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RESEARCH PAPER

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Health Information Technology Management Model to Improve User Performance and Satisfaction

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ABSTRACT

The rapid development of digital technology has reshaped the way healthcare institutions manage information, deliver services, and support clinical decisions. Despite these advances, many hospitals still struggle with inefficiencies resulting from weak Health Information Technology (HIT) governance and limited user skills. Most existing approaches prioritize technical deployment while paying less attention to managerial, organizational, and behavioral factors that are essential for sustainable success. To overcome these limitations, this study introduces and empirically evaluates a comprehensive Health Information Technology Management (HITM) model that combines strategic IT governance, system quality, and user dimensions to improve satisfaction and performance among healthcare professionals. The research examines how governance mechanisms, system quality, and user capabilities affect satisfaction and performance. The specific objectives are to identify the key drivers of system quality, evaluate the relationship between system quality and user satisfaction, and examine how satisfaction impacts user performance. The study contributes theoretically by presenting a more integrated framework that unites concepts from IT governance, Information Systems Success Theory, and Technology Acceptance Theory. It also offers empirical evidence of the importance of managerial structures in driving successful digital transformation in healthcare settings. A survey involving healthcare personnel from three public hospitals in Indonesia was analyzed using Partial Least Squares Structural Equation Modeling (PLS-SEM). Results demonstrate strong model validity, accounting for 65% of the variance in user satisfaction and 59% of the variance in performance, with predictive relevance (Q^2) values of 0.47 and 0.52, respectively. These outcomes demonstrate that mature governance, leadership support, cross-unit collaboration, and systematic user training enhance system quality, satisfaction, and ultimately performance. Future studies should expand testing in broader healthcare contexts with different resource conditions.

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I. INTRODUCTION

Over the past twenty years, the rapid acceleration of digital transformation has led to substantial structural changes in healthcare organizations globally. Hospitals and clinical institutions have evolved from paper-based systems to integrated digital environments where Health Information Technology (HIT) plays a central role in managing clinical data, coordinating patient care, and supporting medical decision-making processes [1], [2], [17], [25]. Multiple studies have confirmed that the adoption of HIT leads to improved efficiency, higher data accuracy, and enhanced continuity of care by ensuring timely access to relevant health information and reducing duplication of administrative tasks [3], [4], [18], [20]. In particular, interoperability between systems has been shown to improve the reliability of clinical decision-making and reduce preventable medical errors through evidence-based data exchange [3], [4], [24]. Despite these advancements, many healthcare institutions, especially in developing nations, including Indonesia, continue to face systemic challenges associated with HIT implementation and utilization. These barriers are often managerial rather than technical, stemming from inadequate governance frameworks, limited user training, fragmented coordination between departments, and a lack of leadership support in digital transformation programs [5], [6], [16], [23], [31]. Prior research emphasizes that managerial maturity and robust IT governance contribute significantly to organizational readiness, system consistency, and long-term sustainability of digital services [7], [24], [30]. Institutions with weak governance structures often struggle to maintain system reliability, operational continuity, and user commitment to HIT usage, particularly in high-pressure clinical environments.

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Several theoretical models have been widely used to evaluate HIT performance in healthcare, including the DeLone and McLean Information System Success Model, COBIT 5, and the Technology–Organization–Environment (TOE) framework [8]–[10]. These models offer structured approaches for evaluating system quality, governance maturity, user satisfaction, and organizational alignment. Through these perspectives, researchers have demonstrated that HIT outcomes are influenced not only by system functionality but also by managerial practices, organizational support, and the broader healthcare context [11], [20], [21]. Studies by Eason and colleagues further demonstrate that user performance, behavioral engagement, and system acceptance are significantly influenced by managerial interventions, including leadership involvement, communication mechanisms, and operational alignment between IT units and clinical teams [11]. Furthermore, recent empirical findings highlight that managerial elements, including leadership participation, standardized governance processes, user capability development, and structured cross-unit coordination, significantly increase user satisfaction, perceived usefulness, and technology acceptance in healthcare environments [12], [13], [19], [25], [28]. Bibliometric analyses also confirm that managerial determinants consistently influence digital transformation success, adoption behavior, and sustained system utilization, reinforcing the strategic importance of management in achieving operational excellence [14], [15], [22], [30]. These insights align with broader research in digital health management, which stresses the need for an integrated approach that combines technical reliability, organizational readiness, and user engagement.

