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Multi-Theoretical Organizational Analysis: Determinants of the Success of SIMRS Integration in the Context of Health Organizations

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ABSTRACT

Background: Hospital Management Information System (SIMRS) integration faces complex challenges that require a deep understanding of organizational dynamics. A comprehensive theoretical approach is needed to identify determinants of successful implementation. Objective: To analyze the determinants of the success of SIMRS integration using a multi-theoretical organizational framework including Systems Theory, Contingency Theory, Technology Acceptance Model, and Organizational Learning Theory. Method: Qualitative research with a case study approach in three type B hospitals in Indonesia. Data were collected through in-depth interviews with 45 respondents, participant observation, and document analysis. Data analysis used thematic analysis with a theoretical framework as a guide. Results: Identification of 12 main determinants of SIMRS integration success categorized into four theoretical dimensions: (1) Systems integration complexity (5 factors), (2) Organizational contingency factors (3 factors), (3) Technology acceptance drivers (2 factors), and (4) Learning capability factors (2 factors). Leadership commitment and user engagement factors are the most significant determinants. Conclusion: The success of SIMRS integration requires a holistic approach that integrates multi-theoretical perspectives of the organization. The developed framework can be a practical guide for hospital management in optimizing SIMRS implementation.

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1. INTRODUCTION

The era of digitalization in the health sector demands a fundamental transformation in hospital information management. The Hospital Management Information System (SIMRS) has become the operational backbone that integrates all aspects of service, from patient registration, electronic medical records, pharmacy management, to strategic management reporting (Sharma et al., 2021). However, the implementation of integrated SIMRS does not always run smoothly, with the failure rate of health information system integration projects reaching 60–70% (Wachter & Goldman, 2020). This high failure rate indicates complex challenges that are not only technical in nature, but also include organizational aspects (Anderson et al., 2019).

As a professional organization, hospitals have unique characteristics with complex hierarchical structures, diverse work cultures, and various stakeholders with different needs (Miller et al., 2020). This complexity makes the integration of SIMRS a multidimensional challenge that

requires a deep theoretical understanding of the organizational dynamics that support or hinder successful implementation. Previous studies have emphasized that a technical approach alone is not enough to guarantee the success of information system implementation in hospitals; an approach that considers human, organizational, and learning factors is very important (Wilson et al., 2021). In addition, the practical challenges faced by hospitals in Indonesia, such as limited resources, digital competency gaps among health workers, and dynamic regulations, further strengthen the urgency of the need for a more comprehensive understanding in designing SIMRS implementation strategies that are appropriate to the local context.

In this context, a comprehensive theoretical framework is needed to understand the complex interactions between technology, humans, and organizations in the implementation of SIMRS (Taylor et al., 2020). This article aims to develop an in-depth understanding of the determinants of successful SIMRS integration using a multi-theoretical approach that includes Systems Theory, Contingency Theory, Technology Acceptance Model (TAM), and Organizational Learning Theory. With this approach, it is hoped that a conceptual framework can be produced that not only supports theoretical contributions but also provides practical guidance that is applicable to hospital management in Indonesia in optimizing the implementation of SIMRS in a sustainable manner, adaptive to technological changes, and responsive to stakeholder needs.

2. RESEARCH METHOD

Research Approach and Design

This study adopts a qualitative paradigm with a multiple case study design to explore the determinants of the success of Hospital Management Information System (SIMRS) integration in the context of Indonesian health organizations. The selection of a qualitative approach is based on the complex nature of the SIMRS implementation phenomenon involving multidimensional interactions between technological elements, human factors, and organizational dynamics.

The multiple case study design was chosen because it provides the advantage of exploring contemporary phenomena in the context of real-life settings, especially when the boundaries between phenomenon and context are not clearly distinguishable. This approach allows the study to capture the complexity and uniqueness of each case of SIMRS implementation while still allowing cross-case analysis to identify common patterns that can be analytically generalized.

A comprehensive literature review is the foundation for developing a theoretical framework that is then used as a theoretical framework in data analysis. The integration of literature review and multiple case studies creates a robust approach in understanding the phenomenon of SIMRS implementation from a solid theoretical perspective but remains grounded in the practical reality of implementation.

