

STRENGTHENING INTERNAL QUALITY ASSURANCE THROUGH DIGITAL TRANSFORMATION: EVIDENCE FROM HIGHER EDUCATION INSTITUTIONS

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Abstract

Digital transformation has increasingly become an important strategy for strengthening internal quality assurance (IQA) in higher education. However, its implementation requires more than the digitization of institutional documents, as it involves changes in organizational processes, human capabilities, leadership, and quality culture. This study examines the gradual implementation of digital transformation in internal quality assurance at Institut Teknologi dan Bisnis Tuban (ITB Tuban), with particular attention to accreditation documentation and Internal Quality Audit (AMI) processes. A qualitative case study design was employed, using semi-structured interviews, document analysis, and observation to examine digital documentation practices, changes in quality assurance processes, organizational benefits, and implementation challenges. The findings indicate that digital transformation has improved the organization, accessibility, traceability, and coordination of accreditation and AMI documentation. Digitalization has also contributed to a more systematic management of quality evidence and supported more efficient preparation and monitoring of quality assurance activities. Nevertheless, the transformation remains gradual, with challenges related to differences in digital competence, inconsistent documentation practices, limited process integration, and the need for stronger institutional coordination. The study demonstrates that digital transformation can strengthen IQA when technology is aligned with institutional objectives, human capabilities, leadership, and quality processes. The findings highlight the importance of developing standardized digital quality systems and progressively integrating quality data to support evidence-based decision-making and continuous institutional improvement.

Keywords: *digital transformation; internal quality assurance; higher education; quality management; Internal Quality Audit.*

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I. INTRODUCTION

Internal quality assurance (IQA) has become an important component of higher education governance because it supports institutional accountability, continuous improvement, and the systematic monitoring of educational quality. Recent research conceptualizes IQA as an interconnected process involving institutional purposes, people, and organizational processes rather than merely an administrative compliance mechanism (Krooi et al., 2024). In the Indonesian context, the Internal Quality Assurance System (SPMI) similarly provides a framework through which higher education institutions establish, implement, evaluate, control, and continuously improve their quality standards (Sampe & Arifin, 2024).

The development of digital technologies has created new opportunities to strengthen these processes. Digital transformation in higher education involves more than adopting technological tools; it requires changes in organizational processes, information management, human resources, and institutional practices (Gkrimpizi et al., 2023). A systematic review of digital transformation in higher education also shows that institutional transformation increasingly involves the redesign of organizational processes and the strategic use of digital technologies to improve institutional performance (Ramadania et al., 2024). Thus, digital transformation can provide an important foundation for developing more efficient, accessible, and data-informed quality assurance systems.

This transformation is particularly relevant to the management of quality documents and evidence. Accreditation and Internal Quality Audit (AMI) require institutions to maintain substantial evidence related to academic processes, governance, human resources, facilities, student outcomes, and institutional performance. When such evidence is managed through fragmented files and conventional procedures, institutions may experience difficulties in document retrieval, version control, monitoring, and coordination. Digitalization can address some of these challenges by improving the accessibility, organization, and traceability of quality-related information. However, digitalization should not be equated with simply converting physical documents into digital files. Effective digital transformation requires changes in workflows, responsibilities, competencies, and organizational culture (Gkrimpizi et al., 2023).

The importance of this distinction is reinforced by recent research on IQA, which emphasizes that quality assurance becomes more effective when its purposes, actors, and processes are aligned within the institutional context (Krooi

et al., 2024). Similarly, emerging discussions of Quality 4.0 highlight the movement toward more proactive, integrated, and data-driven approaches to quality management, while also identifying leadership, technological infrastructure, and human-resource capacity as important implementation conditions. Therefore, digital transformation in quality assurance should be understood as an organizational change process rather than a purely technical intervention.

