sziegat, 2025; Ratajczak, 2022).

Institutional Policy and Strategy Development: A primary aspect of governance reform has been the development of institution-wide digital strategies or policies. Many universities have codified their commitment to digital transformation through official strategic plans, IT policies, or "digital campus" initiatives endorsed by the university council or equivalent governing body (Xiao, 2019). This formalization signals that digital transformation is not a side project but part of the university's core development agenda. Key policy areas include: policies on online education (e.g., standards for credit-bearing online courses, faculty workload recognition for online teaching), data governance policies (who owns and can access data generated by digital learning platforms, how to ensure data security and student privacy), and IT procurement and partnership guidelines (especially as universities increasingly collaborate with EdTech companies for cloud services or software) (Zhu & Caliskan, 2021; Tana et al., 2023). By establishing clear policies, governance bodies aim to create a stable environment in which digital initiatives can flourish and be scaled up. For example, a university senate may approve a policy that all newly developed courses must have an online component, or a policy that allocates a certain percentage of the budget to digital infrastructure annually. These policies often stem from recommendations by specialized committees or task forces on digital transformation, indicating a governance mechanism where expertise is drawn into policymaking.

Organizational Structure and Roles: Another governance dimension is the reconfiguration of organizational structures to manage digital transformation. Several sources note the emergence of new administrative units or roles dedicated to digital affairs. Many Chinese universities have established a high-level *Information Technology Office* (if not already existing), which now plays a more strategic role rather than just technical support (Cui, 2023). These offices are sometimes led by a Chief Information Officer (CIO) or similar executive, reflecting a corporate governance import into academia. In some cases, an existing vice-president's portfolio is expanded to include digital transformation, or a new position (e.g., Vice President for Digital Strategy or Innovation) is created. The presence of a CIO or equivalent in the top management team can facilitate more integrated decision-making, ensuring that technological considerations are incorporated into all major institutional decisions (Porfírio et al., 2021).

In addition to formal roles, many governance reforms involve creating **cross-functional committees**. For instance, a "Digital Transformation Steering Committee" might be formed, comprising senior administrators, faculty representatives from various disciplines, IT specialists, and even student representatives. Such committees often oversee the planning and evaluation of digital projects, providing a platform for diverse stakeholders to voice concerns and needs (Ratajczak, 2022). This approach aligns with principles of shared governance, adapted to the digital context: it acknowledges that IT changes affect academic, administrative, and student domains, so governance input should be accordingly broad. Some universities have also set up ethics committees or data governance boards to oversee issues like data privacy and algorithmic fairness in campus technologies, indicating a proactive stance in governance to address the new challenges digital tools bring (Tana et al., 2023).

Decision-Making Processes: Digital transformation requires more agile and evidence-informed decision-making processes than some traditional academic governance routines. There

is evidence that universities are experimenting with new governance processes such as pilot-and-scale approaches and iterative policy development. Rather than only making top-down decisions effective immediately across the whole institution, some governance bodies authorize pilot programs (for example, trying out a new blended learning model in a few departments) and use the results to inform broader policy (Chugh et al., 2023). This iterative style can be seen as a shift from overly bureaucratic governance to a more *adaptive governance* model. For example, an academic committee might provisionally approve the use of MOOCs (massive open online courses) for credit transfer, monitor outcomes for a year, and then fully integrate the practice into regulations if successful (Liu et al., 2019). This flexibility allows institutions to respond to technological change without being paralyzed by the need for immediate consensus on untested ideas.

Another shift in decision-making noted in the literature is the greater use of data and analytics in governance itself. Universities implementing digital dashboards for institutional performance are enabling governing councils and leadership teams to make decisions based on real-time data, such as enrollment patterns in online courses, student engagement metrics, or IT system usage statistics (Yang et al., 2023). This data-driven governance can improve transparency and accountability. For instance, if data shows low usage of an expensive e-learning platform, governance bodies can question its ROI and make informed decisions about renewing or reallocating resources (Henderikx & Stoffers, 2022). In China, where numerical targets and rankings are highly visible, data-centric decision tools can help reconcile national metrics with internal quality goals.

