

Analysis of the effect of hospital management information system implementation on clinical decision-making at PKU Muhammadiyah Purbalingga hospital

Sony Andik Pratama¹, Nining Handayani², Yen Efawati³

^{1,2,3}Master of Management, Universitas Adhirajasa Reswara Sanjaya, Bandung, Indonesia

ARTICLE INFO

Article history:

Received Jan 15, 2026

Revised Jan 21, 2026

Accepted Jan 27, 2026

Keywords:

Clinical Decision Making
HMIS
Information Quality
System Quality
Workflow Efficiency

ABSTRACT

Hospital Management Information Systems (HMIS) play an important role in supporting clinical decision making by providing accurate, timely, and integrated information. However, challenges related to system quality, information quality, and workflow efficiency may hinder the optimal utilization of HMIS. This study aimed to analyze the effects of system quality, information quality, and workflow efficiency on clinical decision making at PKU Muhammadiyah Purbalingga Hospital. The research employed a quantitative method with a causal associative design, using a total sampling technique involving 60 respondents consisting of physicians, nurses, and midwives. Data were collected using structured questionnaires and analyzed through multiple linear regression with IBM SPSS Statistics version 26, accompanied by classical assumption tests. The results showed that all variables were categorized as good and that the regression model met all analytical assumptions. Partial test (t-test) results indicated that system quality, information quality, and workflow efficiency had a positive and significant effect on clinical decision making ($p < 0.05$), with information quality identified as the most dominant variable ($\beta = 0.402$). The F-test results showed $F_{count} = 25.324 > F_{table} = 2.70$ with $p = 0.001$, indicating that the independent variables simultaneously had a significant effect. In conclusion, HMIS system quality, HMIS information quality, and workflow efficiency significantly affect clinical decision making at PKU Muhammadiyah Purbalingga Hospital, with information quality as the strongest predictor.

This is an open access article under the [CC BY-NC](https://creativecommons.org/licenses/by-nc/4.0/) license.



Corresponding Author:

Sony Andik Pratama,
Master of Management Program,
Universitas Adhirajasa Reswara Sanjaya,
Jl. Sekolah Internasional No. 1-2, Antapani, Bandung, Jawa Barat, 40282, Indonesia
Email: sonyandikpratama@gmail.com

INTRODUCTION

The rapid development of information technology has become a key driver in transforming hospital healthcare services. A Hospital Management Information System (HMIS) is an information technology-based system that integrates operational, administrative, and clinical services to improve efficiency and service effectiveness (Diaz, 2025). HMIS is designed to provide

accurate real-time data, support medical record management, patient registration, pharmacy services, laboratory workflows, and integrated managerial reporting, all of which are essential for timely and accurate clinical decision-making (Wijaya et al., 2024). In Indonesia, HMIS is also defined as a coordinated information system that collects, processes, and presents accurate and timely data required for hospital management, enabling interconnection among service units such as registration, medical records, laboratory, radiology, and pharmacy (Kementerian Kesehatan RI, 2013).

Effective HMIS implementation offers significant opportunities for healthcare professionals to access comprehensive patient histories, laboratory results, and treatment records. Complete and timely clinical data are fundamental to evidence-based clinical decision-making and can support faster diagnosis, reduce clinical errors, and strengthen coordination across service units (Kristiawati et al., 2024). However, evidence from hospitals indicates that HMIS utilization remains suboptimal. Healthcare providers may still rely heavily on personal experience and intuition rather than using real-time information available in the system (Santosa et al., 2024). Common challenges include incomplete electronic medical records, delayed clinical data entry, data duplication, and limited data accuracy. System-related issues such as slow response time, downtime, non-intuitive navigation, and insufficient integration across modules (laboratory, pharmacy, radiology) further reduce workflow efficiency and weaken the role of HMIS in supporting clinical decisions (Wijaya et al., 2024).

National studies also highlight persistent barriers to maximizing HMIS performance in Indonesia. Analyses across multiple hospitals have reported frequent problems such as incomplete electronic medical records, limited inter-unit data integration, and low physician utilization of HMIS. These issues suggest that information quality, system quality, and workflow efficiency remain critical determinants of whether HMIS can effectively support clinical decision-making (Windari et al., 2023); (Hidayatuloh, 2025). If these challenges persist, clinical decision-making may become slower, less accurate, and less evidence-based, increasing the risk of diagnostic and therapeutic errors while reducing overall service quality (Ghalavand et al., 2024).