This issue is particularly relevant to Institut Teknologi dan Bisnis Tuban (ITB Tuban), which has gradually initiated digitalization within its internal quality assurance practices. One of the emerging areas is the digital management of accreditation documents and Internal Quality Audit (AMI). This transition represents an institutional effort to move from predominantly conventional document management toward a more systematic digital approach in organizing, storing, accessing, and monitoring quality evidence. The process is still developing, making ITB Tuban a relevant context for examining how a higher education institution gradually adapts digital practices to strengthen its internal quality assurance system.

However, the transition also presents organizational challenges. The availability of digital documents does not automatically ensure effective quality assurance if institutional members have different levels of digital competence, document-management practices remain inconsistent, or digital systems are not integrated with evaluation and follow-up processes. Digital transformation therefore requires alignment between technology, people, organizational processes, and institutional objectives. This perspective is consistent with research emphasizing that higher education digital transformation affects not only technology but also institutional strategy, processes, and organizational culture.

Although digital transformation in higher education has received increasing scholarly attention, relatively limited research has examined how digitalization is specifically used to strengthen internal quality assurance, accreditation evidence management, and AMI processes, particularly within smaller and developing higher education institutions. This creates an opportunity to examine digital transformation from the perspective of educational leadership and management rather than solely from a technological perspective.

Therefore, this study examines the gradual implementation of digital transformation for internal quality assurance at Institut Teknologi dan Bisnis Tuban. It focuses on the digitalization of accreditation and AMI documentation, the perceived benefits and challenges of the process, and the ways in which digital

practices contribute to the strengthening of institutional quality assurance. The study seeks to provide practical and contextual evidence on how higher education institutions can use digital transformation to develop more systematic, accessible, and sustainable quality management practices.

II. LITERATURE REVIEW

Internal quality assurance (IQA) is a fundamental mechanism through which higher education institutions monitor, evaluate, and continuously improve the quality of their academic and organizational processes. In the Indonesian context, the Internal Quality Assurance System (SPMI) provides a structured framework for implementing quality cycles, institutional documentation, monitoring, evaluation, and internal quality audits (Sampe & Arifin, 2024). Effective IQA, however, should not be understood merely as compliance with accreditation requirements. Recent literature conceptualizes IQA as an integrated system involving purpose, people, and process, in which institutional objectives, stakeholder participation, and quality processes must be aligned within the organizational context (Krooi et al., 2024).

Digital transformation has increasingly reshaped how higher education institutions organize information, manage processes, and support institutional decision-making. Unlike simple digitization, digital transformation involves broader organizational changes encompassing technology, information, processes, human resources, leadership, and organizational culture (Fernández et al., 2023; Castro Benavides et al., 2020). Recent systematic reviews indicate that digital transformation in higher education is increasingly associated with institutional performance, organizational innovation, data utilization, and the development of more integrated educational management systems (Bisri et al., 2023; Mukul & Büyüközkan, 2023). Consequently, digital transformation should be viewed not simply as the adoption of digital platforms but as a strategic process for redesigning institutional practices.

The intersection between digital transformation and quality assurance has generated growing interest in the concept of Quality 4.0, which emphasizes data-driven, proactive, interconnected, and continuously improving quality management. Digital technologies can facilitate faster access to evidence, improve information transparency, support monitoring, and strengthen data-informed decision-making in quality processes (Prince & Almusharraf, 2024; Septio & Madhakomala, 2026). In this perspective, accreditation documentation, quality

standards, evaluation reports, audit findings, and follow-up actions can be organized within interconnected digital systems rather than managed as isolated administrative records. Such integration can potentially strengthen traceability and institutional learning while reducing fragmentation in quality-management practices.

