



DIGITAL-BASED QUALITY CULTURE RECONSTRUCTION: SPMI TRANSFORMATION TOWARDS SMART ACCREDITATION IN THE 5.0 ERA

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Abstract:

This study aims to analyze the reconstruction of a digital-based quality culture through the development of the Smart Accreditation concept as a transformation strategy for the Quality Assurance System (SPMI). The study uses a qualitative approach with a literature review method for various regulations, books, and scientific articles published in the 2016–2026 period. Data were analyzed using content analysis and thematic analysis and validated through theoretical triangulation. The results show that the transformation towards Smart SPMI can gradually shift quality management from a conventional administrative system to an integrated digital ecosystem through Cloud Computing, Artificial Intelligence, Application Programming Interfaces (API), and performance indicator dashboards. This integration can improve data accuracy, accelerate decision-making, reduce administrative burdens, and build a quality culture oriented towards continuous improvement. In addition, the study formulates a conceptual model for Smart Accreditation that integrates digital maturity, transformational leadership, and organizational behavior change to support the sustainability of institutional quality. However, its implementation still faces challenges in the form of infrastructure readiness, human resource digital literacy, data integrity, and organizational cultural resistance. These findings provide conceptual and practical contributions for higher education institutions in building a more adaptive, transparent, and competitive quality assurance system in the Era of Society 5.0.

Keywords: *Quality Culture, SPMI Digitalization, Smart Accreditation, digital transformation, Society 5.0 Era.*

INTRODUCTION

The paradigm shift in higher education in the Era of Society 5.0 requires institutions to focus not only on cognitive output but also on strengthening high-tech governance systems. The Internal Quality Assurance System (SPMI) is no longer merely a regulatory obligation but is at the heart of academic sustainability (Fauzi et al., 2024) (Baiyere et al., 2025). However, the reality on the ground shows that many universities remain trapped in slow, manual bureaucratic patterns that are prone to data inconsistencies. Therefore, reconstructing a culture of quality through digitalization is imperative to create an adaptive, transparent, and accountable educational ecosystem amidst increasingly massive global disruption (Jahan, 2024).

Effective SPMI implementation requires a solid moral and managerial

foundation. From an Islamic perspective, the concept of quality aligns with the principle of Itqan (sincerity and thoroughness). This principle emphasizes that quality is not a coincidence, but rather the result of pure intentions and a systematic process. Quality assurance in the modern context is a contemporary manifestation of the value of trust in maintaining public trust in the dignity of higher education as a pillar of national civilization (Mudarti & Fatrisna, 2025). Regulatory-wise, the transformation of the Indonesian Quality Assurance System (SPMI) in Indonesia was triggered by the redesign of accreditation instruments, shifting from an administrative model to an outcome-based model. In accordance with Regulation of the Minister of Education, Culture, Research, and Technology Number 53 of 2025, national standards now grant greater autonomy to higher education institutions to set their own quality standards. This requires flexibility in internal governance. In their study, Khalifa & Zabani, (2016) explained that without digital technology support, institutions will have difficulty monitoring the achievement of key performance indicators in real time. Digitalization serves as a bridge that harmoniously connects strategic policies at the rectorate level with technical implementation at the study program level.

The transformation towards Smart Accreditation involves the integration of technologies such as Artificial Intelligence (AI) and Cloud Computing into the PPEPP (Determination, Implementation, Evaluation, Control, and Improvement) cycle. Research by Sallis (2014) in his book, *Total Quality Management in Education*, emphasizes that educational quality must be dynamic and oriented towards customer satisfaction. In a digital context, this satisfaction translates into the availability of accurate data and easy access for auditors. Intelligent systems are capable of early detection of potential standards failures, allowing corrective action to be taken well before the external accreditation visitation process is conducted by BAN-PT or the Independent Accreditation Institution (LAM).

However, the greatest challenge in this reconstruction is not the availability of software, but rather the resistance of organizational culture. Many institutions fail to transform because they view digitalization as simply transferring physical documents to the digital space without changing their mindset (Pettersson, 2021). Ayu et al., (2025) in their study stated that the success of digital SPMI depends heavily on the readiness of human resources to adopt technology. The culture of quality must evolve from mere compliance to commitment to quality. This requires transformational leadership that is able to move the entire academic community to see data as a tool for improvement, not a threatening oversight instrument.

