Educational Leadership and Management Journal (Element)
Volume 04 Number 01 (2026)
https://online-journal.unja.ac.id/element
DOI : 10.22437/element.v4i1.54951

e-ISSN 3031-4721

23-40

Managing the Digitalization of Academic and Student Services in Higher Education: A Qualitative Case Study

Catur Priyo Utomo[1], Mohammad Syahidul Haq[2], and Amrozi Khamidi[3]
[1,2,3]Universitas Negeri Surabaya, Surabaya, Indonesia

Article Info

Article history:

Received 12, 03, 2026
Revised 10, 05, 2026
Accepted 29, 05, 2026

Keywords:

digital transformation; higher education digitalization; e-service implementation; academic service management; qualitative case study

ABSTRACT

This study examines the digitalization of academic and student services in higher education to improve service efficiency, accessibility, and governance. Previous studies have mainly focused on technology adoption, system evaluation, or service quality separately, while limited research has explored digitalization as an integrated managerial process at the faculty level. This study aims to analyze the implementation of service digitalization at the Faculty of Education, Universitas Negeri Surabaya, identify supporting and inhibiting factors, and formulate an integrated implementation model. This study employed a qualitative case study approach. Data were collected through interviews, observations, and documentation involving faculty leaders, administrative staff, and system developers, and analyzed using thematic analysis. The findings show that service digitalization is influenced by needs-based planning, policy support, human resource readiness, infrastructure, and adaptive system development. Digitalization improved service efficiency, accessibility, and administrative organization, although challenges remain in digital competencies, coordination, system integration, and technical maintenance. The study proposes a cyclical implementation model consisting of planning, organizing, implementation, and continuous evaluation. The study contributes theoretically to implementation management and e-service studies in higher education digital transformation and provides practical guidance for managing digital services in a systematic and sustainable manner.

Corresponding Author: mohamadhaq@unesa.ac.id

INTRODUCTION

Digital transformation in higher education has become a strategic necessity that extends beyond the mere adoption of technology to encompass changes in organizational processes, governance, and service quality. Higher education institutions are required to provide academic and student services that are fast, transparent, accessible, and responsive to student needs. Hashim et al. (2022) emphasize that digital transformation involves changes in organizational models and business processes to enhance technology-based service

quality. In this context, service digitalization plays a crucial role in improving administrative efficiency and supporting data-driven decision-making.

The effectiveness of digital services is not determined solely by speed, but also by the system's ability to deliver reliable, integrated, and value-added services for users. Alamirew (2024) states that service quality dimensions—such as speed, reliability, responsiveness, and ease of access—significantly influence student satisfaction. Therefore, service digitalization must be supported by systematic work processes and well-planned management to ensure effective and sustainable implementation.

However, the implementation of service digitalization in higher education still faces various challenges, particularly in terms of system integration and organizational readiness. Many digital services remain fragmented and are not fully interconnected across units or integrated into institutional strategies (Fernández et al., 2023). At the same time, students increasingly demand integrated and easily accessible services to support their academic and student-related activities (Rotar, 2022). This condition reflects a gap between technological adoption and the improvement of service quality.

In the context of the Faculty of Education, Universitas Negeri Surabaya, the digitalization of academic and student services has been initiated through various information systems. However, its implementation still encounters challenges, such as limited resources, suboptimal inter-unit coordination, and incomplete system integration. These conditions indicate that service digitalization has not yet been fully effective and still requires a more structured and integrated implementation process. Based on these issues, this study aims to analyze the implementation of academic and student service digitalization at the Faculty of Education, Universitas Negeri Surabaya, identify supporting and inhibiting factors, and formulate an integrated implementation model. This study is expected to provide theoretical contributions to digital transformation and implementation management studies, as well as practical contributions to the development of academic and student services in higher education institutions.

LITERATURE REVIEW

Digitalization in Higher Education

Digitalization in higher education is part of a broader organizational transformation involving changes in technology, processes, governance, and human resources to improve service efficiency and support data-driven decision-making (Farias-Gaytan et al., 2023; Fernández et al., 2023). Digital transformation in higher education involves the integration of technology, organizational processes, governance, and human resource readiness, indicating that digitalization should be positioned as an institutional strategy rather than merely the adoption of digital applications (Carmo et al., 2025; Díaz-Garcia et al., 2023).

However, the implementation of digitalization in higher education still faces challenges, such as limited infrastructure, inadequate human resource readiness, resistance to change, and weak system integration. The fragmentation of digital services indicates that many institutions have not fully integrated systems into their organizational strategies (Fernández et al., 2023). Therefore, digitalization must be managed through a systematic implementation process to sustainably improve service quality.

Although previous studies emphasize the importance of digital transformation in higher education, the literature demonstrates differing emphases regarding its implementation. Some studies focus primarily on technological adoption and infrastructure readiness, while others highlight organizational culture, governance, and human resource adaptation as the main determinants of successful digitalization (Fernández et al., 2023; Hashim et al., 2022). This indicates that digital transformation cannot be understood solely as a technical process, but rather as a multidimensional organizational transformation involving managerial, structural, and socio-technical changes. However, the integration of these dimensions within the implementation of academic and student services remains insufficiently explored, particularly at the faculty level.

E-Service in Higher Education

E-service in higher education refers to digitally integrated academic and administrative services designed to improve efficiency, accessibility, and data management. Through system-based and online services, e-service supports more structured and responsive service delivery while enabling information integration across institutional units (Biloshchytskyi et al., 2024; Farias-Gaytan et al., 2023).

In the context of higher education, e-service acts as a link between data, processes, and users, enabling academic and student services to be delivered more systematically and with proper documentation. The use of digital data also supports information-based decision-making (Hashim et al., 2022). Thus, e-service represents the operational implementation of digital transformation in higher education services.

Implementation Management of Digital Systems Based on POAC

The implementation management of digital systems involves coordinating organizational resources, governance, and human resource capabilities to support sustainable technology-based services. In higher education, digitalization implementation should not be understood merely as system deployment, but as a managerial process that connects institutional strategies, operational practices, and service transformation (Hashim et al., 2022; Holm et al., 2025).

