

Transformation of Emergency Department Services through Hospital Management Information System: A Case Study of Bakti Pajajaran Regional General Hospital

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Abstract : *This study examines the digital transformation of Emergency Department services through the Hospital Management Information System at Bakti Pajajaran Regional General Hospital, Bogor Regency. Digital transformation has become a strategic necessity for improving public service quality, bureaucratic efficiency, and patient safety. The study aims to analyze the dynamics of digital transformation in emergency services from a public administration perspective and identify its contribution to service efficiency and patient safety. Using a qualitative post-positivist approach, data were collected through in-depth interviews, observation, document analysis, and literature review. The analysis applied a public sector digital transformation framework consisting of transformation reasons, objects, processes, and results. The findings show that digital transformation was driven by the need to improve service quality, advances in information technology, and national regulatory demands. The system improved service efficiency by accelerating access to patient data, reducing duplicate documentation, and strengthening inter-unit coordination. It also supported patient safety through more complete, accurate, and traceable clinical documentation. However, challenges remain in system interoperability, digital competency, health data governance, and information security.*

Keywords : *Digital Transformation, Emergency Department, Hospital Management Information System, Public Service, Patient Safety*

Abstrak : Penelitian ini mengkaji transformasi digital layanan Instalasi Gawat Darurat (IGD) melalui Sistem Informasi Manajemen Rumah Sakit di RSUD Bakti Pajajaran, Kabupaten Bogor. Transformasi digital telah menjadi kebutuhan strategis untuk meningkatkan kualitas pelayanan publik, efisiensi birokrasi, dan keselamatan pasien. Penelitian ini bertujuan untuk menganalisis dinamika transformasi digital dalam layanan gawat darurat dari perspektif administrasi publik serta mengidentifikasi kontribusinya terhadap efisiensi layanan dan keselamatan pasien. Dengan menggunakan pendekatan kualitatif pasca-positivistik, data dikumpulkan melalui wawancara mendalam, observasi, analisis dokumen, dan tinjauan pustaka. Analisis dilakukan dengan menerapkan kerangka kerja transformasi digital sektor publik yang mencakup alasan, objek, proses, dan hasil transformasi. Hasil penelitian menunjukkan bahwa transformasi digital didorong oleh kebutuhan untuk meningkatkan kualitas layanan, kemajuan teknologi informasi, dan tuntutan regulasi nasional. Sistem ini meningkatkan efisiensi layanan dengan mempercepat akses data pasien, mengurangi duplikasi dokumentasi, dan memperkuat koordinasi antarunit. Sistem ini juga mendukung keselamatan pasien melalui dokumentasi klinis yang lebih lengkap, akurat, dan dapat ditelusuri. Namun, masih terdapat tantangan terkait interoperabilitas sistem, kompetensi digital, tata kelola data kesehatan, dan keamanan informasi.

Kata kunci : Transformasi Digital, Instalasi Gawat Darurat, Sistem Informasi Manajemen Rumah Sakit, Pelayanan Publik, Keselamatan Pasien

INTRODUCTION

Digital technology has fundamentally changed the way organizations create value, deliver services, and interact with stakeholders. Rapid technological development has encouraged organizations to reconfigure their structures, service mechanisms, and institutional relationships in order to remain relevant in an increasingly digital environment (Hartl & Hess, 2017; Karimi & Walter, 2015; Porter & Heppelmann, 2014). In public administration, this transformation is not merely a technical process of converting manual information into digital formats, but a broader socio-technical change involving organizational routines, infrastructure, human interaction, work culture, and governance arrangements (Mergel et al., 2019; Osmundsen et al., 2018; Yoo et al., 2010). From the perspective of public service and e-government, digitalization should also be understood as an effort to improve accessibility, effectiveness, accountability, and the quality of public service delivery (Rahayu, Rahmayanti, & Juwono, 2020). Therefore, digital transformation in the public sector requires not only technological adoption, but also institutional readiness, governance capacity, and human resource capability.

In Indonesia, the urgency of digital transformation is closely related to the rapid growth of digital connectivity. The Indonesian Internet Service Providers Association reported that the number of internet users in Indonesia reached 221,563,479 people in 2024. In Bogor Regency, Open Data Jabar showed that 95.55% of young people used mobile phones, while 95.53% were active internet users. This finding is consistent with BPS Kabupaten Bogor (2021), which reported that 98.55% of residents aged five years and above accessed the internet through mobile phones in the last three months of 2020. These figures indicate that digital connectivity has become a significant feature of Indonesian society, including in local public service environments. However, the 2024 Indonesian Digital Society Index still highlighted challenges in digital empowerment and human resource capability (Hary Budiarto et al., 2024). Thus, digital transformation must be accompanied by capacity development and digital literacy so that technology does not become an administrative burden for public organizations (Mergel et al., 2019; Manik & Juwono, 2024).

