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Strategic Management of Educational Institutions in the Digital Age

Rahmat Hidayat
Kementrian Komunikasi Digital
email: onlyrahmat272@loloedu.my.id

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***ABSTRACT** (10 PT)*

This study analysed the strategic management of educational institutions in the digital era to identify challenges and investigate prospects for improving educational quality. The primary objective was to provide direction to school administrators in developing programs that successfully address digital dynamics. This study combined qualitative methods with a literature review, utilising content analysis tools for data processing. The findings indicated that digital transformation presented both benefits and obstacles for educational institutions. Substantial hurdles included the necessity for infrastructure evaluation, continuous educator development, and regulatory amendments. Conversely, the digital era offered advantages such as gamification, interactive learning, analytics for tracking student achievement, and access to global resources. The study demonstrated that stakeholder engagement, adequate technical support, and adaptable techniques were essential to overcome these challenges. It was concluded that successfully addressing problems while leveraging opportunities facilitated optimal adaptation, hence enhancing educational outcomes and learning experiences.

Keywords : Digital Transformation; Educational Technology; Teacher Competence; Adaptive Strategy; E-learning Challenges

INTRODUCTION

Undoubtedly, every organization, regardless of its size or sector, is confronted with a myriad of advantageous opportunities and disadvantageous difficulties that threaten its survival and growth. In the realm of strategic management, these issues are multifaceted, arising from dynamic internal sources such as human resource management complexities, operational efficiency gaps, and the intricate management of organizational structures (Sembiring, 2022). Conversely, external factors—including volatile market dynamics, shifting governmental laws, and rapid socio-economic transitions—also significantly affect organizational stability and sustainability (Syahkuan et al., 2022). Therefore, the role of an organizational leader has evolved into one of substantial duty, requiring the capacity to recognize, address, and resolve diverse difficulties that emerge from both internal and external environments to ensure long-term viability (Warcito et al., 2021).

The demands on organizational leadership have grown progressively intricate throughout time. Contemporary leadership theories suggest that leaders must not only provide operational stability but also strategically manage change in an increasingly unpredictable environment (Yukl, 2010). The performance of each individual in the organization signifies the efficacy of leadership; hence, proactive and solution-focused management measures are crucial to alleviate prospective issues that

may hinder organizational productivity and effectiveness. In the context of educational institutions, such as madrasahs and schools, this leadership responsibility extends beyond administrative duties to include the management of academic quality and character development (Halik, 2022). Leaders are expected to navigate these challenges while maintaining the core mission of education, which is becoming increasingly difficult in the face of modern disruptions.

These issues are further complicated in the contemporary digital age, where digital transformation is no longer an option but an indispensable requirement. This period, often referred to as the Industrial Revolution 4.0, is marked by swift progress in information and communication technologies, heightened consumer expectations, and intense global competition (Alwi, 2022). External influences, including the necessity for ongoing innovation, rapid technology advancement, and the rise of novel digital business models, are pivotal in shaping the strategic direction and policies of organizations. For educational institutions, this shift is embodied in new paradigms such as the "Merdeka Belajar Kampus Merdeka" (MBKM) policy in Indonesia, which demands a revolution in how education is delivered and managed (Saptadi et al., 2024).

Simultaneously, organizations encounter significant internal difficulties, particularly concerning the preparedness of human resources to embrace new technologies. The transition in work culture towards digitalization often faces resistance, highlighting the necessity for efficient and secure data and information management. In the educational sector, the transformation of administrative processes requires a fundamental shift in mindset among staff and educators (Kusuma et al., 2023). Teachers and administrators are now required to operate within digital ecosystems, necessitating a re-evaluation of traditional competencies. The challenge is not merely technical but also cultural, as the integration of digital tools impacts the pedagogical core of the institution. For instance, the implementation of digital-based learning models in subjects like Islamic Religious Education (PAI) requires teachers to blend theological content with modern delivery methods effectively (Nasaruddin et al., 2023).

To navigate this complexity, organizational leaders must exhibit flexible, sensitive, and visionary managerial and leadership skills. In an era where physical interactions are often replaced or augmented by digital ones, the concept of leadership has expanded to include "virtual leadership," where school principals must influence and guide their teams through digital platforms (Das, 2022). They must possess the capability to formulate management strategies that are efficient, adaptable, and data-driven, guaranteeing that every member of the organization can adjust to alterations in business processes and current technological innovations. Moreover, executives must be vigilant in capitalizing on opportunities presented by digital disruption to improve operational efficiency and generate sustainable value. This includes implementing research-based digital learning systems that can project future educational needs and trends (Halik & Rustan, 2021).

