Journal of Public Health and Pharmacy
2775-4952 (Online - Elektronik)
Research Articles Open Access

Evaluation of the Utilization of the Hospital Management Information System (SIMRS) at Madani Regional General Hospital, Palu

Muhammad Rifial[1]*, Amran Razak[2], Darmawansyah Darmawansyah[3], Indar Indar[4], Arsyad Rahman[5]
[1]Health Policy Administration Study Program, Faculty of Public Health, Universitas Hasanuddin Makassar, Indonesia
[2]Health Policy Administration Study Program, Faculty of Public Health, Universitas Hasanuddin Makassar, Indonesia
[3]Health Policy Administration Study Program, Faculty of Public Health, Universitas Hasanuddin Makassar, Indonesia
[4]Health Policy Administration Study Program, Faculty of Public Health, Universitas Hasanuddin Makassar, Indonesia
[5]Health Policy Administration Study Program, Faculty of Public Health, Universitas Hasanuddin Makassar, Indonesia

***Corresponding Author:** E-mail: vialrifial@gmail.com

ARTICLE INFO

Manuscript Received: 01 Aug 2024
Revised: 26 Oct, 2024
Accepted: 16 Jan, 2025
Date of publication: 01 Jul, 2025
Volume: 5
Issue: 2
DOI: 10.56338/jphp.v5i2.6169

KEYWORDS

SIMRS Utilization;
Net Benefit;
HOT-FIT;
Hospital

ABSTRACT

Introduction: The Hospital Management Information System (SIMRS) plays a crucial role in supporting optimal healthcare services in hospitals. SIMRS enables efficient and effective management of information, ranging from patient data to hospital administration. At Madani Regional General Hospital, Palu, the implementation of SIMRS has been carried out; however, operational challenges and user satisfaction issues still need to be evaluated. This study aims to evaluate the utilization of SIMRS at Madani Regional General Hospital, Palu, in 2024, and to analysed the impact of system usage, user satisfaction, information quality, and service quality on the net benefits of SIMRS.
Methods: This study uses a quantitative method with a cross-sectional study approach and logistic regression analysis. The population of this study includes all employees at Madani Regional General Hospital, Palu. The sample consists of 172 respondents, determined using the Slovin formula
Results: The study shows that system usage ($p = 0.007$), user satisfaction ($p = 0.003$), information quality ($p = 0.002$), and service quality ($p = 0.006$) are associated with the utilization of SIMRS at Madani Regional General Hospital, Palu. Based on Binary Logistic analysis, the variable with the strongest influence is System Usage (Sig = 0.006)
Conclusion: This study concludes that the use of SIMRS at Madani Regional General Hospital, Palu, provides significant benefits in terms of hospital service efficiency and effectiveness. System usage is the most dominant factor influencing the utilization of HMIS, followed by user satisfaction, information quality, and service quality. It is recommended to continuously improve the quality of system usage by providing ongoing training for hospital staff.

Publisher: Pusat Pengembangan Teknologi Informasi dan Jurnal Universitas Muhammadiyah Palu

INTRODUCTION

Recruitment that has been carried out, even when based on various strict requirements and regulations, often results in employees whose competencies are not fully aligned with job competencies both qualitatively and quantitatively.

To support optimal public health, efforts in health services must be implemented, such as the provision of general health services (2). One of the service sectors that plays a fairly important role for society is hospital services. (3). A hospital is an organization operated by professional medical personnel, equipped with organized and permanent medical facilities and infrastructure, providing medical services, continuous nursing care, diagnosis, and treatment of diseases experienced by patients (4,5). Therefore, hospitals are required to provide optimal services to the community. The high demands from the public regarding patient satisfaction compel hospitals to develop the best possible quality management (5).

In carrying out its operations, hospitals collect and manage a large amount of data and information, ranging from patient data and medical information to financial data. To optimize the management of this data and information, hospitals utilize a Health Information System (HIS) (6). An information system is a tool or means aimed at processing data into information, which can be utilized by decision-makers (7). This information system can also be defined as a medium for sharing and disseminating information to users quickly, accurately, and appropriately. Currently, it is undeniable that information systems have rapidly developed in all fields, including health. Therefore, in healthcare services, such as in hospitals, modern and advanced information systems are now being used (8).

Management Information Systems (MIS) are essential for management at any level, whether for making structured or unstructured decisions, as well as programmed or non-programmed decisions (9). According to several studies, the potential benefits of implementing an information system can be maximized if technology, humans, and the organization support each other (human, organization, and technology fit). Therefore, the success of the Hospital Management Information System (HMIS) also greatly depends on management policies, organizational culture, and especially the human resources within the hospital (10–14).