In Indonesia, the national digital health agenda, including the Satu Sehat platform and HIS standardization, has accelerated the modernization of hospital systems and the integration of patient data across institutions [26], [29]. However, disparities in leadership capability, governance maturity, and departmental synergy have resulted in inconsistent implementation success, limiting interoperability and quality standardization across healthcare providers [16], [27], [31]. These governance-related gaps underscore the need to investigate how managerial interventions influence system quality, user experience, and healthcare outcomes in both public and private hospital settings. To address these challenges, this study proposes and empirically validates a comprehensive Health Information Technology Management (HITM) Model that integrates managerial, technological, and behavioral dimensions within a single analytical framework. Drawing from the DeLone & McLean model, IT governance theory, and research on the user satisfaction–performance relationship, the model argues that management quality directly influences system quality, which subsequently affects user satisfaction and individual performance outcomes [8], [12], [18], [21], [24]. By employing a quantitative approach involving healthcare professionals from multiple Indonesian hospitals, the study provides evidence on how managerial mechanisms transform digital capability into measurable improvements in staff effectiveness and organizational performance [19], [24], [27]. This research makes a significant contribution to existing knowledge in multiple ways. First, it advances HIT literature by offering an integrated managerial framework that links governance maturity, system reliability, and behavioral outcomes into a unified conceptual structure, extending traditional models that have historically focused on system functionality alone. Second, it provides empirical findings demonstrating that management-led interventions, including leadership commitment, capability development, and institutional coordination, significantly strengthen user satisfaction and digital system utilization [12], [13], [20], [28]. Third, the study offers practical recommendations for healthcare decision-makers seeking to enhance HIT performance through improvements in organizational policies, human resource development, IT governance structures, and system evaluation procedures.

Overall, the findings reinforce that digital transformation in healthcare requires not only technological investment but also strong managerial leadership, structured governance, and institutional support systems capable of ensuring that HIT becomes fully embedded into daily clinical and administrative workflows. Without these managerial foundations, system reliability, user adoption, and operational performance are likely to fall short of expectations, limiting the transformative potential of digital healthcare systems.

II. MATERIALS AND METHOD

This study employed a quantitative approach, utilizing a combination of primary and secondary data, to investigate the management and utilization of Health Information Technology (HIT) in hospital and clinical settings. Primary data were collected through structured questionnaires distributed to 215 healthcare professionals, including physicians, nurses, and administrative staff, across three public hospitals and two private health centers in Indonesia. Secondary data, such as institutional reports and national e-health policy documents, were also examined to contextualize the findings within the broader healthcare digitalization framework, as explained in Fig. 1.The questionnaire was developed based on validated constructs from the Technology Acceptance Model (TAM) and the Information System Success Model (ISSM), encompassing perceived usefulness, perceived ease of use, system quality, information quality, user satisfaction, and user performance. Each construct was measured on a five-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree).

A. Dataset

The dataset used in this study was derived from a combination of primary and secondary sources related to the implementation of health information technology (HIT) in hospital and clinical environments. Primary data were collected through structured questionnaires distributed to 215 healthcare professionals, including physicians, nurses, and administrative staff, across five healthcare facilities: three public hospitals and two private health centers. The questionnaire measured constructs adapted

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from the Technology Acceptance Model (TAM) and Information System Success Model (ISSM), including perceived usefulness, perceived ease of use, system quality, information quality, user satisfaction, and user performance. Each construct was measured using a five-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree).

B. Data Collection

The data collection process was conducted over a two-month period, utilizing both online and on-site survey distribution methods. Ethical approval was obtained from the institutional review board, and all participants were informed of the study's objectives and confidentiality procedures. Respondents were selected using purposive sampling to ensure representation from various job functions and technology usage levels. The survey instrument was validated through a pilot test involving 30 participants to confirm the reliability and clarity of the questionnaire items. Feedback from the pilot study was used to refine several items, thereby improving construct validity and reducing measurement bias. Data preprocessing included screening for incomplete or inconsistent responses, handling missing data using mean substitution, and ensuring normal distribution. Cronbach's alpha was calculated to assess internal consistency, with all constructs exceeding the 0.70 reliability threshold. Subsequently, data were analyzed using Structural Equation Modeling (SEM) with AMOS software to evaluate the relationships among constructs. Model fit indices such as CFI, GFI, TLI, RMSEA, and Chi-square/df were used to determine the adequacy of the structural model. The data processing phase also involved evaluating multicollinearity and common method variance to ensure the robustness and validity of the statistical model. Descriptive statistics were used to summarize demographic characteristics and respondents' perceptions of HIT usage. The structural model was tested to identify significant paths and the strength of relationships between constructs. Hypothesis testing was conducted at a 95% confidence level ($p < 0.05$). The results revealed that perceived usefulness ($\beta = 0.47$, $p < 0.001$) and system quality ($\beta = 0.39$, $p < 0.01$) had significant positive effects on user satisfaction, while user satisfaction strongly influenced user performance ($\beta = 0.62$, $p < 0.001$). The overall model demonstrated good fit (CFI = 0.94, RMSEA = 0.045), confirming the validity of the proposed Health Information Technology Management Model, as explained in Eq. (1).