The POAC (planning, organizing, actuating, controlling) framework provides a relevant perspective for understanding digitalization implementation as an integrated and continuous organizational process. Within this framework, planning emphasizes priority setting and resource allocation, organizing focuses on coordination and role distribution, actuating involves system operation and user adaptation, while controlling highlights monitoring and continuous evaluation (Carmo et al., 2025; Chounta et al., 2024; Díaz-Garcia et al., 2023).

However, previous studies on digital transformation management have generally emphasized strategic planning or technology adoption separately, while limited attention has been given to how managerial functions interact dynamically throughout the implementation process. In practice, digitalization frequently encounters challenges related to coordination, adaptation, governance, and system sustainability that cannot be resolved through technical solutions alone. Therefore, the POAC framework is used in this study to

conceptualize digitalization as a cyclical managerial process involving continuous interaction among organizational, technical, and human resource dimensions.

Human Resources in Service Digitalization

Human resources are a critical factor in service digitalization because implementation effectiveness depends on employees' digital competencies, readiness to adapt, and ability to operate digital systems (Fernández et al., 2023; Saltos-Rivas et al., 2023). Therefore, digitalization requires organizational support through training, mentoring, and change management to ensure effective system adoption and sustainable service implementation (Chounta et al., 2024; Lee, 2024).

A lack of readiness may lead to issues such as misuse, low participation, and resistance to change. Therefore, service digitalization requires change management through training, mentoring, and organizational support. Human resources function both as users and system managers, making their ability to operate, maintain, and develop digital services essential for successful implementation (Enakrire et al., 2024).

Policy, Infrastructure, and Digital Governance

Policy, infrastructure, and digital governance are key factors in the success of digitalizing academic and student services. Policy serves as a strategic direction that defines goals, priorities, and implementation standards, ensuring that digitalization is not carried out in a fragmented manner (Fernández et al., 2023; Rahmadi, 2024). Digital infrastructure forms the technical foundation, including devices, networks, systems, and data security. Adequate infrastructure is essential for smooth service delivery, while technological limitations may hinder effectiveness (Chugh et al., 2023; Vishnu et al., 2024).

Meanwhile, digital governance ensures coordination across units, system integration, and effective management of resources and data. Integrated governance is necessary for digital services to operate optimally and sustainably (Carmo et al., 2025; Luo et al., 2024). Thus, policy, infrastructure, and governance are interrelated in supporting effective and well-directed service digitalization.

System and Service Application Development

System and service application development is both a technical and managerial aspect of digitalizing academic and student services. System and service application development involves user needs analysis, system integration, and continuous evaluation to ensure that digital services remain relevant, usable, and aligned with organizational needs (Carmo et al., 2025; Fernández et al., 2023). Information systems therefore function not only as administrative tools, but also as mechanisms for integrating data, processes, and services to improve service effectiveness. Thus, system development is an ongoing process encompassing analysis, design, integration, and evaluation.

Previous Studies

Research on digital transformation in higher education has been widely conducted; however, most studies remain partial in scope. Fernández et al. (2023) show that many

higher education institutions lack integrated digital strategies, while Daim et al. (2024) emphasize user behavior in system adoption without addressing organizational implementation strategies. Other studies focus on specific technical aspects and applications, such as information system evaluation (Mijač et al., 2024), chatbot acceptance (Bilquise et al., 2023), and intelligent systems for academic services (El-kholy, 2024). Additionally, research on student services highlights the importance of responsive and accessible services (Barnes et al., 2024), as well as the influence of service quality on student satisfaction and loyalty (Alamirew, 2024; NGO et al., 2025).

Previous studies on digital transformation in higher education have primarily focused on technology adoption, system evaluation, student acceptance, and service quality as separate areas of investigation (Bilquise et al., 2023; Daim et al., 2024; Mijač et al., 2024). Although these studies provide important insights into the technical and behavioral dimensions of digitalization, they tend to emphasize isolated aspects of digital transformation rather than examining its implementation as an integrated managerial process. In addition, many studies focus on institution-wide digital transformation without sufficiently addressing the operational dynamics and implementation challenges at the faculty level, where academic and student services are directly delivered.

Furthermore, limited studies have integrated managerial implementation processes, governance, human resource readiness, infrastructure, and system development within a single analytical framework. As a result, the interaction among organizational, technical, and managerial factors in sustaining digital services remains underexplored. This limitation is significant because the effectiveness of service digitalization depends not only on technology adoption, but also on the institution's ability to coordinate policies, resources, organizational actors, and system integration.

Therefore, this study seeks to address these gaps by examining the implementation of academic and student service digitalization at the Faculty of Education, Universitas Negeri Surabaya, from an integrated managerial perspective. The study contributes by proposing a cyclical implementation model that connects planning, organizing, implementation, and continuous evaluation within the context of higher education digital transformation.

Conceptual Framework

This study conceptualizes the digitalization of academic and student services as an integrated managerial process influenced by organizational, technical, and human resource factors. The framework is developed based on digital transformation, e-service, and implementation management literature, particularly the POAC (planning, organizing, actuating, controlling) perspective. In this framework, policy support, governance, infrastructure readiness, human resource competence, and system development function as key enabling factors influencing the implementation process of service digitalization. These factors interact within the stages of planning, organizing, implementation, and continuous evaluation to support effective and sustainable digital services. The implementation process subsequently influences service quality, particularly in terms of efficiency, accessibility, integration, and administrative organization. The framework positions digitalization not merely as technology adoption, but as a continuous organizational transformation process requiring coordination among managerial, technical,

and operational dimensions. Based on this framework, the study examines how these interconnected factors shape the implementation of academic and student service digitalization at the faculty level.