The advancement of organizational strategic management has become essential in light of these quick transformations. Organizations can no longer depend on traditional managerial methods; they must develop creative, technology-driven strategies focused on organizational learning. Within educational settings, this implies a rigorous application of quality management principles to ensure that the digitization of education does not compromise the standard of learning outcomes (Septiani et al., 2023). An inclusive and participative organizational culture will foster employee engagement in attaining organizational objectives and enhance competitiveness. Furthermore, the implementation of quality control management in schools becomes paramount to monitor the effectiveness of these new strategies (Das & Halik, 2018).

Nonetheless, a disparity persists in comprehending how educational institutions uniquely manage these strategic transitions in contrast to typical corporate enterprises. While corporate strategy often focuses on profit maximization and market share, educational strategy must balance efficiency with the public good and pedagogical integrity. Despite the extensive discourse on digital transformation, a thorough investigation into the strategic management of educational institutions—specifically addressing infrastructural challenges and human resource competencies while recognizing global

opportunities—continues to be a vital field for additional inquiry. There is a need to understand how leadership styles, such as transformational leadership, specifically impact the competitiveness of higher education and schools in the Industry 4.0 era (Alwi, 2022).

Therefore, this study seeks to examine the strategic administration of educational institutions in the digital age, identifying the obstacles encountered and exploring new methods for enhancing educational quality. Utilizing a rigorous research design that combines qualitative approaches with literature review techniques (Creswell & Creswell, 2023), this research aims to dissect the nuances of digital adaptation in schools. This research offers guidance to educational managers on formulating and executing plans, thereby enhancing the integration of theoretical strategic management with practical digital adaptation in the educational sector. By bridging the gap between management theory and educational practice, this study aspires to contribute to the development of resilient educational institutions capable of thriving in a digital future.

RESEARCH METHODS

This study employed a qualitative methodology combined with a literature review approach. This method was selected to enable a comprehensive examination of various literature sources regarding the strategic administration of educational institutions in the digital age, while simultaneously identifying the potential opportunities and challenges faced. The primary data sources for this research were literature, encompassing books, scientific journals, conference proceedings, research reports, and other credible sources. Academic databases such as Google Scholar, JSTOR, ScienceDirect, and other online libraries served as the repositories for these materials.