The Indonesian government has also shown progress in electronic-based governance. According to the United Nations E-Government Development Index, Indonesia's ranking improved from 110th in 2014 to 64th in 2024, placing Indonesia among countries with a very high level of e-government development (UN Department of Economic and Social Affairs, 2024). At the local level, Bogor Regency obtained a score of 3.7 out of 4 in the 2023 Electronic-Based Government System assessment, indicating that the region had implemented digital governance at a very good level (Diskominfo Kabupaten Bogor, 2024). Nevertheless, the success of digital transformation in government cannot be measured only by the existence of digital platforms. It also depends on clear digital transformation roadmaps, data culture, enterprise architecture, organizational agility, managerial commitment, and capacity development (Manik & Juwono, 2024). In this context, digital transformation becomes part of broader public sector reform aimed at improving governance quality and public value.

The health sector is one of the most strategic areas of public sector digital transformation because health is a basic human need and a key component of public welfare. Access to quality health services is not only a technical administrative issue, but also a public responsibility involving the state, health institutions, and society (Cristina De Campos, 2012). From a public economics perspective, public health is often regarded as a public good that requires collective action and strong institutional governance (Anomaly, 2023; Kaul & Faust, 2001). In this regard, digital transformation in healthcare is expected to improve service quality, administrative efficiency, inter-unit coordination, and patient safety. The implementation of digital health

systems should therefore be viewed as part of public service transformation, particularly in how government-owned health facilities respond to citizens' needs in a more efficient, transparent, and accountable manner (Rahayu *et al.*, 2020).

The COVID-19 pandemic accelerated the adoption of digital technology in healthcare services. The pandemic created an urgent need for health institutions to use digital systems for service management, detection, response, treatment, and communication with patients (Klein & Todesco, 2021; Nurhas *et al.*, 2021; Nur Aisyah *et al.*, 2023). After the pandemic, the Indonesian government strengthened its digital health agenda through regulatory frameworks, including the Ministry of Health Regulation Number 24 of 2022 concerning Medical Records, which requires health facilities to implement electronic medical records integrated with the SATUSEHAT platform. In addition, Law Number 17 of 2023 concerning Health emphasizes the importance of integrating health information systems to strengthen the national health system. Presidential Regulation Number 95 of 2018 concerning the Electronic-Based Government System also provides a framework for public institutions, including regional public hospitals, to develop integrated, efficient, and digital public services.

Within the hospital system, the Emergency Department plays a critical role because it serves as the frontline unit for handling urgent and life-threatening cases. The speed and accuracy of decision-making in the Emergency Department are closely related to patient safety, morbidity, and mortality outcomes (O'Connor *et al.*, 2009). In Indonesia, Emergency Department visits account for approximately 15–20% of total hospital visits, with highly fluctuating workloads (Kemenkes RI, 2023). The Emergency Department is also responsible for triage, initial emergency treatment, referral decisions, and coordination with other hospital units. Therefore, digital transformation through a Hospital Management Information System is expected to reduce administrative barriers, improve real-time data synchronization, support clinical documentation, and strengthen inter-unit coordination.

Bakti Pajajaran Regional General Hospital, formerly known as RSUD Cibinong, was selected as the case of this study due to its strategic service environment. West Java is the most populous province in Indonesia, with 50.345 million people in 2024, while Bogor Regency had 5.682 million residents, making it the most populous regency in Indonesia (BPS, 2025; BPS Kabupaten Bogor, 2024). The hospital is located in Cibinong, one of the most densely populated districts in Bogor Regency. Open Data Kabupaten Bogor also showed a declining trend in households practicing clean and healthy living behavior in several dense districts, including Cibinong, which may increase the burden on local health facilities. In addition, data from 2020 to 2024 showed that Bakti Pajajaran Regional General Hospital had one of the highest patient visit rates among regional public hospitals in Bogor Regency. The hospital also functions as a regional referral hospital in West Java and received national recognition from BPJS Kesehatan as the second-best Class B hospital health facility after RS Lavalette in 2024 (Setda Kabupaten Bogor, 2024).