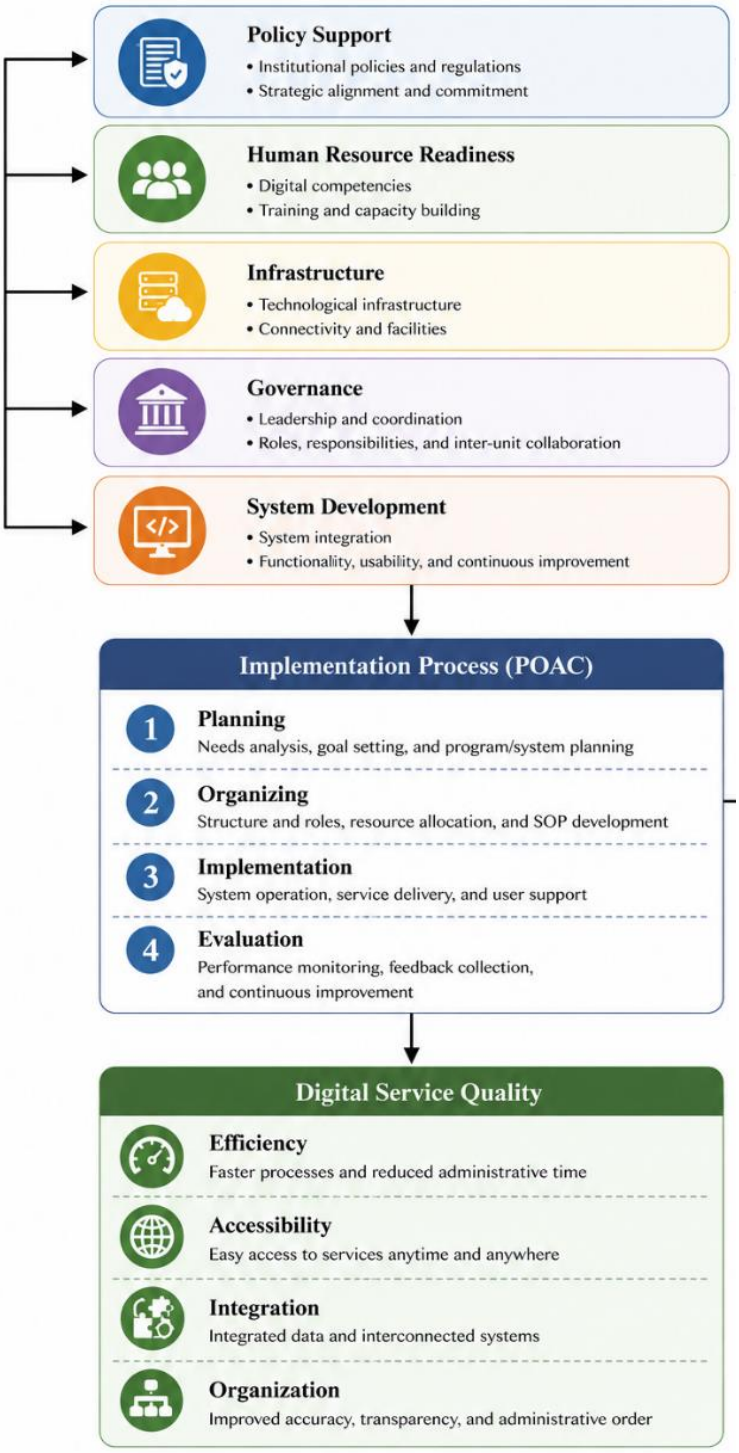

Figure 1. Conceptual framework of academic and student service digitalization implementation

METHODS

Research Design

This study employs a qualitative approach using a case study design to gain an in-depth understanding of the implementation of digitalization in academic and student services within a higher education organizational context. This approach allows for the exploration of meanings, experiences, and contextual dynamics (Aspers & Corte, 2021; Yadav, 2021). The case study focuses on the Faculty of Education, Universitas Negeri Surabaya, as a single unit of analysis, enabling a comprehensive examination of the phenomenon in its real-life setting (Fearon et al., 2021; Sibbald et al., 2021). The research was conducted at the Faculty of Education, Universitas Negeri Surabaya, from April to July 2026. This location was selected because it has implemented digitalization in academic and student services, making it relevant for examining its implementation.

Research Target/Subject

The research participants were selected purposively based on their direct involvement and strategic roles in the implementation of academic and student service digitalization at the Faculty of Education, Universitas Negeri Surabaya. The informants consisted of the Vice Dean for Administration and Finance (Vice Dean II), the Head of the Personnel Office, two application developers, one administrative operator, one lecturer, and one student. These participants represented managerial, technical, operational, and user perspectives related to the implementation of digital services within the faculty.

The study focused on managerial and organizational aspects of service digitalization implementation; therefore, the selected participants were considered capable of providing in-depth information regarding policy direction, implementation processes, coordination, infrastructure readiness, and system management. The inclusion of lecturers and students also enabled the study to capture user experiences and service accessibility perspectives related to digital service implementation. Although the number of participants was limited, the selection emphasized information richness and relevance rather than sample size, which is consistent with qualitative case study research principles. Data collection continued until thematic saturation was achieved, indicated by the absence of substantially new information or themes emerging from subsequent interviews.

Research Procedure

The research procedure involved several stages: (1) identifying the research focus and selecting informants; (2) collecting data through interviews, observations, and documentation; (3) organizing and categorizing data based on research themes; and (4) interpreting findings to develop an implementation model of service digitalization.

Instruments and Data Collection Techniques

Data were collected through in-depth interviews, non-participant observations, and documentation. Semi-structured interviews were used to explore participants' experiences and implementation strategies (Adeoye-Olatunde & Olenik, 2021; Wakelin et al., 2024). Observations were conducted to examine service processes directly (Cheek et al., 2024; House et al., 2025), while documentation was used to verify data through policy documents and service records (Price et al., 2021). The instruments included interview guides, observation checklists, and document analysis sheets.

Data analysis technique

Data were analyzed using the Miles and Huberman interactive model, which consists of data reduction, data display, and conclusion drawing conducted continuously throughout the research process. The analysis focused on key themes related to planning, implementation processes, supporting and inhibiting factors, governance, and the implementation model of service digitalization.

Thematic analysis was conducted through several stages. First, interview recordings and field notes were transcribed and reviewed repeatedly to achieve data familiarization. Second, initial open coding was carried out by identifying meaningful statements related to the implementation of academic and student service digitalization. Third, similar codes were grouped into broader categories and themes, including planning, organizing, implementation, evaluation, human resource readiness, infrastructure, governance, and system development. Finally, the themes were interpreted and connected to relevant theoretical perspectives on digital transformation, e-service, and implementation management to generate analytical findings. The credibility of the findings was strengthened through source and technique triangulation by comparing data obtained from interviews, observations, and documentation.