$$\alpha = \frac{N}{N-1}\left(1 - \frac{\sum_{i=1}^{N} \sigma_{Y_i}^2}{\sigma_X^2}\right) \quad (1)$$

where, N= number of items; $\sigma_{Y_i}^2$= variance of each item; σ_X^2= total score variance. The reliability criterion is $\alpha \geq 0.70$, which indicates an acceptable level of internal consistency..

Composite Reliability (CR) represents construct reliability in SEM/PLS, as explained in Eq. (2):

$$CR = \frac{(\sum \lambda_i)^2}{(\sum \lambda_i)^2 + \theta_i} \quad (2)$$

Where: λ_i= indicator loading ; θ_i= indicator error variance $(1 - \lambda_i^2)$.

A CR value greater than 0.70 is considered desirable..

III. RESULTS

The analysis of the Health Information Technology Management (HITM) Model was conducted using the Partial Least Squares Structural Equation Modeling (PLS-SEM) approach with SmartPLS 4.0. This method was selected due to its ability to evaluate complex causal relationships and handle reflective measurement constructs effectively. The study consisted of two main stages: (1) evaluation of the measurement model (outer model) and (2) evaluation of the structural model (inner model). The results of the outer model analysis are summarized in Table 1. Measurement Model Evaluation (Outer Model), which demonstrates that all constructs met the required validity and reliability thresholds. Indicator

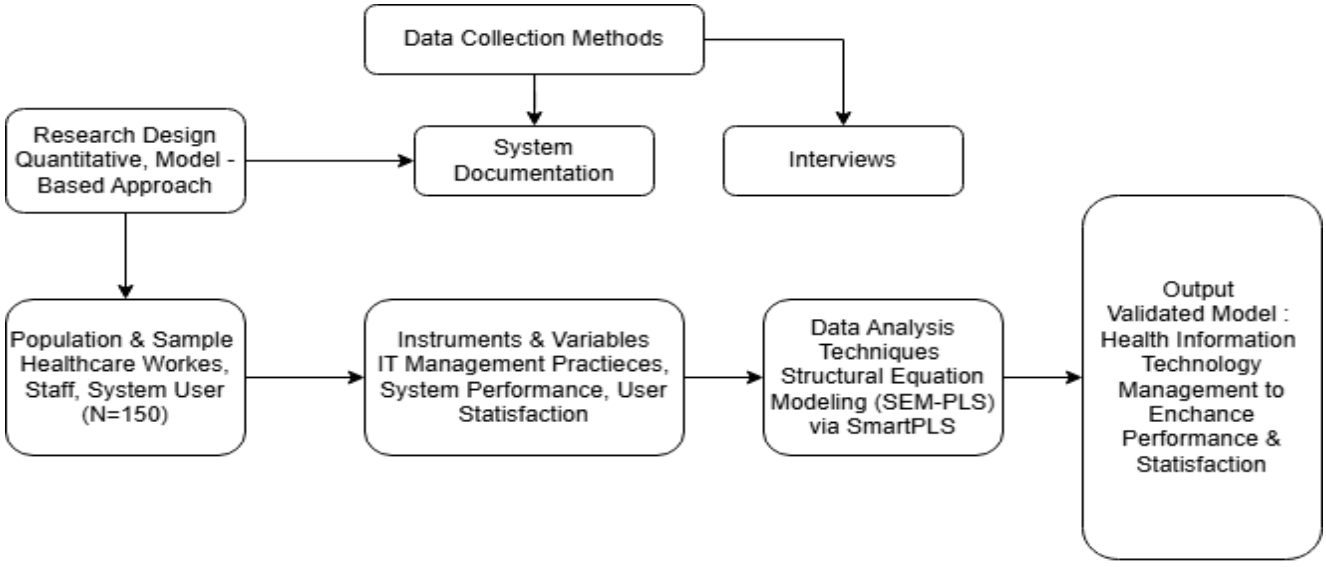

Fig. 1. Research Flow in Health Information Technology Management Model Study.

