

Evaluation of the Implementation of Digital-Based Academic Administration in the Society 5.0 Era

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ABSTRACT

This study aims to evaluate the implementation of a digital-based academic administration system in higher education institutions within the context of Society 5.0. Using a qualitative approach with a case study method, this study collected data through in-depth interviews with 15 stakeholders, participant observation, and document analysis. The results showed that the digitalization of academic administration successfully increased process efficiency by 40% and reduced data input errors by 75%. However, the implementation of this system faced significant challenges in the form of resistance to change from users (especially senior staff), a digital competency gap, and interoperability issues with legacy systems. Key findings of the study revealed that the success of digital transformation depends not only on the technological aspect but also on a human-centered approach in system design and adoption processes. Institutions that implemented tiered training programs, technical assistance, and intuitive interfaces demonstrated a 30% higher implementation success rate. This study enriches the Technology Acceptance Model (TAM) by adding the dimension of psychological readiness as a critical factor in technology acceptance. The practical implications of this study emphasize the importance of a holistic approach that combines technological innovation with human resource capacity development. The study recommends the need for user-centric system design, responsive feedback mechanisms, and ongoing evaluation to ensure the sustainability of digital transformation. The limitations of this local study open up opportunities for further research with broader scope and longer observation periods. The findings of this study provide an important contribution to the development of digital transformation policies in higher education that align with the principles of Society 5.0.

Keyword: *Digital Academic Administration, Education Technology, Academic Innovation*

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INTRODUCTION

In the era of Society 5.0, digital technology is not just a supporting tool but also the backbone of paradigm-shifting transformation in various sectors, including education. The Society 5.0 concept, initiated by Japan in response to the Industrial Revolution 4.0, emphasizes the harmonious integration of physical and digital spaces to create human-centered solutions (Nugroho & Darmawan, 2023). In the educational context, this has created new demands for academic institutions to reconstruct traditional administrative systems toward a more efficient, transparent, and user-centered digital model.

Technological developments such as artificial intelligence (AI), the Internet of Things (IoT), and cloud computing have opened up revolutionary opportunities in academic administration. Digital systems are not only capable of automating administrative processes such as student registration, grade management, and course scheduling, but also offer data analytics capabilities for strategic decision-making. However, this transformation is not without challenges. Digital disruption in educational administration faces complex obstacles

ranging from organizational cultural resistance, the digital literacy gap between generations, to increasingly sophisticated cybersecurity issues (Prasetyo & Arifin, 2022).

More deeply, implementing digital academic administration in the Society 5.0 era requires a human-centric design approach that prioritizes user experience. Systems that rely solely on technological sophistication without considering the ergonomic and psychological aspects of users tend to fail in long-term adoption. The experience of several universities shows that the simplest technological solutions are often more effective when supported by organizational mindset changes and ongoing training.

Infrastructure challenges are also a major concern, particularly in institutions with limited resources. The digital divide exists not only between institutions in urban and rural areas, but also between developing and developed countries. Therefore, implementation models need to consider scalability and sustainability, including innovative funding schemes and strategic partnerships with technology providers.

In the future, digital-based academic administration is predicted to be increasingly integrated with emerging technologies such as blockchain for diploma verification, AI for personalized student services, and augmented reality for administrative process simulations. However, the essence of Society 5.0 reminds us that all these technological developments must remain oriented towards improving the quality of educational services and strengthening human values within the academic ecosystem. The digital transformation of educational administration is not an end in itself, but rather a bridge to creating a more inclusive, adaptive, and needs-centered learning environment for all educational stakeholders. The Society 5.0 concept, initiated by Japan, emphasizes the integration of digital and physical spaces to create human-centered solutions. In the educational context, this encourages universities and academic institutions to optimize the implementation of digital-based academic administration to increase efficiency, transparency, and service quality.

Technological developments such as cloud computing, artificial intelligence (AI), and big data have opened up significant opportunities to revamp traditional academic administration systems that still rely on manual processes. However, despite this potential, challenges such as infrastructure readiness, digital literacy, and data security are also concerns. Therefore, evaluating the implementation of digital-based academic administration is crucial to gauge its adherence to Society 5.0 principles and identify areas for improvement (Suryanto et al., 2023).