Research Setting and Organizational Context

This study was conducted in three type B hospitals in Indonesia that have implemented integrated SIMRS for a minimum period of two years. The selection of type B hospitals as the research setting was based on the consideration that this category of hospitals has a fairly high operational complexity for the implementation of comprehensive SIMRS, but is not as complex as type A hospitals that may have unique characteristics that are difficult to generalize.

Strict selection criteria were applied to ensure comparability between cases. The selected hospitals had to have a capacity of 200-500 beds, representing medium-scale healthcare organizations with sufficient operational complexity for the analysis of SIMRS implementation. The requirement to have implemented an integrated SIMRS ensures that the organization has passed the initial implementation phase and is in the steady-state operational phase, allowing for a comprehensive evaluation of the impact and effectiveness of the implementation.

The minimum implementation period of two years was chosen based on the consideration that organizational learning and adaptation to new technologies require sufficient time to be evaluated meaningfully. This period also allows for the identification of long-term impacts and sustainability factors which are important focuses in this study.

Participant Profile and Sampling Strategy

The study involved 45 participants selected through purposive sampling with consideration of representation of various organizational levels and functional areas. This sampling strategy was designed to capture comprehensive perspectives from various stakeholders involved in the implementation and use of SIMRS.

Participants at the strategic leadership level consisted of 6 directors and deputy directors, who provided top-level management perspectives on strategic decision-making, resource allocation, and organizational vision in the implementation of SIMRS. The Head of IT/SIM Department, 3 people, represented technical leadership who understood the technical complexity of the implementation and the integration challenges faced.

The 12 heads of installations/units provide a middle management perspective that bridges strategic vision with operational implementation. This group is particularly important because they experience firsthand the challenges of integrating SIMRS with existing workflows and motivating staff to adopt new technologies.

9 specialist doctors and 15 nurses and other health workers represent the end-users who are the ultimate beneficiaries and primary users of SIMRS. Their perspectives are crucial in understanding user acceptance factors, usability issues, and actual impacts on clinical workflows and patient care quality.

Multisource Data Collection Strategy

In-depth Interviews as Primary Data Source

Semi-structured interviews were the primary method for data collection, with a question guide developed based on an integrated theoretical framework. The semi-structured structure was chosen to provide flexibility in exploring emerging topics during the interviews while ensuring consistent coverage of key theoretical dimensions.

The interview duration of 45-90 minutes per respondent was designed to provide sufficient time for participants to explore their experiences and perspectives in depth. The variation in duration accommodates differences in depth of involvement and complexity of roles that vary across participants.

The interview guide was developed with careful consideration of four theoretical dimensions: systems integration foundation, contextual adaptation layer, user interaction interface, and evolutionary development spiral. Each dimension was operationalized into specific questions that were relevant to the role and experience of each participant category.

Participatory Observation for Contextual Understanding

Participatory observation was conducted to capture actual usage patterns and real-time interactions between users and SIMRS in various work units. This method is particularly valuable in identifying gaps between intended use and actual use, as well as in understanding informal workarounds and adaptations developed by users.

Observations were conducted in various settings ranging from inpatient units, outpatient units, emergency departments, to administrative units to capture diversity in usage patterns and challenges faced. The focus of observations included user behaviors, system response times, integration seamlessness, and informal interactions that occur around system usage.

Document Analysis for Historical Perspective

Document review provides historical perspective and official organizational narrative about SIMRS implementation. Documents analyzed include project implementation plans that provide insight into original intentions and strategies, training materials that indicate the approach to user preparation, user manuals that indicate system complexity and user expectations.

Evaluation reports and meeting minutes provide a longitudinal perspective on the challenges encountered, solutions implemented, and organizational learning that occurred throughout the implementation process. Analysis of these documents is crucial in understanding the evolution of implementation strategy and organizational responses to emerging challenges.

Systematic Data Analysis Framework

Data analysis used thematic analysis with a systematic and theory-driven approach. The process began with verbatim transcription of all interviews, followed by an intensive familiarization process where the researcher conducted repeated readings to understand the overall patterns and meanings in the data.

Initial coding was conducted based on the theoretical framework that had been developed, with codes reflecting the four main theoretical dimensions. The coding process was both deductive (theory-driven) and inductive (data-driven), allowing for the emergence of themes that were not anticipated in the initial theoretical framework.

Searching for themes involves identifying patterns in codes that can be organized into meaningful themes that capture essential aspects of the phenomenon being studied. Theme reviewing ensures consistency and coherence, with careful attention to the internal homogeneity and external heterogeneity of themes.