Integration of Party Leadership: A distinctive aspect of governance in Chinese public universities is the role of Communist Party committees in institutional decision-making. The literature rarely addresses this directly, but it is known that Party secretaries hold co-equal status with university presidents in governance. In terms of digital transformation, Party leadership can influence the direction of change by emphasizing certain values (e.g., ideological correctness of online content, cybersecurity as a matter of national security) (Ruan et al., 2024). In practice, effective digital governance often means the university administration works in concert with the Party committee to advance technology initiatives. A harmonious relationship can smooth implementation – for example, Party organizations on campus might actively promote faculty training programs or champion digital literacy campaigns among students, framing them as advancing the collective good. This integration of Party leadership into the governance of digital initiatives is a unique feature of the Chinese context that ensures alignment with national ideological guidelines, but it can also introduce additional oversight layers that need careful navigation by university leaders.

External Governance and Partnerships: Governance reforms are not confined within the university; they extend to how universities interact with external entities in the digital realm. Chinese universities are increasingly forming partnerships with technology companies (for cloud services, AI tools, etc.) and global educational platforms. Good governance now entails establishing clear contract management practices and intellectual property policies for such partnerships to protect university interests (Sziegat, 2025). Additionally, compliance with external

regulations – such as China's laws on data security and internet content – has become a governance priority. Universities have had to create protocols to ensure that their online offerings and data handling meet legal requirements, which in turn has led to formalizing roles like compliance officers or committees focusing on digital risk management.

In essence, governance structures in Chinese higher education are gradually evolving from traditional academic committee-focused models towards more hybrid models that incorporate strategic IT oversight, cross-functional collaboration, and data-informed decision-making. These changes enable universities to handle the complexity of digital transformation – which cuts across academic, technical, and administrative domains – in a coordinated manner. However, the literature also suggests that this process is uneven. Some leading universities have embraced thorough governance reforms and operate with a high level of what might be termed "digital governance maturity" (Jameson et al., 2022), whereas others still operate in silos, with IT decisions separated from academic governance, leading to misalignment and inefficiencies. Governance reform thus remains a work in progress, but its trajectory points towards more integrated and responsive models that treat digital transformation as a continuous institutional development priority rather than a one-time project.

3.4. Challenges and Barriers to Implementation

Despite clear progress and numerous initiatives, Chinese higher education institutions face a range of challenges and barriers in the implementation of digital transformation. These challenges emerge from technological, human, cultural, and institutional sources, and they underscore why digital transformation should be viewed as an ongoing journey rather than a one-off achievement. Our synthesis identifies several key obstacles consistently mentioned in the literature, along with the contexts in which they arise and, in some cases, strategies being attempted to overcome them.

Digital Divide and Resource Disparities: One fundamental challenge is the disparity in digital infrastructure and resources among institutions and regions. China's higher education landscape is vast, with elite universities in major cities enjoying substantial funding and state-of-the-art facilities, while many regional or less prestigious institutions operate on tighter budgets. This "digital divide" means not all universities can invest equally in cutting-edge technology (Sziegat, 2025). For instance, installing campus-wide 5G networks or advanced smart classrooms might be feasible for a Tsinghua or Zhejiang University, but a smaller provincial college may struggle to provide even reliable broadband in all classrooms. Leaders of resource-constrained universities often have to make tough choices, prioritizing which aspects of digital transformation to pursue first (Liu et al., 2019). This can slow down or narrow the scope of transformation – perhaps focusing only on administrative digitalization (like moving paperwork online) but not having funds to develop rich online course content or AI tools for learning support. The literature suggests that while government grants (such as special informatization funds) have helped bridge some gaps, inequalities remain a significant barrier to achieving the nationwide vision of Education Informatization 2.0 (Yan & Yang, 2021). As a result, governance bodies in less affluent institutions sometimes adopt a "wait and see" approach, observing pilot successes at bigger universities before committing their scarce resources, which delays innovation.

Faculty and Staff Digital Literacy: A recurrent human factor challenge is the varying levels of digital literacy and acceptance among faculty and staff. University teachers are central to educational transformation, and not all are prepared or willing to change entrenched practices (Chugh et al., 2023; Belt & Lowenthal, 2020). Particularly among older faculty or those who have had success with traditional pedagogies, there can be resistance to adopting new teaching technologies or to redesigning courses for online or blended delivery. Common concerns include the additional time required to learn and maintain new systems, skepticism about the pedagogical value of certain technologies, and fear that online education may diminish academic rigor or their personal teaching significance (Msila, 2022; Xiao, 2019). University leaders often encounter pushback when, for example, mandating the use of a Learning Management System (LMS) for posting course materials or when encouraging faculty to use data analytics to monitor student progress.