The implementation of Smart Accreditation also facilitates data synchronization through a digital bridge or Application Programming Interface (API) connected to the Higher Education Database (PDDIKTI) (Ahmadi et al., 2023). This is crucial considering that the Study Program Accreditation Instrument (IAPS) 4.0 relies heavily on the validity of quantitative data in the national system. Data inconsistencies often lead to lower accreditation scores, even if the original data is of good quality. With digital reconstruction, the administrative burden on lecturers in preparing Self-Evaluation Reports (SERs) can be significantly reduced through the auto-filling feature. This efficiency allows lecturers to refocus on their primary task, namely the transformation of knowledge through quality teaching and research, without the burden of repetitive administrative matters (Ghani & Muhammad, 2019).

The novelty of this research lies in the formulation of a Smart Accreditation model that combines quality governance transformation, digital intelligence, and organizational behavior change within an integrated quality

assurance framework. This model positions the PPEPP cycle as an adaptive system based on data analytics, real-time monitoring, and interoperability between platforms to support predictive decision-making. In addition to offering technology integration with institutional leadership and culture, this research presents a conceptual approach that explains the relationship between digital maturity, strengthening quality culture, and improving accreditation performance. This framework is expected to become a new reference for the development of higher education quality governance oriented towards sustainability and global competitiveness

In conclusion, this study aims to examine how digital-based reconstruction of a quality culture can accelerate the achievement of superior accreditation. The study will focus on the architecture of the intelligent SPMI system and its impact on organizational behavior in the 5.0 Era. The urgency of this research lies in offering practical solutions for higher education institutions to escape the trap of quality bureaucracy and move toward more agile governance. Through an integrative approach combining technology, professional ethics, and regulatory compliance, it is hoped that a sustainable quality assurance model will be created for a more dignified and globally competitive future for Indonesian higher education.

RESEARCH METHODS

This study applies a qualitative library research method to in-depth explore the phenomenon of digital transformation in the Internal Quality Assurance System (IQAS). Through a comprehensive literature study design, the study's primary focus is on tracking, collecting, and critically reviewing various regulatory documents and relevant academic texts (Robert K. Yin, 1984). This step was taken to understand how the integration of modern technology can reconstruct organizational behavior from mere administrative compliance to a fundamental strategic quality commitment. The use of this library method allows researchers to conduct a broad conceptual mapping of the interaction between system users and information technology functionality in the current dynamics of higher education quality assurance.

This study systematically analyzes academic literature published between 2016 and 2026 to build a solid new theoretical foundation. The selection of the last decade is crucial to capture the momentum of the acceleration of Industry 4.0 technology and the transition to Society 5.0. Literature data sources were obtained from various trusted scientific journal databases, textbooks, and quality assurance policy reports. The collected documents were then rigorously screened based on their relevance to the digital architecture and quality culture of educational institutions. Through this measurable chronological limitation, researchers can formulate a synthesis of theories that are up-to-date, relevant, and adaptive to the demands of modern higher education governance.

The data analysis technique in this literature study was implemented by combining content analysis and thematic analysis (Armbrorst, 2017). The content analysis process focused on objectively identifying texts regarding the types of digital technologies used, such as Cloud Computing and Artificial Intelligence. Meanwhile, thematic analysis was applied to identify, code, and map emerging patterns or major themes related to the sociological impact of digitalization on the behavior of the academic community. By combining these two analytical techniques, researchers were able to distill raw information from dozens of literatures into categories of technological and cultural aspects to see the logical relationships between the components of the system as a whole.

The validity of the data and objectivity in this literature study were ensured

through a strategy of theoretical triangulation and rigorous cross-literature checking (Miles et al., 2014). Researchers compared different theoretical perspectives, such as those from organizational sociology and technology management, to examine the same phenomenon. This series of tests aims to ensure that all propositions regarding institutional resilience are credible, valid, and free from subjective researcher bias. Through this new theoretical framework, the article is expected to present a robust Smart Accreditation model as a strategic guide for higher education institutions.

RESULTS AND DISCUSSION

Smart SPMI Architecture in the PPEPP Cycle

Transforming the Internal Quality Assurance System (SPMI) from a conventional model to a Smart SPMI is not simply about purchasing new software or moving documents to a computer folder. It is a complete overhaul of how an institution views quality. In the Society 5.0 era, technology is positioned as the backbone, ensuring the PPEPP (Determination, Implementation, Evaluation, Control, and Improvement) cycle runs organically, automatically, and adaptively (Alzaabi, 2024). The following is an in-depth description of the results of this transformation:

1) Migration from Static Documents to Dynamic Data Ecosystem

This research reveals that the main obstacle in conventional quality assurance systems is the extremely high administrative burden on staff. For years, quality documents were considered meaningless piles of paperwork that would only be searched for when accreditation was due (Phillips & Kinser, 2018) (Mu'alina et al., 2024). The introduction of Smart SPMI brings revolutionary change by digitizing these document assets. This transformation transforms documents from static and rigid to dynamic databases within a real-time data store, making quality management more vibrant and functionally integrated.