Ethical Considerations

This study was conducted in accordance with ethical research principles. All participants were informed about the purpose of the study and voluntarily agreed to participate in the interviews. Informed consent was obtained prior to data collection. Participants' identities were anonymized using role-based identifiers to maintain confidentiality and privacy. The collected data were used solely for academic purposes and stored securely throughout the research process.

FINDINGS AND DISCUSSION

Findings

Thematic Analysis of Findings

The thematic analysis generated four major interconnected themes related to the implementation of academic and student service digitalization: (1) needs-based digitalization planning, (2) organizational implementation and adaptation, (3) supporting and inhibiting factors, and (4) cyclical implementation and continuous development. These themes demonstrate that digitalization implementation is shaped by the interaction among managerial processes, governance, human resource readiness, infrastructure, and adaptive system development.

Table 1. Themes and Analytical Meanings of Academic and Student Service Digitalization Implementation

Theme	Supporting Evidence	Analytical Meaning
Need-based planning	Planning considered policy direction, infrastructure readiness, and service priorities	Effective digitalization requires strategic alignment between organizational needs and institutional capacity
Human resource readiness and adaptation	Variations in employees' digital competencies and adaptation processes	Human resource capability significantly affects implementation effectiveness and service consistency

Organizational coordination and governance	Coordination among leadership, operators, and developers influenced implementation	Integrated digital services depend on collaborative governance and inter-unit coordination
Adaptive system development	Continuous system adjustment and system maintenance based on feedback	Digitalization is dynamic and requires continuous refinement and responsiveness
Continuous evaluation and improvement	Monitoring, maintenance, and feedback collection supported service sustainability	Sustainable digitalization depends on ongoing evaluation and organizational adaptation

Planning of Academic and Student Service Digitalization

The findings indicate that the planning of academic and student service digitalization at the Faculty of Education, Universitas Negeri Surabaya was directed toward improving service efficiency, transparency, and administrative organization. The planning process integrated policy direction, operational needs, human resource readiness, and adaptive system development, demonstrating that digitalization was positioned as an organizational transformation process rather than merely technological adoption.

From the policy perspective, digitalization was viewed as an institutional strategy to strengthen administrative effectiveness and service governance. As stated by the Vice Dean II (VD-II):

"*Digitalization is designed to accelerate services and minimize manual processes… as well as to ensure that services are more transparent and well documented.*" (VD-II, interview, 2026)

The implementation was carried out gradually according to service priorities and organizational readiness. This indicates that digitalization planning was influenced by resource allocation, infrastructure capacity, and implementation risks, requiring adaptive managerial decision-making throughout the planning process.

Human resource readiness also emerged as an important aspect of planning. Variations in employees' digital competencies affected the organization's preparedness to implement digital systems consistently across service units:

"*Not all staff are immediately ready to use digital systems…*" (HR, interview, 2026)

This finding suggests that digitalization planning required not only technical preparation, but also employee adaptation and competency development. Uneven digital readiness potentially affected implementation effectiveness and increased dependence on technical assistance and training during service operations.

From the system development perspective, planning was conducted through identifying user needs and evaluating existing systems to ensure operational relevance:

"*Application development is also based on the evaluation of existing systems…*" (SD-2, interview, 2026)

This finding reflects a user-oriented and adaptive planning approach in which system development was continuously adjusted to organizational needs and service conditions. Overall, the findings demonstrate that digitalization planning at FIP UNESA was shaped by the interaction among policy support, infrastructure readiness, human resource capability, and adaptive system development.

Implementation of Academic and Student Service Digitalization

The findings show that the implementation of academic and student service digitalization was carried out through the use of digital systems in administrative and service processes. The implementation improved workflow organization, service documentation, and data processing efficiency, indicating a transition from manual administration toward integrated digital services.

The implementation process involved leadership, administrative staff, and application developers, making coordination among organizational actors an important determinant of implementation effectiveness. As explained by the Vice Dean II (VD-II):

"*The implementation of digital services cannot run independently; coordination between leadership, operators, and system developers is necessary…*" (VD-II, interview, 2026)

This finding indicates that technological integration alone was insufficient without organizational coordination and communication among units. Weak coordination potentially created inconsistencies in system use and hindered service integration across administrative processes.

Administrative staff played a direct role in operating the digital systems within daily service activities:

"*We use the system to input data, process services, and store documents…*" (HR, interview, 2026)

From the user perspective, both lecturers and students perceived that digital services improved accessibility and administrative efficiency, particularly in document submission and information access. However, several participants also noted that system usability and response speed still required improvement during peak service periods. Observations also revealed that several system features still required adjustment to align with operational realities:

"*Some features still need to be adjusted…*" (SD-1, interview, 2026)

This finding demonstrates that digitalization implementation was dynamic and continuously evolving. The need for feature adjustment reflects the gap between initial system design and actual service practices, indicating that effective digitalization requires continuous adaptation and technical responsiveness.

From the human resource perspective, employee adaptation occurred gradually and required organizational support through guidance and assistance:

"*Some employees adapt quickly… but others still need assistance…*" (HR, interview, 2026)

This condition suggests that implementation effectiveness was strongly influenced by employees' digital competencies and organizational readiness to support adaptation processes. Uneven adaptation potentially affected service consistency and increased dependence on technical guidance during implementation.

From the technical perspective, implementation sustainability depended on continuous system maintenance and evaluation:

"*User feedback is very important…*" (SD-1, interview, 2026)

This finding indicates that digitalization implementation should be understood as an ongoing organizational process requiring continuous monitoring, evaluation, and system refinement to maintain service effectiveness and usability.

Supporting and Inhibiting Factors in Digitalization Implementation

The findings reveal that the implementation of academic and student service digitalization was influenced by interconnected supporting and inhibiting factors involving organizational, technical, and human resource dimensions. These factors shaped the effectiveness and sustainability of digital service implementation within the faculty.