Empirically, Emergency Department and radiology visits were among the highest service categories at Bakti Pajajaran Regional General Hospital from 2020 to 2024. This makes the Emergency Department a relevant unit for examining digital transformation in a high-risk and high-demand service setting. Moreover, Bakti Pajajaran Regional General Hospital has implemented the Hospital Management Information System since the COVID-19 pandemic in 2020. The integration with SATUSEHAT and the national electronic medical record policy further encouraged structural changes in the hospital information system. These conditions show that the hospital's digital transformation is not only a response to technological change, but also a form of institutional adaptation to regulatory demands, service complexity, and public expectations.

Previous studies on digital transformation have mostly focused on private organizations and business sectors (Bharat Vagadia, 2020; Bilgeri et al., 2017; Karimi & Walter, 2015; Porter & Heppelmann, 2014). Studies in the public sector have generally discussed digitalization, e-government, and bureaucratic simplification through digital instruments (Al-Mamary et al., 2025; Benjamin & Potts, 2018; Mbae et al., 2024). In the Indonesian context, studies have also emphasized that digital transformation in government requires strategic planning, organizational commitment, data governance, and cross-sector collaboration (Manik & Juwono, 2024; Prabaningrum & Juwono, 2020; Susanti & Juwono, 2019). However, studies on digital transformation in hospitals have often examined hospitals as a single organizational entity without specifically analyzing the different functions and risks of particular service units, such as the Emergency Department (Baihaqy & Subriadi, 2025; Barnett et al., 2019; Raimo et al., 2023).

This study addresses that gap by examining digital transformation in the Emergency Department of a regional public hospital using the public sector digital transformation framework proposed by Mergel et al. (2019), which consists of digital transformation reasons, digital transformation objects, digital transformation processes, and results of digital transformation. Accordingly, this study aims to analyze the dynamics of digital transformation in Emergency Department services through the Hospital Management Information System at Bakti Pajajaran Regional General Hospital from a public administration perspective. It also seeks to examine how digital transformation contributes to service efficiency and patient safety. By focusing on a high-risk public healthcare service unit, this study contributes to the literature on digital governance and public service transformation by showing how digital systems can create public value in a regional hospital context.

METHODS

This study employed a qualitative research method with a post-positivist approach to examine the digital transformation of Emergency Department services through the Hospital Management Information System (SIMRS) at Bakti Pajajaran Regional General Hospital, Bogor Regency, Indonesia. A qualitative design was considered appropriate because this study aimed to understand the institutional dynamics, service processes, organizational changes, and governance implications of digital transformation in a public healthcare setting. Rather than measuring digital transformation only through numerical indicators, this study explored how SIMRS shaped service delivery, administrative efficiency, inter-unit coordination, and patient safety in the Emergency Department.

The study was conducted at Bakti Pajajaran Regional General Hospital, a regional public hospital owned by the Government of Bogor Regency. The Emergency Department was selected as the main unit of analysis because it represents a strategic frontline service that operates continuously, handles urgent and high-risk cases, and requires rapid coordination among registration officers, doctors, nurses, laboratory units, radiology, pharmacy, inpatient units, and medical record officers. This context provides a relevant setting for analyzing how digital transformation operates in a time-sensitive and high-risk public service environment.

Data were collected through in-depth interviews, direct observation, document analysis, and literature review. The interviews were conducted using open-ended questions to allow informants to explain their experiences, perceptions, and evaluations of SIMRS implementation in Emergency Department services. Informants were selected using purposive sampling based on their knowledge, authority, experience, or direct involvement in the governance, implementation, or use of SIMRS. The study involved 21 informants, consisting of 11 key informants and 10 Emergency Department patients or patients' family members. The key informants represented hospital management, Emergency Department management, information technology

management, medical records, local health authority, professional associations, academic experts, and community or patient advocacy stakeholders. The inclusion of patients and family members was intended to capture the user-side experience of digital service transformation, particularly in registration, service flow, and perceived service benefits.

Observation was conducted to examine the use of SIMRS in actual Emergency Department service processes, including patient registration, triage, clinical documentation, administrative verification, coordination with supporting units, referral procedures, and patient transfer to inpatient care. Document analysis was carried out by reviewing relevant institutional and policy documents, including the hospital strategic plan, SIMRS operational guidelines, Emergency Department business processes, annual performance reports, standard operating procedures, and other documents related to hospital service governance. These multiple sources of data were used to strengthen the empirical basis of the study and to avoid relying solely on interview statements.