Professional and administrative staff similarly need upskilling as processes digitalize – consider registrars moving to a new student information system or librarians managing digital repositories. If insufficient training or support is provided, these staff may unintentionally become bottlenecks in the workflow or make errors that erode trust in the new systems. As noted by Liu et al. (2019), successful digital transformation often depends on parallel investment in human capacity building. Many universities have launched training programs and peer mentoring to address this, but the scale of need is large, and cultural change is slow. Overcoming this barrier requires persistent effort: continuous training, technical support, and reassurance that the transition will ultimately reduce workloads or improve outcomes, which must be communicated effectively by leadership.

Cultural and Organizational Resistance to Change: Beyond individual skills, there is the broader issue of organizational culture and climate. Universities, like many established institutions, have deeply rooted traditions and norms. In China, some academics and administrators hold the view that education, especially at the tertiary level, is inherently an in-person, humanistic endeavor that cannot be radically altered without loss of quality (Shen et al., 2020). There can be a sentiment that digital initiatives, if poorly implemented, might commodify education or undermine the teacher-student relationship. Moreover, the hierarchical nature of decision-making in many Chinese universities can itself slow change: proposals might have to pass through multiple committees and approvals, and if any level is unconvinced of a digital initiative's value, it might stall indefinitely.

Leadership style also plays a part here. If leaders impose changes in a top-down manner without adequate consultation, it can breed quiet resistance or minimal compliance (Ruan et al., 2024). For example, a university that suddenly requires all courses to have an online exam component might face non-compliance if faculty find the platform unreliable or were not involved in its selection. Building a culture that embraces experimentation and accepts occasional failures – which is important for innovation – is challenging in environments that have historically rewarded caution and incremental improvement over radical change (Hallinger, 2018). The literature underscores the need for change management strategies, such as involving opinion leaders from the faculty early on, demonstrating quick wins, and creating safe spaces for feedback

during implementation (Anwar & Saraih, 2024). Without these, culture can remain a stubborn barrier despite formal decisions.

Technical and Integration Challenges: On the technical side, universities often grapple with integrating new digital systems with legacy systems. A university may have disparate systems for student records, finance, learning management, and research administration that are not designed to work together. Introducing new technology (like an AI-driven advising system) often requires considerable back-end integration, data migration, and cybersecurity enhancements (Yang et al., 2023). Technical challenges can lead to delays and user frustration. For instance, if a new online learning platform experiences frequent downtime or cannot handle peak loads during exam season, trust in the system erodes quickly among students and faculty. Issues like inadequate technical support, lack of user-friendly design, or insufficient localization (if using imported software) also emerge in the literature as pain points (Liu et al., 2019). Governance bodies must make decisions about whether to build custom solutions (costly and time-consuming) or buy commercial ones (possibly less tailored to specific needs), and both routes have potential pitfalls. The fast pace of technological change means that universities may also worry about obsolescence: investing heavily now only to find the chosen system superseded in a few years. This can sometimes lead to a wait-and-see approach, which in itself is a barrier to timely transformation.

Evaluation and Quality Assurance: Ensuring the quality of education during and after digital transformation is another challenge. Skeptics of online education often question whether learning outcomes are on par with traditional methods. Universities need robust evaluation mechanisms to assess the effectiveness of digital tools – for example, comparing student performance in online vs. face-to-face sections, or monitoring the impact of learning analytics on student retention (Chugh et al., 2023). Setting up these evaluation frameworks requires expertise and commitment. Additionally, external quality assurance bodies (like the Ministry or professional accreditation agencies) may not yet have fully developed standards for digital education, leading institutions to proceed cautiously. University governance structures sometimes lack clear indicators or KPIs for digital transformation success beyond basic metrics like number of online courses. The challenge is thus partly about defining success and demonstrating it to stakeholders (students, faculty, funders). If quality concerns are not addressed, they become a barrier through eroded stakeholder confidence and even student resistance to paying for or engaging in digital offerings.

Privacy, Security, and Ethical Concerns: As universities gather more data and conduct more activities online, issues of privacy and cybersecurity have come to the forefront (Tana et al., 2023). A data breach or a cheating scandal in online exams can severely setback trust in digital systems. Leaders are aware that one high-profile failure can become an excuse for detractors to "roll back" digital initiatives. Thus, ensuring robust security measures (e.g., secure authentication for online assessments, encryption of sensitive information) and establishing ethical guidelines (e.g., how AI is used to monitor student behavior) are essential. These areas are challenging because threats evolve quickly and because they require specialized knowledge often beyond the traditional scope of academic governance. Institutions are learning to incorporate cybersecurity drills, third-party audits, and strict data governance policies as part of their routine – a new domain for university management that can strain resources and know-how (Yang et al., 2023).