The Hospital Management Information System is currently known as a computer system that processes and integrates all business process flows of healthcare services in the form of a network of coordination, reporting, and administrative procedures to obtain information quickly, accurately, and precisely (15). Currently, the computer-based Management Information System (MIS) for hospitals (HMIS) is a crucial supporting tool, even considered essential, for supporting hospital operational management (16). Many hospitals that continue to use conventional administrative systems have demonstrated significant losses in profit opportunities due to weak inter-departmental coordination and a lack of fast, accurate, precise, and integrated information support (17–19). This, of course, affects the quality of services provided to stakeholders, particularly patients. These hospitals generally lag behind in competition compared to those using the Hospital Management Information System (HMIS).

To support patient care and administration, HMIS provides information that is accurate, relevant, and up-to-date, easily accessible to the right people at different locations, and in a usable format. Service transaction data is collected, stored, processed, and documented to produce information about the quality of patient care, hospital performance, and costs. This indicates that the hospital information system must be able to communicate high-quality data between various units within the hospital. Besides communication, another key objective of HMIS is the electronic exchange of data between healthcare providers (private practitioners, primary care facilities, and hospitals) to ensure the comprehensive availability of patient information and service efficiency.

Madani Regional General Hospital, Palu, is a type C government hospital. Currently, there are nine outpatient clinics in Madani Hospital, with primary support from the laboratory and radiology departments. According to data from the Medical Record Unit of Madani Hospital in 2022, the number of outpatient visits has increased compared to the previous year. In 2021, the number of patients was 55,856, while in 2022, it increased to 56,614. Services at the outpatient department are provided to patients who come to the outpatient unit. The outpatient department is not a standalone service unit; it is closely connected to other hospital departments to provide patients with optimal care. The outpatient department comprises healthcare workers, including doctors, dentists, nurses, midwives, and administrative staff who must work together and coordinate as a health team (20).

The increasing number of patient visits at Madani Regional General Hospital, Palu, has led to greater demands and needs for services provided to patients and their families. Therefore, to support better services and improve efficiency and effectiveness, Madani Hospital has implemented HMIS. This Hospital Management

Information System is a product of a local Indonesian vendor, and its current management is handled by the hospital's IT department. The Information System can be used for data and information services more productively, transparently, orderly, quickly, easily, accurately, interactively, securely, and efficiently, particularly in facilitating and simplifying policy-making to enhance health service systems, especially in hospital management.

Based on preliminary observations and data collection, the researcher identified issues regarding the implementation of HMIS at Madani Hospital as follows: System users, ranging from young to older age groups, generally face limitations in using devices and technological systems. Initial observations show that user satisfaction with the system is low due to both difficulties in operation and dissatisfaction with the menu display. Additionally, there are concerns about the quality of the available information, with some data or information not being adequately backed up in the system. Moreover, the system services have not been fully integrated with other platforms, such as BPJS (Indonesia's Health Insurance System), leading to delays in patient services. Hence, improvements in system operations, menu displays, data backup, and integration with other platforms are crucial to enhancing user experience and the quality of services provided.

The differences between the field case and existing theories create a gap or problem that requires further examination. The Hospital Management Information System (HMIS) greatly assists in identifying occurring problems, considering that both computerized and manual processes make it easy to detect issues or errors, such as those in reports. This facilitates decision-making. The decision-making process, which involves identifying and resolving problems according to their type and stage, should follow expert recommendations: clarifying the issue, following relevant connections, substituting when necessary, improving when required, and re-engaging as needed.

METHOD

This research is a quantitative study with a cross-sectional design, using a survey approach to examine the influence between independent and dependent variables. The independent variables are human factors (system usage and user satisfaction) and technology factors (information quality and service quality). Meanwhile, the dependent variable is benefit analysis (net benefits), specifically the utilization of HMIS. Data is obtained through questionnaire responses and analysed using computerized methods.

The research was conducted at Madani Regional General Hospital, Palu, in June 2024. The sample size was determined using the Slovin formula, resulting in 172 respondents. Data processing techniques utilized computerized calculations, as this program provides high statistical analysis capabilities and a data management system in a graphical environment using descriptive menus and simple dialog boxes, making it easy to understand its operation.

Data analysis in this study consists of two stages: univariate analysis, presented in the form of frequency distribution tables providing information on respondent characteristics, and bivariate analysis, which is used to describe the relationship between two variables and determine the nature of the relationship (asymmetric, symmetric, reciprocal, etc.). The questionnaire aims to answer questions regarding the implementation of the Hospital Management Information System (HMIS) at Madani Hospital, Palu. The statistical method used in bivariate analysis is Pearson Correlation to assess the relationship between independent variables (system usage, user satisfaction, information quality, and service quality) and the dependent variable (net benefits or HMIS utilization). Furthermore, multivariate analysis is conducted to understand the effect of more than one independent variable on a single dependent variable. This analysis aims to identify which independent variables have a strong influence on the utilization of HMIS at Madani Regional General Hospital, Palu. The statistical analysis used is binary logistic regression.