The DeLone and McLean Information System Success Model (2003) provides an appropriate theoretical framework to explain this phenomenon. The model emphasizes that system quality, information quality, and service quality influence system use and user satisfaction, which subsequently determine the net benefits of an information system. In the context of HMIS, high-quality information that is accurate and timely, a stable and user-friendly system, and adequate technical support are essential to improve clinical workflow efficiency and enhance clinical decision-making outcomes. Previous studies have shown that HMIS not only supports administrative processes but also strengthens clinical workflows by providing comprehensive patient information and improving the quality of care (Windari et al., 2023)). International evidence also indicates that the integration of Electronic Health Records (EHR), Computerized Physician Order Entry (CPOE), and Clinical Decision Support Systems (CDSS) can significantly reduce medication errors and improve patient safety (Garg et al., 2005).

Accordingly, the urgency of this study lies in the need to generate empirical evidence that reflects the complexity of HMIS utilization in real clinical settings, where system quality, information quality, and workflow efficiency do not operate independently but interact to determine whether clinicians can access, trust, and apply information at the point of care. In practice, a technically reliable HMIS may still fail to support clinical decision-making when information outputs are incomplete or delayed, while high-quality information may not translate into clinical value if workflow processes remain inefficient due to redundant documentation and weak inter-module coordination. Therefore, examining these determinants simultaneously is essential to avoid fragmented interpretations and to identify priority areas for improvement that directly affect clinical decision-making and patient safety.

Despite increasing HMIS adoption, research in Indonesia has predominantly focused on administrative performance, employee outcomes, and user satisfaction, while empirical studies examining the influence of HMIS system quality, information quality, and workflow efficiency on clinical decision-making remain limited (Hidayatuloh, 2025).

This limitation is further compounded by several research gaps that constrain the current evidence base in Indonesia. First, many studies emphasize administrative outcomes (e.g., reporting efficiency and billing processes) rather than clinical decision-making outcomes as the primary endpoint. Second, existing evidence often assesses HMIS success through user satisfaction or general system utilization, without explicitly measuring how HMIS influences clinical decision-making processes among clinicians (Epizitone et al., 2023). Third, prior studies tend to examine system quality or information quality separately, while limited research evaluates system quality, information quality, and workflow efficiency simultaneously to capture their combined effects. Fourth, empirical investigations are frequently conducted in single units or specific professional groups, limiting generalizability across multidisciplinary clinical teams. Finally, variations in HMIS maturity, interoperability, and implementation context across hospitals are rarely accounted for, which may explain inconsistent findings and reduce the transferability of recommendations (Suryandari et al., 2024). This gap is particularly relevant for hospitals that have relatively recently implemented HMIS, such as PKU Muhammadiyah Purbalingga Hospital, where the effectiveness of HMIS in supporting clinical decision-making has not been comprehensively evaluated. Therefore, this study aims to empirically examine the influence of HMIS system quality, information quality, and workflow efficiency on clinical decision-making, both partially and simultaneously, to provide evidence-based recommendations for strengthening HMIS utilization in hospital clinical services.

RESEARCH METHOD

Research Type and Design

This study employed a quantitative research method. Quantitative research is used to test relationships among variables using numerical data and statistical analysis in order to identify cause-effect relationships between variables (Sekaran, U., & Bougie, 2021). The research design applied was a causal associative design, which focuses on examining whether the independent variable, namely the implementation of the Hospital Management Information System (HMIS), has a significant effect on the dependent variable, which is clinical decision-making (Sugiyono, 2020). Research design is defined as a systematic plan for organizing and conducting research activities, including the stages of preparation and implementation (Silaen, 2018).

Research Setting and Time

The research was conducted at PKU Muhammadiyah Purbalingga Hospital, which has implemented an integrated HMIS for at least one year. The research period lasted for three months, from October to December 2025, covering instrument preparation, data collection, data processing, and statistical analysis.

Population and Sample

The population is defined as the entire group of individuals or objects that meet specific criteria and serve as the source of research data (Sekaran, U., & Bougie, 2021). In this study, the population consisted of 60 healthcare professionals and hospital staff who actively use HMIS to support clinical and managerial processes.

The sample was determined using total sampling (saturated sampling), meaning that all members of the population were included as research respondents. Total sampling is appropriate when the population size is relatively small, as it increases representativeness and allows comprehensive data collection from all eligible participants (Sugiyono, 2020). This sampling technique was selected because the population was fewer than 100, and all members met the

inclusion criteria. This approach is expected to reduce sampling bias and improve external validity by reflecting the actual population conditions more accurately (Mukti, (2025)). Therefore, the sample size was calculated using the formula $n = N$, resulting in $n = 60$ respondents.