Nevertheless, digital transformation does not automatically produce stronger quality assurance. Research identifies technological infrastructure, digital competence, organizational culture, leadership, resistance to change, resource limitations, and fragmented systems as important barriers to digital transformation in higher education (Farias-Gaytan et al., 2023; Classification of Barriers to Digital Transformation in HEIs, 2023). Leadership is particularly important because successful digital transformation requires strategic direction, organizational coordination, appropriate technology choices, and sustained implementation rather than isolated technological interventions (Bisri et al., 2023). Similarly, the 3P model of IQA suggests that technological change needs to remain aligned with institutional purposes, people responsible for quality, and established quality processes (Krooi et al., 2024).

Within Indonesian higher education, SPMI implementation involves quality standards, documentation, implementation of the quality cycle, and Internal Quality Audit (AMI), requiring continuous institutional commitment and coordination across organizational levels (Sampe & Arifin, 2024). The Indonesian government has also provided specific guidance for SPMI implementation, emphasizing systematic institutional management of internal quality assurance. However, existing studies predominantly discuss SPMI conceptually or examine digital transformation at the broader institutional level, while empirical attention to how digital transformation is gradually integrated into accreditation evidence management and AMI practices within individual higher education institutions remains comparatively limited. This gap is particularly relevant for institutions that are still developing their digital quality infrastructure.

Therefore, digital transformation in internal quality assurance can be conceptualized as an organizational change process in which digital technology, quality information, people, leadership, and institutional processes are integrated to support continuous improvement. Building on the 3P perspective and digital transformation literature, this study examines the experience of Institut Teknologi dan Bisnis Tuban in gradually digitalizing accreditation documentation and AMI processes. The study focuses on how digitalization is implemented, what

organizational benefits and challenges emerge, and how the transformation contributes to strengthening institutional quality assurance.

III. RESEARCH METHOD

This study employed a qualitative case study design to examine the gradual implementation of digital transformation in internal quality assurance (IQA) at Institut Teknologi dan Bisnis Tuban (ITB Tuban). A qualitative approach was selected because the study aimed to understand how digitalization was implemented, experienced, and integrated into institutional quality assurance practices rather than to measure its effects statistically. ITB Tuban was selected as the research setting because the institution has gradually introduced digital management of accreditation documents and Internal Quality Audit (AMI) processes as part of its efforts to strengthen the Internal Quality Assurance System (SPMI).

Data were collected through semi-structured interviews, document analysis, and observation. Interviews involved personnel directly engaged in quality assurance and institutional document management, particularly those responsible for SPMI, accreditation preparation, and AMI. Document analysis covered relevant quality standards, accreditation evidence, AMI instruments and reports, evaluation records, and digital documentation practices. Observations focused on how quality-related information was organized, accessed, updated, and used in institutional quality processes.

The data were analyzed thematically through four stages: data familiarization, coding, theme development, and interpretation. The analysis focused on four analytical dimensions: (1) digitalization of quality documentation, (2) changes in quality assurance processes, (3) organizational benefits and challenges, and (4) the role of leadership, people, and institutional processes in sustaining digital transformation. The analytical framework was informed by the 3P perspective of internal quality assurance—purpose, people, and process—and by literature on digital transformation in higher education (Krooi et al., 2024).

Data trustworthiness was strengthened through source triangulation, comparison of interview findings with institutional documents and observations, and iterative interpretation of emerging themes. Participants were informed about the purpose of the study, and confidentiality was maintained throughout the research process. The study therefore presents ITB Tuban as a contextual case

illustrating how digital transformation can gradually be integrated into institutional quality assurance practices.

IV. RESULTS AND DISCUSSION

Results

The findings indicate that digital transformation at Institut Teknologi dan Bisnis Tuban (ITB Tuban) has gradually strengthened the management of internal quality assurance, particularly in the organization, storage, retrieval, and monitoring of accreditation documents and Internal Quality Audit (AMI) records. The transformation was initially driven by the need to overcome the limitations of conventional document management, where quality-related files were distributed across different locations and could be difficult to retrieve, update, and monitor consistently. The gradual transition toward digital documentation has enabled quality-related evidence to be organized more systematically and accessed more efficiently by personnel involved in quality assurance activities.

