

Efficacy and User Satisfaction with the iHOMIS System: Basis for Iterative Systems Development

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ABSTRACT

Aims: This study aimed to evaluate the effectiveness of the Integrated Hospital Operations and Management Information System (iHOMIS) Electronic Medical Records (EMR) system in supporting patient admission processes among physicians in the emergency departments of Culion Sanitarium and General Hospital and Coron District Hospital.

Study design: A mixed methods descriptive–correlational research design was used in the study.

Place and Duration of Study: The study was conducted at Culion Sanitarium and General Hospital and Coron District Hospital during April 2026.

Methodology: The study involved 30 emergency department physicians selected through total population sampling. Data were collected using a researcher-made questionnaire consisting of Likert-scale items and open-ended questions assessing system quality, information quality, user satisfaction, and challenges encountered in using iHOMIS during patient admission processes. Quantitative data were analyzed using frequency, percentage, weighted mean, standard deviation, and Pearson Product-Moment Correlation Coefficient at the 0.05 level of significance, while qualitative responses were analyzed using thematic analysis.

Results: Findings revealed that physicians generally perceived the iHOMIS EMR system as effective in supporting patient admission processes. System quality obtained an overall weighted mean of 3.57, information quality obtained 3.64, and user satisfaction obtained 3.27, all verbally interpreted as Very High. Ease of use received the highest mean score (3.76), while interoperability obtained the lowest mean score (2.73), indicating limitations in external system integration.

Common challenges identified included system downtime, slow performance, interface and navigation difficulties, duplicate patient entries, data loss, insufficient training, workflow disruptions, and limited interoperability. Correlation analysis showed no significant relationship between system quality and user satisfaction ($r = 0.055$, $p = 0.773$) and between information quality and user satisfaction ($r = 0.047$, $p = 0.805$).

Conclusion: The iHOMIS EMR system is generally effective in supporting patient admission processes in emergency department settings. However, technical instability, workflow integration concerns, limited interoperability, and insufficient customization continue to affect operational efficiency. Findings further suggest that physician satisfaction is influenced not only by system and information quality but also by organizational and workflow-related factors.

Keywords: Integrated Hospital Operations and Management Information System (iHOMIS); Electronic Medical Records; Emergency Department; Patient Admission; System Quality; Information Quality; User Satisfaction; Mixed Methods Research

INTRODUCTION

Electronic Medical Records (EMRs) are essential components of modern healthcare systems as they improve the efficiency, accuracy, and accessibility of patient information for clinical decision-making. EMRs store critical data such as patient demographics, medical history, vital signs, and laboratory results, thereby supporting continuity and quality of care (Centers for Medicare & Medicaid Services, 2024). However, emergency departments operate under time-critical and high-volume conditions, requiring reliable information systems to support fast and accurate patient admission processes. In the Philippines, the Department of Health implemented iHOMIS to digitize hospital operations and improve service delivery through electronic patient registration, triage documentation, clinical assessment, and admission workflows (Department of Health, 2017). Despite these benefits, several hospitals report challenges such as system downtime, slow performance, complex navigation, and limited user training, which may affect system effectiveness in emergency care settings.

In geographically isolated and resource-limited areas such as Culion and Coron, efficient health information systems are essential due to operational constraints and high patient demand. The Culion Sanitarium and General Hospital and Coron District Hospital, both utilizing iHOMIS in their emergency departments, provide a suitable context for evaluating EMR effectiveness in real-world clinical settings.

This study is anchored on the DeLone and McLean Information System Success Model, which evaluates system success in terms of system quality, information quality, service quality, system use, user satisfaction, and net benefits (DeLone & McLean, 2003). Although EMR systems are widely implemented, evidence remains limited regarding their effectiveness in emergency department admission processes in developing country contexts, including the Philippines. This study therefore assesses the effectiveness of iHOMIS, identifies implementation challenges, and provides evidence-based recommendations to improve system performance and healthcare delivery efficiency in public hospitals.

METHODOLOGY

Research Design

This study employed a mixed methods descriptive–correlational research design to evaluate the effectiveness of the Integrated Hospital Operations and Management Information System (iHOMIS) Electronic Medical Records (EMR) system in supporting patient admission processes in the emergency departments of Culion Sanitarium and General Hospital and Coron District Hospital. Mixed methods research combines quantitative and qualitative approaches to provide a more comprehensive understanding of research problems than either method alone (Creswell & Creswell, 2018). The quantitative component used a descriptive cross-sectional survey to assess physicians' perceptions of system quality, information quality, and user satisfaction. The qualitative component used open-ended questions to explore challenges encountered in system use. The study was anchored on the DeLone and McLean Information System Success Model (DeLone & McLean, 2003), which served as the theoretical framework for evaluating system effectiveness.