One of the primary supporting factors was the organizational need to improve service quality to become faster, more accessible, and better documented. Leadership support also played an important role in determining the continuity of digitalization implementation:

"*Faculty leaders are fully supporting service digitalization… although it is implemented gradually according to priority needs.*" (VD-II, interview, 2026)

This finding suggests that leadership commitment functioned as a strategic driver that strengthened institutional legitimacy and organizational support for digital transformation.

The gradual implementation also reflects an adaptive managerial approach that considered institutional readiness and resource limitations.

Human resource capability and technical support from system developers also facilitated implementation effectiveness:

"*We continuously improve and adjust the system based on user needs.*" (SD-1, interview, 2026)

This finding demonstrates that digitalization implementation depended on the interaction between user readiness and adaptive system development. Continuous adjustment based on operational feedback indicates that digitalization required responsive and user-oriented technical management.

However, uneven human resource readiness became one of the major inhibiting factors:

"*There are still employees who are not accustomed to using the system…*" (HR, interview, 2026)

This condition indicates that differences in digital competencies affected service consistency and slowed organizational adaptation to digital work systems. Coordination and system integration also emerged as significant implementation challenges:

"*Some systems still operate independently…*" (SD-2, interview, 2026)

This finding suggests that technological implementation alone could not guarantee integrated services without strong organizational coordination and interconnected systems. Fragmented systems potentially reduced efficiency and limited data integration across service units.

Technical constraints, including system disruptions and network limitations, also affected implementation stability:

"*We still frequently handle minor bugs or errors…*" (SD-1, interview, 2026)

This finding reflects that sustainable digitalization required continuous technical maintenance, infrastructure support, and organizational responsiveness to ensure stable service delivery. Overall, the findings demonstrate that service digitalization was supported by organizational needs, leadership commitment, human resource capability, infrastructure, and adaptive system development. However, implementation effectiveness remained constrained by uneven digital readiness, coordination weaknesses, fragmented systems, and technical maintenance challenges.

Model of Digitalization Implementation for Academic and Student Services

The findings indicate that the implementation of academic and student service digitalization at the Faculty of Education, Universitas Negeri Surabaya can be conceptualized as an integrated and cyclical managerial process involving organizational, technical, and human resource dimensions. The proposed model demonstrates that digitalization implementation is not limited to technology adoption, but represents a continuous organizational transformation process requiring coordination among policy, governance, infrastructure, human resources, and system development.

The model consists of four interconnected stages: planning, organizing, implementation, and continuous evaluation. The planning stage emphasizes the identification of service needs, resource readiness, infrastructure capacity, and policy direction to ensure that digitalization aligns with institutional priorities. The organizing stage focuses on role distribution, inter-unit coordination, and communication among leadership, administrative staff, and system developers to support integrated service delivery.

The implementation stage involves the operational use of digital systems supported by employee adaptation, technical assistance, and system responsiveness to operational conditions. The findings demonstrate that implementation effectiveness is strongly influenced by employees' digital competencies, organizational collaboration, and continuous

system adjustment. Meanwhile, the evaluation stage functions as a mechanism for monitoring service effectiveness, identifying technical constraints, collecting user feedback, and supporting continuous system refinement.

The interaction among these stages indicates that digitalization implementation operates as a dynamic and adaptive process rather than a linear technological intervention. Continuous evaluation influences subsequent planning and system development, creating a cyclical implementation pattern that supports sustainable digital services.

The model also highlights the importance of integrating managerial processes with socio-technical factors in higher education digital transformation. Unlike previous studies that tend to focus separately on technology adoption, governance, or service quality, this model integrates policy support, human resource readiness, infrastructure, governance, and adaptive system development within a single implementation framework. Therefore, the model contributes theoretically to implementation management and e-service studies while providing practical guidance for managing academic and student service digitalization in higher education institutions. The proposed implementation model is illustrated in Figure 2.

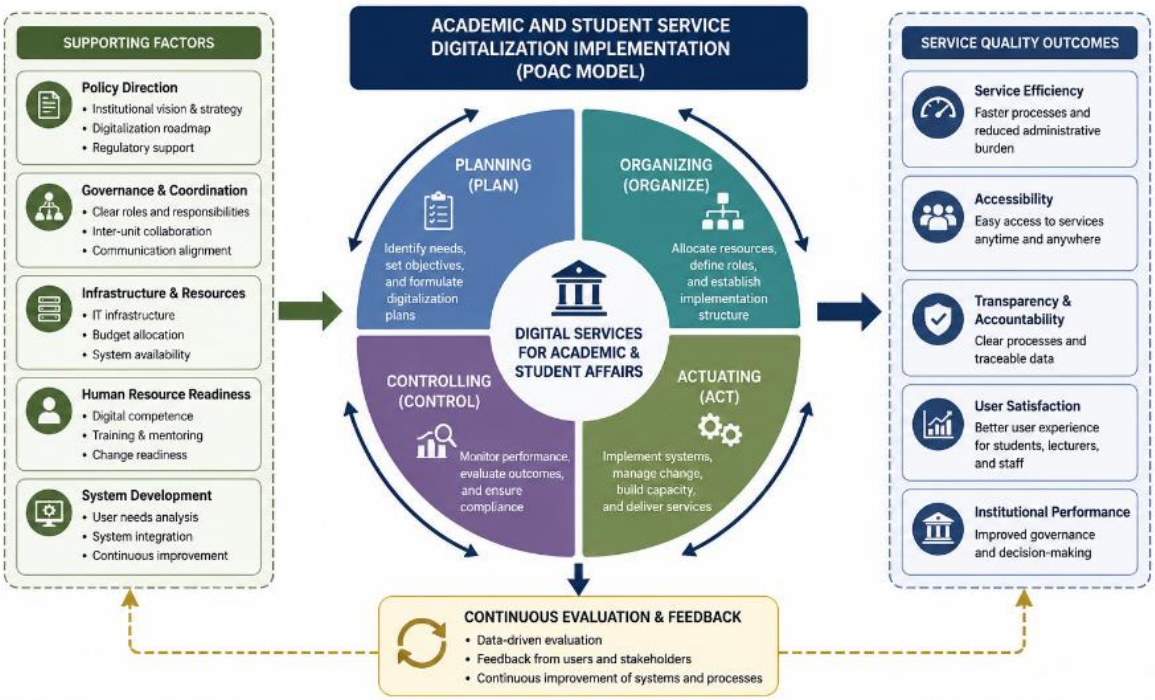

Figure 2. Integrated and cyclical implementation model of academic and student service digitalization in higher education

Figure 2 illustrates that digitalization implementation operates as a continuous and interconnected process in which evaluation outcomes influence subsequent planning, coordination, and system development activities.