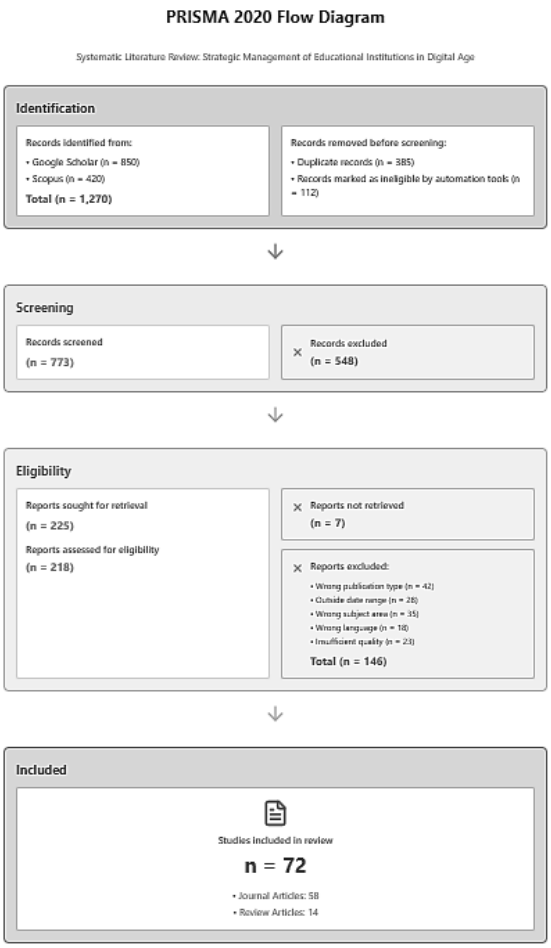

Figure 1. PRISMA 2020 Flow Diagram of the Study Selection Process

As illustrated in Figure 1, the initial search across Google Scholar and Scopus identified a total of 1,270 records. After removing 385 duplicates and 112 ineligible records via automation tools, 773 records remained for screening. During the screening phase, 548 records were excluded based on title and abstract irrelevance. The remaining 225 reports were sought for retrieval, of which 218 were assessed for full-text eligibility. A strict filtering process excluded 146 articles due to reasons such as wrong publication type, date range, or insufficient quality. Ultimately, 72 studies (consisting of 58 journal articles and 14 review articles) were included in the final bibliometric analysis. The data collection technique involved several systematic steps. First, a search was conducted for literature related to the research subject using specific keywords, including "educational strategic management," "digital era," "digital education opportunities," and "digital education challenges". Second, a quality assessment was performed to evaluate the reliability of the identified sources; only literature meeting specific quality criteria was included in the analysis.

Data analysis was conducted using a content analysis approach. This process began with data coding and classification, where collected literature was sorted according to main themes such as difficulties in technology implementation, opportunities arising from technology use, and efficient management techniques. The organized data were then analyzed to discover trends, relationships, and information relevant to the research topic. Finally, conclusions were drawn to identify key issues and opportunities, which served as the basis for formulating strategic recommendations for educational managers.

Research Design and Protocol

This study adopts a quantitative bibliometric analysis approach combined with a Systematic Literature Review (SLR) following the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) guidelines. This method was chosen to map the global evolution of strategic management research in education, moving beyond traditional narrative reviews to provide a data-driven visualization of the field.

Data Source and Search Strategy

Data mining was conducted using the *Publish or Perish* software to harvest metadata from the Google Scholar and Scopus databases. These databases were selected for their comprehensive coverage of educational management literature. The boolean search string employed was: ("Strategic Management" OR "School Leadership") AND ("Digital Transformation" OR "Digital Era") AND ("Education" OR "School").

Eligibility Criteria

To ensure the quality and relevance of the data, a strict screening process was applied based on inclusion and exclusion criteria (Table 1).

Table 1. Inclusion and Exclusion Criteria

Criterion	Inclusion Criteria	Exclusion Criteria	Rationale
Timeline	2019 – 2025	Pre-2019	To capture the specific shifts occurring during and after the COVID-19 pandemic acceleration.
Document Type	Journal Articles (Research & Review)	Conference Proceedings, Book Chapters, Editorials	Ensuring findings are based on rigorous peer-reviewed processes.
Language	English and Bahasa	Other languages	Focus on global context and relevant

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	Indonesia		local implementation.
Subject Area	Social Science, Management, Education	Engineering, Medicine, Pure Science	Maintaining relevance to organizational psychology and management.

Data Analysis Tools

The harvested metadata (n = [MASUKKAN JUMLAH TOTAL ARTIKEL]) were exported in RIS format. Data cleaning was performed using Mendeley to remove duplicates. The final dataset was analyzed using VOSviewer version 1.6.19 to visualize bibliometric networks, specifically focusing on:

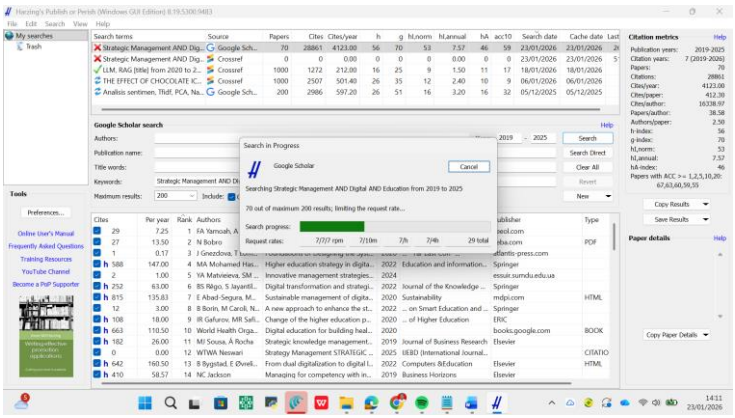
1. Co-occurrence Analysis: To identify dominant research themes and clusters.
2. Overlay Visualization: To detect the most recent trends and topic evolution over time.