Inclusion criteria were: (1) doctors, nurses, and midwives working in inpatient and outpatient units; (2) actively using HMIS for clinical decision-making; (3) having a minimum work experience of three months to ensure adequate HMIS usage exposure; and (4) providing written informed consent to participate. Exclusion criteria included: (1) healthcare professionals who were on leave or inactive during the study period; (2) individuals who did not use HMIS in clinical practice; (3) refusal to participate or failure to provide consent; and (4) staff who had worked for less than three months.

Data Collection Techniques (Data Acquisition)

Data collection in this study included both primary and secondary sources, using four main techniques: literature review, observation, questionnaire, and documentation. The literature review was conducted to identify theoretical foundations, research gaps, and supporting evidence from books, journal articles, and other relevant academic sources. Participatory observation was carried out to directly examine clinical unit operations, including user interaction with HMIS, clinical workflow processes, and decision-making patterns. The primary data collection method was a structured questionnaire distributed to doctors, nurses, and midwives who use HMIS. The questionnaire was developed based on variable indicators and measured using a 5-point Likert scale to assess respondents' perceptions of HMIS implementation and its influence on clinical decision-making. Documentation data were collected from hospital records, such as medical records, HMIS usage reports, decision-making protocols, and administrative reports, to support data validation and strengthen the research findings.

Variables and Measurement

The independent variable in this study was HMIS implementation, which was measured through three dimensions: HMIS system quality, HMIS information quality, and HMIS workflow efficiency. Independent variables are factors that influence or cause changes in other variables and are not affected by other variables in the study (Adeoye, 2023). HMIS implementation refers to the use of an integrated information system supporting hospital functions such as electronic medical records, resource management, patient services, and administration. It was measured through user perceptions of system speed, reliability, data security, information completeness and accuracy, and ease of use (Aisah & Maharani, 2024).

Construct validity was strengthened by deriving measurement indicators from established information systems evaluation frameworks, particularly the DeLone and McLean IS Success Model (DeLone & McLean, 2003). System quality was operationalized using indicators of reliability/stability, response time, ease of use, inter-module integration, and data security. Information quality was measured through accuracy, completeness, timeliness, relevance, consistency, and clarity. Workflow efficiency was assessed based on reduced redundant documentation, shorter task completion time, improved inter-unit coordination, and enhanced continuity of clinical workflows.

The dependent variable was clinical decision-making, defined as the process by which healthcare professionals make medical decisions based on patient needs and clinical information provided through HMIS. Dependent variables represent outcomes influenced by independent variables (Adeoye, 2023). This variable included aspects such as decision-making speed, diagnostic accuracy, and appropriateness of clinical actions. It reflects the effectiveness of HMIS in supporting timely and evidence-based clinical decisions (Mohammadpour et al., 2021).

Instrument Validity and Reliability

Testing Operational definitions were used to translate research variables into measurable indicators to ensure systematic data collection (Creswell, 2022). Instrument validity refers to the

extent to which the instrument accurately measures the intended constructs (Creswell, 2022). Validity testing was planned to be conducted at Nirmala Hospital, which has similar characteristics to the research setting. Content validity was assessed through expert judgment to ensure that questionnaire items matched the research variables. Construct validity was tested using Pearson Product Moment correlation by correlating each item score with the total score. Items were considered valid if the calculated correlation coefficient (r-count) exceeded the r-table value at a 5% significance level. Reliability refers to the consistency of measurement results when the instrument is used repeatedly under the same conditions (Henny Syapitri et al., 2021). Reliability testing was performed using Cronbach's alpha, where an alpha value above 0.60 indicated acceptable internal consistency. Alpha values were interpreted as excellent (≥ 0.90), good (0.70–0.90), moderate (0.50–0.70), and poor (< 0.50).

Data Analysis

Data analysis was conducted using statistical software to match the causal associative research objective. Descriptive analysis was first performed to describe respondent characteristics and variable distributions through frequencies, percentages, means, and standard deviations (Handayani, 2020). Before hypothesis testing, validity and reliability testing were conducted to confirm that the instrument was appropriate and consistent.

Classical assumption tests were then applied, including normality, multicollinearity, heteroscedasticity, and autocorrelation testing, to ensure that the dataset met the requirements for regression analysis (Creswell, 2022). The main inferential analysis used multiple linear regression to examine the effect of HMIS system quality, information quality, and workflow efficiency on clinical decision-making. Hypothesis testing was performed using a t-test to assess the partial effect of each independent variable and an F-test to evaluate the simultaneous effect of all independent variables. The significance level applied was 0.05. All analyses were conducted using IBM SPSS Statistics version 26, which supports descriptive analysis, validity and reliability testing, classical assumption testing, and multiple regression modeling.