Discussion

Digitalization Planning from an Implementation Management Perspective

From the e-service perspective, the implementation of digitalization in higher education reflects a transition toward integrated and technology-driven service governance. Digital services at FIP UNESA already demonstrate several key characteristics of e-service, including system-based operations, centralized data management, and improved service accessibility. These findings support Fernández et al. (2023), who argue that e-service is

an important component of digital transformation because it enables more efficient and well-documented services.

However, the findings also indicate that digital service effectiveness depends not only on system availability, but also on organizational synchronization, infrastructure readiness, and users' adaptation capacity. This suggests that e-service implementation should be understood as a socio-technical transformation process involving continuous interaction between technology, organizational practices, and human resource capability.

Implementation of Digitalization from an E-Service and Implementation Management Perspective

From the e-service perspective, digitalization in higher education reflects a transition toward integrated and technology-driven service governance. Digital services at FIP UNESA demonstrate several core characteristics of e-service, including system-based operations, centralized data management, and improved service accessibility. This supports Fernández et al. (2023), who argue that e-service enables more efficient and well-documented service delivery.

The implementation process also highlights that effective e-service depends not only on technological availability, but also on organizational synchronization, infrastructure readiness, and users' adaptation capacity. In this context, digitalization should be understood as a socio-technical transformation involving continuous interaction between technology, organizational practices, and human resource capability. This reinforces Biloshchytskyi et al. (2024), who emphasize the importance of system integration, user readiness, and data management quality in determining service effectiveness.

From the implementation management perspective, digitalization corresponds to the actuating function within the POAC framework, requiring organizational actors to operate, coordinate, and sustain digital systems collaboratively. The implementation process at FIP UNESA demonstrates that leadership support, inter-unit coordination, and technical collaboration are essential for maintaining integrated service delivery. Consistent with Díaz-Garcia et al. (2023), weak coordination and differences in operational understanding may reduce implementation consistency and limit service integration. In addition, digitalization implementation requires continuous human resource adaptation. Employees must adjust to new workflows, technologies, and service procedures, indicating that digital transformation involves organizational and behavioral change in addition to technical change. This supports Fernández et al. (2023), who emphasize the importance of adaptation capacity and individual readiness in digital transformation initiatives.

From a technical perspective, sustainable digitalization depends on continuous maintenance, troubleshooting, and system refinement based on user feedback. Therefore, digital transformation should not be understood as a one-time technological intervention, but as an ongoing organizational process requiring continuous evaluation and system adjustment (Carmo et al., 2025). Overall, the implementation of digitalization at FIP UNESA demonstrates that successful e-service practices depend on the interaction between managerial coordination, infrastructure readiness, human resource capability, and adaptive system development. Unlike technology-centered approaches, this study highlights that digital transformation effectiveness is shaped by the integration of socio-technical and managerial dimensions within higher education organizations.

Supporting and Inhibiting Factors in Digitalization Implementation

The findings indicate that digitalization implementation in higher education is shaped by the interaction between organizational support and implementation constraints. This demonstrates that successful digital transformation depends not only on technological resources, but also on institutional readiness to coordinate policies, infrastructure,

governance, and human resource adaptation simultaneously. The coexistence of supporting and inhibiting factors reflects the complex and multidimensional nature of digitalization implementation in organizational contexts.

These findings indicate that digitalization challenges in higher education are multidimensional and interconnected. Technical limitations may reduce service effectiveness, but organizational factors such as coordination, governance, and human resource readiness often determine whether digital systems can operate sustainably. This suggests that digital transformation requires balanced development between technological infrastructure and organizational capacity.

On the other hand, major challenges include uneven human resource readiness, coordination issues, system integration problems, and technical constraints. These findings reinforce previous studies emphasizing the importance of digital readiness (Chounta et al., 2024), organizational coordination (Díaz-Garcia et al., 2023), and system integration (Fernández et al., 2023). Thus, successful implementation depends not only on technology availability, but also on the organization's ability to manage these factors in an integrated and sustainable manner.

Model of Digitalization Implementation for Academic and Student Services

The proposed implementation model conceptualizes digitalization as a cyclical managerial and socio-technical transformation process rather than a linear technological intervention. The model demonstrates that sustainable digital services emerge through continuous interaction among planning, organizing, implementation, and evaluation processes, supported by policy direction, governance, infrastructure, human resource readiness, and adaptive system development.

The main contribution of this model lies in integrating managerial processes with socio-technical factors within a faculty-level context. It expands the POAC framework into digital service transformation in higher education and reinforces the importance of system integration and organizational coordination in achieving effective and responsive services. Thus, the model provides both theoretical contributions to digital transformation studies and practical guidance for higher education institutions in managing digital service implementation systematically and sustainably.

Theoretical Contribution of the Study

This study contributes to digital transformation and implementation management literature in higher education by proposing an integrated and cyclical model of academic and student service digitalization implementation. The findings extend the POAC framework by demonstrating that digitalization is not a linear managerial process, but a dynamic interaction among organizational, technical, and human resource dimensions.

The study also contributes to e-service research by integrating policy support, governance, infrastructure readiness, human resource adaptation, and system development within a single implementation framework. Unlike previous studies that tend to examine technology adoption, governance, or service quality separately, this study highlights the interdependence between managerial coordination, organizational readiness, and adaptive system development in sustaining digital services.