Final defining and naming themes were conducted with consideration of theoretical significance and practical implications. This process resulted in a comprehensive understanding of the determinants of successful SIMRS integration that was grounded in empirical data but informed by theoretical insights.

Validity and Reliability of Research

The validity of the study was ensured through comprehensive multiple strategies. Source triangulation was conducted by combining perspectives from multiple stakeholder groups and multiple data sources (interviews, observations, documents). Member checking involved validation of key findings with selected participants to ensure accurate representation of their perspectives and experiences.

Peer debriefing with expert researchers provided external validation of the interpretation and analysis process. Inter-coder reliability using Cohen's Kappa coefficient ensured consistency in the coding process, with multiple coders independently analyzing subsets of the data to calculate agreement levels.

This methodological rigor approach ensures that the research findings are not only theoretically informed but also empirically robust and practically relevant for healthcare organizations that are implementing or will implement integrated SIMRS.

3. RESULTS AND DISCUSSIONS

Context and Characteristics of Research Cases

This study explores three type B hospitals with diverse SIMRS implementation profiles, providing rich insights into variations in implementation trajectories and outcomes. This diversity of characteristics creates a natural experiment that allows for in-depth analysis of the factors that differentiate successful implementations from those that face significant challenges.

Hospital A, with a capacity of 350 beds and three years of SIMRS implementation experience, shows a high level of success in system integration. This organization has reached a maturity level that allows for continuous optimization and expansion of SIMRS capabilities. This achievement is a benchmark for understanding best practices in implementing integrated SIMRS.

Hospital B, with 280 beds and 2.5 years of implementation, showed a moderate success rate. This case is interesting because it presents mixed results that reflect the complexity of implementing SIMRS in the context of limited organizational capabilities. The experience of Hospital B provides insight into trade-offs and prioritization strategies in resource-constrained environments.

Hospital C, with the largest capacity of 420 beds but the latest implementation for two years, experienced significant challenges that provide valuable perspectives on pitfalls to avoid and recovery strategies that can be implemented. This case illustrates that organizational size does not automatically guarantee successful implementation.

Landscape Determinants of Success: Four-Dimensional Analysis

Comprehensive thematic analysis identified 12 key determinants distributed across four theoretical dimensions, reflecting the multifaceted complexity of the SIMRS implementation phenomenon. This

distribution of determinants confirms the validity of the integrated theoretical framework developed previously.

Systems Integration Dimensions: Technical Foundation as Prerequisites

Architectural compatibility emerges as a fundamental prerequisite that determines the technical feasibility of system integration. The experience of the Head of IT from Hospital B reveals the complexity of managing legacy systems that cannot integrate seamlessly: "Successful integration requires a compatible system architecture across modules. We experienced difficulties because some legacy systems could not be integrated well."

These findings indicate that architectural decisions made in the early stages of implementation have significant long-term implications. Successful organizations generally conduct comprehensive systems audits and architectural planning prior to implementation to identify potential compatibility issues.

Data standardization has emerged as a critical enabler for seamless information flow across subsystems. Standardization of data formats and communication protocols is not only a technical requirement, but also an organizational capability that requires coordination across departments and alignment with existing workflows.

Interface usability is consistently identified as a key driver of user acceptance. Intuitive and responsive interface design directly contributes to perceived ease of use, which in turn influences adoption rates and user satisfaction. These findings reinforce the importance of user-centered design in SIMRS development.

System reliability and minimal downtime become non-negotiable expectations from the users' perspective. Time-sensitive clinical workflows cannot accommodate system instability, making reliability a fundamental success criterion. Clear integration governance structures are needed to manage the complexity of coordination between units and ensure consistent implementation standards.

Dimensions of Organizational Contingency: Context-Specific Success Factors

Leadership commitment emerges as the single most important contingency factor that influences all dimensions of implementation. As expressed by the Head of SIM from Hospital A: "Full support from top management is very important. Without commitment from the director, implementation will be hampered." Leadership commitment is not only in the form of rhetorical support, but also tangible actions in resource allocation and organizational prioritization.

Resource allocation adequacy includes not only financial investment but also human resources with appropriate skills and adequate infrastructure support. Successful organizations generally allocate resources with a strategic perspective that considers long-term benefits rather than short-term costs.