RESULTS AND DISCUSSION

Publication Trends (2019–2025)

The analysis of publication trends reveals a significant surge in research regarding digital strategic management in education starting in 2020. This aligns with the global disruption caused by the pandemic, forcing institutions to accelerate their digital roadmaps. The consistent high volume of publications in 2023-2024 indicates that digital transformation has moved from an "emergency response" to a "strategic core" of educational management.

Keyword Co-occurrence Network Analysis



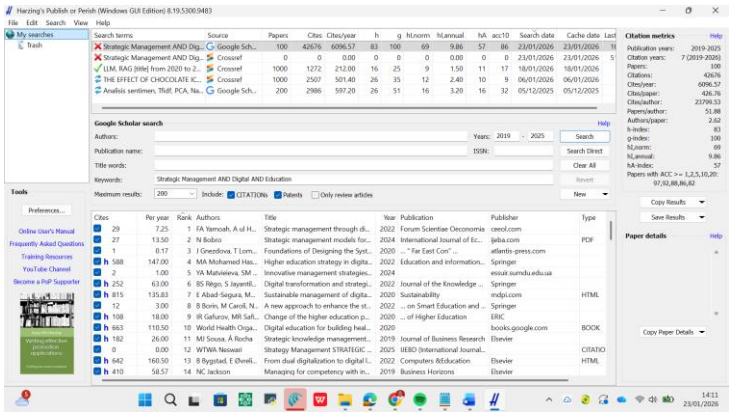


Figure 2. Network Visualization

Figure 2 illustrates the co-occurrence network of keywords, revealing three distinct clusters that represent the core pillars of strategic management in the digital age.

Cluster 1 (Red) : The Technological Infrastructure Backbone
The first cluster, dominated by keywords such as *infrastructure, digital divide, bandwidth, and hardware*, highlights the physical prerequisites of transformation. The bibliometric data confirms that infrastructure remains the primary hurdle. As detailed in our theoretical review, many institutions operate with outdated technological ecosystems. The network analysis supports the finding that bandwidth limitations and legacy hardware are central topics in current literature, often appearing as the root cause of operational inefficiencies. Without resolving these "Red Cluster" issues, strategic plans are rendered ineffective

Cluster 2 (Green) : Human Capital and Psychological Readiness
The second cluster focuses on the "humanware," featuring keywords like *competence, teacher training, mindset, and resistance*. This cluster is critical as it connects technology with organizational psychology. The density of links in this area suggests that the transition to digital education is less about the tool and more about the user. Existing literature validates this, showing that the human dimension is arguably more complex than infrastructure. The challenge identified in this cluster is the "competency gap," where educators struggle not only with technical skills but with "digital pedagogical knowledge". Furthermore, the keyword *resistance* in this cluster underscores the psychological barriers—comfort with status quo and fear of displacement —that leaders must manage through psychological approaches, not just technical instructions.

Cluster 3 (Blue) : Strategic Governance and Leadership
The third cluster encompasses *strategic planning, leadership style, policy, and quality assurance*. This represents the management layer that binds infrastructure and people. The prominence of *transformational leadership* in this cluster indicates a shift from administrative management to visionary leadership. Strategic responses identified in the literature emphasize that sustainable implementation requires leadership commitment that goes beyond rhetoric. This cluster suggests that successful institutions are those where leaders actively model digital usage and align resource allocation with digital priorities.

Infrastructure Deficiencies and Technological Gaps

The digital transformation of educational institutions is fundamentally challenged by persistent infrastructure inadequacies that extend far beyond simple hardware limitations. Contemporary research reveals that many educational establishments operate with severely outdated technological ecosystems, where legacy systems create cascading operational inefficiencies. These institutions frequently struggle with computers that are five to ten years old, running obsolete operating systems that cannot support modern educational software platforms. The bandwidth limitations are particularly acute, with many schools operating on internet connections that were designed for basic web browsing rather than the simultaneous streaming, video conferencing, and cloud-based collaboration that modern pedagogy demands.

The infrastructure challenge manifests in multiple dimensions. First, the physical layer—comprising network cables, routers, and access points—often represents a patchwork of incremental additions rather than a coherent, planned system. This results in dead zones, inconsistent connectivity, and frequent service interruptions that disrupt the learning process. Second, the application layer suffers from fragmentation, with institutions deploying incompatible systems that cannot communicate effectively with each other. Student information systems, learning management platforms, and assessment tools frequently operate in isolation, creating data silos that prevent the holistic view of student progress that digital transformation promises.