Furthermore, the study provides a faculty-level perspective on higher education digital transformation, which remains relatively underexplored in previous literature. The novelty of this study lies in its integrated managerial-socio-technical framework that conceptualizes digitalization as a cyclical process involving planning, organizing, implementation, adaptation, and continuous evaluation. The proposed model therefore

offers both theoretical insight and practical guidance for managing sustainable digital services in higher education institutions.

CONCLUSION

This study demonstrates that the digitalization of academic and student services in higher education represents an integrated organizational transformation involving managerial, technical, and human resource dimensions. The findings show that implementation effectiveness at the Faculty of Education, Universitas Negeri Surabaya was influenced by policy support, organizational coordination, human resource readiness, infrastructure, and adaptive system development. Although digitalization improved service efficiency, accessibility, and administrative organization, challenges related to digital competencies, system integration, and inter-unit coordination remained significant. The study contributes theoretically by extending implementation management and e-service perspectives through a cyclical implementation model consisting of planning, organizing, implementation, and continuous evaluation. The model highlights the interaction between managerial and socio-technical dimensions in higher education digital transformation. Practically, the findings provide guidance for managing digital services in a more systematic and sustainable manner. Although the study included managerial, technical, operational, and user perspectives, the findings were still limited to a single faculty context within one higher education institution. Future studies are recommended to examine the applicability of the model across broader institutional contexts using comparative or mixed-method approaches.

ACKNOWLEDGMENTS

The authors would like to express their gratitude to the Faculty of Education, Universitas Negeri Surabaya, for providing access and support during the research process. Appreciation is also extended to all participants who contributed their time and insights to this study.

AUTHOR CONTRIBUTIONS

Conceptualization, C.P.U. and M.S.H.; Methodology, C.P.U.; Software, C.P.U.; Validation, C.P.U., M.S.H., and A.K.; Formal Analysis, C.P.U.; Investigation, C.P.U.; Resources, M.S.H. and A.K.; Data Curation, C.P.U.; Writing – Original Draft Preparation, C.P.U.; Writing – Review & Editing, M.S.H. and A.K.; Visualization, C.P.U.; Supervision, M.S.H. and A.K.; Project Administration, C.P.U.; Funding Acquisition, M.S.H

CONFLICTS OF INTEREST

The authors declare no conflict of interest. The funding sponsors had no role in the design of the study; in the collection, analysis, or interpretation of data; in the writing of the manuscript; or in the decision to publish the results.

REFERENCES

Adeoye-Olatunde, O. A., & Olenik, N. L. (2021). Research and scholarly methods: Semi-structured interviews. *JACCP Journal of the American College of Clinical Pharmacy*, *4*(10), 1358–1367. https://doi.org/10.1002/JAC5.1441

Aspers, P., & Corte, U. (2021). What is Qualitative in Research. *Qualitative Sociology 2021 44:4*, *44*(4), 599–608. https://doi.org/10.1007/S11133-021-09497-W

Barnes, N., Fischer, S., & Kilpatrick, S. (2024). Going above and beyond: Realigning university student support services to students. *International Journal of Educational Research*, *124*, 102270. https://doi.org/10.1016/J.IJER.2023.102270

Biloshchytskyi, A., Omirbayev, S., Mukhatayev, A., Kuchanskyi, O., Hlebena, M., Andrashko, Y., Mussabayev, N., & Faizullin, A. (2024). Structural models of forming an integrated information and educational system "quality management of higher and postgraduate education." *Frontiers in Education*, *9*, 1291831. https://doi.org/10.3389/FEDUC.2024.1291831/TEXT

Bilquise, G., Ibrahim, S., & Salhieh, S. M. (2023). Investigating student acceptance of an academic advising chatbot in higher education institutions. *Education and Information Technologies 2023 29:5*, *29*(5), 6357–6382. https://doi.org/10.1007/S10639-023-12076-X

Carmo, J. E. S., Lacerda, D. P., Klingenberg, C. O., & Piran, F. A. S. (2025). Digital transformation in the management of higher education institutions. *Sustainable Futures*, *9*, 100692. https://doi.org/10.1016/J.SFTR.2025.100692

Cheek, C., Austin, E., Richardson, L., Testa, L., Ransolin, N., Francis-Auton, E., Safi, M., Murphy, M., De Los Santos, A., Vukasovic, M., & Clay-Williams, R. (2024). Non-Participant Observations in Experience-Based Codesign: An example using a Case Study Research approach to explore Emergency Department Care. *International Journal of Qualitative Methods*, *23*. https://doi.org/10.1177/16094069241289278

Chounta, I. A., Ortega-Arranz, A., Daskalaki, S., Dimitriadis, Y., & Avouris, N. (2024). Toward a data-informed framework for the assessment of digital readiness of higher education institutions. *International Journal of Educational Technology in Higher Education 2024 21:1*, *21*(1), 59-. https://doi.org/10.1186/S41239-024-00491-0

Chugh, R., Turnbull, D., Cowling, M. A., Vanderburg, R., & Vanderburg, M. A. (2023). Implementing educational technology in Higher Education Institutions: A review of technologies, stakeholder perceptions, frameworks and metrics. *Education and Information Technologies 2023 28:12*, *28*(12), 16403–16429. https://doi.org/10.1007/S10639-023-11846-X

Daim, T., Ozdemir Gungor, D., Basoglu, N., Yarga, A., & VanDerSchaaf, H. (2024). Exploring student information management system adoption post pandemic: Case of Turkish higher education. *Technology in Society*, *77*, 102557. https://doi.org/10.1016/J.TECHSOC.2024.102557

Alamirew, G. D. (2024). Investigating quality service and student satisfaction: evidence from College of Business & Economics, University of Gondar, Ethiopia. *Journal of Innovation and Entrepreneurship 2024 13:1*, *13*(1), 76-. https://doi.org/10.1186/S13731-024-00422-3

Díaz-Garcia, V., Montero-Navarro, A., Rodríguez-Sánchez, J. L., & Gallego-Losada, R. (2023). Managing Digital Transformation: A Case Study in a Higher Education Institution. *Electronics (Switzerland)*, *12*(11). https://doi.org/10.3390/electronics12112522