Research Population and Sample

The population of this study consisted of all emergency department physicians working at Culion Sanitarium and General Hospital and Coron District Hospital who actively use the iHOMIS EMR system for patient admission processes. Total population sampling was used, involving all 30 physicians (20 from Culion

Sanitarium and General Hospital and 10 from Coron District Hospital), ensuring complete representation of all end-users of the system.

Participants were included based on the following criteria: (1) licensed physicians assigned in the emergency department, (2) active users of iHOMIS during patient admission, and (3) willingness to participate in the study.

Research Instrument

Data were collected using a researcher-made integrated survey questionnaire consisting of both quantitative and qualitative components. The quantitative section was based on the DeLone and McLean Information System Success Model and included 18 Likert-scale items rated from 1 (Strongly Disagree) to 4 (Strongly Agree). It measured system quality (ease of use, functionality, reliability), information quality (accuracy, completeness, timeliness), and user satisfaction (usability, reliability, response time, interoperability, functionality, and customization).

The instrument underwent content validation by experts to ensure clarity, relevance, and appropriateness. A pilot test involving five emergency department physicians not included in the final sample was conducted to refine the questionnaire. Reliability was tested using Cronbach's alpha with a minimum acceptable value of 0.70.

The qualitative section consisted of six open-ended questions that explored challenges such as technical issues, interface and navigation difficulties, data entry concerns, training and support adequacy, workflow integration, and system interoperability. Responses were analyzed using thematic analysis.

Data Gathering Procedure

Prior to data collection, ethical approval and permission were obtained from hospital administration and relevant institutional authorities. Participants were informed about the study purpose, procedures, risks, benefits, and their rights, and informed consent was secured.

Data collection was conducted in April 2026. The questionnaire was distributed to all eligible physicians using printed or electronic formats depending on participant preference. Completed questionnaires were collected, checked for completeness, coded, and securely stored. Confidentiality was ensured by assigning numerical codes instead of names. Data were used strictly for research purposes.

Statistical Treatment

Quantitative data were analyzed using descriptive and inferential statistics. Frequency distribution, percentage, weighted mean, and standard deviation were used to describe respondents' perceptions of system quality, information quality, and user satisfaction.

Pearson Product-Moment Correlation Coefficient was used to determine the relationship between system quality and user satisfaction, and between information quality and user satisfaction at a 0.05 level of significance.

Qualitative data from open-ended questions were analyzed using thematic analysis, which involved coding responses, grouping similar codes into categories, and identifying recurring themes related to system challenges.

Results were presented using tables and charts to clearly summarize findings and support interpretation.

RESULTS AND DISCUSSION

System Quality of the iHOMIS EMR System

The system quality of the Integrated Hospital Operations and Management Information System (iHOMIS) was evaluated in terms of ease of use, functionality, and reliability. Table 1 presents the summary of respondents' perceptions.

Table 1. Level of Perception on System Quality of the iHOMIS EMR System (n = 30)

Indicator	Mean	Interpretation
Ease of use	3.76	Very High
Functionality	3.50	Very High
Reliability	3.46	Very High
Overall Mean	3.57	Very High

The findings show that emergency department physicians generally perceived the iHOMIS system as having very high system quality. Ease of use obtained the highest mean, indicating that physicians were generally able to navigate the system during patient admission with minimal difficulty.

The results suggest that user-friendly system design contributes positively to acceptance and usability in clinical environments. According to the DeLone and McLean Information System Success Model, system quality strongly influences user experience and system adoption (DeLone & McLean, 2003). However, despite the high ratings, qualitative responses revealed recurring concerns such as slow system response, frequent navigation steps, and occasional downtime. These issues indicate that while usability is acceptable, system stability and workflow efficiency still require improvement, particularly in high-pressure emergency settings where time sensitivity is critical (Ratwani et al., 2018).

Information Quality of the iHOMIS EMR System

Table 2 presents the respondents' perception of information quality in terms of accuracy, completeness, and timeliness.

Table 2. Level of Perception on Information Quality of the iHOMIS EMR System (n = 30)

Indicator	Mean	Interpretation
Accuracy	3.53	Very High
Completeness	3.66	Very High
Timeliness	3.73	Very High
Overall Mean	3.64	Very High

The results indicate that physicians perceived the information provided by iHOMIS as highly accurate, complete, and timely. Timeliness obtained the highest mean, suggesting that the system generally supports rapid access to patient data during emergency admissions.