The digitalization process also produced changes in the implementation of quality assurance activities. Accreditation evidence, quality documents, audit instruments, reports, and supporting records could be arranged according to specific quality requirements and institutional needs. This organization facilitated the identification of required documents and supported the preparation and implementation of AMI. Digital documentation also improved the traceability of quality-related information by making it easier to identify document versions, monitor the availability of evidence, and review previous quality activities. Consequently, digitalization contributed to a more structured workflow for quality assurance rather than functioning merely as a mechanism for storing electronic files.

The findings further reveal several organizational benefits. Digital documentation reduced the dependence on physical files, improved accessibility to quality information, and facilitated coordination among personnel responsible for quality assurance and accreditation. The availability of organized digital records also supported more efficient preparation for evaluation and audit activities because relevant evidence could be located and reviewed more quickly. In this sense, digitalization began to shift quality assurance practices from

predominantly administrative document management toward a more systematic information-based process.

However, the transformation also revealed several challenges. Differences in digital competence among personnel affected the consistency of document management and the adoption of standardized digital practices. Some quality documents still required manual coordination, while the integration between documentation, evaluation results, audit findings, and follow-up actions remained under development. The findings therefore suggest that digital transformation cannot be achieved through technological adoption alone. It requires clear procedures, standardized documentation practices, defined responsibilities, continuous capacity development, and sustained institutional leadership.

Discussion

The findings of this study demonstrate that digital transformation at Institut Teknologi dan Bisnis Tuban (ITB Tuban) has begun to strengthen internal quality assurance (IQA), particularly through the digital organization, storage, retrieval, and monitoring of accreditation documents and Internal Quality Audit (AMI) records. Importantly, the findings indicate that digital transformation is not simply a technical transition from physical to electronic documents. Rather, it represents an organizational process that gradually changes how quality information is managed, how personnel coordinate quality activities, and how evidence is prepared and utilized in institutional quality assurance. This finding is consistent with the broader literature emphasizing that digital transformation in higher education involves changes in organizational processes, information management, human capabilities, and institutional practices rather than merely the adoption of new technologies (Castro Benavides et al., 2020; Fernández et al., 2023; Farias-Gaytan et al., 2023).

The improvement in document organization and accessibility found at ITB Tuban is particularly relevant because quality assurance in higher education is highly dependent on reliable institutional evidence. Accreditation documents, quality standards, evaluation reports, AMI instruments, audit findings, and follow-up records collectively constitute an institutional memory that supports both accountability and continuous improvement. When such evidence is fragmented or managed inconsistently, quality assurance may become heavily

administrative and reactive. Digital documentation can reduce these limitations by facilitating systematic storage, retrieval, updating, and sharing of quality-related information. This finding corresponds with research on digital transformation in higher education, which identifies information management and administrative process transformation as important dimensions of institutional digitalization (Castro Benavides et al., 2020; Fernández et al., 2023). Fernández et al. (2023), for example, emphasize that digital transformation initiatives in higher education extend across organizational activities and require institutions to rethink how digital technologies are integrated into existing processes.

The findings also support the argument that digital transformation can improve the efficiency and transparency of institutional operations. At ITB Tuban, the organization of accreditation and AMI evidence in digital form made it easier for personnel to identify required documents, access previous records, and coordinate the preparation of quality evidence. Similar patterns have been identified in studies examining digital transformation and organizational performance in higher education. Ramadania et al. (2024), through a systematic review of 183 Scopus-indexed publications, found increasing scholarly attention to the relationship between digital transformation and organizational performance, indicating that digitalization is increasingly understood as an organizational and managerial issue rather than merely a technological one. In this sense, the experience of ITB Tuban suggests that even relatively gradual digitalization can generate organizational benefits when technology is connected directly to institutional workflows.