The analytical framework was adapted from Mergel et al. (2019), which conceptualizes public sector digital transformation through four dimensions: digital transformation reasons, digital transformation objects, digital transformation process, and results of digital transformation. These dimensions were used as sensitizing concepts to organize the empirical data and guide the interpretation of findings. The first dimension examined the internal and external drivers of digital transformation. The second identified the organizational objects that changed, including service procedures, work processes, technology, coordination patterns, and data management. The third analyzed how digital transformation was implemented in practice. The fourth assessed the results of transformation, particularly in relation to service efficiency and patient safety.

Data were analyzed using the interactive model of Miles, Huberman, and Saldana (2014), which consists of data condensation, data display, and conclusion drawing or verification. In the data condensation stage, interview transcripts, field notes, and documents were selected, categorized, and coded based on the four dimensions of digital transformation. In the data display stage, findings were organized into analytical narratives, matrices, and selected interview excerpts. In the final stage, conclusions were drawn and continuously verified by comparing interview data, observation results, and documentary evidence.

To enhance methodological rigor, this study applied trustworthiness strategies consisting of credibility, dependability, confirmability, and transferability. Credibility was strengthened through triangulation across interviews, observations, and institutional documents. Dependability was maintained through the use of a consistent interview guide derived from the analytical framework. Confirmability was supported by linking interpretations to empirical evidence from informants, observations, and documents. Transferability was addressed by providing a detailed description of the hospital context, the characteristics of Emergency Department services, and the institutional setting of digital transformation in a regional public hospital.

RESULTS AND DISCUSSIONS

The findings show that digital transformation in the Emergency Department of Bakti Pajajaran Regional General Hospital was not merely a technological project, but an institutional response to service pressure, regulatory demands, and the need to improve public service quality. Using the public sector digital transformation framework proposed by Mergel et al. (2019), the transformation can be understood through four interconnected dimensions: transformation reasons, transformation objects, transformation process, and transformation results. These dimensions help explain why SIMRS was adopted, what changed in the organization, how the change was implemented, and what outcomes were produced for the hospital and the public.

Drivers of Digital Transformation in Emergency Department Services

The first finding concerns the reasons for digital transformation. Internally, the hospital needed a faster and more reliable system to access patient information, reduce dependence on physical documents, and improve coordination among health workers. Before SIMRS was implemented, patient history and medical records had to be searched manually, which was time-consuming and risky in an emergency setting. After the implementation of SIMRS, patient history, previous treatment, clinical notes, and service records could be accessed more quickly by authorized personnel. This finding supports Mergel et al. (2019), who argue that public sector digital transformation is often driven by internal organizational needs to improve performance, simplify processes, and respond to complex service demands.

In the Emergency Department, speed is not only an administrative requirement but also a clinical necessity. Emergency services require rapid triage, accurate clinical documentation, and timely coordination with laboratory, radiology, pharmacy, inpatient wards, and medical record units. Therefore, the implementation of SIMRS became a practical strategy to support service continuity and reduce delays in emergency decision-making. This is consistent with O'Connor et al. (2009), who emphasize that emergency care quality is closely linked to the speed and accuracy of clinical decisions.

Externally, the transformation was encouraged by the COVID-19 pandemic, national digital health policies, and the obligation to implement electronic medical records. The study found that the hospital had started planning electronic medical record implementation before the issuance of Ministry of Health Regulation No. 24 of 2022. However, the regulation and the SATUSEHAT integration agenda strengthened the institutional legitimacy of digital transformation. In this case, regulation functioned not only as a compliance mechanism, but also as an enabling factor that accelerated digital readiness. This pattern is in line with Manik and Juwono (2024), who argue that digital transformation in government requires clear strategy, organizational commitment, regulatory support, and data governance capacity.

From a public administration perspective, these drivers show that digital transformation is not neutral. It is shaped by institutional pressure, public expectations, resource constraints, and the state's responsibility to provide better public services. Rahayu, Rahmayanti, and Juwono (2020) explain that e-government and digital public services should be directed toward improving accessibility, efficiency, accountability, and service quality. The case of Bakti Pajajaran Hospital reflects this argument because SIMRS was adopted not only to modernize the hospital, but also to improve the quality of emergency public services.