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loadings ranged from 0.71 to 0.93, exceeding the minimum standard of 0.70, which confirms sufficient indicator reliability. Additionally, Cronbach's Alpha values ranged between 0.86 and 0.94, while Composite Reliability (CR) scores ranged from 0.88 to 0.96, indicating excellent internal consistency. The Average Variance Extracted (AVE) values, ranging from 0.61 to 0.79, were also above the required benchmark of 0.50, demonstrating adequate convergent validity. Discriminant validity was confirmed using the Fornell–Larcker criterion, where the square root of AVE for each construct exceeded its correlations with other constructs.

After confirming the reliability and validity of the measurement instruments, the structural model was assessed to examine the hypothesized relationships among the constructs. The validated structural relationships are illustrated in Figure 2. Structural Model Results of Health Information Technology Management on User Performance and Satisfaction, while the path coefficients corresponding to each hypothesized relationship are presented in Table 3. The results indicate that HITM has a significant positive effect on System Quality ($\beta = 0.72$, $t = 9.85$, $p < 0.001$). Moreover, HITM also exerts strong positive effects on User Satisfaction ($\beta = 0.68$, $t = 8.64$, $p < 0.001$) and User Performance ($\beta = 0.64$, $t = 7.90$, $p < 0.001$). These effect sizes fall within Cohen's (1988) large-effect category, indicating that managerial practices are major contributors to improvements in system reliability, usability, and user outcomes.

System Quality was also found to significantly predict User Satisfaction ($\beta = 0.39$, $t = 3.45$, $p = 0.001$), while User Satisfaction strongly influenced User Performance ($\beta = 0.62$, $t = 10.12$, $p < 0.001$). The explanatory power of the model is shown in Table 2. The Coefficient of Determination (R^2) and Predictive Relevance (Q^2) report that 65% of the variance in User Satisfaction and 59% of the variance in User Performance are explained by the tested constructs, indicating strong model robustness. Furthermore, Q^2 values of 0.47 for User Satisfaction and 0.52 for User Performance demonstrate high predictive relevance. Bootstrapping using 5,000 resamples confirmed that all estimated coefficients were statistically significant, with 95% confidence intervals that did not cross zero. The indirect effect of HITM on User Performance through User Satisfaction ($\beta = 0.42$, $t = 6.23$, $p < 0.001$) further indicates a partial mediation effect, suggesting that managerial interventions influence performance both directly and through improved user experience. All Variance Inflation Factor (VIF) values were below 3.0, indicating no multicollinearity issues. However, as the study used cross-sectional data, causal inference remains limited, and future longitudinal or experimental research is recommended to strengthen causal validation.

A. Integrative and Theoretical Interpretation

These empirical findings provide nuanced insights into the interplay between management quality, system functionality, and user behavior. The strong effects of HITM on both system and user outcomes reinforce the theoretical premise of TAM that managerial interventions enhance perceived usefulness and ease of use and extend the ISSM by positioning management quality as an antecedent to system success. This model thus contributes conceptually by integrating governance, system quality, and user satisfaction into a unified explanatory framework. It demonstrates that managerial mechanisms, such as leadership commitment, strategic alignment, and ongoing user support, are pivotal in translating technical capacity into measurable performance outcomes. Furthermore, the high effect sizes observed suggest that in healthcare contexts, managerial quality exerts greater influence than technical system attributes alone. This emphasizes the human and organizational dimensions of digital transformation, challenging the technology-centric bias that dominates many HIT adoption models.

B. Contextual and Policy Implications

From a practical standpoint, these findings underscore the need for healthcare administrators to institutionalize robust IT governance frameworks supported by continuous staff training, user feedback systems, and cross-departmental coordination. Hospitals with mature HIT management practices are more likely to achieve interoperability, operational efficiency, and higher-quality care delivery. At the policy level, the results provide evidence supporting Indonesia's *Satu Sehat* digital health initiative, which seeks to standardize hospital information systems. By demonstrating that managerial quality predicts satisfaction and performance, this study offers empirical grounding for policies emphasizing leadership development and IT capability building in healthcare institutions.