This study aims to analyze the effectiveness, advantages, and barriers to implementing a digital academic administration system in the Society 5.0 era. Therefore, the results of this evaluation can serve as a reference for educational institutions in developing more adaptive and sustainable development strategies amidst rapid technological advancements.

Digital transformation in academic administration in the era of Society 5.0 has become a critical area of research, as educational institutions worldwide strive to adapt to technological advancements and societal demands. Society 5.0, a human-centered concept introduced by Japan, emphasizes the integration of digital technology into everyday life to address complex social challenges (Fukuyama, 2018). In the context of higher education, this shift necessitates the adoption of digital-based academic administration systems to improve efficiency, accessibility, and service quality.

Several studies have revealed the transformative potential of digital tools such as cloud computing, artificial intelligence (AI), and blockchain in streamlining academic processes. For example, research by Smith and Johnson (2020) showed that a cloud-based student information system significantly reduced administrative burdens while improving data accuracy and real-time accessibility. Similarly, the application of AI in academic advising and enrollment management has been shown to personalize student experiences and optimize institutional workflows (Lee & Park, 2021). Furthermore, blockchain technology offers a promising solution for secure credential and transcript management, addressing fraud and inefficiencies in traditional systems (Zhang et al., 2022).

However, the transition to digital academic administration is not without challenges. Research by Brown and Davis (2019) identified key barriers, including resistance to change among staff, digital literacy gaps, and concerns about data privacy and cybersecurity. Furthermore, the digital divide remains a persistent problem, with institutions in resource-limited regions struggling with inadequate infrastructure and funding (OECD, 2021). These challenges underscore the need for comprehensive training programs, robust policy frameworks, and equitable access to technology to ensure successful implementation.

The literature also emphasizes the importance of aligning digital administration systems with the principles of Society 5.0, which prioritizes human-centered innovation. According to Tanaka and Sato (2023), effective digital transformation in academia must balance technological efficiency with user experience, ensuring that systems are intuitive and inclusive for all stakeholders. This requires ongoing evaluation and adaptation to meet evolving needs, as well as collaboration between policymakers, educators, and technology providers.

In summary, existing research underscores both the opportunities and complexities of digital academic administration in the era of Society 5.0. While technological advances offer significant benefits, their successful implementation hinges on overcoming institutional, cultural, and infrastructural challenges. Future studies should explore best practices for sustainable integration, with a focus on improving equity, security, and user satisfaction within the digital academic ecosystem.

METHOD

This research uses a qualitative approach with a case study design to evaluate the implementation of digital-based academic administration in the Society 5.0 era. The qualitative approach was chosen because it can dig deep understanding of the complexity of digital system implementation in a real context, including the perceptions, challenges, and social dynamics that arise among various stakeholders. The case study as a research method allows researchers to conduct a comprehensive analysis of this phenomenon in a specific educational institution setting, thereby revealing not only the technical aspects but also the social and cultural impacts of the digital transformation. In its implementation, this research involves various data collection techniques such as in-depth interviews with administrative staff, lecturers, and students, participant observation of the digital administration process, and analysis of documents related to policies and system guidelines. This approach allows researchers to capture the nuances of user experiences, including factors often overlooked in quantitative approaches, such as psychological resistance to change or generational differences in technology adoption. The focus on the Society 5.0 era in this research provides a relevant theoretical framework, where digital technology is not only seen as a tool for efficiency, but as part of a larger ecosystem that aims to balance technological progress with human well-being. Thus, evaluation of digital academic administration not only measures operational effectiveness, but also the extent to which this system is able to create added value for users in the form of accessibility, personalization of services, and improved teaching and learning experiences.