Transformation Objects: From Manual Workflows to Integrated Digital Services

The second finding relates to transformation objects. SIMRS changed several key objects in Emergency Department services, including work processes, service mechanisms, inter-unit relationships, business models, service products, and technology infrastructure. This supports Mergel et al. (2019), who state that digital transformation in the public sector is not limited to digitizing documents but involves broader changes in organizational objects.

The most visible change occurred in the service process. Patient registration, triage, medical examination, laboratory and radiology orders, medication requests, referral processes, and inpatient transfer were increasingly conducted through the same digital platform. The system reduced repeated manual entries and allowed the same patient data to be used by different units according to their authority. This integration reduced duplication and improved information consistency.

The transformation also changed the relationship among hospital units. Before SIMRS, coordination depended heavily on physical documents and direct communication. After SIMRS,

doctors, nurses, laboratory staff, radiology staff, pharmacy units, and medical record officers could access patient information through one system. This created a more integrated workflow and reduced the risk of information gaps. Susanti and Juwono (2019), in their study of collaborative governance in digital infrastructure, emphasize that digital systems require coordination among actors and institutions. Although their study focused on telecommunications infrastructure, the principle is relevant here: digital transformation requires collaboration, not only technology.

Another important object of transformation was service products. Physical prescriptions, laboratory results, radiology results, and several clinical documents were gradually replaced or supported by electronic records. The use of NIK-based identification and fingerprint detection also simplified administrative verification, especially for BPJS patients or patients who were unconscious and unable to provide personal information. For patients and families, this reduced the need to bring multiple photocopies of identity documents. For the hospital, it reduced paper use, document storage needs, and administrative workload.

The use of mandatory fields in SIMRS also changed documentation practice. Certain clinical forms could not be saved unless required information was completed. This feature encouraged compliance with clinical documentation standards and reduced the possibility of incomplete records. In this sense, the system did not merely record work; it shaped work discipline. This finding is relevant to Oktaviana *et al.* (2025), who argue that healthcare data governance depends on data quality, metadata management, and information security.

Digital Transformation Process: Integration, Adaptation, and Organizational Learning

The transformation process was implemented through the gradual integration of SIMRS into daily Emergency Department routines. The study found that digitalization affected several stages of work: document digitization, process redesign, digital coordination, data use, and competency development. This confirms that digital transformation is not a one-time implementation, but an ongoing organizational change process.

The transition from paper-based records to electronic documentation required health workers to adapt to new work routines. This was especially important for senior staff who were more familiar with manual procedures. The hospital responded through mentoring and internal learning mechanisms, including Training of Trainers, in which trained staff supported their colleagues in using SIMRS. This indicates that human resource development became a crucial part of the transformation process. Chansanguan *et al.* (2025) also show that knowledge management and leadership are important enablers of sustainable digital transformation in public hospitals.

The findings further indicate that technology reliability became a critical issue. Because Emergency Department services operate 24 hours and handle high-risk cases, technical failure can directly disrupt service continuity. Therefore, IT support must be available continuously to ensure that the system remains functional. This is consistent with Amzar and Legowo (2025), who identify software instability, network problems, limited IT capacity, user error, and integration failure as important risks in hospital information system implementation.

At the same time, the process of digital transformation strengthened managerial control. Through digital records and dashboard-based information, hospital management could monitor service indicators such as patient flow, response time, bed availability, length of stay, and service bottlenecks. This encouraged more evidence-based decision-making. Prabaningrum and Juwono (2020), although discussing internet protocol governance, underline the importance of digital governance arrangements in managing technical systems, institutional responsibilities, and

regulatory coordination. In the hospital context, this means that SIMRS requires clear governance over data access, system maintenance, interoperability, and accountability.

Efficiency, Patient Safety, and Public Value

The most important result of SIMRS implementation was the improvement of service efficiency. The system accelerated registration, simplified BPJS verification, reduced repetitive documentation, and shortened the time needed to access patient history. The use of NIK and fingerprint identification allowed administrative verification to be conducted more quickly, reducing the burden on patients' families, particularly in emergency situations. This is important because emergency service users often arrive under stressful conditions and cannot be expected to navigate complicated administrative requirements.

The service performance data support this finding. The Emergency Department recorded an average doctor response time of 4.99 minutes, meeting the national minimum service standard of ≤ 5 minutes. Patient satisfaction reached 83.91%, exceeding the minimum standard of 70%. The hospital also recorded 100% lifesaving capability and an Emergency Department mortality rate within 24 hours of 0.004 per thousand, far below the standard threshold of ≤ 2 per thousand. These indicators suggest that digital transformation contributed to service efficiency while maintaining quality and safety.