Beyond the technical specifications, there exists a critical gap in infrastructure planning and governance. Many institutions lack dedicated information technology leadership at the strategic level, relegating technology decisions to administrative afterthoughts rather than treating them as fundamental to educational mission. This results in reactive rather than proactive technology acquisition, where purchases are made to address immediate crises rather than as part of a comprehensive digital roadmap. The absence of regular technology audits and needs assessments means that institutions often remain unaware of the full extent of their infrastructure deficiencies until system failures occur.

The financial dimension of infrastructure upgrading presents perhaps the most daunting obstacle. Educational institutions, particularly in under-resourced communities, face the challenge of allocating limited budgets between competing priorities—teacher salaries, facility maintenance, curriculum materials, and technology infrastructure. The capital-intensive nature of technological modernization, combined with the rapid obsolescence of digital tools, creates a perpetual cycle of investment need. Furthermore, the total cost of ownership extends well beyond initial hardware purchases to encompass ongoing licensing fees, maintenance contracts, technical support staffing, and regular upgrade cycles. This comprehensive financial burden requires sustained commitment and strategic budget allocation over multiple fiscal years, a planning horizon that proves challenging for institutions facing annual budget uncertainties.

Human Capital Development and Pedagogical Transformation

The human dimension of digital transformation presents challenges that are arguably more complex and consequential than technological infrastructure issues. The transition to digitally-enhanced education demands a fundamental reconceptualization of the educator's role, moving from information transmission to learning facilitation and curation. This paradigm shift requires educators to develop a sophisticated blend of technical proficiency, pedagogical innovation, and adaptive mindset—a combination that cannot be achieved through superficial training interventions.

The current state of educator preparedness reveals significant competency gaps across multiple domains. Technical literacy remains inconsistent, with substantial variation in educators' comfort and proficiency with digital tools. While some faculty members embrace technological innovation and experiment with cutting-edge platforms, others struggle with basic operations such as file management, email communication, and presentation software. This digital divide among educators creates uneven learning experiences for students and complicates institutional efforts to standardize digital learning approaches. Moreover, technical skill alone proves insufficient; educators must also develop what might be termed "digital pedagogical knowledge"—the understanding of how to leverage technology to enhance rather than merely supplement traditional teaching methods.

The pedagogical transformation required by digital education extends to assessment methodologies, classroom management strategies, and student engagement techniques. Traditional lecture-based instruction translates poorly to digital environments without significant adaptation. Educators must learn to design asynchronous learning experiences that maintain student engagement without physical presence, to facilitate online discussions that promote critical thinking, and to utilize digital tools for formative assessment that provides real-time feedback. These competencies require not merely technical training but fundamental shifts in educational philosophy and practice, demanding extensive professional development that goes far beyond single-day workshops or brief tutorial sessions.

Resistance to change represents another critical human capital challenge. Educational institutions, like all organizations, contain individuals at various stages of technology adoption—from enthusiastic innovators to skeptical laggards. This variation creates tensions as institutions attempt to implement standardized digital platforms and practices. Some resistance stems from legitimate concerns about the effectiveness of digital learning, the potential loss of human connection in education, and the risk of technology displacing rather than empowering educators. Other resistance reflects normal human discomfort with change, particularly when that change threatens established routines and professional

identities built over decades of practice. Addressing this resistance requires not merely training but also thoughtful change management that acknowledges concerns, demonstrates value, provides adequate support, and allows for gradual adaptation rather than abrupt transformation.

The professional development infrastructure at most educational institutions remains inadequate for the scale of transformation required. Traditional models—occasional workshops, external conference attendance, or self-directed online courses—fail to provide the sustained, contextual, collaborative learning that supports genuine practice change. What is needed instead is comprehensive professional learning ecosystems that include ongoing coaching, peer collaboration opportunities, protected time for experimentation and reflection, and institutionalized support structures that normalize continuous learning. Furthermore, professional development must be differentiated to address the varying baseline competencies and learning needs of diverse educator populations, while simultaneously building toward common institutional standards and practices.