However, the findings also indicate that digital documentation should not be equated with digital transformation in its fullest sense. The transition from physical documents to digital files may improve accessibility, but it does not automatically create an integrated quality management system. This distinction is important because previous research has warned against conceptualizing digital transformation simply as technology adoption. Castro Benavides et al. (2020) noted that early digital transformation initiatives in higher education frequently lacked a holistic institutional perspective, while Fernández et al. (2023) emphasize that digital transformation involves multiple dimensions of institutional activity. The ITB Tuban findings reflect this challenge: although documentation has become more systematic, the integration of documents with evaluation, audit

findings, follow-up actions, and institutional decision-making remains a developing process. Thus, digital transformation should be understood as a continuum, progressing from digitization and digital organization toward process integration and eventually data-informed quality management.

This interpretation is strongly supported by the 3P conceptual model of internal quality assurance proposed by Krooi et al. (2024). Their systematic literature review conceptualizes IQA through three interconnected dimensions: purpose, people, and process. The model argues that effective quality assurance requires alignment among institutional purposes, the people responsible for quality, and the processes through which quality is monitored and improved. The experience of ITB Tuban illustrates the relevance of this framework in a digital context. Digital platforms and repositories constitute only one component of the transformation; their effectiveness depends on whether personnel understand their responsibilities, whether documentation procedures are standardized, and whether digital information is connected to the institution's quality objectives. Therefore, the findings reinforce the argument that digital quality assurance is fundamentally an organizational alignment issue.

The role of people is particularly visible in the finding that differences in digital competence influence the consistency of documentation practices. This finding is consistent with Farias-Gaytan et al. (2023), whose systematic review identified the development of digital competencies as a significant issue in higher education transformation. Their review of 202 studies showed that technological change creates continuing demands for competence development among educational actors. Similarly, research on barriers to digital transformation identifies human and organizational factors as important constraints alongside technological barriers. A systematic review by the Classification of Barriers to Digital Transformation in Higher Education Institutions (2023) identified 20 distinct barriers affecting digital transformation initiatives, demonstrating that institutional transformation is shaped by multiple interconnected factors rather than infrastructure alone. More recent evidence from Singun (2025) likewise emphasizes that barriers to higher-education digital transformation are multidimensional, reinforcing the need for institutional strategies that address organizational and human factors simultaneously.

The finding that some quality processes at ITB Tuban still require manual coordination should therefore not necessarily be interpreted as a failure of digital

transformation. Instead, it reflects the transitional character of institutional digitalization. Higher education institutions commonly operate through established administrative routines, legacy documentation practices, and different levels of technological readiness among organizational members. Digital transformation therefore tends to occur incrementally rather than instantaneously. Fernández et al. (2023) describe digital transformation in higher education as a broad collection of initiatives that vary in scope and maturity, while Farias-Gaytan et al. (2023) emphasize the complexity of institutional environments in which digital transformation occurs. The ITB Tuban case similarly demonstrates that transformation may begin with a relatively practical need—organizing accreditation and AMI documents—but gradually expand toward broader changes in quality-management practices.

Another important finding concerns the relationship between digital transformation and AMI. In conventional quality assurance, internal audits may be perceived primarily as compliance mechanisms involving document verification and procedural checking. Digitalization provides an opportunity to move AMI toward a more continuous and evidence-based process. Digital records can make it easier to compare previous audit findings, monitor follow-up actions, identify recurring issues, and maintain evidence of institutional responses. This orientation is compatible with the emerging concept of Quality 4.0, which emphasizes interconnected, proactive, data-driven, and technology-supported approaches to quality management. Recent systematic research characterizes Quality 4.0 as a paradigm in which digital technologies are integrated into quality-management processes to support innovation, performance, and continuous improvement.