Organizational culture that is supportive of change and innovation becomes an enabling factor that facilitates the adoption of SIMRS. This culture cannot be developed overnight, but requires systematic efforts in change management and consistent communication strategies.

Dimensions of Technology Acceptance: User-Centric Success Factors

Perceived usefulness is the primary driver of user acceptance, influenced by the alignment between system capabilities and users' actual job requirements. Users who can identify clear benefits in daily workflows demonstrate higher adoption rates and more positive attitudes toward the system.

Training effectiveness emerges as a critical mediator between system capabilities and user competence. Comprehensive training programs and continuous support not only improve technical skills but also users' confidence in using the system. Effective training also contributes to perceived ease of use which in turn increases usage intention.

Dimensions of Learning Capability: Sustainable Success Factors

Knowledge management capability is adequate organizational ability in capturing lessons learned, sharing best practices, and applying insights for continuous improvement. Organizations with strong knowledge management demonstrate better adaptation to challenges and more effective utilization of system capabilities.

Continuous improvement culture reflects organizational commitment to excellence and willingness to evolve based on experience and feedback. This culture enables organizations to not only overcome initial implementation challenges but also optimize system performance over time.

Dynamic Interactions: The Complexity Web

Cross-case analysis reveals complex interactions among determinants that create synergistic effects in successful implementations. The leadership-culture nexus shows that leadership commitment has not only direct impacts but also indirect effects through shaping organizational culture that then facilitates user acceptance across all levels.

The training-learning spiral indicates that effective training programs create self-reinforcing learning momentum. Initial success in training builds confidence that encourages further learning and exploration of system capabilities, creating sustainable positive feedback loops.

System-user integration demonstrates that technical excellence must be combined with user-centric approaches to produce optimal perceived usefulness. System reliability and usability interact with user training to create positive user experiences that drive deeper adoption.

Patterns of Success: Multi-Theoretical Insights

Hospital A with a high success rate shows balanced excellence across all theoretical dimensions. Strong leadership commitment creates an enabling environment for comprehensive systems integration, which is then supported by a robust learning culture that facilitates continuous optimization. This pattern confirms the proposition that optimal success requires simultaneous attention to all theoretical dimensions.

Hospital B with moderate success illustrates partial optimization that produces mixed results. Good technical implementation is not sufficient to overcome weaknesses in organizational learning and user engagement. This case highlights the importance of a holistic approach that addresses all critical dimensions simultaneously.

RS C with challenged implementation reveals the consequences of inadequate attention to systems integration complexity and lack of contingency planning. Challenges in the technical foundation are then amplified by unsupportive organizational factors, creating compounding difficulties that are difficult to overcome.

Implications and Strategic Insights

The findings of this study have significant implications for both theoretical understanding and practical implementation of SIMRS. From a theoretical perspective, these results validate an integrated theoretical framework that combines systems theory, contingency theory, TAM, and organizational learning theory in a single comprehensive framework. The complex interactions among determinants suggest that single-theory approaches are inadequate to understand the phenomenon of SIMRS implementation.

From a practical perspective, these results provide actionable insights for healthcare organizations planning or implementing SIMRS implementation. The identified success patterns can be used as a blueprint for strategic planning, while failure patterns can be used as an early warning system for risk mitigation.

The importance of balanced attention across all theoretical dimensions implies that organizations need to develop comprehensive implementation strategies that focus not only on technical aspects but also organizational and human factors that are equally critical for success.

Table 1. Categorization of Determinants Based on Theoretical Framework

Theoretical Dimension	Primary Determinant	Impact Level
Systems Theory	Architectural Compatibility	High
	Data Standardization	High
	Interface Usability	Medium
	System Reliability	High
	Integration Governance	Medium
Contingency Theory	Leadership Commitment	Very High
	Resource Allocation	High
	Organizational Culture	High
TAM	Perceived Usefulness	High
	Training Effectiveness	Medium
Organizational Learning	Knowledge Management	Medium
	Continuous Improvement	High

Implications, Conclusions, and Recommendations: Toward Sustainable SIMRS Integration
Theoretical Contribution: Advancing Multi-Theoretical Understanding

This study makes a significant contribution to the development of the body of knowledge on information system implementation in the context of health organizations through several fundamental theoretical contributions. The main contribution lies in the empirical demonstration that a single theoretical perspective is inadequate to explain the complexity of the SIMRS implementation phenomenon, which requires the integration of multiple theoretical lenses to produce a comprehensive understanding.