Organizational Culture and Change Management

The cultural dimension of digital transformation often receives insufficient attention relative to its importance in determining success or failure of institutional change initiatives. Educational institutions possess deeply embedded cultures that reflect decades or even centuries of tradition, established hierarchies, and shared assumptions about the nature of teaching and learning. These cultural foundations can either facilitate or obstruct digital transformation depending on how change initiatives are conceived and implemented.

Institutional culture manifests in numerous ways that impact digital transformation. Decision-making processes, whether hierarchical or collaborative, determine how technology initiatives are conceived, approved, and implemented. Communication patterns influence how information about new tools and practices disseminates through the organization and how feedback from early adopters shapes subsequent implementations. Risk tolerance affects willingness to experiment with innovative approaches that may fail initially but offer long-term benefits. Recognition and reward systems signal what the institution truly values, either supporting or undermining stated priorities around digital innovation.

The transition to digital learning environments challenges traditional power structures and expertise hierarchies within educational institutions. Technology often disrupts established patterns of authority, as younger faculty members or staff with greater digital fluency may possess knowledge that more senior colleagues lack. This inversion can create discomfort and resistance, particularly in cultures that strongly emphasize seniority and formal credentials. Similarly, students themselves often possess technical skills that exceed those of their instructors, fundamentally altering the traditional expert-novice relationship that has characterized education for centuries. Navigating these shifts requires cultural adaptation that values learning from multiple sources and recognizes diverse forms of expertise.

Leadership commitment emerges as perhaps the single most critical cultural factor in digital transformation success. When institutional leadership—from department chairs through senior administration—demonstrates genuine commitment to digital innovation through resource allocation, personal engagement, and sustained attention, these initiatives gain credibility and momentum. Conversely, when digital transformation is perceived as a peripheral initiative championed by a small faction rather than a core institutional priority, adoption remains limited regardless of the quality of available technology. This leadership commitment must extend beyond rhetorical support to include difficult trade-offs, such as redirecting funding from traditional priorities, modifying promotion and tenure criteria to recognize digital innovation, and personally modeling the use of new technologies and practices.

Strategic Implementation and Sustainability

Moving from vision to sustainable implementation represents the ultimate test of digital transformation initiatives in educational contexts. Many institutions experience cycles of enthusiasm followed by disappointment as initial implementations fail to achieve promised outcomes or gradually fade as attention shifts to other priorities. Breaking this cycle requires strategic approaches that address sustainability from the outset rather than treating it as an afterthought.

Comprehensive needs assessment forms the essential foundation for sustainable digital transformation. Rather than adopting technologies based on vendor marketing or peer institution adoption, effective institutions conduct rigorous analysis of their specific contexts, challenges, and opportunities. This assessment encompasses not only technical infrastructure gaps but also pedagogical needs, student characteristics, community expectations, and institutional strategic priorities. Such analysis enables the selection and customization of digital tools that address genuine needs rather than creating solutions in search of problems. Furthermore, ongoing needs assessment—conducted annually or biannually—ensures that digital strategies evolve in response to changing circumstances rather than becoming ossified.

Pilot programs and iterative implementation strategies prove far more effective than institution-wide rollouts of untested technologies and practices. Pilot approaches allow institutions to experiment on manageable scales, identify and address implementation challenges, refine practices based on early user feedback, and build credibility through demonstrated success before scaling initiatives. These pilots should involve diverse participants who represent the broader institutional community, include robust evaluation mechanisms that capture both quantitative metrics and qualitative experiences, and operate with clear timelines and decision criteria for determining whether to expand, modify, or abandon the initiative. The lessons learned from pilots should be systematically documented and disseminated to inform subsequent implementation phases.

Technical support infrastructure represents a critical yet often underfunded element of sustainable digital transformation. Even the most sophisticated technology proves worthless if users cannot access assistance when difficulties arise. Effective technical support requires multiple channels—walk-in help desks, phone support, email ticketing systems, and online knowledge bases—to accommodate diverse user preferences and urgency levels. Response times must be rapid enough to prevent minor technical issues from derailing learning activities. Support staff must possess not only technical knowledge but also pedagogical understanding and interpersonal skills that enable them to assist users with varying levels of technical proficiency. Moreover, support infrastructure should include proactive elements such as system monitoring that identifies potential issues before users encounter them, regular communication about system updates and maintenance, and user education that builds self-sufficiency over time.