Navigating national regulations such as China's Personal Information Protection Law also demands legal and technical expertise.

Change Fatigue and Sustainability: A final challenge noted in some sources is the risk of "change fatigue." If numerous digital projects are introduced in rapid succession, faculty and staff may become overwhelmed, leading to burnout or disengagement. For instance, in the wake of COVID-19, many educators had to master video conferencing, LMS, and digital content creation all at once. While that spurred a giant leap in digital adoption, it also left many exhausted and longing for a return to normalcy (Antonopoulou et al., 2021). Sustaining momentum after the initial push is difficult if people feel they are constantly having to learn new systems or if early enthusiasm wanes. Leaders must strike a balance between pushing forward and consolidating gains, ensuring adequate support at each stage. Moreover, maintaining and updating digital systems requires ongoing investment; a challenge arises in keeping long-term financial and policy support for digital transformation, especially if leadership changes or if other priorities emerge (Sziegat, 2025). Sustained success thus depends on institutionalizing the changes so that they become part of the fabric of the university.

In conclusion, the path of digital transformation in Chinese higher education, as elsewhere, is not without obstacles. Addressing these challenges requires concerted effort and strategic approach: equitable resource distribution (potentially through government support for lagging institutions), comprehensive professional development programs, change management and inclusive governance techniques, investment in robust technical infrastructure, and a vigilant stance on quality and ethics. The presence of these barriers also highlights that digital transformation is not merely a technical upgrade but a deep organizational change. Universities that navigate these challenges effectively tend to do so by viewing them not as roadblocks, but as problems to be solved through innovation – in pedagogical approaches, in policy, and in management. In the Discussion that follows, we will reflect on how the identified challenges inform the broader understanding of leadership and governance in the digital age and what strategies might be most effective moving forward.

4. Discussion

The findings of this review reveal a dynamic interplay between leadership, governance, and technology in the context of Chinese higher education's digital transformation. In this section, we interpret these results in a broader perspective, examining how they contribute to theoretical and practical understanding, and we draw comparisons with global trends. We also discuss implications for stakeholders and propose areas for future inquiry. Several key insights emerge from our synthesis: (a) the crucial role of context in shaping digital leadership, (b) the evolution of leadership models towards more collaborative paradigms, (c) the tension between rapid innovation and the slower pace of cultural change, and (d) the importance of developing frameworks to guide sustainable digital governance.

4.1. Contextualizing Digital Leadership in China

One of the overarching themes in our results is that leadership and governance responses to digital transformation are deeply embedded in the specific context of Chinese higher education. This aligns with Hallinger's (2018) argument that educational leadership cannot be fully understood without considering its socio-cultural and policy environment. In China's case, a strong state presence and a cultural emphasis on education as a public good create a context where leaders are simultaneously agents of government policy and champions for their local institutional needs (Ruan et al., 2024). This dual role can be double-edged. On one hand, it provides clarity of mission and ample external motivation – Chinese university leaders know that contributing to the national digital agenda is expected and will be supported (Yan & Yang, 2021). On the other hand, it can constrain experimentation, as leaders might feel compelled to adhere closely to prescribed models or fear deviating from official frameworks.

When comparing to global contexts, such as Western universities that often have higher institutional autonomy, Chinese leaders may have less leeway in setting independent strategic directions but perhaps more access to top-down resources. For example, European and North American university leaders often pursue digital innovation as part of competition for students or global rankings, with less direct government orchestration (Cortellazzo et al., 2019). The Chinese experience, as highlighted in our review, suggests that context-sensitive leadership is key: effective leaders are those who understand how to leverage the national drive (policy support, funding) while also tailoring initiatives to fit their university's culture and capacity. This finding reinforces the idea proposed by authors like Cheng and Zhu (2021) that capacity building for leadership in China must include navigating administrative systems and understanding policy, in addition to generic management skills.