El-kholy, S. S. A. M. (2024). An intelligent system for providing academic advising and its impact on satisfaction and stress relief in the light of crises (COVID-19) among postgraduate students. *Education and Information Technologies 2024 30:2*, *30*(2), 1695–1727. https://doi.org/10.1007/S10639-024-12810-Z

Enakrire, R. T., Fombad, M. C., & Morodi, L. (2024). Skills Required of Academics to Use Digital Technologies in Open Distance Learning Institutions. *Innovative Higher Education 2024 50:3*, *50*(3), 843–866. https://doi.org/10.1007/S10755-024-09758-W

Farias-Gaytan, S., Aguaded, I., & Ramirez-Montoya, M. S. (2023). Digital transformation and digital literacy in the context of complexity within higher education institutions: a systematic literature review. *Humanities and Social Sciences Communications 2023 10:1*, *10*(1), 386-. https://doi.org/10.1057/s41599-023-01875-9

Fearon, D., Hughes, S., & Brearley, S. G. (2021). Constructivist Stakian Multicase Study: Methodological Issues Encountered in Cross-Cultural Palliative Care Research. *International Journal of Qualitative Methods*, *20*. https://doi.org/10.1177/16094069211015075

Fernández, A., Gómez, B., Binjaku, K., & Meçe, E. K. (2023). Digital transformation initiatives in higher education institutions: A multivocal literature review. *Education and Information Technologies*, *28*(10), 12351–12382. https://doi.org/10.1007/s10639-022-11544-0

Hashim, M. A. M., Tlemsani, I., & Matthews, R. (2022). Higher education strategy in digital transformation. *Education and Information Technologies*, *27*, 3171–3195. https://doi.org/10.1007/s10639-021-10739-1

Holm, C. G., Kringelum, L., & Anand, A. (2025). Creating effective strategy implementation: a systematic review of managerial and organizational levers. *Review of Managerial Science 2025 20:2*, *20*(2), 673–705. https://doi.org/10.1007/S11846-025-00880-3

House, D., Walker, R., Kent-Saisch, S., Emm-Collison, L., Salway, R., Porter, A., de Vocht, F., Beets, M., Jago, R., & Langford, R. (2025). The Value in Rapid, Multi-Site Team Ethnography for Understanding Context to Design Public Health Interventions: Learning From the PASSPORT Study. *International Journal of Qualitative Methods* , *24*. https://doi.org/10.1177/16094069251401808

Kabakus, A. K., Bahcekapili, E., & Ayaz, A. (2025). The effect of digital literacy on technology acceptance: An evaluation on administrative staff in higher education. *Journal of Information Science*, *51*(4), 930–941. https://doi.org/10.1177/01655515231160028

Lee, Y. K. (2024). Cosmopolitanism, Digital Readiness, and Faculty Engagement in Higher Education Transformation. *The Asia-Pacific Education Researcher 2024 34:1*, *34*(1), 221–235. https://doi.org/10.1007/S40299-024-00848-Z

Luo, Z., Junfeng, M., Abbasi, B. N., & Zilong, L. (2024). Institutional structure and governance capability in universities: an empirical study from the perspectives of time, space, and quantity dimensions. *Humanities and Social Sciences Communications 2024 11:1*, *11*(1), 1035-. https://doi.org/10.1057/s41599-024-03558-5

Mijač, T., Jadrić, M., & Ćukušić, M. (2024). Measuring the success of information systems in higher education – a systematic review. *Education and Information Technologies*, *29*(14), 18323–18360. https://doi.org/10.1007/S10639-024-12564-8/METRICS

Ngo, T. T. A., Bui, C. T., Chau, H. K. L., Tran, N. P. N., Nguyen, P. P. T., & Tran, N. K. T. (2025). Influence of university service quality on student experiences, academic performance and institutional loyalty: A case study in Vietnam. *Acta Psychologica*, *260*, 105599. https://doi.org/10.1016/J.ACTPSY.2025.105599

Price, H., Domoney, J., Ariss, S., Hughes, E., & Trevillion, K. (2021). Documentary Analysis Within a Realist Evaluation: Recommendations From a Study of Sexual Assault Referral Centres. *International Journal of Qualitative Methods*, *20*. https://doi.org/10.1177/16094069211047818

Rahmadi, I. F. (2024). Research on Digital Transformation in Higher Education: Present Concerns and Future Endeavours. *TechTrends 2024 68:4*, *68*(4), 647–660. https://doi.org/10.1007/S11528-024-00971-0

Rotar, O. (2022). Online student support: a framework for embedding support interventions into the online learning cycle. *Research and Practice in Technology Enhanced Learning 2022 17:1*, *17*(1), 2-. https://doi.org/10.1186/S41039-021-00178-4

Saltos-Rivas, R., Novoa-Hernándezhern´hernández, P., Rocío, ·, Rodríguez, S., Novoa-Hernández, P., & Serrano Rodríguez, R. (2023). Understanding university teachers' digital competencies: a systematic mapping study. *Education and Information Technologies 2023 28:12*, *28*(12), 16771–16822. https://doi.org/10.1007/S10639-023-11669-W

Sibbald, S. L., Paciocco, S., Fournie, M., Van Asseldonk, R., & Scurr, T. (2021). Continuing to enhance the quality of case study methodology in health services research. *Healthcare Management Forum*, *34*(5), 291–296. https://doi.org/10.1177/08404704211028857

Vishnu, S., Tengli, M. B., Ramadas, S., Sathyan, A. R., & Bhatt, A. (2024). Bridging the Divide: Assessing Digital Infrastructure for Higher Education Online Learning. *TechTrends 2024 68:6*, *68*(6), 1107–1116. https://doi.org/10.1007/S11528-024-00997-4

Wakelin, K. J., McAra-Couper, J., & Fleming, T. (2024). Using an Online Platform for Conducting Face-To-Face Interviews. *International Journal of Qualitative Methods*, *23*. https://doi.org/10.1177/16094069241234183

Yadav, D. (2021). Criteria for Good Qualitative Research: A Comprehensive Review. *The Asia-Pacific Education Researcher 2021 31:6*, *31*(6), 679–689. https://doi.org/10.1007/S40299-021-00619-0