This finding highlights the role of EMR systems in improving clinical decision-making through real-time data availability. Studies show that timely access to patient information significantly enhances emergency care efficiency and reduces delays in treatment (Agarwal et al., 2010). However, despite positive ratings, respondents reported occasional issues such as system errors, duplicate entries, and data loss after system refresh. These issues may affect data integrity and highlight the importance of continuous system maintenance and error management in EMR implementation (Campanella et al., 2016).

User Satisfaction with the iHOMIS EMR System

Table 3 presents the level of satisfaction of emergency department physicians across different dimensions.

Table 3. Level of Satisfaction with the iHOMIS EMR System (n = 30)

Indicator	Mean	Interpretation
Usability	3.56	Very High
Reliability	3.36	Very High
Response time	3.46	Very High
Interoperability	2.73	High
Functionality	3.36	Very High
Customization	3.20	High
Overall Mean	3.27	Very High

The findings indicate that respondents were generally highly satisfied with the iHOMIS EMR system. Usability obtained the highest satisfaction score, reflecting positive user experience during patient admission workflows.

However, interoperability received the lowest rating, indicating limited integration with external hospital systems. This suggests that while the system supports internal hospital processes, it does not fully facilitate inter-hospital communication. Similar findings were reported in previous studies, which identified interoperability as a major challenge in EMR systems, particularly in developing healthcare settings (Adler-Milstein & Jha, 2017).

Despite high overall satisfaction, respondents still reported issues such as slow system response, occasional downtime, and limited customization features. These findings indicate that satisfaction is influenced not only by system performance but also by workflow compatibility and organizational context, consistent with the DeLone and McLean model (DeLone & McLean, 2003).

Relationship Between System Quality, Information Quality, and User Satisfaction

Table 4 presents the correlation between system quality, information quality, and user satisfaction.

Table 4. Correlation Analysis Between Variables (n = 30)

Variable	r-value	p-value	Interpretation
System Quality vs User Satisfaction	0.055	0.773	Not Significant
Information Quality vs User Satisfaction	0.047	0.805	Not Significant

The results show no significant relationship between system quality and user satisfaction, as well as between information quality and user satisfaction. This indicates that even though respondents rated system and information quality highly, these do not necessarily translate into increased satisfaction.

This finding suggests that other contextual and organizational factors may influence user satisfaction in emergency department settings, such as workload pressure, staffing conditions, and workflow interruptions. Similar results were found in studies where EMR satisfaction was influenced more by service quality and implementation context rather than system features alone (Ifinedo, 2017; Tun et al., 2023).

Challenges Encountered in Using the iHOMIS EMR System

Table 5 summarizes the thematic analysis of challenges experienced by respondents.

Table 5. Thematic Analysis of Challenges in Using iHOMIS EMR System

Theme	Key Issues Identified
Technical system instability	System crashes, downtime, lag, data loss
Interface and navigation difficulties	Complex navigation, slow interface, difficulty locating functions
Data entry issues	Duplicate entries, missing fields, limited text input
Training and support	Lack of formal training, reliance on peer learning
Workflow integration	Delays during system downtime, workflow disruption
Interoperability issues	Lack of external system integration, reliance on printed referrals

The findings reveal that technical instability and system downtime remain the most critical challenges affecting system use. These disruptions directly impact emergency department workflows, where timely documentation and decision-making are essential.

Interface complexity and insufficient training further contribute to inefficiencies, increasing user workload and cognitive burden. Consistent with sociotechnical systems theory, EMR effectiveness depends not only on technical performance but also on user readiness, training, and workflow alignment (Sittig & Singh, 2016). Additionally, interoperability limitations highlight a major structural weakness, as physicians rely on manual referral processes rather than integrated digital communication systems. This limits continuity of care and reduces system efficiency across healthcare facilities.

CONCLUSION AND RECOMMENDATIONS

Study Strengths and Limitations

This study contributes to the growing body of healthcare informatics research by evaluating the effectiveness of the Integrated Hospital Operations and Management Information System (iHOMIS) in supporting patient admission processes within emergency department settings. A key strength of the study is the use of a mixed-methods descriptive-correlational design, which enabled the integration of quantitative measures and qualitative insights to provide a more comprehensive understanding of system performance and user experiences. Furthermore, the use of total population sampling ensured that all emergency department physicians within the participating hospitals were represented, thereby strengthening the internal validity of the findings. The study also adopted a multidimensional approach by assessing system quality, information quality, user satisfaction, and implementation challenges, resulting in a holistic evaluation of the iHOMIS Electronic Medical Records system.