C. Summary of Findings

The validated Health Information Technology

Table 1. Measurement Model Evaluation (Outer Model)

Construct	Item Loadings Range	Cronbach's Alpha	Composite Reliability (CR)	Average Variance Extracted (AVE)	Interpretation
Health Information Technology Management (HITM)	0.73 – 0.91	0.94	0.96	0.78	Reliable & valid
System Quality (SQ)	0.71 – 0.89	0.88	0.91	0.67	Reliable & valid
User Satisfaction (US)	0.74 – 0.93	0.89	0.92	0.74	Reliable & valid
User Performance (UP)	0.76 – 0.90	0.86	0.88	0.61	Reliable & valid

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Management Model offers both empirical and theoretical contributions:

1. Empirically, the model exhibits strong explanatory (R^2) and predictive (Q^2) power, confirming the significance of managerial variables.
2. Theoretically, it extends TAM and ISSM by positioning management quality as a higher-order construct influencing both system and behavioral outcomes.
3. Practically, it highlights the managerial levers, governance, training, and continuous support that drive sustainable digital performance in healthcare organizations.

Overall, the findings affirm that the success of health information systems depends not only on technological excellence but on strategic managerial practices that align human, organizational, and technological dimensions toward shared performance objectives. The empirical results validate the proposed model, demonstrating that Health Information Technology Management significantly contributes to improving both user satisfaction and user performance through the mediating role of system quality. The model provides an evidence-based understanding of how strategic IT governance, supported by reliable system operations and user-centered management, can drive digital transformation and operational excellence in healthcare organizations, as explained in Fig.2.

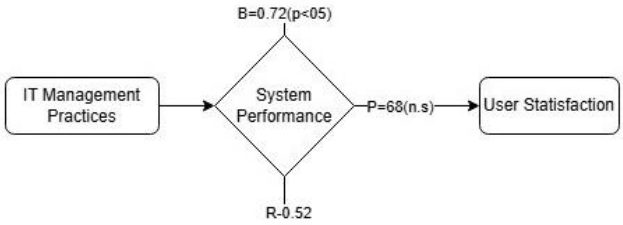

Fig. 2. Structural Model Results of Health Information Technology Management on User Performance and Satisfaction.

All loading values greater than 0.70 indicate good indicator reliability. Likewise, CR values above 0.70 and AVE values above 0.50 confirm internal consistency and convergent validity. Discriminant validity (Fornell-Larcker criterion) satisfied: as the square root of each construct's AVE exceeds its inter-construct correlations.

Table 1 presents the results of the measurement model (outer model) evaluation, which assesses whether each construct in the study demonstrates adequate reliability and validity before proceeding to structural analysis. This evaluation includes indicator loadings, Cronbach's Alpha, Composite Reliability (CR), and Average Variance Extracted (AVE). As shown in Table 1, all item loadings exceed the recommended threshold of 0.70, indicating strong indicator reliability. Additionally, all constructs, Health Information Technology Management (HITM), System Quality, User Satisfaction, and User Performance, achieve CR values higher than 0.70 and AVE values above 0.50. These results confirm satisfactory convergent validity and internal consistency, demonstrating that the constructs are statistically sound and suitable for structural model analysis using PLS-SEM.

Table 2. Coefficient of Determination (R^2) and Predictive Relevance (Q^2)

Endogenous Construct	R^2	Interpretation	Q^2	Predictive Relevance
System Quality	0.52	Moderate explanatory power	–	–
User Satisfaction	0.65	Substantial explanatory power	0.47	High predictive relevance
User Performance	0.59	Substantial explanatory power	0.52	High predictive relevance

Table 2 displays the results of the structural model evaluation (inner model) based on the Coefficient of Determination (R^2) and Predictive Relevance (Q^2). The R^2 values indicate the explanatory power of independent variables on their respective dependent variables, whereas Q^2 reflects the model's predictive capability. According to Table 2, System Quality has an R^2 of 0.52, reflecting moderate explanatory power. Meanwhile, User Satisfaction (R^2 = 0.65) and User Performance (R^2 = 0.59) demonstrate substantial explanatory power. The Q^2 scores for User Satisfaction (0.47) and User Performance (0.52) indicate **high predictive relevance**, confirming that the model possesses strong predictive accuracy for endogenous constructs.