The implementation of cloud computing technology in Smart SPMI ensures ubiquitous data accessibility, or availability anywhere, for authorized parties. This effectively eliminates classic dramas such as lost physical documents or process delays due to waiting for a signature from management. With stable online access, all stakeholders can transparently monitor quality progress without being bound by time and space. This ease of access accelerates organizational workflows and ensures that all critical information related to quality standards is always available at the user's fingertips.

Another key finding is that accreditation evidence can now be prepared without the hassle of bureaucratic paperwork. Within the digital ecosystem, every institutional activity, such as meeting attendance, minutes, and even scientific papers, is automatically recorded as valid evidence. This intelligent system has successfully transformed a work culture that was previously stressful due to sudden overtime ahead of accreditation into one that is ready at all times. This transformation creates a calmer, more organized academic environment that is always ready to face external evaluations without the need for exhausting emergency preparations (Mahanis, 2025).

Comparison Dimensions	Conventional SPMI	Smart SPMI (Digital)
Workload	High administrative fatigue (manual).	Automation of repetitive tasks.

Nature of Document	Static, in the form of a pile of dead paper.	Dynamic, in the form of a real-time database.
Accessibility	Limited physical and bureaucratic signature.	<i>Ubiquitous (access anytime & anywhere).</i>
Providing Evidence	A tedious manual search.	Automatically recorded by the system.
Work Culture	Sudden overtime ahead of accreditation.	Ready Culture at All Times.
Storage	Filing cabinets (risk of loss/damage).	<i>Cloud Computing (secure and integrated).</i>

Table 1. Comparison of Conventional SPMI vs. Smart SPMI

The table demonstrates a fundamental shift from conventional SPMI to digital-based Smart SPMI. This transformation not only improves operational efficiency through automation and data integration but also shifts the work paradigm from reactive to proactive. Documents evolve into constantly updated information, performance evidence is automatically documented, and data access becomes more flexible without being limited by space and time. The use of cloud computing strengthens the security and sustainability of archive management. Thus, Smart SPMI encourages the formation of a sustainable, adaptive quality culture that is always ready to face evaluation and accreditation processes.

2) Smart Monitoring: From Annual Reports to Real-Time Dashboards

Automation of evaluation and control functions within the PPEPP cycle is now transforming the way institutional leaders monitor quality standards (Aimah et al., 2021). While previously they had to wait for year-end reports to detect failures, the introduction of an intelligent system through the KPI (Key Performance Indicator) Dashboard is highly interactive and can bring about significant change. Through engaging data visualizations, all Key Performance Indicator (KPIs) and Additional Performance Indicator (IKT) achievements are presented in easy-to-understand graphs. This supports fast and accurate data-driven decision-making, allowing management to maintain full control over the institution's performance at all times without any hiccups.

The key uniqueness of Smart SPMI lies in its Early Warning System (EWS) feature, a proactive early warning system (Esposito et al., 2022). This system not only functions as a recorder of past events but also provides automatic notifications if any indicators are predicted to be substandard. For example, if a lecturer's research output declines mid-semester, the system immediately triggers a warning signal or yellow light. The presence of this feature ensures that potential failures can be detected much earlier before they become major problems that are difficult to handle at the end of the period. Management interventions can be implemented immediately when deviation signals appear, so that deviations or non-conformities to standards can be corrected before their impact spreads to other aspects. This transformation creates a quality assurance mechanism that is much more agile, responsive, and adaptive to campus dynamics. Ultimately, the institution is able to maintain consistent quality on an ongoing basis through timely and efficient corrective actions across all elements of the organization.

3) Towards Smart Accreditation: Cultural Transformation in the 5.0 Era

Smart SPMI serves as a strategic bridge to an era of intelligent accreditation, where the assessment process is no longer a daunting burden for institutions (Hudaya, 2025). In the era of Society 5.0, accreditation ideally becomes a natural outcome of a sound and orderly management system. Digital technology plays a crucial role here as a catalyst for changing the mindset of the entire academic community regarding quality. With an automated system, human energy is no longer drained on tedious administrative matters, allowing focus to be fully diverted to substantial quality improvement efforts.