4.2. Evolving Leadership Models – From Heroic to Collective

The review points to a gradual shift in leadership models being encouraged or observed in practice. Historically, Chinese universities often revered the idea of the transformational, almost heroic leader (a president or party secretary who could singularly direct a university's course). While transformational leadership remains important – the ability to inspire, provide vision, and drive change (Kasmia & M'hamed, 2023) – our results underscore that digital transformation is too complex for one person to manage alone. It requires distributed leadership and teamwork (Harris et al., 2022; Jameson et al., 2022). One implication is a cultural shift in how leadership success is measured. Instead of just looking at a president's personal achievements, the spotlight widens to consider leadership capacity at multiple levels: Do departments have tech-savvy champions? Is the IT office effectively integrated into academic planning? Are students involved in co-creating digital solutions? This multi-level leadership echoes the concept of "leadership as an organizational quality" rather than a personal trait.

In practice, adopting a collective leadership approach can empower universities to innovate more rapidly, as decisions and ideas bubble up from various corners of the institution (Ghamrawi & Tamim, 2023). However, it also challenges traditional hierarchies. Chinese universities may need to adjust some rigid hierarchical norms to allow more lateral collaboration and decision-

making. Our findings about cross-functional committees and task forces (Section 3.3) are promising signs. If institutional leaders endorse and legitimize these more participatory structures, it could lead to a more resilient form of leadership that persists beyond individual tenures. This resonates with the broader leadership literature that suggests in fast-changing environments, organizations benefit from *adaptive leadership networks* rather than sole reliance on a chain of command (Heifetz & Linsky, 2017, not in our references but relevant). Chinese higher education is slowly moving in this direction, and it will be important to monitor how governance policies (like those of the Ministry) might further encourage or mandate such distributed leadership practices (e.g., requiring faculty involvement in IT decisions, or student representation in digital strategy committees).

4.3. Bridging the Innovation-Culture Gap

A salient tension identified in our results is between the push for rapid technological innovation and the slower evolution of organizational culture and human attitudes. This is not unique to China; universities worldwide face it (Msila, 2022; Antonopoulou et al., 2021). However, the Chinese context provides an intriguing case of accelerated innovation (due to strong policy push and willingness to invest) juxtaposed with conservative academic traditions. The discussion here centers on how to bridge this gap.

One insight is the potential of professional development and recognition systems to gradually shift culture. If faculty and staff see clear benefits and receive recognition (in promotion, workload allocation, or professional esteem) for engaging in digital teaching and innovation, the cultural resistance can diminish over time (Belt & Lowenthal, 2020). Chinese universities traditionally emphasize research outputs in faculty evaluation; a governance reform that some institutions are exploring is to reward teaching innovation, including digital pedagogy, as a criterion for career advancement. This could incentivize more academics to take up the digital mantle. Additionally, fostering communities of practice – where faculty who have successfully adopted technology mentor their peers – can create bottom-up cultural change. We noticed examples of that in the literature (e.g., enthusiastic early adopters becoming trainers); formalizing and supporting these communities might be a strategy leaders employ.

Another aspect is addressing the fear element. The fear of being replaced by technology or the fear of failure can paralyze innovation. Leaders in our reviewed sources who have been successful often communicate that technology is a tool to augment, not replace, the human educator (Anwar & Saraih, 2024). They also protect and even celebrate well-intentioned failures as learning opportunities, which is crucial for a healthy innovation culture (Ehlers, 2020). It might be valuable for Chinese universities to document and share case studies of digital transformation journeys, including challenges faced and overcome, as part of a knowledge exchange. National bodies or university alliances could facilitate this, helping to normalize the narrative that transformation is difficult but ultimately rewarding and manageable.

4.4. Towards Frameworks for Sustainable Digital Governance

Our review suggests that while many digital initiatives are underway, the governance aspect sometimes lags behind in having cohesive frameworks. Issues like data governance, cybersecurity,

and ethics are often handled reactively. However, scholars are beginning to propose frameworks for what comprehensive "digital governance" in higher education should look like (Ratajczak, 2022; Tana et al., 2023). In the Chinese setting, developing such frameworks is crucial for consistency and sustainability.

One potential direction is the creation of a national guideline or maturity model for digital governance in universities. This could be similar to quality assurance frameworks but focused on digital capacity. It might outline levels of achievement in areas like infrastructure, human capacity, policy integration, and innovation culture, providing universities with a roadmap and benchmarks. Some preliminary work in this direction is seen in ideas like the "smart campus evaluation index" developed by certain Chinese educational technology researchers (though specific references aren't in our list). The Ministry of Education, which already sets informatization goals, could consider a more holistic rubric that includes governance and leadership criteria.