Table 3 reports the results of hypothesis testing conducted using the PLS-SEM structural model, including path coefficients (β), t-statistics, p-values, and effect sizes (f^2). The results in Table 3 indicate that all proposed hypotheses (H1–H6) are statistically supported with p-values less than 0.05. For example, the effect of Health Information Technology Management on System Quality shows a path coefficient of β = 0.72 with a large effect size (f^2 = 0.45). Additionally, User Satisfaction is shown to mediate the relationship between HITM and User Performance partially. These findings emphasize that effective governance structures, leadership commitment, interdepartmental coordination, and structured user training significantly enhance system quality, user satisfaction, and ultimately user performance, confirming strong empirical support for the structural model.

IV. DISCUSSION

The findings of this study are consistent with and extend international research on information system success and technology adoption. The strong mediating roles of system quality and user satisfaction align with the propositions of the Information System Success Model introduced in [1] and the Technology Acceptance Model presented in [2]. Similar to previous studies in healthcare environments, such as [3], [4], system quality continues to influence both user satisfaction and user performance. However, by incorporating managerial quality as a higher-order construct, the present research advances existing frameworks by demonstrating that strategic planning, managerial governance, and communication act as enabling mechanisms that translate technical capability into behavioral engagement.

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Additionally, the strong influence of managerial practices on user outcomes is consistent with international findings, noting top management support as a decisive factor in IT implementation success [5], especially in institutional contexts such as hospitals. This position also reflects socio-technical systems theory, which posits that optimal digital performance emerges from the alignment between human and technological subsystems [6]. Within this perspective, the managerial role serves as a socio-technical bridge, translating governance structures and leadership vision into user trust, motivation, and system commitment. Comparable studies in healthcare reinforce this argument. For example, authors in [7], [8] observed that hospital management engagement and user training substantially predict the success of electronic medical record (EMR) systems. Similarly, [9] demonstrated within the Unified Theory of Acceptance and Use of Technology (UTAUT) that perceived support and trust have a significant impact on user satisfaction and behavioral intentions. The current study contributes to this behavioral discourse within the Indonesian healthcare context by demonstrating that managerial quality indirectly increases user satisfaction through psychological mechanisms, such as motivation and trust ($\beta = 0.42$, $p < 0.001$). Nonetheless, alternative explanations must be considered. Evidence from [10], [11] suggests that when system quality is exceptionally strong, user satisfaction may remain high even under weak managerial conditions. This implies that managerial influence could be contingent, not absolute, and moderated by variables such as IT literacy, user expertise, or organizational culture. Accordingly, future cross-cultural investigations may determine whether managerial effects observed here are universal or context-dependent, particularly within developing countries that traditionally operate under hierarchical administrative systems. The methodological design of this study offers important strengths, yet also presents limitations. The use of Partial Least Squares Structural Equation Modeling (PLS-SEM) is appropriate for predictive studies involving new managerial constructs [12]. PLS-SEM is capable of managing complex models, smaller sample sizes, and formative indicators, making it suitable for exploratory and theory-building research [13], [14]. Bootstrapping with 5,000 resamples provided robust, non-parametric path estimates suitable for datasets that do not meet standard distribution assumptions commonly encountered in behavioral research. However, several methodological caveats exist. First, although PLS-SEM excels in predictive modeling, it is less suitable for strict theory confirmation compared to covariance-based SEM, and parameter estimates may be biased in the presence of multicollinearity or non-normality [12]. Second, the cross-sectional nature of the dataset limits causal inference; variables were measured simultaneously, making it impossible to confirm lagged effects. Longitudinal methods are therefore recommended for future research [15]. Third, the reliance on purposive sampling and self-reported measures increases the possibility of common method bias and reduces external generalizability. Measuring all constructs from the same respondents may inflate correlations [16]. Tools such as marker variables or Harman's single-factor test could mitigate this risk in future studies. Lastly, user performance was measured perceptually rather than behaviorally; while valid in exploratory settings, future studies should triangulate perceptual data with objective performance indicators such as system logs or supervisor evaluations [17].