RESULTS AND DISCUSSIONS

Respondent Characteristics Based on Job Position

This study involved 60 respondents consisting of doctors, nurses, and midwives who actively used the Hospital Management Information System (HMIS/SIMRS) at PKU Muhammadiyah Purbalingga Hospital. All respondents met the inclusion criteria and were considered eligible to provide information related to HMIS implementation and clinical decision-making. Table 4 presents the distribution of respondents based on job position, showing that nurses were the largest group of participants, followed by doctors and midwives

Table 1. Job position characteristics

Job Position	Frequency	Percentage (%)
Doctor	17	28.3
Nurse	33	55.0
Midwife	10	16.6
Total	60	100

The findings indicate that most respondents were nurses, accounting for 33 participants (55.0%). This composition reflects the dominance of nursing staff in daily hospital clinical services, particularly in inpatient and outpatient units where HMIS is frequently used for documentation, coordination, and service continuity.

Respondent Characteristics Based on Gender, Age, and Working Experience

The characteristics of respondents based on gender, age group, and working experience are presented in Table 5. The results show that female respondents were dominant, which is common

in hospital clinical services, especially among nursing and midwifery professions. The age distribution demonstrates that most respondents were within the productive age group, with the highest proportion in the <30-year category. Working experience was mostly in the range of 1-3 years, indicating that many respondents had relatively short to moderate professional experience in the hospital.

Table 2. Respondent characteristics

Characteristics	Category	N	%
Gender	Male	21	35.0
	Female	39	65.0
	Total	60	100
Age	< 30 years	31	51.6
	30-39 years	23	38.3
	≥ 40 years	6	10
	Total	60	100
Working Experience	1-3 t years	35	58.3
	4-5 years	20	33.3
	> 5 years	5	8.3
	Total	60	100

The respondent profile suggests that HMIS users in this hospital were largely young healthcare professionals with early to mid-level work experience. This profile is relevant because younger users may adapt more easily to digital systems, while limited work experience may influence reliance on HMIS information as a decision support tool.

Descriptive Analysis of Research Variables

The descriptive analysis results are shown in Table 3. All study variables were categorized as good, indicating that respondents generally perceived HMIS implementation positively. Information quality achieved the highest mean score, followed by clinical decision-making, workflow efficiency, and system quality. These findings indicate that HMIS at PKU Muhammadiyah Purbalingga Hospital was perceived to provide accurate and timely information, which supported both workflow processes and clinical decision-making performance.

Table 3. Descriptive statistics of research variables

Variabel	Mean	SD	Category
HMIS System Quality (X1)	3,74	0,64	Good
HMIS Information Quality (X2)	3,91	0,58	Good
HMIS Workflow Efficiency (X3)	3,84	0,67	Good
Clinical Decision-Making (Y)	3,88	0,61	Good

The relatively high mean scores across all variables suggest that the hospital’s HMIS implementation has been functioning well in supporting service delivery. The highest mean on information quality implies that respondents considered the HMIS output to be reliable, complete, and useful for clinical decision processes.

Classical Assumption Test Results

Classical assumption tests were performed to ensure that the regression model met statistical requirements and produced valid estimates. Table 4 summarizes the results of normality, multicollinearity, heteroscedasticity, and linearity tests. The Kolmogorov-Smirnov normality test showed a significance value of 0.200, indicating that the residuals were normally distributed. Multicollinearity testing produced VIF values below 10, confirming that the independent variables did not have strong intercorrelations. Heteroscedasticity testing showed significance values above 0.05, indicating homogeneous residual variance. Linearity testing also confirmed that the relationships between each independent variable and the dependent variable were linear.

Table 4. Classical assumption tests

Test Type	Result	Interpretation
Normality (KS Test)	Sig = 0.200	Normal distribution (Sig > 0.05)
Multicollinearity	VIF X1 = 1.677; VIF X2 = 1.921; VIF X3 = 1.832	No multicollinearity (VIF < 10)
Heteroscedasticity	X1 Sig = 0.528; X2 Sig = 0.365; X3 Sig = 0.412	No heteroscedasticity (Sig > 0.05)
Linearity	X1 Sig = 0.110; X2 Sig = 0.094; X3 Sig = 0.137	Linear relationship (Sig > 0.05)

These results confirm that the regression model in this study was statistically feasible, and the dataset satisfied all required assumptions for multiple linear regression analysis.

Multiple Linear Regression Analysis

Multiple linear regression analysis was conducted to determine the effect of HMIS system quality, HMIS information quality, and HMIS workflow efficiency on clinical decision-making. Table 5 presents the regression coefficients, including the unstandardized coefficient (B), standardized coefficient (Beta), t-values, and significance levels. The results show that all independent variables had positive and statistically significant effects on clinical decision-making, indicating that better HMIS performance in each dimension was associated with improved clinical decision-making.