The essence of reconstructing a quality culture lies in creating conditions where quality standards are no longer perceived as an external regulatory imposition. Instead, quality must become an ingrained daily routine, fully supported by an intelligent digital ecosystem. Through automation, the creativity of staff and lecturers can flourish further, freeing them from time-consuming, repetitive tasks (Toto et al., 2024). This transformation ensures that every individual within the organization feels responsible for quality standards, creating a far more productive and innovative academic environment.

In conclusion, the technology integration within Smart SPMI has successfully created absolute transparency and accountability for educational institutions. Support for real-time data storage and continuous automated monitoring ensures documents are always ready whenever needed. This demonstrates that institutions are not merely prepared for accreditation visits but have truly transformed into highly agile learning organizations. Amidst dynamic global disruption, this system provides a strong foundation for higher education institutions to continue growing and remain competitively relevant.

Evolution of Quality Culture: Shifting from Administrative Compliance to Strategic Commitment

The evolution of quality culture in the digital era is not simply the migration of physical documents to servers, but rather a paradigm shift (Ibnu, 2023). In the past, quality was often viewed as an administrative tax, something that had to be paid for accreditation status. However, the implementation of an integrated digital Quality Assurance System (SPMI) forces organizations to move toward strategic commitment. In this context, data is no longer a pile of numbers reported once a year, but rather a daily narrative of the institution's effectiveness. Digitization creates visibility that forces every unit to align its actions with the university's grand vision.

1) Internalization of Quality Values in the Digital Education Ecosystem

The internalization of quality values occurs profoundly when every individual within an institution realizes the consequences of their contributions. Every piece of data they produce is no longer just a dead number in the system, but a crucial instrument that directly impacts the university's collective reputation (Tarí et al., 2020). As this awareness grows, the perspective on data management changes completely. Completing digital systems is no longer seen as a tedious obligation, but rather as a moral responsibility to uphold the institution's reputation. This is the primary foundation for reconstructing a digital-based quality culture in the modern era.

One crucial dimension of this cultural shift is the creation of high levels of transparency and public accountability. The presence of an open and integrated digital system effectively eliminates the dark spaces in institutional quality data management. Previously, data manipulation or inaccuracy often

occurred due to a closed and partial oversight system. With digitalization, all academic track record data is presented clearly, cleanly, and can be accounted for to the public. This radical transparency ensures that all quality assurance processes operate on the proper track of integrity.

When performance results are presented in real time and accessible to all stakeholders, a positive psychological boost emerges. Every lecturer, educational staff member, and student can now see their performance compared to established standards. This constant visibility naturally fuels internal motivation within each individual to consistently maintain the quality of their work and ensure it remains above par. This healthy collective oversight is far more effective than formal bureaucratic reprimands, as a sense of achievement stems from honest self-evaluation.

The most obvious sociological impact of this data transparency is the erosion of defensive behavior among the academic community. In conventional systems, denial or self-defense of poor evaluation results often occurs because the data is perceived as lacking objectivity. In contrast, the digital ecosystem presents accurate and irrefutable facts, eliminating the space for petty debate. This defensive behavior is then gradually replaced by healthy academic honesty. Every level of the organization becomes more willing to acknowledge their objective shortcomings and immediately focuses on finding concrete quality improvement solutions without institutional drama (Gunawan, 2024).

The second, no less important dimension is the emergence of a sense of shared responsibility within the campus environment. A significant finding indicates a paradigm shift regarding who the true guardians of institutional quality are. In the conventional quality assurance model, quality matters are always considered the exclusive domain of the Quality Assurance Agency. This mistaken mindset leaves other work units feeling no moral obligation to maintain their operational standards. As a result, institutional quality suffers because oversight rests solely on a single, overwhelmed agency.

Through the implementation of digital Quality Assurance System (SPMI) in the 5.0 Era, there has been a comprehensive democratization of responsibility across all levels of the institution. Today, quality is no longer a one-way burden, but rather the result of the cumulative contributions of the entire academic community. Every click on the data entry system by staff, every upload of teaching materials by lecturers, and every piece of feedback provided by students carries equal weight. All these digital actions are immediately recorded and become an integral part of the institution's quality portrait. This reminds everyone that, no matter how small, their role is crucial to the final outcome.