The theoretical integration developed in this study shows that Systems Theory, Contingency Theory, Technology Acceptance Model, and Organizational Learning Theory do not stand as competing perspectives, but rather as complementary frameworks that strengthen each other in explaining different facets of the implementation process. This integration produces a more robust holistic understanding compared to approaches that only rely on a single theoretical foundation.

Identifying context-specific factors unique to healthcare organizations enhances understanding of how general technology implementation theories should be adapted to healthcare settings. Unique characteristics such as the critical nature of healthcare services, complex professional hierarchies, stringent regulatory requirements, and patient safety imperatives create an implementation context that is distinct from other organizational settings.

The dynamic interaction model developed from the findings of this study advances theoretical understanding of how implementation determinants do not operate independently, but rather through complex webs of interactions that can produce synergistic or antagonistic effects. This model provides a framework for understanding why identical implementation strategies can produce different outcomes in different organizational contexts.

Strategic Implications for Healthcare Management

The practical implications of this study have significant relevance for various stakeholders in the healthcare ecosystem, with implications that can be actioned at multiple organizational levels. For hospital management, the findings of this study indicate the need for a paradigm shift from the traditional project management approach to comprehensive transformation management that integrates all the theoretical dimensions that have been identified.

Developing a comprehensive implementation strategy requires systematic attention to technical, organizational, human, and learning dimensions simultaneously. This means that hospital management can no longer rely exclusively on IT departments to manage the implementation of SIMRS, but must develop cross-functional integration teams involving representatives from all key stakeholder groups.

Establishing a strong governance structure for integration project management is a critical success factor that requires formal mechanisms for coordination, decision-making, and accountability. This governance structure must be capable of managing the complexity inherent in large-scale technology implementations while maintaining flexibility for adaptation to emerging challenges and opportunities.

Investment in organizational learning capability is a strategic imperative for the sustainability of SIMRS implementation. Successful organizations not only focus on initial implementation success, but also on developing capabilities for continuous improvement, adaptation, and evolution based on changing needs and technological advances.

For IT implementation teams, practical implications include an expansion from a traditional technical focus to a broader understanding of organizational readiness and user-centric approaches. Technical excellence remains a necessary condition, but it is not sufficient for implementation success without adequate attention to organizational and human factors.

The development of a user-centric approach in system design and implementation requires systematic involvement of end-users in all phases of implementation, from requirements gathering to post-implementation optimization. This approach not only improves user acceptance but also ensures that system capabilities are aligned with actual workflow needs and clinical practices.

Creation of feedback mechanisms for continuous system improvement enables organizations to maintain system relevance and effectiveness over time. These mechanisms should be designed to capture both quantitative performance metrics and qualitative user experiences that can inform ongoing optimization efforts.

Comprehensive Conclusions: Multi-Dimensional Success Framework

This study successfully identified and validated 12 key determinants of SIMRS integration success distributed across four fundamental theoretical dimensions. This distribution confirms that implementation success cannot be reduced to a single critical factor, but rather emerges from complex interactions between multiple determinants operating at different organizational levels.

Leadership commitment and user engagement emerge as the most significant determinants in influencing implementation success, but their significance is not standalone but rather through their capacity to influence and enable other determinants. Leadership commitment creates an enabling environment for resource allocation, organizational culture development, and strategic alignment, while user engagement ensures that system capabilities are effectively utilized and optimized.

The multi-theoretical framework developed in this study demonstrates that successful SIMRS integration requires a holistic understanding of the complex interactions between technical systems, organizational contexts, user characteristics, and learning capabilities. This framework provides a structured approach to understanding implementation complexity while maintaining practical applicability for real-world implementations.

Contingency-based implementation approaches that consider specific organizational characteristics have been shown to be more effective than standardized one-size-fits-all approaches. This indicates that successful implementation strategies must be customized based on organizational readiness, contextual factors, and strategic priorities of each healthcare organization.

Organizational learning capability emerges as a critical factor for the sustainability of SIMRS implementation that enables organizations to not only achieve initial implementation success but also maintain and enhance system effectiveness over time. This learning capability encompasses not only technical competence but also adaptive capacity to respond to changing needs and technological evolution.