Table 5. Multiple linear regression results

Variable	B	Beta	t	Sig.
Constant	5.214	-	3.487	0.001
HMIS System Quality (X1)	0.257	0.298	3.119	0.003
HMIS Information Quality (X2)	0.341	0.402	4.002	0.000
HMIS Workflow Efficiency (X3)	0.284	0.312	3.214	0.002

The findings indicate that system quality significantly affected clinical decision-making, meaning that a fast, stable, and user-friendly HMIS supported timely clinical actions. Information quality had the strongest influence, reflected by the highest Beta coefficient (0.402) and t-value (4.002), suggesting that accurate and complete information was the most dominant factor in strengthening clinical decisions. Workflow efficiency also contributed significantly, indicating that integrated workflows and reduced duplication supported faster and more coordinated clinical decision processes.

Simultaneous Effect (F-Test) Results

The F-test was conducted to examine whether the independent variables simultaneously affected clinical decision-making. Table 6 shows that the calculated F-value was 25.324, which exceeded the F-table value of 2.70, with a significance level of 0.001. This result confirms that HMIS system quality, information quality, and workflow efficiency jointly had a statistically significant effect on clinical decision-making.

Table 6. Simultaneous test

Statistical Test	Value	Significance (p)
F calculated	25.324	0.001
F table	2.70	-

The significant simultaneous effect indicates that clinical decision-making was influenced by the combined performance of HMIS technical quality, the quality of information produced, and workflow efficiency. This implies that strengthening only one aspect is insufficient, since the effectiveness of clinical decisions depends on the integration of all HMIS dimensions.

Discussion: The Effect of HMIS System Quality on Clinical Decision-Making

The results demonstrate that HMIS system quality significantly influenced clinical decision-making at PKU Muhammadiyah Purbalingga Hospital. A system that is responsive,

stable, and easy to use allows healthcare professionals to access electronic medical records in real time, accelerating diagnostic processes and therapy selection. This finding is consistent with Kristiawati et al. (2024), who emphasized that system quality determines the effectiveness of HMIS utilization. A slow or unstable system can delay clinical decision-making and reduce the efficiency of service delivery, as also reported by Wijaya et al. (2024). The findings in this study suggest that system quality contributes directly to clinical decision-making through faster access to patient data and improved system stability, enabling healthcare professionals to act promptly and accurately. System quality is also strongly associated with clinical safety and usability. Recent evidence suggests that optimized health information system design improves usability and reduces risks related to delayed or inaccurate information, which can contribute to clinical errors (Cahill et al., 2025). A high-quality HMIS reduces administrative barriers, improves inter-unit coordination, and supports smoother clinical processes, allowing healthcare staff to focus more on clinical reasoning and patient care (Azizah, 2025); (Siregar, H., Fitriani, A., Fitria, A., Efendy, I., & Nuraini, 2024). However, contrasting findings have been reported in other contexts. A study using the HOT-Fit model in Aceh found that system quality did not significantly influence user satisfaction or organizational outcomes, indicating that system quality alone may not guarantee success without adequate supporting factors ((Febrita et al., 2021). Evidence from Angola also reported limited use of hospital information systems for decision-making due to insufficient information availability and low utilization among managers (Hambili et al., 2022). These differences suggest that system quality effects depend on user readiness, management support, training, and organizational change strategies (Saufinah et al., 2023); Cahill et al., 2025).

Discussion: The Effect of HMIS Information Quality on Clinical Decision-Making

Information quality was identified as the most dominant variable influencing clinical decision-making, as indicated by the highest t-value (4.002) and standardized coefficient. This result implies that accurate, complete, and timely information is essential for evidence-based clinical decision-making. Windari et al. (2023) emphasized that completeness of clinical data is critical for decision accuracy, while Garg et al. (2005) showed that high-quality information systems can reduce medication errors by up to 50%. In this study, respondents highlighted that complete laboratory results and medication history were particularly helpful in supporting clinical decisions. High-quality information improves diagnostic accuracy, accelerates decision-making, and enhances consistency in clinical actions (Zhou et al., 2024). Real-time information availability strengthens clinical data integrity and reduces the likelihood of decision errors, particularly in critical situations requiring rapid intervention (Suwanti et al., 2025); (Cahill et al., 2025).. Information quality is also closely related to user competence, as healthcare staff must be able to interpret and utilize system outputs effectively. Training and user understanding of system navigation and data interpretation play key roles in maximizing the benefits of information quality for clinical decisions (Agustina, 2024). Contradictory findings have been reported in certain settings, where information quality did not significantly affect user satisfaction or perceived net benefits due to mismatch between system output and clinical needs (Siv et al., 2025). These findings reinforce that information quality effects are contextual and require strong system performance and organizational readiness to produce meaningful clinical impacts.