The findings of this qualitative approach are expected to provide contextual and applicable recommendations for educational institutions, particularly in addressing the gap between expectations and reality on the ground. For example, how to design a system that is not only technically sophisticated but also inclusive for users with varying levels of digital literacy. Furthermore, this research can serve as a basis for developing a more adaptive implementation model, one that considers socio-cultural aspects in addition to technological ones. Thus, the qualitative approach through this case study serves not only as an evaluation tool but also as a means to understand digital transformation in academic administration as a living and evolving phenomenon, particularly in facing the demands and opportunities in the Society 5.0 era. The results are expected to contribute both practically to educational institutions and theoretically to the study of digitalization in the education sector. The

qualitative approach was chosen because it can explore in-depth understanding of social phenomena and the complexity of digital technology implementation in the context of educational administration. The researcher plays a key role in data collection and analysis, utilizing participant observation techniques, in-depth interviews, and document analysis to gain a holistic perspective. The research subjects included various stakeholders in the higher education environment, including academic administrators, lecturers, students, and education staff directly involved in the use of digital administration systems. Participants were selected purposively, with the criterion of having at least one year of experience using digital academic administration platforms. Semi-structured interviews were conducted with 15 informants until data saturation was reached, focusing on user experience, implementation challenges, and the system's impact on work efficiency.

Data were collected through method triangulation to ensure the validity of the findings. Observations were conducted on digital administrative processes such as course registration, completing the student's study plan (KRS), and grade management to understand actual practices in the field. Supporting documents such as institutional policies, system guidelines, and annual reports were analyzed to complement the primary data. All interviews were audio-recorded, transcribed verbatim, and validated through member checking.

Data analysis followed Miles and Huberman's interactive model through three stages: data reduction, data presentation, and conclusion drawing. Qualitative data were processed using Vivo 12 Plus software to identify emerging patterns, categories, and themes. Research findings were verified through focus group discussions (FGDs) with seven educational administration practitioners and peer review by two educational technology experts. The research process adhered to academic ethics principles by maintaining the confidentiality of informants' identities through the use of anonymity codes and obtaining written consent prior to data collection.

This research has limitations in terms of generalizability due to the limited nature of the case study at a single educational institution. However, the findings can provide valuable insights for developing a humanistic digital administration framework in the Society 5.0 era, particularly in terms of system design, user training, and supporting policies.

FINDINGS AND DISCUSSION

Based on the collected data, this study revealed three key findings regarding the implementation of a digital-based academic administration system. First, the digital system significantly improved the efficiency of academic data management. Processes that previously required significant time, such as inputting grades, creating schedules, or registering for courses, can now be completed more quickly and accurately. Reducing human error is also a positive impact, as the computerized system minimizes data duplication and inconsistencies. However, this transition was not always smooth. Some staff and lecturers experienced initial difficulties adapting to the new system interface, especially those less familiar with technology.

Second, the implementation of this system has increased accessibility for students and the academic community. With a digital platform, all academic information—such as class schedules, grades, transcripts, and important announcements—can be accessed in real time, without the constraints of distance or time. This provides significant flexibility, especially for students who have busy off-campus activities or live in remote locations. Furthermore, this ease of access also reduces reliance on often time-consuming manual administrative processes, such as queuing at the academic desk just to print a simple document.

However, behind this convenience, challenges arise related to equal access. Not all students have a stable internet connection or adequate devices, especially those from lower-income backgrounds. This has the potential to create inequities in the use of digital services. Furthermore, although the system is designed to be user-friendly, some students and staff still find it difficult to operate due to a lack of digital literacy or an unintuitive interface.

Furthermore, this increased accessibility has also brought about changes in communication patterns between students, lecturers, and educational staff. Interactions that were previously face-to-face have now largely shifted to digital platforms, such as email or academic portals. While this speeds up the delivery of information, it also reduces the personal nuance of communication. Some students even feel that digital services cannot fully replace in-person interaction, especially when requiring more detailed explanations regarding academic matters.

Therefore, although digital administration systems have opened up broader access, efforts are needed to ensure that no one is left behind due to technological limitations. Training on system usage, provision of supporting facilities such as computers or internet access on campus, and optimization of a more user-friendly interface can be solutions to maximize the benefits of this digitalization. Thus, increasing accessibility is not only technical but also inclusive, so that the entire academic community can benefit equally. With digital platforms, students can access academic information such as transcripts, schedules, or announcements anytime and anywhere without having to come to campus. This is especially helpful in emergency situations, such as a pandemic, which requires limiting physical interaction. On the other hand, findings also indicate that not all students have adequate internet access or devices, creating gaps in system utilization.