The second major result was improved patient safety. Electronic clinical documentation reduced the risk of lost records, unreadable handwriting, incomplete information, and delays in accessing previous medical history. Mandatory fields also encouraged more complete clinical documentation before data could be saved. This helped ensure that doctors and nurses had access to more accurate and traceable information when making clinical decisions. This finding is consistent with Stoumpos, Kitsios, and Talias (2023), who argue that digital transformation in healthcare can improve service quality, operational efficiency, patient engagement, and health data management.

The third result was the creation of public value. In public administration, the success of digital transformation should not be measured only by the presence of digital applications, but by whether the system improves public service quality, accountability, transparency, and citizen welfare. The findings show that SIMRS produced public value in at least five ways: improving service effectiveness, increasing operational efficiency, strengthening inter-unit coordination, enhancing accountability through traceable digital records, and supporting patient safety. This supports Rahayu *et al.* (2020), who frame e-government as part of public service improvement, not merely as technological modernization.

However, the transformation also revealed several challenges. First, interoperability with external platforms, particularly SATUSEHAT, still needs continuous strengthening. Second, health data security and access control remain important because clinical information is sensitive and must be protected. Third, the digital competency of health workers must be continuously improved to ensure that SIMRS is used consistently and correctly. Fourth, the hospital needs stronger data analytics capacity so that the data collected through SIMRS can be used not only for reporting, but also for service planning, risk detection, and quality improvement.

Overall, the findings show that SIMRS implementation in the Emergency Department of Bakti Pajajaran Regional General Hospital has moved beyond basic digitization. It has changed service workflows, reduced administrative burdens, strengthened coordination, improved documentation, and supported patient safety. Nevertheless, the sustainability of this transformation depends on continuous improvement in interoperability, data governance, cybersecurity, digital competency, and managerial commitment. Therefore, digital transformation

in public hospitals should be understood as a continuous governance process rather than a completed technology project.

CONCLUSION

This study concludes that digital transformation in Emergency Department services should be understood as a governance process rather than a mere technological intervention. The implementation of the Hospital Management Information System at Bakti Pajajaran Regional General Hospital shows that digital transformation in a public hospital is shaped by the interaction between regulatory pressure, organizational readiness, service complexity, and the need to create public value in a high-risk healthcare setting. In this context, SIMRS functions not only as an administrative tool, but also as an institutional mechanism that reorganizes service workflows, strengthens coordination, and supports more accountable clinical documentation.

Theoretically, this study contributes to the literature on public sector digital transformation by extending the discussion to a specific hospital unit with urgent, complex, and time-sensitive service characteristics. Previous studies often examine digital transformation at the organizational or policy level, while this study shows how transformation operates within a frontline public service unit where administrative efficiency and patient safety are closely connected. By applying the dimensions of transformation reasons, objects, processes, and results, this study demonstrates that digital transformation in public healthcare should be analyzed as a socio-technical and governance-oriented process involving technology, human resources, work routines, regulation, and institutional coordination.

Practically, the findings imply that public hospitals need to treat digital transformation as a continuous improvement agenda. Hospital management should not only invest in information systems, but also strengthen digital competency, data governance, system interoperability, cybersecurity, and user support. For policymakers, this study suggests that national digital health regulations such as electronic medical records and SATUSEHAT integration need to be accompanied by technical assistance, infrastructure readiness, and realistic implementation support for regional public hospitals. For hospital managers, the sustainability of SIMRS depends on the alignment between technology design, clinical workflow, leadership commitment, and the daily needs of frontline health workers.

This study has several limitations. First, it focuses on a single regional public hospital, which limits the generalizability of the findings to other institutional contexts. Second, the study uses a qualitative approach, so it does not measure the statistical relationship between SIMRS implementation and specific service performance indicators. Third, patient perspectives were included, but the analysis still gives greater emphasis to institutional and managerial aspects of digital transformation.

Future research may compare digital transformation across several public hospitals with different classifications, regions, and levels of digital maturity. Further studies may also use mixed methods to examine the relationship between hospital information systems, service efficiency, patient safety indicators, and patient satisfaction. In addition, future research should explore interoperability, health data governance, and cybersecurity as emerging issues in Indonesia's digital health transformation.

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