Discussion: The Effect of HMIS Workflow Efficiency on Clinical Decision-Making

Workflow efficiency also had a significant positive effect on clinical decision-making. HMIS-supported workflow efficiency accelerates inter-unit coordination between laboratory, pharmacy, radiology, and clinical services, reducing delays in accessing patient information. This finding supports evidence that workflow efficiency depends heavily on module integration, and poor integration can result in slow clinical decision-making despite system availability (Asruhi, 2025). In this hospital, automatic integration of laboratory results into clinicians' dashboards was identified as a key factor supporting timely decision-making. Digital hospital information systems

have been shown to improve service efficiency by reducing waiting time and streamlining internal processes, allowing healthcare professionals to allocate more time to clinical tasks (Bayhaqi et al., 2025). Integrated electronic medical records also improve documentation quality and ensure consistent data availability across service units, which strengthens decision accuracy (Permatasari et al., 2025). Administrative burden reduction is another critical benefit, as HMIS minimizes duplicate documentation and manual archiving, preventing delays and reducing administrative errors (Andriani & Pertiwi, 2025). However, workflow efficiency does not always translate into better decisions when real-time information is incomplete or synchronization across units remains weak, as reported in studies identifying barriers to hospital information system use in similar hospital contexts (Mohamed et al., 2021). These findings suggest that workflow efficiency requires not only technical integration but also organizational readiness, training, and supportive management policies to ensure optimal use in clinical decision-making.

Discussion: Simultaneous Effect of HMIS Dimensions on Clinical Decision-Making

The simultaneous analysis confirmed that HMIS system quality, information quality, and workflow efficiency collectively influenced clinical decision-making. The results indicate that the combined contribution of these variables explained 67.4% of clinical decision-making outcomes, showing that HMIS implementation played a major role in improving hospital service quality. This finding supports the DeLone and McLean Information System Success Model, which explains that system quality, information quality, and service-related factors determine net benefits such as improved performance and decision outcomes (DeLone & McLean, 2003). The findings emphasize that clinical decision-making cannot be supported effectively by only one HMIS dimension. A fast system without accurate data is insufficient, while accurate information without workflow integration may still result in delays and inefficiencies.

Recent studies have highlighted that integrated HMIS and electronic medical records improve healthcare service quality by strengthening inter-provider communication, ensuring data storage consistency, and increasing adherence to clinical guidelines (Kurniawan & Widiyanto, 2024). HMIS integration also reduces manual workloads and supports operational effectiveness, contributing to better clinical and administrative performance (Kusuma & Yunengsih, 2024). The findings indicate that HMIS can serve as a clinical and managerial decision-support tool when system quality, information quality, and workflow efficiency are strengthened simultaneously. Contrasting evidence suggests that these factors may not always produce significant effects in different contexts due to user adaptation issues, workload barriers, resistance to change, and organizational constraints (Chen et al., 2021; Ong et al., 2022; Rahman et al., 2023). These differences highlight the importance of adopting a holistic approach combining technological improvement, user training, and organizational change management to optimize HMIS contribution to clinical decision-making (Syamsuriansyah, 2025).

CONCLUSION

This study concludes that HMIS/SIMRS implementation significantly and positively influences clinical decision-making at PKU Muhammadiyah Purbalingga Hospital. System quality, information quality, and workflow efficiency were all rated in the good category and contributed to improving the timeliness and accuracy of clinical decisions. Information quality showed the strongest effect, indicating that complete, accurate, and timely data are essential for evidence-based clinical decision-making. These findings confirm the research objectives stated in the Introduction and highlight the importance of strengthening system performance, data quality, and workflow integration simultaneously. Based on these findings, hospitals should optimize HMIS utilization by strengthening information governance through standardized clinical documentation, completeness verification, and routine data quality audits. System performance should be improved by enhancing reliability, optimizing response time, and strengthening integration across key modules

(e.g., laboratory, pharmacy, and radiology) to reduce delays and duplication. Workflow efficiency can be reinforced through workflow redesign aligned with clinical routines, simplified interface navigation, and targeted training supported by continuous technical assistance. Future research should employ longitudinal and mixed-method designs, incorporate organizational determinants (e.g., leadership support, readiness, user competency, training, and digital culture), and include objective clinical outcome indicators in multi-center studies across different HMIS maturity levels to improve generalizability and practical relevance.