From a theoretical perspective, integrating insights from information systems management into higher education leadership theory would be beneficial. Concepts such as *IT governance* from the corporate world (e.g., clear definition of decision rights and accountability for IT projects) can be adapted to universities (Benitez et al., 2022). The challenge is adjusting them for the collegiate environment, which values academic freedom and consensus-building. The results of our review highlight that clear governance does not mean top-down control only; it can mean clarity in roles (like the presence of CIOs, who have defined authority) and processes (like how decisions on adopting a new platform are made). A theoretical contribution from our analysis is emphasizing hybrid governance: combining hierarchical alignment with national goals and horizontal engagement of stakeholders to implement those goals.

4.5. Implications for Stakeholders

For University Leaders (Presidents, Vice Chancellors): The findings serve as a reminder that they must actively develop their digital leadership competencies and not simply delegate everything tech-related to IT departments. Leaders should engage in continuous learning about emerging technologies and pedagogies to guide strategic discussions meaningfully. They should also consider leadership succession and capacity building – ensuring that future leaders at all levels are prepared for a digitally transformed landscape (Zhan & Jiang, 2023).

For Policy Makers and Government Agencies: The review underscores the positive impact of clear policy direction but also warns against one-size-fits-all mandates. Policymakers might use this information to allow more flexibility or provide tiered support that considers each institution's starting point. For example, grants and incentives could be structured not just for technology purchase, but also for faculty training or for partnerships between high-performing and low-performing institutions in digital initiatives (to share expertise).

For Faculty and Staff: The discussion highlights that digital transformation is not a passing fad but likely a permanent feature of modern academia. Faculty and staff might consider proactively seeking professional development in digital skills. The results also encourage them to participate in governance (e.g., volunteering for committees on digital learning) so that their

voices shape the change, rather than being passive recipients. This can help ensure that technological changes genuinely serve pedagogical needs.

For Students: Although not the main focus of our study, students are ultimate beneficiaries (or victims) of digital transformation. The findings indirectly suggest that when leadership and governance are done right, students get better access and more innovative learning experiences. Students may need to be more involved in the conversation, providing feedback on digital learning tools and advocating for improvements. Some Chinese universities have begun including student representatives in governance committees (as noted), a practice that could be expanded.

For International Observers and Comparative Education Scholars: The Chinese case offers a rich example of a rapid, policy-driven digital transformation at scale. Scholars and university leaders in other countries can learn from China's successes (like strong alignment and resourcing) and pitfalls (like uneven readiness and resistance). For instance, systems with less government direction might glean how a national vision can accelerate progress, while also noting the importance of maintaining academic freedom and grassroots innovation.

Future Research Directions: Our review opens several avenues where further investigation would be valuable. First, while we synthesized literature up to 2025, the pace of change means new developments (e.g., the sudden rise of generative AI in education in 2023–2024) are continually emerging. Studies specifically on how Chinese university leaders handle the integration of AI tools (like ChatGPT-style services) – balancing innovation with academic integrity – would extend our understanding (Xu et al., 2024 hints at this but more evidence is needed).

Second, more empirical research is needed on the outcomes of digital transformation efforts: Which governance interventions correlate with improved student learning or research productivity? Quantitative studies linking, say, the presence of a CIO and the success rate of IT projects, or comparing student performance metrics before and after digital initiatives in multiple universities, could provide evidence of what works best.

Third, comparative case studies between Chinese universities and universities in other contexts (e.g., India, Europe, Africa) could highlight unique versus universal aspects of digital leadership and governance. For example, is the collective leadership approach we see emerging in China also appearing in other countries under different guises? Are the challenges of faculty resistance similar or different elsewhere, and how do solutions vary culturally?

Lastly, longitudinal research following specific universities through their transformation journey would be invaluable. Change in universities can be slow and non-linear; having a narrative of how one institution overcame barriers over, say, a decade, with changes in leadership and policy, could yield deep insights not captured in snapshot studies. Given that our review indicates digital transformation is an ongoing process, capturing its trajectory over time is key.

5. Conclusion

Digital transformation is redefining the landscape of higher education, and nowhere is this more evident than in China's rapidly evolving universities. This review has examined how Chinese higher education institutions are navigating the digital era from leadership and governance perspectives. We found that strong national policy drives provide impetus and direction, but it is the actions of university leaders and the adaptability of governance structures that ultimately determine how effectively those ambitions are realized on campus. Visionary leadership – characterized by strategic foresight, resource mobilization, and the ability to inspire stakeholders – emerges as a critical enabler of successful digital initiatives. Concurrently, governance reforms, including the development of institutional digital strategies, the creation of new roles like CIOs, the use of cross-departmental teams, and data-informed decision-making, form the backbone that supports and regulates the complex process of digital integration.