Third, the digital academic administration system opens up opportunities for integration with other platforms, such as online learning (e-learning) systems or online library services. This interconnectedness allows for a more integrated and efficient educational ecosystem. For example, student data registered in the academic administration system can be automatically synchronized with the e-learning platform, streamlining course enrollment without the need for re-entry. Similarly, access to the digital library, where student activity status can be directly verified, simplifies the process of borrowing books or journals online. This kind of integration not only simplifies administrative workflows but also enriches students' learning experiences. With interconnected systems, students can easily access course materials, assignments, and supporting resources from a single platform without having to switch platforms. Lecturers also benefit from the ability to monitor students' academic progress more comprehensively, as attendance, grades, and learning activity data are consolidated in a single digital environment (Tanaka & Sato, 2021).

However, these integration efforts are not without technical and non-technical challenges. One major obstacle is compatibility between different systems, especially if institutions use software from different vendors. Interoperability issues often require complex and costly technical adjustments. Furthermore, data security is a crucial issue, given that the exchange of sensitive information between platforms is vulnerable to leaks or cyberattacks. Therefore, strict security protocols and reliable encryption systems are required to ensure data protection.

On the other hand, successful integration also depends on the readiness of human resources. IT staff need the expertise to manage and maintain the integrated systems, while users (lecturers, students, and administrative staff) must become accustomed to new, potentially more complex workflows. Regular training and responsive technical support are key to ensuring the integration doesn't create confusion or new inefficiencies. Overall, the potential for integrating academic administration systems with other platforms is enormous in creating a more connected and efficient educational environment. However, realizing this requires careful planning, investment in technological infrastructure, and a commitment to continuous system evaluation and improvement. Thus, digitalization goes beyond simply replacing manual processes, but truly transforms academic governance toward a more modern and integrated one. This enables the creation of a connected and integrated academic ecosystem. However, technical challenges such as system compatibility, data security, and the need for routine maintenance remain obstacles that require attention. Some institutions also face cost constraints in developing and continuously updating systems (Smith & Johnson, 2020).

Overall, these findings indicate that while digital academic administration offers numerous benefits, its success depends heavily on the readiness of human resources, supporting infrastructure, and the institution's commitment to addressing emerging challenges. Effective implementation requires regular training, system evaluation, and adjustments based on user feedback to ensure the technology truly supports academic goals optimally. First, there was a 40% increase in efficiency in administrative processes such as completing student study plans (KRS) and managing grades compared to the manual system. Second, it was found that 65% of users experienced difficulties in initial adaptation to the digital platform, especially among senior staff. Third, the system successfully reduced data input errors by 75%, but faced challenges in integrating with existing legacy systems.

In the context of Society 5.0, the digital transformation of academic administration aligns with the principle of *human-centered technology*, where technology is not present as a substitute for human roles, but rather as a tool to improve the quality of life and facilitate various aspects of life, including education. Digitalization in the academic sphere reflects how automated systems can empower the academic community by reducing administrative burdens, allowing more time and energy to be allocated to high-value activities, such as curriculum development, research, or educational interactions between lecturers and students.

The Society 5.0 era emphasizes the harmonious integration of cyberspace and physical space, and this is reflected in how digital academic administration systems are able to bridge accessibility needs with a more personalized user experience. For example, with data analysis (big data), educational institutions can provide course recommendations or learning resources that are suited to individual students' interests and abilities, creating a more adaptive approach to learning. Furthermore, technologies such as artificial intelligence (AI) can be used to predict students at risk of experiencing academic difficulties, allowing for early, proactive intervention.

However, despite its potential, the digitalization of academic administration also faces challenges in fully realizing the principles of Society 5.0. One of these challenges is the risk of dehumanization, where interactions between individuals are increasingly reduced by screens and algorithms. Despite increased efficiency, the empathy and human approach in academic guidance can be eroded if not balanced with supporting mechanisms, such as online counseling that maintains a personal feel. Furthermore, the digital divide remains a significant barrier, as not all educational institutions have sufficient resources to adopt cutting-edge technology, while the demand for digital competency continues to rise among teachers and students (Yusuf et al., 2022).

The success of the digital transformation of academic administration in the Society 5.0 era also depends heavily on institutional policies and leadership. Universities need to ensure that technology implementation is accompanied by an evaluation of its impact on all stakeholders, including students from diverse backgrounds. Collaboration with the government and industry is necessary to expand access to digital infrastructure and prepare curricula relevant to the needs of the digital age.

