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The Strategic Role of Information Professionals in Advancing Digital Transformation in Educational Institutions

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ABSTRACT

Digital transformation in the education sector has become an inevitable challenge alongside rapid advancements in information technology. This study aims to examine the strategic role of information professionals in supporting digital transformation within educational institutions. Using a qualitative approach supported by a comprehensive literature review, the study analyzes how these professionals contribute to planning, implementing, and sustaining digital initiatives. The findings indicate several key barriers, including limited budgets, resistance to change, skill gaps, and inadequate technological infrastructure. Despite these constraints, information professionals play a critical role as change agents who drive innovation, enhance administrative efficiency, and strengthen the alignment between digital solutions and institutional goals. The study implies that developing professional competencies, improving digital literacy among stakeholders, and fostering stronger collaboration between information personnel and institutional leaders are essential strategies for achieving sustainable digital transformation in education. This research contributes to a deeper understanding of human resource readiness in digital initiatives and offers practical insights for policymakers and educational administrators.

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INTRODUCTION

The rapid expansion of the digital era has reshaped nearly every sector of society, and education is no exception (Arinta, 2024; Alkatiri et al., 2025). As technological innovation accelerates, communities increasingly rely on digital systems for communication, economic participation, and access to public services, making digital competence a societal necessity (Djatmiko et al., 2025). This shift places educational institutions at the center of preparing individuals for a technology-driven world, requiring them not only to introduce digital tools

but to rethink pedagogical models, administrative processes, and institutional culture (Svari & Arlinayanti, 2024). Evidence from global digital transformation trends demonstrates that countries failing to adapt educational systems to technological change experience widening skill gaps and reduced competitiveness in the global labor market (Mhlanga, 2024). Consequently, society increasingly demands that educational institutions deliver graduates who are digitally literate, adaptive, and future-ready (Kayyali, 2024). Therefore, research on digital transformation in education is critical to ensure that schools, universities, and training institutions can meet societal expectations. This study contributes by examining how information professionals who serve as key technological actors within institutions can help bridge the gap between societal digital demands and institutional readiness, ensuring that education remains relevant in an evolving digital landscape.

Despite the societal need for strong digital competencies, many educational institutions struggle to implement effective digital transformation (Palacios-Rodríguez et al., 2023). The primary issue arises from the gap between technological advancement and institutional capacity to adapt, particularly in regions with limited technological access or underdeveloped educational infrastructure (Omweri, 2024). Schools and universities often encounter difficulties integrating technology into daily operations, managing digital learning environments, and protecting sensitive information (Alenezi, 2023). This institutional unpreparedness leads to inefficient learning processes, administrative delays, and a mismatch between graduate skills and industry expectations (Rusli et al., 2025). Such limitations ultimately hinder national competitiveness, as education systems play a vital role in producing human resources capable of functioning in a digital economy (Zhang, 2024). Additionally, many institutions still operate with traditional structures that slow down innovation, creating resistance to change and reluctance to embrace technology-driven work models. These problems highlight the need for targeted strategies that address structural, cultural, and competency-related barriers. Therefore, understanding the institutional problems underlying digital transformation becomes essential to designing sustainable solutions. This study responds to that societal need by focusing on the human resources specifically information professionals—who manage institutional technology and serve as key agents in navigating these complex transitions.

In practice, educational institutions frequently face concrete challenges when attempting to adopt digital systems. Many schools operate with outdated hardware, fragmented networks, and software that cannot support modern learning platforms, creating operational inefficiencies and disruptions to teaching activities (Rodin et al., 2025). Resistance to digital adoption is also

commonly observed among lecturers and teachers who are accustomed to traditional teaching models and feel uncertain about integrating new technologies into their instruction (Syah, 2024). This resistance often stems from limited digital literacy, fear of errors, or perceptions that technology threatens pedagogical autonomy. Furthermore, numerous institutions report difficulties in maintaining cybersecurity, managing large volumes of data, and ensuring the interoperability of technological systems (Sari, 2024b). Skilled personnel capable of addressing these challenges are often insufficient, leading to an overreliance on a small number of information staff who may lack opportunities for targeted professional development. These observed phenomena show that digital transformation in education is far from a purely technical upgrade—it requires addressing human behavior, institutional culture, and resource allocation. Thus, examining the strategic role of information professionals in resolving these field-level challenges becomes increasingly important.