The application of Quality 4.0 principles to higher education has received increasing scholarly attention. Prince and Almusharraf (2024) argue that Quality 4.0 can support innovation and institutional performance by integrating digital developments into people and operational processes. More recently, Abnoulgid et al. (2025) systematically examined Quality 4.0 in higher education and identified the potential of Industry 4.0 technologies, including artificial intelligence, big data, and other digital technologies, to transform quality-management practices. At the same time, they highlight challenges related to implementation costs, data protection, organizational readiness, and the development of human competencies. These findings are consistent with ITB Tuban's experience, although

the institution is still at an earlier stage of transformation. The present case can therefore be viewed as an initial pathway toward more integrated digital quality management rather than as a fully developed Quality 4.0 system.

The findings also have implications for educational leadership and institutional management. Digital transformation requires leadership that can connect technological initiatives with institutional priorities. Bisri et al. (2023), based on a systematic literature review, identify executive leadership as a key factor in the successful implementation of digital transformation in higher education because leaders are responsible for addressing barriers, establishing strategies, and maintaining consistency throughout implementation. This perspective is important for the ITB Tuban case because digital quality assurance requires coordination across units rather than the work of the quality assurance office alone. Leadership must therefore establish clear responsibilities, standardize documentation procedures, facilitate competence development, and encourage the use of quality information for decision-making.

From this perspective, strengthening IQA through digital transformation requires a shift from document-centered management to process-centered and decision-centered quality management. In a document-centered model, the primary objective of digitalization may be to ensure that files are stored and easily retrieved. In a process-centered model, digital documentation is connected to the quality cycle, including planning, implementation, evaluation, control, and improvement. In a decision-centered model, quality data are further utilized to identify institutional problems, determine priorities, and support evidence-based decision-making. This progression is consistent with the movement toward proactive and data-driven quality assurance identified in recent Quality 4.0 literature.

The Indonesian context makes this issue particularly significant because SPMI and AMI are embedded within institutional quality assurance practices. The effectiveness of SPMI depends not only on the existence of standards and audit instruments but also on the extent to which quality information is systematically documented, evaluated, and used for improvement. The present findings suggest that digitalization can strengthen this cycle by creating more accessible and traceable quality evidence. Nevertheless, digitalization should remain connected to substantive quality improvement. If digital systems are used only to store accreditation evidence without linking those records to evaluation and follow-up,

institutions may simply reproduce compliance-oriented practices in digital form. This concern is consistent with recent quality assurance literature suggesting that higher education quality systems can become overly compliance-oriented unless they are connected to meaningful institutional improvement.

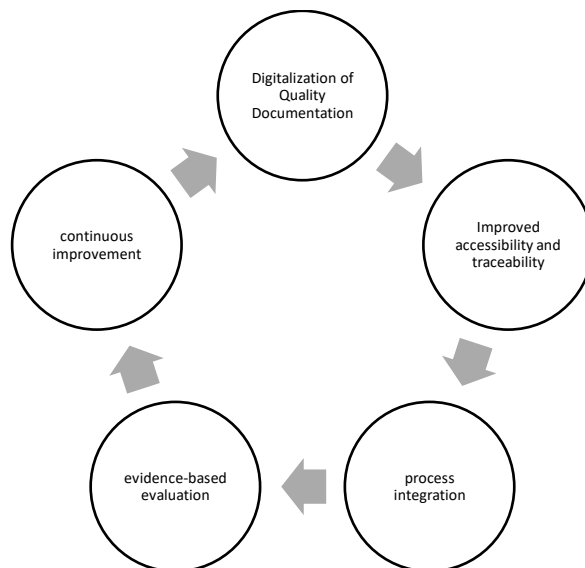
The findings therefore suggest that one of the most important challenges for ITB Tuban is moving from digital document management toward digital quality intelligence. The first stage involves establishing standardized digital repositories and documentation structures. The second involves integrating accreditation evidence, AMI results, evaluation records, and follow-up actions. The third involves using accumulated quality data to identify patterns and support institutional decisions. Such development would allow digital transformation to become part of the institution's continuous improvement architecture rather than an isolated administrative innovation. The progression is consistent with recent Quality 4.0 research, which emphasizes the integration of digital technologies with quality processes, implementation readiness, and organizational capabilities.