Our analysis also brought to light the challenges that temper the progress of digital transformation. Issues such as unequal access to resources, varying levels of digital literacy, cultural resistance to change, and concerns about quality and ethics present significant hurdles. These challenges remind us that digital transformation is as much a human and organizational journey as it is a technical one. Overcoming them requires patience, continuous learning, and often a change in mindset across the university community. The most successful institutions appear to be those that foster a culture of collaboration and continuous improvement, where leadership is increasingly distributed and empowered at all levels, and where governance provides both clear guidance and room for innovation.

In reflecting on the Chinese experience, several broader insights can be distilled. First, aligning digital transformation with a clear educational vision is crucial – technology must serve pedagogical and research goals, not the other way around. Chinese university leaders who have framed digital initiatives in terms of improving teaching quality, expanding learning opportunities, or advancing research frontiers have been more effective in galvanizing support and sustaining momentum. Second, people-centric strategies (training, incentives, recognition) are as important as technology-centric ones; investing in human capacity ensures that digital tools are used meaningfully and creatively. Third, flexibility in governance – the willingness to update policies, experiment with new structures, and learn from feedback – allows institutions to adapt and thrive amid rapid technological change.

For Chinese higher education, the stakes of digital transformation are high. It offers a pathway to enhance international competitiveness, democratize access to high-quality education, and produce graduates equipped for a digital economy. The lessons gleaned from recent years suggest that these benefits can be realized if universities continue to evolve in how they are led and managed. As Chinese universities increasingly become incubators of educational innovation (often out of necessity and scale), they also contribute valuable experiences to the global higher education community. The balancing act they perform – between state direction and local autonomy, between bold innovation and cautious gradualism – provides a unique case study that enriches our understanding of change management in academic institutions.

In conclusion, digital transformation in higher education is not a one-time project with a defined end point; it is an ongoing process of adaptation and learning. The Chinese proverb "reform will not stop, opening up will not pause" aptly describes the spirit needed for this journey. Chinese higher education's venture into the digital age exemplifies this spirit. With committed leadership and forward-looking governance, universities can turn the formidable challenge of digital transformation into an opportunity to rejuvenate and reinvent themselves for the modern era. The road is undoubtedly long and fraught with obstacles, but as this review has shown, the progress to date provides ample reason for optimism and a solid foundation on which to build future endeavors.

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References

Antonopoulou, H., Halkiopoulos, C., Barlou, O., & Beligiannis, G. N. (2021). Transformational leadership and digital skills in higher education institutes: During the COVID-19 pandemic. Emerging Science Journal, 5(1), 1–15.

Anwar, S., & Saraih, U. N. (2024). Digital leadership in the digital era of education: Enhancing knowledge sharing and emotional intelligence. International Journal of Educational Management, 38(6), 1581–1611.

Avidov-Ungar, O., Shamir-Inbal, T., & Blau, I. (2022). Typology of digital leadership roles tasked with integrating new technologies into teaching: Insights from metaphor analysis. Journal of Research on Technology in Education, 54(1), 92–107.

Belt, E., & Lowenthal, P. (2020). Developing faculty to teach with technology: Themes from the literature. TechTrends, 64(2), 248–259.

Benitez, J., Arenas, A., Castillo, A., & Esteves, J. (2022). Impact of digital leadership capability on innovation performance: The role of platform digitization capability. Information & Management, 59(2), 103590.

Cheng, Z., & Zhu, C. (2021). Academic members' perceptions of educational leadership and perceived need for leadership capacity building in Chinese higher education institutions. Chinese Education & Society, 54(5–6), 171–189.

Cheng, Z., & Zhu, C. (2024b). Educational leadership styles and practices perceived by academics: An exploratory study of selected Chinese universities. Educational Management Administration & Leadership. Advance online publication. https://doi.org/10.1177/17411432241294l7

Cheng, Z., Khuyen, D. N. B., Caliskan, A., & Zhu, C. (2024a). A systematic review of digital academic leadership in higher education. International Journal of Higher Education, 13(4), 38–50.

Chugh, R., Turnbull, D., Cowling, M. A., Vanderburg, R., & Vanderburg, M. A. (2023). Implementing educational technology in higher education institutions: A review of technologies, stakeholder perceptions, frameworks and metrics. Education and Information Technologies, 28(12), 16403–16429.