Despite these strengths, several limitations should be acknowledged. First, the study involved only 30 physicians from two public hospitals, which may limit the generalizability of the findings to other healthcare institutions and geographical settings. Second, the study relied primarily on self-reported perceptions of physicians, which may be subject to response bias and may not fully reflect actual system performance. Finally, while the study evaluated important dimensions of information system success, it did not include objective performance indicators such as patient admission turnaround time, documentation accuracy, error rates, system uptime, and patient-related outcomes. Consequently, the findings should be interpreted within the context of these methodological limitations.

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Definitions, Acronyms, Abbreviations

For clarity and consistency in interpreting findings of the study, the following terms are operationally defined as used in this research. The terms are arranged in alphabetical order.

Accuracy. Accuracy refers to the correctness of patient data delivered by iHOMIS as perceived by emergency department physicians.

Challenges Encountered. Challenges Encountered refer to the technical issues, interface and navigation difficulties, data entry and documentation concerns, training and technical support inadequacies, workflow integration problems, and system compatibility issues experienced by emergency department physicians in using the iHOMIS system during the patient admission process.

Completeness. Completeness refers to the extent to which the iHOMIS system provides comprehensive patient information needed by physicians in the emergency department during the patient admission process.

Customization Options. Customization Options refer to the ability of the iHOMIS system to be adapted or modified to meet the specific requirements of the emergency departments of Culion Sanitarium and General Hospital and Coron District Hospital.

Ease of Use. Ease of Use refers to the extent to which emergency department physicians perceive the iHOMIS system as easy and convenient to use during patient admission.

Efficacy. Efficacy refers to the extent to which the iHOMIS system effectively supports and enhances patient admission processes in terms of system quality, information quality, user satisfaction, and challenges encountered.

Electronic Medical Records (EMR). Electronic Medical Records (EMRs) refer to the digital versions of patients' paper charts that contain medical and treatment histories. These are real-time, patient-centered records that make information instantly and securely available to authorized users (Centers for Medicare & Medicaid Services, 2024). In this study, EMRs refer to the Integrated Hospital Operations and Management Information System (iHOMIS) used by Culion Sanitarium and General Hospital and Coron District Hospital for the electronic management of patients' health information.

Emergency Department Physicians. Emergency Department Physicians refer to the licensed medical doctors assigned to the Emergency Room Departments of Culion Sanitarium and General Hospital and Coron District Hospital who directly utilize the iHOMIS system for patient admission and serve as respondents in this study.

Functionality. Functionality refers to the features and operations of the iHOMIS system that enable emergency department physicians to accomplish patient admission tasks effectively.

Integrated Hospital Operations and Management Information System (iHOMIS). Integrated Hospital Operations and Management Information System (iHOMIS) refers to the electronic medical record (EMR) system implemented in Culion Sanitarium and General Hospital in February 2020 and in Coron District Hospital in January 2021, used to manage patient admission and other hospital operations.

Information Quality. Information Quality refers to the quality of patient information provided by the iHOMIS system to emergency department physicians during the patient admission process.

Interoperability. Interoperability refers to the capability of the iHOMIS system to communicate and exchange data with other hospital systems and external healthcare platforms.

Patient Admission Process. Patient Admission Processes refer to the workflow activities involved in patient registration, medical history documentation, vital signs recording, clinical assessment, diagnostic test ordering, and admission decision documentation in the emergency departments of Culion Sanitarium and General Hospital and Coron District Hospital.

Perception. Perception refers to the subjective evaluation and appraisal of emergency department physicians regarding the iHOMIS system, based on their personal experiences with its use in patient admission procedures.

Reliability. Reliability refers to the consistency and stability of the iHOMIS system's performance, including system uptime, minimal crashes, and error-free operation during patient admission processes.

Response Time. Response Time refers to the speed at which the iHOMIS system retrieves, processes, and displays patient information upon request by emergency department physicians during patient admission procedures.

System Quality. System Quality refers to the technical characteristics and performance aspects of the iHOMIS system as perceived by emergency department physicians during patient admission in the emergency department.

System Usability. System Usability refers to the ease and efficiency with which emergency department physicians can use the iHOMIS interface to accomplish patient admission tasks.

Timeliness. Timeliness refers to the promptness with which the iHOMIS system provides access to up-to-date patient information during admission procedures in the emergency department.

User Satisfaction. User Satisfaction operationally refers to the degree of contentment experienced by emergency department physicians regarding their overall use of the iHOMIS system, particularly in terms of usability, reliability, response time, interoperability, functionality, and customization options