Evaluation and continuous improvement mechanisms ensure that digital transformation initiatives remain aligned with institutional goals and responsive to user needs. Comprehensive evaluation frameworks should incorporate multiple data sources: usage analytics that reveal actual adoption patterns, student performance data that illuminate learning outcomes, user satisfaction surveys that capture subjective experiences, and cost-benefit analyses that assess resource utilization efficiency. These evaluations should occur at regular intervals with results transparently shared with stakeholders and systematically used to inform subsequent planning and resource allocation decisions. The commitment to evidence-based iteration signals that digital transformation is viewed as an ongoing journey of improvement rather than a one-time destination to be reached and then maintained unchanged.

Financial sustainability planning must extend beyond initial implementation budgets to address the ongoing costs of digital infrastructure maintenance, software licensing, professional development, and technical support. Institutions should develop multi-year financial projections that account for both predictable expenses such as annual license renewals and less predictable costs such as emergency equipment replacements. Diversification of funding sources—combining institutional operating budgets with grant funding, public-private partnerships, and community support—can provide greater financial stability than reliance on any single source. Additionally, institutions should regularly assess

return on investment, identifying which digital initiatives provide sufficient value to justify continued funding and which should be scaled back or eliminated to redirect resources to higher-impact uses.

Table 2. Summary of Strategic Challenges and Responses in Educational Digital Transformation

Strategic Domain	Identified Challenges	Digital Opportunities	Strategic Responses
Infrastructure Technology	Outdated hardware (PCs, servers), insufficient bandwidth/internet access.	Access to global resources (MOOCs, Digital Libraries).	Comprehensive technology needs analysis & infrastructure investment.
Human Resources	Lack of digital competence, need for continuous training on LMS/tools.	Use of learning analytics to track progress and personalize instruction.	Continuous Professional Development (CPD) & technical support.
Curriculum & Pedagogy	Materials not adapted for digital delivery, rigid assessment methods.	Interactive learning (Gamification), flexible/autonomous learning.	Curriculum adaptation for hybrid models & new assessment tools.
Policy & Governance	Data privacy concerns, regulatory gaps for digital safety.	Operational efficiency through digital administration.	Formulating clear policies on data security & stakeholder engagement.

CONCLUSION

This research confirms that the challenges of digital transformation in educational organizations can be effectively addressed through the implementation of integrated strategic measures. The study findings demonstrate that synergy between infrastructure needs analysis, continuous educator professional development, and curriculum adaptation is key to bridging the technological and pedagogical gap. Furthermore, active stakeholder engagement, supported by clear policies and adequate technical assistance, has proven vital in creating a safe and adaptive learning ecosystem. Thus, this transformation is not simply about adopting digital tools, but rather an essential mechanism for significantly improving the quality of education through leveraging global resources, personalized instruction, and broader collaboration in the digital age.

RECOMMENDATION

1. Field Study on the Implementation of Digital Strategies in Educational Institutions
   Further research is recommended to conduct empirical field studies on educational institutions that have implemented digital strategies. The goal is to directly understand how these strategies are designed and implemented, as well as the challenges and outcomes encountered in a real-world context.
2. Comparative Analysis of Public and Private Educational Institutions in Adopting Digital Strategic Management
   Comparative research is recommended to evaluate the differences in digital strategic management approaches between public and private educational institutions, particularly in terms of technology management, teacher training, and digital curriculum adaptation.
3. Evaluation of the Effectiveness of Digital Technology Training for Educators
   Further research could examine the effectiveness of digital training programs for teachers and educational personnel in improving their digital competencies, as well as their impact on the quality of online and hybrid learning processes.
4. The Role of Transformational Leadership in Driving Digital Strategy Adaptation
   An in-depth study of how transformational leadership styles contribute to the success of educational institutions in implementing strategic digital transformation is crucial, given the role of leadership as a key driver of organizational change.

5. Technology Risk Management Model in Digital Education
   Research is recommended to develop a comprehensive risk management model to address various technological challenges such as data security, digital system vulnerabilities, and dependence on internet connections.
6. Development of a Digital Readiness Index for Educational Institutions
   Further research can also focus on developing measurement instruments to assess educational institutions' readiness to adopt digital transformation, encompassing aspects of infrastructure, human resources, organizational culture, and internal policies.
7. Analysis of Stakeholder Involvement in Formulating Digital Education Strategies
   It is recommended to examine in more detail the roles of various stakeholders—teachers, students, parents, and local governments—in the process of developing and implementing digital strategies in educational institutions.