Previous studies have emphasized the growing importance of digital transformation in education, highlighting the need for technology integration, digital pedagogy, and institutional modernization (Ahyani & Dhuhani, 2024a; Sari, 2024a). Researchers have also examined barriers such as limited budgets, inefficient infrastructure, skill gaps, and resistance to change, suggesting that these factors hinder institutions from adopting sustainable technological innovations (Sinulingga & Nasution, 2024a). Additionally, several studies focus on student digital literacy, teacher readiness, and the effectiveness of learning technologies; however, they often overlook the internal organizational actors responsible for managing digital systems. The role of information professional individuals or teams responsible for designing, maintaining, and implementing technological solutions is discussed only marginally, despite their central contribution to integrating digital tools with institutional strategic goals (Renaldi, 2025). This omission limits the academic understanding of how digital transformation succeeds or fails within institutions. Therefore, there remains a research gap regarding the strategic and human resource-oriented dimensions of digital transformation. This gap underscores the need for a deeper examination of the competencies, leadership roles, and challenges faced by information professionals in educational settings.

While existing research acknowledges technical challenges such as system maintenance, network reliability, and cybersecurity, few studies analyze these issues in connection with organizational leadership and institutional culture. For instance, Saparuddin, Komariyah et al. (2025) highlight the evolution of information personnel roles from technical maintenance to strategic planning, yet their study stops short of exploring how these evolving roles influence institutional decision-making, change management, or long-term digital

sustainability. Similarly, Navisa et al. (2025) discuss skill gaps among information workers but do not address how institutions can strategically develop these skills or align them with broader educational objectives. Additionally, prior research seldom incorporates a holistic view that links technology, human resources, and organizational change management within the same analytical framework. This creates a fragmented understanding of digital transformation and leaves institutions without clear guidance on empowering information professionals as strategic partners. Therefore, existing literature lacks comprehensive models that position information professionals as central actors in driving digital transformation. Addressing this gap is essential for developing more robust theories and practical frameworks for educational digitalization.

The novelty of this study lies in its explicit focus on information professionals as strategic actors in digital transformation, expanding beyond traditional discussions that frame them merely as technical support staff. This research emphasizes the multidimensional capabilities required by information professionals today, including digital leadership, data governance, cybersecurity awareness, and pedagogical technology understanding (Agit & Muharram, n.d.). By synthesizing literature and field observations, the study proposes that information professionals serve as institutional change agents who not only maintain systems but actively design and implement digital strategies aligned with organizational missions. This perspective represents a significant departure from earlier works that treated technology adoption as a purely technical process. Moreover, the study advances a more integrated conceptualization of digital transformation that incorporates technological readiness, cultural adaptation, and competency development into a single framework. In doing so, it offers a state-of-the-art understanding of how digital transformation must be approached in the contemporary education landscape. This novelty is important because it fills a critical theoretical and practical gap in the field, enabling institutions to better design strategies for sustainable digital change.

Based on gaps identified in literature and observed challenges in the field, this study addresses the central research problem: How do information professionals play a strategic role in supporting and sustaining digital transformation in educational institutions? This question is crucial because their responsibilities increasingly extend to digital planning, infrastructure management, cybersecurity protection, data management, and leading institutional adaptation efforts (Saparuddin, Wartini et al., 2025). The study argues that understanding this expanded role is essential for developing more effective institutional strategies, particularly in environments with limited budgets, skill disparities, and resistance to change. By providing an analytical

framework that links competencies, institutional culture, and digital readiness, this research offers a preliminary answer: information professionals function as key mediators between technological possibilities and institutional needs, shaping how digital transformation unfolds. The expected contribution of this research includes advancing theoretical understanding of human resource roles in digital education, informing policy decisions, and offering practical insights for institutional leaders seeking to strengthen digital capacity. Therefore, examining this problem is not only academically relevant but also vital for ensuring long-term educational sustainability in the digital era.