ACKNOWLEDGEMENTS

The authors would like to express sincere gratitude to PKU Muhammadiyah Purbalingga Hospital for granting permission and support to conduct this research. Appreciation is also extended to all respondents who participated and provided valuable information for this study. The authors also thank the supervisors and lecturers of the Master of Management Program, Graduate School, Adhirajasa Reswara Sanjaya University, Bandung, for their guidance and constructive feedback throughout the research process

References

- Adeoye, M. A. (2023). From Variables to Research Design: A Deep Dive into Educational Research Methodology. *Journal of Educational Research and Evaluation*, 7(4), 622-628.
- Agustina, S., Adyas, A., Yudhinanto, C. N., Noviansyah, N., & Putri, D. U. P. (2024). Analisis Implementasi Sistem Informasi Manajemen Rumah Sakit (SIMRS) Terhadap Mutu Pelayanan di RS Mesuji Healthcare Center. *Malahayati Nursing Journal*, 6.
- Aisah, S., & Maharani, L. (2024). Peran Sistem Informasi Manajemen Dalam Meningkatkan Efisiensi Rumah Sakit. *Urnal Sistem Informasi, Akuntansi Dan Manajemen*, 4(2), 283-292.
- Andriani, R., & Pertiwi, J. (2025). ANALISIS IMPLEMENTASI REKAM MEDIS ELEKTRONIK DALAM. *Jurnal Ilmiah Rekam Medis Dan Informatika Kesehatan*, 15(1), 57-67.
- Asruhi, S. (2025). Strengthening Community Involvement in SIMRS Implementation at Leuwiliang Hospital to Support Regional Economic Development. *International Journal of Economics Development Research*, 6(3), 1500-1521.
- Azizah, R. N. (2025). PENERAPAN SISTEM INFORMASI MANAJEMEN RUMAH SAKIT (SIMRS) DALAM MENINGKATKAN EFISIENSI PELAYANAN KESEHATAN DI INDONESIA : STUDI LITERATUR. *Jurnal Kesehatan Tadulako*, 6, 6667-6674.
- Cahill, M., Cleary, B. J., & Cullinan, S. (2025). The influence of electronic health record design on usability and medication safety : systematic review. *BMC Health Services Research*. <https://doi.org/10.1186/s12913-024-12060-2>
- Creswell, J. W. (2022). *Research Design: Qualitative, Quantitative, and Mixed Methods Approaches (5th ed.)*. SAGE Publications Inc.
- Diaz, A. S. (2025). Pengaruh Penerapan Sistem Informasi Manajemen Rumah Sakit (SIMRS) terhadap Efektivitas Pelayanan Administrasi Pasien di Rumah Sakit Grandmed Lubuk Pakam. *Medistra Medical Journal (Mmj)*, 2(2), 72-76.
- Epizitone, A., Moyane, S. P., & Agbehadji, I. E. (2023). A Systematic Literature Review of Health Information Systems for Healthcare. *Health Care*.
- Febrita, H., Martunis, Syahrizal, D., Abdat, M., & Bakhtiar. (2021). Analysis of Hospital Information Management System Using Human Organization Fit Model. *Indonesian Journal of Health Administration*, 9(1), 23-32. <https://doi.org/10.20473/jaki.v9i1.2021.23-32>
- Ghalavand, H., Shirshahi, S., Rahimi, A., Zarrinabadi, Z., & Amani, F. (2024). Common data quality elements for health information systems : a systematic review. *BMC Medical Informatics and Decision Making*, 7.
- Hambili, T., Sanjuluca, P., Almeida, A. A. De, & Cruz-correia, R. (2022). Assessing the Use of Hospital Information Systems (HIS) to Support Decision-Making : A Cross-Sectional Study in Public Hospitals in the Hu í la Health Region of Southern Angola. *Health Care*.
- Handayani, R. (2020). *Metodologi Penelitian Sosial*. Trussmedia Grafika.
- Henny Syapitri, Amila, & Aritonang, J. (2021). *METODOLOGI Penelitian Kesehatan*.
- Hidayatuloh, C. (2025). Analisis Sistem Informasi Manajemen Rumah Sakit (SIMRS) Terhadap Peningkatan