At the same time, the findings highlight the importance of organizational culture. Digital transformation is more sustainable when personnel perceive digital systems as instruments that simplify and improve their work rather than as additional administrative burdens. This requires communication, participation, training, and continuous feedback. Farias-Gaytan et al. (2023) emphasize the continuing need to develop digital competencies within higher education institutions, while Singun (2025) demonstrates that digital transformation barriers are multidimensional and require coordinated institutional responses. Consequently, ITB Tuban's next stage of transformation should not focus exclusively on expanding technological infrastructure but also on developing a shared digital quality culture in which quality personnel, academic units, and administrative staff understand common standards for creating, maintaining, validating, and using digital quality evidence.

Another implication concerns institutional sustainability. A digital quality assurance system should reduce dependence on particular individuals by ensuring that institutional knowledge remains accessible even when personnel change. This is especially relevant to accreditation and AMI because quality evidence is accumulated over time and often requires historical comparison. A

structured digital repository can function as institutional memory, preserving records of previous audits, evaluations, improvements, and accreditation evidence. This strengthens organizational continuity and can support future quality planning. The argument corresponds with the 3P model of Krooi et al. (2024), particularly its emphasis on aligning people and processes with institutional purposes rather than treating quality assurance as a collection of isolated activities.

ITB Tuban case contributes to the literature by illustrating how digital transformation can begin at the operational level of quality documentation and gradually develop into a broader organizational transformation. Existing research has extensively discussed digital transformation in teaching and learning, institutional operations, and general organizational performance, while recent studies have increasingly introduced Quality 4.0 as a framework for digitally enabled quality management. However, empirical accounts of how a higher education institution gradually digitalizes accreditation evidence and AMI processes remain less visible, particularly in the context of developing institutions. The present findings indicate that the effectiveness of such transformation depends on the interaction between technology, people, processes, and leadership. Thus, digital transformation should be understood not as an endpoint but as a continuous institutional change process through which internal quality assurance becomes increasingly organized, traceable, collaborative, and potentially data-driven.



The pathway also requires three enabling conditions: leadership commitment, personnel digital competence, and standardized quality processes. This interpretation extends the 3P perspective of internal quality assurance by demonstrating how digital transformation can become an enabling mechanism for connecting purpose, people, and process. Rather than replacing existing quality assurance mechanisms, digital transformation can strengthen them by making institutional evidence more accessible, quality processes more coordinated, and improvement activities more visible. The ultimate value of digitalization, therefore, lies not in the presence of digital files or platforms, but in its capacity to strengthen the institution's ability to learn from evidence and translate quality information into continuous organizational improvement.

V. CONCLUSION AND RECOMMENDATION

This study concludes that digital transformation can strengthen internal quality assurance (IQA) by improving the organization, accessibility, traceability, and management of accreditation and Internal Quality Audit (AMI) documentation. The experience of Institut Teknologi dan Bisnis Tuban (ITB Tuban) demonstrates that digitalization has begun to shift quality assurance practices from conventional document management toward more systematic and information-based processes. However, the transformation remains gradual and cannot be understood solely as the conversion of physical documents into digital files. Its effectiveness depends on the alignment of digital technology with institutional objectives, quality processes, human competencies, and leadership commitment. The findings further indicate that differences in digital competence, inconsistent documentation practices, limited process integration, and the need for stronger coordination remain important challenges. Thus, digital transformation should be viewed as a continuous organizational change process aimed ultimately at strengthening evidence-based evaluation and continuous institutional improvement.

Based on these findings, higher education institutions should develop a standardized digital quality assurance architecture that integrates accreditation documents, SPMI records, AMI instruments and reports, evaluation results, and follow-up actions. Digital repositories should be supported by clear procedures for document ownership, version control, access, validation, and updating.