REFERENCES

Alwi, M. (2022). Kepemimpinan Transformasional: Meningkatkan Daya Saing Perguruan Tinggi Di Era Industri 4.0. *JUPENJI: Jurnal Pendidikan Jompa Indonesia*, *1*(2), 87-97. https://doi.org/10.55784/jupenji.vol1.iss2.227

Aria, M., & Cuccurullo, C. (2017). bibliometrix: An R-tool for comprehensive science mapping analysis. *Journal of Informetrics*, *11*(4), 959-975. https://doi.org/10.1016/j.joi.2017.08.007

Creswell, J., & Creswell, D. (2023). *Research Design: Pendekatan Metode Kualitatif, Kuantitatif, dan Campuran* (Edisi Keenam). SAGE Publications, Inc.

Das, W. H. (2022). *Kepemimpinan Kepala Sekolah Berbasis Virtual*. Uwais Inspirasi Indonesia.

Das, W. H., & Halik, A. (2018). *Implementasi Manajemen Pengendalian Mutu Di Sekolah*. Global RCI.

Donthu, N., Kumar, S., Mukherjee, D., Pandey, N., & Lim, W. M. (2021). How to conduct a bibliometric analysis: An overview and guidelines. *Journal of Business Research*, *133*, 285-296. https://doi.org/10.1016/j.jbusres.2021.04.070

Halik, A. (2022). *Manajemen Madrasah*. IAIN Parepare Nusantara Press.

Halik, A., & Rustan, A. S. (2021). Sistem Pembelajaran Digital Berbasis Riset: Studi Proyeksi IAIN Parepare. *Prosiding Seminar Nasional Transformasi Pendidikan Di Era Merdeka Belajar*, 1-13.

Kusuma, N., Ma'arif, A. C., Yani, Y., Agustian, H., Sholihannisa, L. U., et al. (2023). *Transformasi Administrasi Pendidikan*.

Nasaruddin, A. H., Das, S. W. H., & Ladiqi, S. (2023). Model Pembelajaran Pendidikan Agama Islam (PAI) Berbasis Digital di Sekolah Menengah Atas. *Indonesian Journal of Islamic Education Studies (IJIES)*, *6*(Juni), 79-92.

Page, M. J., McKenzie, J. E., Bossuyt, P. M., Boutron, I., Hoffmann, T. C., Mulrow, C. D., ... & Moher, D. (2021). The PRISMA 2020 statement: An updated guideline for reporting systematic reviews. *BMJ*, *372*(71), n71. https://doi.org/10.1136/bmj.n71

Saptadi, N. T. S., Alwi, M., Maulani, G., Novianti, W., Agustina, Y., Susilawati, E., ... & Hadikusumo, R. A. (2024). *Revolusi Pendidikan: Merdeka Belajar Kampus Merdeka (MBKM)*. Sada Kurnia Pustaka.

Sembiring, M. S. (2022). *Manajemen Strategik* (H. F. Ningrum, Alih Bahasa). CV. Media Sains Indonesia.

Septiani, S., Surachman, A. E., Alwi, M., Tuerah, P. R., Arribathi, A. H., Hadikusumo, R. A., ... & Maulani, G. (2023). *Manajemen Mutu Pendidikan*. Sada Kurnia Pustaka.

Syahkuan, J., Ni'mah, S., Absor, S. M. U., Azis, M. A., Bakri, A. A., & Napitupulu, R. H. M. (2022). *Manajemen Strategik Dalam Organisasi*. Penerbit NEM.

Van Eck, N. J., & Waltman, L. (2010). Software survey: VOSviewer, a computer program for bibliometric mapping. *Scientometrics*, *84*(2), 523–538.

Warcito, Kusuma, P. U. A. M., Prihanto, J. N., & Saputra, N. (2021). Manajemen Strategik Tingkat Lanjut dalam Organisasi dan Bisnis: Perspektif, Pendekatan, dan Dinamika. *Jurnal Penelitian Pendidikan Guru Sekolah Dasar*, *1*(1). Bintang Pustaka Madani.

Yukl, G. (2010). *Kepemimpinan dalam Organisasi*. University at Albany, State University of New York.