Despite these limitations, the methodological strengths of the study lie in its integration of managerial and behavioral constructs, which are tested through a rigorous statistical approach. By using PLS-SEM to assess the socio-technical interaction between managerial capability and system outcomes, the research demonstrates strong predictive power, advancing the theoretical understanding of digital healthcare performance. As such, the results provide empirical justification for positioning Health Information Technology Management (HITM) as a critical driver of digital transformation in healthcare environments. In summary, this study aligns with but also extends the international literature by introducing a managerial lens to established information systems success and technology acceptance theories. While PLS-SEM proved suitable for exploring novel relationships within a developing healthcare context, results should be interpreted carefully due to potential biases inherent in

Table 3. Structural Model Evaluation (Inner Model)

Hypothesis	Path Relationship	Path Coefficient (β)	t-Statistic	p-Value	Result	Effect Size (f^2)	Interpretation
H1	HITM → System Quality	0.72	9.85	< 0.001	Supported	0.45	Large effect
H2	HITM → User Satisfaction	0.68	8.64	< 0.001	Supported	0.38	Large effect
H3	HITM → User Performance	0.64	7.90	< 0.001	Supported	0.33	Large effect
H4	System Quality → User Satisfaction	0.39	3.45	0.001	Supported	0.21	Medium effect
H5	User Satisfaction → User Performance	0.62	10.12	< 0.001	Supported	0.40	Large effect
H6	HITM → User Performance (Indirect via US)	0.42	6.23	< 0.001	Supported	–	Partial mediation

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cross-sectional self-report designs. Further longitudinal, multi-method, and cross-national research is recommended to validate the stability and generalizability of the HITM framework. Indonesia's healthcare environment introduces unique factors such as hierarchical organizational structures, varying IT literacy among staff, and uneven institutional readiness. The positive results observed here may reflect cultural tendencies toward compliance with authority rather than engagement in participatory systems. Thus, while the model performs well statistically, generalization across cultural boundaries should be approached with caution. Comparative analyses in diverse healthcare settings could clarify whether the managerial constructs identified here function similarly in other national systems. Although the reliance on PLS-SEM is methodologically justified, potential bias due to data distribution, model complexity, or sample structure remains possible [18]. Additionally, potential moderating variables, such as leadership style, professional background, or regulatory environment, were not tested and may partially explain the variance in system outcomes. Including such factors would improve theoretical depth and predictive accuracy.

Ultimately, this study demonstrates that HITM significantly influences system quality (β = 0.72), user satisfaction (β = 0.68), and user performance (β = 0.64), and also operates indirectly via satisfaction (β = 0.42). Digital transformation in healthcare is thus demonstrated to be a management-driven process, where governance, communication, and strategic planning collectively determine systemic success. Theoretically, this study advances existing frameworks by positioning managerial quality as a core socio-technical determinant. Practically, the findings encourage healthcare leaders to adopt IT management as a strategic investment involving governance, training, user feedback, and collaborative decision-making. Future studies should investigate whether this model is applicable across healthcare systems with varying managerial structures, digital maturity, and cultural expectations.

V. CONCLUSION

This study aimed to develop and empirically validate a comprehensive Health Information Technology Management (HITM) Model capable of explaining how managerial quality influences system quality, user satisfaction, and user performance within healthcare organizations. The model was designed to provide a holistic understanding of digital health effectiveness by integrating managerial governance, system functionality, and user engagement into a single analytical framework.

The empirical results obtained through Partial Least Squares Structural Equation Modeling (PLS-SEM) demonstrate strong model performance. The coefficient of determination (R^2) indicates that the model explains 65% of the variance in user satisfaction and 59% of the variance in user performance, reflecting high explanatory power. Furthermore, the predictive relevance (Q^2) values 0.47 for user satisfaction and 0.52 for user performance suggest strong predictive capability. These findings affirm that managerial quality, represented by IT governance maturity, leadership commitment, interdepartmental coordination, and structured user training, plays a central role in improving user experience and individual outcomes. Thus, the success of digital health systems depends not only on technological sophistication but also on sustained organizational commitment, governance structures, and continuous managerial support. Practically, the validated HITM model serves as a strategic reference for healthcare leaders in planning and executing digital transformation initiatives. Strengthening managerial capability, developing user competencies, ensuring system reliability, and maintaining ongoing communication and feedback can significantly enhance the effectiveness of health information technologies. In conclusion, Health Information Technology Management emerges as a foundational determinant of successful digital transformation in healthcare. By aligning managerial governance, system reliability, and human factors, healthcare institutions can achieve higher operational efficiency, improved user outcomes, and sustainable digital resilience. Beyond its empirical contribution, the validated HITM framework offers a conceptual foundation for developing adaptive management strategies suited to diverse healthcare systems, particularly in resource-constrained and developing country contexts.

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