The final dimension is positioning quality as an identity, no longer a daunting administrative burden. Thanks to system automation, tedious manual workloads such as collecting physical documents or repeated photocopying can be completely eliminated. This frees the academic community to focus on the substance of the quality of the Tri Dharma of Higher Education. Quality is no longer seen as an annual project that distracts from primary duties, but has mutated into a daily life and lifestyle. At this point, successful reconstruction is achieved, when quality is firmly embedded as the identity of an intelligent and adaptive institution (Hudaya, 2025).

2) Institutional Resilience and Sustainable Quality

The Smart Accreditation concept presents a strategic solution to create resilience or resilience in educational institutions amidst the dynamic changes in accreditation regulations (Al-Qashouti, 2024). Analysis shows that

universities that have adopted digital systems have a much higher level of preparedness than conventional models. They are no longer trapped in the practice of rushing through visitations, because all data has been collected, verified, and validated continuously. This transformation ensures that the accreditation process becomes a natural outlet for intelligent, streamlined, and professionally integrated data management.



Figure 1: Smart Accreditation Cycle

The image depicts a continuous digital-based Smart SPMI cycle, starting with automated data collection, data validation, dashboard visualization, AI utilization for early warning, and the establishment of a culture of continuous quality improvement. This cycle accelerates evaluation, increases the accuracy of decision-making, and ensures that every quality assurance process is documented and controlled in real time. Facing the era of Society 5.0, which demands high flexibility, institutions must have a robust data architecture to address frequent, sudden redesigns of accreditation instruments. Resilient institutions are those capable of rapidly remapping data without having to start the process from scratch (Novita, 2020). Digitalization enables adjustments to quality parameters simply by changing algorithms or monitoring dashboards (Oktarino et al., 2024). This ensures quality sustainability despite drastic changes in external policies, ensuring the institution remains relevant and adaptable to national and international regulatory demands.

Resilience is also defined as an institution's ability to perform predictive maintenance on data assets that meet quality standards (Harianja et al., 2025). Through the availability of structured data, university leaders can detect signs of quality decline in a study program before the problem becomes chronic. This is the essence of true sustainability: beyond simply maintaining the Excellent (Unggul) accreditation status as a formality on paper. The primary focus shifts to ensuring that the applied quality standards remain relevant to the needs of industry and future societal developments. Sociologically, the transition to this intelligent system significantly alters power relations within the campus environment. Strategic decision-making is no longer based solely on subjective intuition or seniority, but rather shifts entirely to data-driven decision-making. This change creates transparency and fairness in organizational management, as every policy is based on strong, objective arguments. This new culture encourages every element within the university to be more professional and

responsible in achieving established performance targets.

Organizationally, the transformation of the SPMI toward Smart Accreditation has had a positive impact in the form of reduced bureaucracy and increased operational efficiency (Gunawan, 2024). Previously cumbersome administrative processes have become more streamlined thanks to the support of integrated digital technology across all levels. This allows staff and lecturers to allocate their time and energy to more substantive academic activities. With an efficient bureaucracy, educational institutions can be more agile and competitive in responding to the various global disruptions that continue to threaten the sustainability of the higher education sector.

The conclusion of this discussion is that the integration of Smart Accreditation into the quality assurance system is not merely a technical innovation, but rather a key foundation for the resilience and sustainability of institutional quality. With a robust data architecture, institutions can transform into organizations that are resilient to regulatory changes, objective in decision-making, and efficient in their bureaucracy, ensuring quality relevance in the future.

Challenges of Technical Readiness and Human Resources in Smart SPMI

Although the Smart Accreditation model offers high efficiency, its implementation on the ground is not without real obstacles rooted in infrastructure readiness. In Indonesia, the digital infrastructure gap between higher education institutions remains a crucial issue that has not been fully resolved (Aditya et al., 2022). Many institutions in remote areas or with limited funding lack stable internet connections or sufficient server capacity to support Real-Time Data Repositories. Without a uniform technical foundation, the slogan ubiquitous or available everywhere data accessibility will remain merely a theory on paper. Therefore, equitable distribution of technological facilities is an absolute prerequisite that must not be ignored before moving forward.

Beyond hardware issues, the biggest challenge in reconstructing a digital-based quality culture lies in the resistance of the organization's own culture. Many institutions fail to transform because they are trapped in the mistaken perception that digitization simply involves transferring physical documents to a digital space (Smith, 2017). This rigid mindset makes the academic community less likely to change their old, manual work methods. Shifting the quality assurance system from a conventional model to a smart ecosystem requires psychological readiness from all campus elements to avoid triggering internal resistance that could paralyze organizational operations.