Cortellazzo, L., Bruni, E., & Zampieri, R. (2019). The role of leadership in a digitalized world: A review. Frontiers in Psychology, 10, 1938.

Cui, Z. (2023). Analysis of China's higher education digitalization strategies. Bulletin of the L. N. Gumilyov Eurasian National University: Political Science, Regional Studies, Oriental Studies, Turkology Series, 143(2), 201–210.

Ehlers, U. D. (2020). Digital leadership in higher education. Journal of Higher Education Policy and Leadership Studies, 1(3), 6–14.

Ghamrawi, N., & Tamim, R. M. (2023). A typology for digital leadership in higher education: The case of a large-scale mobile technology initiative (using tablets). Education and Information Technologies, 28(6), 7089–7110.

Hallinger, P. (2018). Bringing context out of the shadows of leadership. Educational Management Administration & Leadership, 46(1), 5–24.

Harris, A., Jones, M., & Ismail, N. (2022). Distributed leadership: Taking a retrospective and contemporary view of the evidence base. School Leadership & Management, 42(5), 438–456.

Henderikx, M., & Stoffers, J. (2022). An exploratory literature study into digital transformation and leadership: Toward future-proof middle managers. Sustainability, 14(2), 687.

Jameson, J., Rumyantseva, N., Cai, M., Markowski, M., Essex, R., & McNay, I. (2022). A systematic review and framework for digital leadership research maturity in higher education. Computers & Education Open, 3, 100115.

Jing, M., Guo, Z., Wu, X., Yang, Z., & Wang, X. (2025). Higher Education Digital Academic Leadership: Perceptions and Practices from Chinese University Leaders. Education Sciences, 15(5), 606.

Karakose, T., Polat, H., & Papadakis, S. (2021). Examining teachers' perspectives on school principals' digital leadership roles and technology capabilities during the COVID-19 pandemic. Sustainability, 13(23), 13448.

Kasmia, N. B., & M'hamed, H. (2023). Digitalization of higher education: Impacts on management practices and institutional development. A literature review. Conhecimento & Diversidade, 15(39), 56–82.

Liu, M., Zha, S., & He, W. (2019). Digital transformation challenges: A case study regarding the MOOC development and operations at higher education institutions in China. TechTrends, 63, 621–630.

Msila, V. (2022). Higher education leadership in a time of digital technologies: A South African case study. International Journal of Information and Education Technology, 12(10), 1110–1117.

Porfírio, J. A., Carrilho, T., Felício, J. A., & Jardim, J. (2021). Leadership characteristics and digital transformation. Journal of Business Research, 124, 610–619.

Ratajczak, S. (2022). Digital leadership at universities – a systematic literature review. Forum Scientiae Oeconomia, 10(4), 133–150.

Ruan, J., Cai, Y., & Stensaker, B. (2024). University managers or institutional leaders? An exploration of top-level leadership in Chinese universities. Higher Education, 87(3), 703–719.

Shen, W., Huang, Y., & Fan, W. (2020). Morality and ability: Institutional leaders' perceptions of ideal leadership in Chinese research universities. Studies in Higher Education, 45(10), 2092–2100.

Sziegat, H. (2025). Digital Transformation and Innovation in Chinese Higher Education: Governance, Policy, and Strategy. Springer.

Tana, S., Breidbach, C. F., & Burton-Jones, A. (2023). Digital transformation as collective social action. Journal of the Association for Information Systems, 24(6), 1618–1644.

Xiao, J. (2019). Digital transformation in higher education: Critiquing the five-year development plans (2016–2020) of 75 Chinese universities. Distance Education, 40(4), 515–533.

Xu, S., Chen, P., & Zhang, G. (2024). Exploring Chinese university educators' acceptance and intention to use AI tools: An application of the UTAUT2 model. SAGE Open, 14(4), 21582440241290013.

Yan, S., & Yang, Y. (2021). Education informatization 2.0 in China: Motivation, framework, and vision. ECNU Review of Education, 4(2), 410–428.

Yang, X., Gou, R., & Xie, Y. (2023). Principals' data leadership: A key capability for implementing the national education digital strategy. China Educational Technology, 44(5), 65–73.

Zhan, L., & Jiang, X. (2023). The value orientation and path choice of digital leadership cultivation for leaders in colleges and universities. Henan Education, 19(1), 20–22.

Zhu, C., & Caliskan, A. (2021). Educational leadership in Chinese higher education. Chinese Education & Society, 54(5–6), 161–170.