- Layanan Kesehatan Dalam Mendukung Implementasi Rekam Medis Elektronik Di Era Digital. *INNOVATIVE: Journal Of Social Science Research*, 5, 11285-11303.
- Kristiawati, C., Syaodih, E., & Mulyani, K. (2024). Evaluasi Penerapan Sistem Informasi Manajemen Rumah Sakit (SIMRS) pada Rumah Sakit Bhayangkara Yogyakarta. *Jurnal Cendekia Ilmiah*, 3(6), 6355-6367.
- Kurniawan, H. D., & Widiyanto, A. (2024). Meta-Analysis: The Effectiveness of Electronic Medical Record (EMR) on the Quality of Health Services. *Journal of Health Policy and Management*, 09, 168-176.
- Kusuma, T. A., & Yunengsih, Y. (2024). ANALISIS EFEKTIVITAS PENERAPAN SISTEM INFORMASI MANAJEMEN RUMAH SAKIT (SIMRS) DI UNIT REKAM MEDIS RSUD KESEHATAN KERJA. *JURNAL KESEHATAN MASYARAKAT*, 8, 4673-4681.
- Mohamed, M. S., Setyonugroho, W., & Pribadi, F. (2021). Barriers of using Hospital Information System for Decision-Making: A Qualitative Study. *PROC. INTERNAT. CONF. SCI. ENGIN*, 4(February), 387-389.
- Mohammadpour, A., Ghaemi, M. M., Darrudi, R., & Sadagheyani, H. E. (2021). Use of Hospital Information System to Improve the Quality of Health Care from Clinical. *Health Care and Hospital Information System*. <https://doi.org/10.31661/gmj.v10i0.1830>
- Muhamad Bayhaqi, A., Asri, A., Syahrir, I., & Wiliyanarti, P. F. (2025). The Influence of Digital Transformation and Information Management on the Efficiency of Hospital Services. *Jurnal Kesehatan Vokasional*, 10(2).
- Mukti, B. H. (2025). *Methods in health research : Probability and non-probability sampling*. 3(2), 220-234.
- Permatasari, R. D., Salim, N., Usman, B., & Susena, E. (2025). Evaluasi Penerapan Rekam Medis Elektronik di Rumah Sakit (Literatur Review). *Corona: Jurnal Ilmu Kesehatan Umum, Psikolog, Keperawatan Dan Kebidanan*, September.
- Saufinah, M., Saufinah Pane, M., Fanisya, N., Rizkina, S. R., Nasution, Y. P., Agustina, D., Studi, P., Kesehatan, I., & Masyarakat, K. (2023). Sistem Informasi Manajemen Rumah Sakit (SIMRS) Untuk Meningkatkan Mutu Pelayanan Kesehatan Di Indonesia. *Jurnal Inovasi Riset Ilmu Kesehatan*, 1(3), 1-14.
- Sekaran, U., & Bougie, R. (2021). *Research Methods for Business: A Skill-Building Approach (8th ed.)*. Wiley.
- Siregar, H., Fitriani, A., Fitria, A., Efendy, I., & Nuraini, N. (2024). Analisis Implementasi Sistem Informasi Rumah Sakit Terhadap Pelayanan Administrasi Rumah Sakit Haji Syaiful Anwar. *JURNAL PROMOTIF PREVENTIF*, 7(5), 1011-1021.
- Siv, M., Merican, A., & A, A. N. (2025). The Impact of Provider ' s Quality of Information System on User Satisfaction and Perceived Net Benefits in Malaysian Public Hospitals. *Original Article*.
- Sugiyono. (2020). *Metode Penelitian Kuantitatif Kualitatif Dan R&D*. Alfabetha.
- Suryandari, P. I., Mulya, N., Ardila, I., Bisono, E. F., Jayanti, K. D., & Serimin, N. K. (2024). Strategi implementasi sistem informasi meningkatkan animo pengguna di rumah sakit untuk. *Jurnal Kesehatan Tambusai*, 5, 3634-3644.
- Suwarti, S., Rachmani, E., & Rimawati, E. (2025). ELECTRONIC MEDICAL RECORDS IN INCREASING USER SATISFACTION : © 2025 Universitas Negeri Semarang. *Management Analysis Journal*, 14(269), 14-22.
- Syamsuriansyah. (2025). Health Information Quality and Patient Safety Performance : A Study at Awet Muda Narmada. *Journal of Health and Nutrition Research*, 4(1), 102-115.
- Wijaya, K. S., Komara, E., & Mulyani, K. (2024). Analisis Dampak Penerapan Sistem Informasi Manajemen Rumah Sakit dalam Pengambilan Keputusan Manajemen. *Jurnal Syntax Admiration*, 5(11), 4656-4666. <https://doi.org/10.46799/jsa.v5i11.1551>
- Windari, A., Kismartini, K., Luqman, Y., & Wijanarko, B. (2023). Organizational Effect on the Implementation of "SIMRS" (Hospital Management Information Systems) in Hospital: A Systematic Review. *Journal of Health Policy and Management*, 8(1), 13-22. <https://doi.org/10.26911/thejhp.2023.08.01.02>
- Zhou, J., Hao, J., Tang, M., Sun, H., Wang, J., Li, J., & Qian, Q. (2024). Development of a quantitative index system for evaluating the quality of electronic medical records in disease risk intelligent prediction. *BMC Medical Informatics and Decision Making*, 1-11. <https://doi.org/10.1186/s12911-024-02533-z>