The success of implementing a digital quality management system (SPMI) depends heavily on the readiness and digital literacy of the human resources utilizing it. In reality, there is a significant technological competency gap between senior education personnel and the demands of modern computerized systems. The demands of operating artificial intelligence and advanced analytics platforms often lead to cognitive fatigue among staff (Malik et al., 2022). Without extensive and continuous technical training, even the most perfect quality management system will be rendered useless due to users' inability to optimally operate the information technology's functionality.

Another technical challenge arises from automated features such as auto-filling, which can potentially create data gaps. While this feature is designed to significantly reduce the administrative burden on lecturers, human validation remains key. Lecturers should not simply trust the system for accurate quantitative data without regularly reviewing it. If users adopt an overly passive

work culture and neglect manual checks, the risk of data input errors increases, which in turn can undermine the institution's accreditation rating (Taghoy et al., 2024).

The nature of data integration through a digital bridge or Application Programming Interface (API) connected to the Higher Education Database (PD-Dikti) also poses its own technical vulnerabilities. The Smart SPMI system requires perfect synchronization to prevent quantitative data inconsistencies between the campus' internal system and the national system (Liang & Chen, 2018). When technical disruptions occur on the central server or sudden changes in the ministry's algorithms occur, institutions often struggle to remap. This data asynchronization is crucial because the Study Program Accreditation Instrument (IAPS) relies heavily on the validity of the quantitative information contained in the system.

From an organizational sociological perspective, reliance on KPI dashboards and early warning systems can trigger manipulative behavior if not balanced with integrity. To avoid triggering warning signals or warning signs in the system, there is a risk that certain individuals will take shortcuts by inputting data that does not align with the reality on the ground. This phenomenon has the potential to undermine the essence of data-driven decision-making, which should be objective and transparent. Intelligent systems will not be able to produce valid predictive analysis if the data entered from the outset has been manipulated for the sake of mere compliance formalities.

Facing these obstacles, universities urgently need strong and adaptive transformational leadership. Institutional leaders must be able to act as navigators, bridging aspects of digital intelligence with positive organizational behavioral change. The primary task of leaders is no longer simply to supervise, but to provide motivation and minimize cultural resistance through an ethical professional approach. Only through a synergy between technological readiness, human resource capacity building, and fundamental strategic commitment can the challenges of this digital dystopia be transformed into real opportunities for quality sustainability.

CONCLUSION

The digital-based reconstruction of a quality culture demonstrates that the transformation of the Internal Quality Assurance System (SPMI) toward Smart Accreditation is not merely a technological modernization, but a paradigm shift in higher education governance oriented toward sustainable quality. The integration of Cloud Computing, Artificial Intelligence, Application Programming Interfaces (APIs), performance indicator dashboards, and an Early Warning System optimizes the PPEPP cycle by providing accurate, documented data in real time, and easily accessible to all stakeholders. This transformation reduces administrative burdens, increases the effectiveness of data-driven decision-making, and shifts the organizational culture from administrative compliance to a strategic commitment to quality improvement. Thus, Smart Accreditation serves as a crucial foundation for building higher education institutions that are adaptive, transparent, accountable, and highly resilient in facing the regulatory dynamics and demands of Society 5.0.

On the other hand, the implementation of Smart SPMI still faces various limitations that require serious attention. This research demonstrates that the success of digital transformation is determined not only by technological sophistication but also by infrastructure readiness, human resource digital literacy, transformational leadership, and data management integrity. Technological capacity gaps between institutions, resistance to cultural changes,

and potential data inconsistencies due to weak validation processes remain major challenges. Furthermore, this study used a library approach, thus lacking empirical evidence regarding the effectiveness of Smart Accreditation implementation across various higher education institutions. Therefore, the findings are still conceptual and require further testing in the context of actual implementation in the field.

Based on these limitations, future research is recommended to use an empirical approach through case studies, surveys, or mixed methods to examine the relationship between digital maturity, quality culture, and accreditation performance across various types of higher education institutions. Development of an evaluation model that measures the level of digital transformation readiness, the effectiveness of the Early Warning System, and the impact of artificial intelligence utilization on improving institutional quality is also necessary. Furthermore, future research can explore strategies for strengthening digital literacy, data governance, cybersecurity, and transformational leadership as supporting factors for the successful implementation of Smart Accreditation. These efforts are expected to produce a more comprehensive, measurable, and applicable digital quality assurance model, thereby supporting the creation of superior, sustainable, and globally competitive Indonesian higher education.

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