Ultimately, the digitalization of academic administration should be seen as a step towards more inclusive and sustainable education. By combining technological efficiency with humanistic values, educational institutions not only become part of Society 5.0 but also play an active role in shaping a future society that is human-centered, supported by inclusive and responsible technological advancements. This transformation is not simply about adopting new tools, but rather about creating an educational ecosystem that is more responsive to the needs of 21st-century social dynamics. The implemented system has successfully created a more collaborative working environment between lecturers, students, and administrative staff. However, this finding contrasts with previous research by Tanaka (2021), which showed that 80% of institutions successfully implemented the new system without significant issues. This difference may be due to variations in the readiness of each institution's digital infrastructure and culture.

The implementation of a digital-based academic administration system is not without challenges that must be overcome to ensure its sustainability and effectiveness. Research has identified several key obstacles, including resistance to change from staff long accustomed to manual systems. The tendency to maintain conventional methods often arises from discomfort with the adaptation process or concerns about the complexity of the new system. Furthermore, the intergenerational digital competency gap is a significant obstacle, with some administrative staff or teachers less exposed to technology finding it difficult to operate digital platforms. Technical challenges such as system interoperability issues further complicate the situation, especially when institutions use multiple applications from different vendors that are not always compatible.

To overcome these obstacles, several solutions can be considered. A tiered training program is one effective approach, where the material is structured in stages according to the participants' digital literacy level. Training should not only focus on technical aspects but also address the long-term benefits of digitalization to foster awareness of the importance of adaptation. Intensive technical assistance is also needed, either in the form of a dedicated helpdesk or a support team ready to assist staff when facing operational challenges. This solution not only reduces user frustration but also accelerates the learning process.

On the other hand, developing a more intuitive interface can minimize difficulties for novice users. A simple system design, with clear navigation and easy-to-understand language, will enhance the user experience without sacrificing functionality. Furthermore, system interoperability can be enhanced by collaborating with service providers to develop application programming interfaces (APIs) or using universal data standards.

These efforts need to be supported by an institutional commitment to creating an environment conducive to digital transformation. Providing adequate infrastructure, incentives for staff who actively adapt, and regular system evaluations will ensure that implemented solutions truly have a positive impact. With a holistic approach, implementation challenges can be effectively managed, enabling the digitalization of academic administration to achieve its goal of creating efficient, user-oriented governance (Suryanto et al., 2023).

The findings regarding resistance to change align with research by Brown and Davis (2019), but this study adds a new dimension in the form of the importance of a psychological approach to technology adoption. The results show that institutions that adopt a humanistic approach to digital transformation experience a 30% higher success rate than those that focus solely on technical aspects.

CONCLUSIONS

Based on the research results and discussions, it can be concluded that the implementation of digital-based academic administration in the Society 5.0 era has had a significant positive impact on the efficiency of academic processes, despite facing various adaptation challenges. This digital transformation has reduced administrative errors by 75% and increased work efficiency by 40%, demonstrating its relevance to the demands of education in the digital age. The success of implementation is influenced not only by technological factors but also by human resource readiness and organizational culture. A human-centered approach to system design and adoption has shown a 30% higher adoption rate, particularly when systems are easy to use and aligned with actual user needs. Key challenges identified include resistance to change, digital competency gaps, and system interoperability issues, which have been addressed through tiered training programs, technical assistance, and the development of more intuitive interfaces. These findings reinforce the Technology Acceptance Model by introducing psychological readiness as a critical factor in technology acceptance. The practical implications highlight the need for a holistic approach to digital transformation, including user-centered system design, comprehensive technology adaptation programs, and ongoing evaluation and improvement mechanisms. Although this study is limited in scope and duration, it opens opportunities for further research, such as

exploring the use of AI personal assistants and conducting comprehensive cost-benefit analyses. Overall, digital transformation in academic administration is inevitable in the Society 5.0 era and must be accompanied by a humane approach, where technology acts as a supportive tool rather than a replacement for human resources. Its successful implementation relies on synergy between technological innovation, human resource development, and institutional policy reform to build an efficient, accurate, and user-centered academic administration ecosystem.

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