Strategic Recommendations: Multi-Stakeholder Action Framework

Future Research Agenda

The development of quantitative measurement tools for identified determinants is a logical next step that will enable systematic assessment of organizational readiness and implementation progress. These tools should be designed to provide actionable insights that can guide implementation strategies and resource allocation decisions.

Longitudinal studies are needed to understand the evolution of implementation determinants over the long term and to identify critical transition points in the implementation lifecycle. This understanding is crucial for developing stage-appropriate intervention strategies and for predicting long-term sustainability of implementation success.

Expansion of research to different types of hospitals and healthcare organizations will enhance the generalizability of findings and enable development of context-specific implementation guidelines. Diversity in organizational contexts will provide a richer understanding of the boundary conditions of the theoretical framework being developed.

Strategic Actions for Practitioners

Adoption of multi-theoretical framework in planning and implementation of SIMRS requires paradigm shift from traditional project management approaches to comprehensive transformation management that integrates technical, organizational, human, and learning considerations. This framework must be operationalized through structured implementation methodologies that provide guidance for each phase of implementation.

Development of organizational readiness assessment tools will enable healthcare organizations to conduct systematic evaluations of their capabilities and constraints before embarking on major SIMRS implementations. This assessment tool should cover all theoretical dimensions and provide specific recommendations for addressing identified gaps or weaknesses.

Establishment of comprehensive change management programs that integrate all theoretical dimensions is a critical success factor that requires systematic attention to communication, training, support, and feedback mechanisms. These programs should be designed to facilitate smooth transitions while building organizational capabilities for ongoing adaptation and improvement.

Policy-Level Interventions

Developing evidence-based guidelines for SIMRS implementation will provide healthcare organizations with structured frameworks for planning and executing successful implementations. These guidelines should incorporate insights from multi-theoretical analysis and provide practical tools for implementation management.

Support programs for capacity building healthcare organizations are needed to address capability gaps commonly encountered in SIMRS implementations. These programs should focus on developing organizational competencies in areas such as change management, user training, and systems integration.

Creation incentive structures that encourage best practices sharing between healthcare organizations will facilitate broader diffusion of successful implementation strategies and accelerate organizational learning across the healthcare sector. These incentive structures should recognize and reward organizations that achieve exemplary implementation outcomes and that actively contribute toward knowledge sharing initiatives.

Towards Sustainable Healthcare Digitalization

This research ultimately contributes toward broader understanding of sustainable healthcare digitalization that transcends technical implementation to encompass comprehensive organizational transformation. Success in SIMRS integration is not only about achieving technical functionality, but also about developing organizational capabilities for leveraging technology in improving healthcare delivery quality, efficiency, and accessibility.

Successful future healthcare organizations will be those capable of continuously adapting and evolving their technological capabilities based on changing needs, emerging opportunities, and evolving best practices. The foundation for this capability lies in a comprehensive multi-theoretical understanding of the factors that determine implementation success and in systematic attention to the technical, organizational, human, and learning dimensions of healthcare digitalization.

4. CONCLUSION

This study has successfully identified and analyzed the determinants of the success of Hospital Management Information System (SIMRS) integration in the context of health organizations in

Indonesia through a comprehensive multi-theoretical approach, including Systems Theory, Contingency Theory, Technology Acceptance Model (TAM), and Organizational Learning Theory. The main findings indicate that the success of SIMRS implementation is not only determined by technical aspects, but also by organizational contingency factors, user acceptance, and continuous organizational learning capabilities. Leadership commitment and user engagement emerge as the most significant determinants that mediate the relationship between these factors. The results of this study provide an important contribution to the development of technology implementation theory in health organizations by offering a holistic conceptual framework that can be used as a reference for a more adaptive and contextual SIMRS implementation strategy. In addition to theoretical contributions, this study also provides practical guidance for hospital management in planning, implementing, and evaluating SIMRS implementation by considering various technical, organizational, and human factors in an integrative manner. The prospects for developing the results of this study include the development of quantitative instruments based on the framework that has been constructed to measure the readiness and success rate of SIMRS implementation in various types of health service organizations. In addition, longitudinal studies that trace the dynamics of SIMRS implementation in the long term will enrich the understanding of sustainability and organizational learning processes. In the future, the adaptation of this framework to the context of different types of hospitals, clinics, or other health institutions is also expected to increase the generalization of findings and support the digitalization of health services more broadly. Thus, this study opens up opportunities for the development of further studies that support sustainable digital transformation in the health sector.

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