RESEARCH METHOD

This study employs a qualitative research design using a literature study and document analysis approach (Khaddafi et al., 2025). This design was selected because it allows for an in-depth exploration of concepts, theoretical frameworks, and empirical findings related to the strategic role of information professionals in digital transformation within educational institutions. Qualitative inquiry is particularly appropriate for examining complex social and organizational phenomena that cannot be fully captured through numerical data. It enables the researcher to synthesize diverse academic perspectives and contextual insights to form a comprehensive understanding of the roles, challenges, and capacity-building strategies relevant to information professionals. A total of 22 academic sources—comprising 20 peer-reviewed journal articles and 2 scholarly books—were systematically reviewed to ensure breadth and depth of analysis on the topic.

Data were collected through extensive review of scholarly publications, policy documents, industry reports, and articles discussing digital transformation in educational settings and the evolving responsibilities of information personnel. The literature was purposefully selected from the last five years to ensure alignment with current technological trends and institutional practices. The selection process involved identifying sources that addressed topics such as digital leadership, information management, technological infrastructure, and workforce competency development in the education sector. Document analysis was also conducted to extract relevant narratives, conceptual models, and institutional strategies reported in previous studies. This multi-source data collection procedure enabled triangulation, ensuring that the information gathered was rich, contemporary, and contextually relevant to the study's focus.

The collected data were analyzed using qualitative content analysis to identify recurring themes, patterns, and conceptual relationships across the reviewed literature. This technique allowed the researcher to categorize

information into key thematic domains, including the roles of information professionals, challenges encountered during digital transformation, and recommended strategies for capacity development. Descriptive analysis was applied to synthesize insights and interpret how these themes contribute to a broader understanding of digital transformation in education. Through iterative reading, coding, and thematic refinement, the analysis yielded a structured set of findings that form the basis for the study's conclusions and recommendations. This analytical approach provided a systematic means to integrate diverse scholarly perspectives and highlight critical implications for institutional decision-making and educational policy.

RESULT AND DISCUSSION

Strategic Roles of Information Professionals

Information professionals in educational institutions now assume multidimensional and strategic responsibilities that extend far beyond traditional technical support roles. Their contributions include digital leadership, innovation facilitation, and alignment of technological initiatives with institutional missions (Mogat et al., 2025). As strategic planners, they translate institutional visions into actionable digital roadmaps, ensuring that technological investments directly support pedagogical enhancement, administrative efficiency, and long-term competitiveness. This requires a deep understanding of emerging technologies, institutional priorities, and the dynamic needs of learners and educators.

A core aspect of their role involves managing and maintaining a robust digital infrastructure, including networks, servers, academic information systems, Learning Management Systems, and various institutional applications. Their work ensures that digital ecosystems remain stable, secure, and accessible, which is essential for sustaining day-to-day academic and operational activities. Additionally, information professionals increasingly serve as integrators of advanced digital solutions, such as adaptive learning platforms, cloud-based services, and institutional analytics systems, allowing institutions to transition toward data-driven decision-making.

Beyond infrastructure and system integration, information professionals serve as facilitators of digital literacy and capacity building across the institution. They design and deliver training programs to help lecturers, staff, and students effectively utilize digital tools for learning, research, and academic management. This role is particularly vital as institutions expand the use of artificial intelligence, big data analytics, and digital pedagogies. Equally important is their responsibility in leading cybersecurity initiatives—developing policies, conducting audits, responding to incidents, and ensuring compliance with data

protection regulations.

Finally, information professionals act as institutional change agents who cultivate a culture of innovation and responsiveness toward technological advancement. Their ability to identify emerging technological trends, pilot experimental solutions, and evaluate digital initiatives positions them as key drivers of institutional modernization. This transformative role marks a shift from being mere technical operators to becoming strategic partners in shaping the future of education. Ultimately, their contributions support the entire lifecycle of digital resource management, including acquisition, organization, preservation, and accessibility—functions critical to achieving sustainable digital transformation.

Challenges

Despite their growing strategic relevance, information professionals face substantial challenges that can hinder digital transformation efforts. One of the most fundamental barriers is technological competency gaps that persist among many information staff members who struggle to keep pace with rapid technological developments (Sinulingga & Nasution, 2024b). The increasing complexity of digital ecosystems—ranging from cybersecurity risks to data governance demands—requires advanced competencies that many institutions have not systematically developed. Consequently, institutions face difficulty ensuring that their technology teams are adequately prepared to support modern digital needs.