Institutions should also provide continuous digital competency development for personnel involved in quality assurance so that technological adoption is accompanied by improvements in organizational capability. Leadership commitment is equally important to ensure that digital transformation is embedded in institutional policies, resource allocation, coordination mechanisms, and quality culture. Furthermore, the use of digital systems should progressively move beyond document storage toward the integration and analysis of quality data to support evidence-based decision-making and continuous improvement. Future research could examine digital quality assurance across multiple higher education institutions and investigate how digital maturity, organizational culture, leadership, and data-driven decision-making influence the sustainability and effectiveness of IQA.

REFERENCES

- Abnoulgid, F. A., Aouhassi, S., Mansouri, K., & Akef, F. (2025). Quality 4.0 in higher education: Integrating Industry 4.0 technologies in higher education quality management practices. *Frontiers in Education*, 10.
- Bisri, A., Putri, A., & Rosmansyah, Y. (2023). A systematic literature review on digital transformation in higher education: Revealing key success factors. *International Journal of Emerging Technologies in Learning*, 18(14), 164–187. <https://doi.org/10.3991/ijet.v18i14.40201>
- Castro Benavides, L. M., Tamayo Arias, J. A., Arango Serna, M. D., & Branch Bedoya, J. W. (2020). Digital transformation in higher education institutions: A systematic literature review. *Sensors*, 20(11), 3291. <https://doi.org/10.3390/s20113291>
- 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*, 10, 386. <https://doi.org/10.1057/s41599-023-01875-9>
- 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, 12351–12382. <https://doi.org/10.1007/s10639-022-11544-0>

- 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, 12351–12382.
- Gkrimpizi, T., Peristeras, V., & Magnisalis, I. (2023). Digital transformation initiatives in higher education institutions: A multivocal literature review. *Education and Information Technologies*, 28, 1–36.
- Krooi, M., Whittingham, J., & Beausaert, S. (2024). Introducing the 3P conceptual model of internal quality assurance in higher education: A systematic literature review. *Studies in Educational Evaluation*, 82, 101360. <https://doi.org/10.1016/j.stueduc.2024.101360>
- Mukul, E., & Büyüközkan, G. (2023). Digital transformation in education: A systematic review of education 4.0. *Technological Forecasting and Social Change*, 194, 122664. <https://doi.org/10.1016/j.techfore.2023.122664>
- Prince, M. I., & Almusharraf, N. (2024). Digital learning demand and applicability of Quality 4.0 for future education: A systematic review. *International Journal of Engineering Pedagogy*, 14(4). <https://doi.org/10.3991/ijep.v14i4.48847>
- Quality 4.0: A systematic literature review and future research agenda for the digital transformation of quality management (2026). *International Journal of Quality & Reliability Management*, 43(6), 1650–1673.
- Ramadania, R., Hartijasti, Y., Purmono, B. B., Haris, D. M. N., & Afifi, M. Z. (2024). A systematic review on digital transformation and organizational performance in higher education. *International Journal of Sustainable Development and Planning*, 19(4), 1239–1252. <https://doi.org/10.18280/ijstdp.190402>
- Sampe, N., & Arifin, Z. (2024). Internal Quality Assurance System in Indonesia Higher Education: Literature Review. *Indonesian Journal of Educational Research and Review*, 7(1), 73–84. <https://doi.org/10.23887/ijerr.v7i1.67925>
- Septio, G., & Madhakomala, R. (2026). Paradigms, strategies, and challenges of quality control in higher education in the digital era: A systematic literature review. *Dinasti International Journal of Education Management and Social Science*, 7(2). <https://doi.org/10.38035/dijemss.v7i2.5817>

- Singun, A. Jr. (2025). Unveiling the barriers to digital transformation in higher education institutions: A systematic literature review. *Discover Education*, 4, 37.