Financial limitations are another major obstacle, especially for institutions in developing countries. Restricted budgets often result in outdated infrastructures, insufficient digital tools, and inadequate human resource capacity (Sari, 2024c). Without sustained investment, institutions cannot upgrade systems, adopt new technologies, or provide high-quality professional development for information staff. Compounding this issue is resistance to change within academic communities; traditional pedagogical cultures often discourage the adoption of digital solutions, requiring extensive communication and training efforts to foster acceptance.

Skill gaps remain a persistent barrier even when infrastructure is available. Accelerating technological innovation necessitates continuous upskilling in areas such as cloud computing, AI, cybersecurity, and data analytics—yet training opportunities are often limited. In addition, fragmented and outdated IT infrastructures present integration challenges that demand substantial time and technical expertise. The complexity of legacy systems slows modernization efforts and limits the institution's ability to deliver seamless digital experiences. Cybersecurity threats exacerbate these challenges, as

educational institutions are increasingly targeted due to large stores of sensitive data.

Other significant barriers include the absence of a clear strategic vision and weak institutional governance structures. Without leadership commitment, digital initiatives often become isolated and fail to produce systemic change. Heavy workloads among information professionals further restrict their capacity for innovation because they are frequently consumed by urgent, routine technical tasks. Broader societal issues, such as digital divides in remote regions and insufficient regulatory frameworks for digital governance, also constrain the success of digital transformation initiatives. Collectively, these challenges illustrate that digital transformation requires more than technology—it demands structural, cultural, and organizational readiness.

Development Strategies

Addressing these challenges requires comprehensive, long-term strategies aimed at strengthening the competencies, leadership roles, and institutional positioning of information professionals. Continuous professional development is essential, particularly in advanced digital skills such as data management, cybersecurity, and cloud-based infrastructure (Mukaddamah, 2025). Institutions must also ensure that IT strategies are tightly aligned with institutional visions through effective communication and collaborative planning with leadership. This alignment helps prioritize investments that directly support academic and organizational goals.

Building a culture of innovation is equally vital, as it encourages information professionals to experiment with emerging technologies and co-design digital solutions with lecturers, staff, and students. Encouraging cross-unit collaboration supports the development of contextually relevant digital tools and enhances engagement across academic communities. Digital literacy programs must also be expanded to equip stakeholders with the skills required to use institutional systems effectively, fostering a more inclusive environment where digital adoption becomes a shared responsibility rather than a technical mandate.

Cybersecurity awareness and institutional resilience must be strengthened through structured training programs, regular security audits, and investment in modern cybersecurity technologies. Proactive risk management strategies ensure that institutions can protect sensitive data and respond effectively to evolving threats. Additionally, optimizing resource management through efficient project governance and automation of routine tasks can free

information professionals to focus on strategic digital initiatives. This shift enables them to contribute more effectively to innovation and long-term planning.

Digital leadership development is crucial for empowering information professionals to assume broader strategic roles. Leadership-focused training, mentorship, and involvement in institutional planning processes can enhance their ability to guide organizational change. Forming strategic partnerships with technology vendors, industry experts, and other educational institutions further expands institutional capacity by enabling knowledge exchange and access to cutting-edge solutions. These combined strategies ensure that institutions not only adapt to digital transformation but also position themselves as leaders in digital innovation.

CONCLUSION

The findings of this study highlight the essential and multidimensional role of information professionals in driving digital transformation within educational institutions. The analysis demonstrates that their responsibilities extend far beyond technical support, encompassing strategic leadership, digital infrastructure management, data governance, cybersecurity, and the facilitation of digital literacy across academic communities. These insights underscore a central lesson: the success of digital transformation is not merely determined by the adoption of new technologies, but by the capacity of institutions to empower information professionals as strategic change agents capable of aligning digital initiatives with institutional goals.

Despite offering a comprehensive conceptual understanding and contributing to the academic discourse by synthesizing recent literature, this study is not without limitations. The reliance on secondary data restricts the ability to capture contextual variations across different institutions, and the absence of empirical field data limits the depth of practical validation. Future research should therefore incorporate qualitative fieldwork or mixed-method approaches involving interviews, case studies, or surveys to examine real-world practices and challenges faced by information professionals. Such research would enrich the findings by providing empirical evidence, enabling more nuanced insights, and expanding the theoretical and practical implications of digital transformation in educational settings.

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