Interpretation:

If the Sig value is < 0.05, there is a significant partial effect between the independent and dependent variables.
If the Sig value is > 0.05, there is no significant partial effect between the independent and dependent variables.
The magnitude of the effect is indicated by the exp(B) value, also known as the odds ratio (OR)

RESULTS

Univariate Analysis

Univariate analysis was conducted with the aim of knowing the distribution and frequency of each variable, both independent variables, dependent variables and respondent characteristics. The univariate results in this study are:

Respondent Characteristics

Table 1. Frequency Distribution of Respondents Based on Characteristics

Characteristics of Respondents	Number (n)	Percentage (%)
Gender		
Man	62	36.0
Woman	110	64.0
Age		
17 – 25 Years	7	4.1
26 – 35 Years	83	48.3
36 – 45 years old	64	37.2
46 – 55 years old	14	11.7
56 – 65 years old	4	2.3
Last Education		
SMA	3	1.7
D1	1	0.6
D3	104	60.5
D4	1	0.6
S1	43	25.0
S2	6	3.5
Nurse Profession	14	8.1
Length of SIMRS		
<5 Months	2	1.2
>5 Months	20	11.6
1 Year	42	24.4
2 Years	108	62.8
Total	**172**	**100,0**

Source: Primary Data

Table 1 shows that the gender of the most respondents in this study is female as many as 110 respondents (64.0%). Based on the age group, dominated by 26-35 years old, as many as 83 respondents (48.3%). The last education of the respondents who had the largest number was D3 with 104 respondents (60.5%). In the length of use of SIMRS, respondents with a vulnerability of 2 years had the largest number of respondents in the length of use of SIMRS with 108 respondents (62.8%).

Variables Studied

Table 2. Frequency Distribution of Respondents Based on Research Variables

Research Variables	Number (n)	Percentage (%)
System Usage		
Bad	36	20.9
Good	136	79.1
User Satisfaction		
Bad	55	32.0
Good	117	68.0
Quality of Information		
Bad	42	24.4

Good	130	75.6
Quality of Service		
Bad	57	33.1
Good	115	66.9

Source: Primary Data

Table 2 shows that the variables of system use are dominated by good categories as many as 136 respondents (79.1%). Based on the user satisfaction variable as many as 117 respondents (68.0%). Based on the information quality variable, respondents had the most good answers at 130 (75.6%). The service quality variable has the most good categories at 115 (66.9%).

Bivariate Analysis

Relationship between System Usage and Net Benefits

Table 3. Distribution of Respondents Based on System Usage in Net Benefits for the Year

System Usage	Net Benefits				Total	P Value
	Not Good		Good			
	n	%	n	%		
Not Good	17	10,0	19	26,0	36	0,007
Good	31	38,0	105	98,0	136	
Total	48	48,0	124	124,0	172	

Source: Primary Data

Table 3 shows that 172 respondents who have good system use and good net benefits are 105 people (98.0%). Meanwhile, the use of the system is not good and the net benefit is not good, namely 17 people (10.0%). The results of the chi square test obtained a value of p=0.007 (p Value <0.05), meaning that statistically there is a statistically significant relationship between the use of the system and net benefits.

Relationship between User Satisfaction and Net Benefits

Table 4. Distribution of Respondents Based on User Satisfaction on Net Benefits

User Satisfaction	Net Benefits				Total	P Value
	Not Good		Good			
	n	%	n	%		
Not Good	24	15,3	31	39,7	55	0,003
Good	24	32,7	93	84,3	117	
Total	48	48,0	124	124,0	172	

Source: Primary Data

Table 4 shows that 172 respondents who have good user satisfaction and good net benefits are 93 people (84.3%). Meanwhile, user satisfaction is not good and net benefit is not good, namely 24 people (15.3%). The results of the chi square test obtained a value of p=0.003 (p Value <0.05), meaning that statistically there is a statistically significant relationship between user satisfaction and net benefits.

Relationship between Information Quality and Net Benefits

Table 5. Distribution of Respondents Based on Quality of Information on Net Benefits

Quality of Information	Net Benefits				Total	P Value
	Not Good		Good			
	n	%	n	%		
Not Good	20	11,7	22	30,3	42	0,002
Good	28	36,3	102	93,7	130	
Total	48	48,0	124	124,0	172	

Source: Primary Data

Table 5 shows that 172 respondents who have good information quality and good net benefits are 102 people (93.7%). Meanwhile, the quality of information is not good and the net benefit is not good, namely 20 people (11.7%). The results of the chi square test obtained a value of p=0.002 (p value <0.05), meaning that statistically there is a statistically significant relationship between the quality of information and net benefits.

Relationship between Service Quality and Net Benefits

Table 6. Distribution of Respondents Based on Quality of Service on Net Benefits

Quality of Service	Net Benefits				Total	P Value
	Not Good		Good			
	n	%	n	%		
Not Good	24	15,9	33	41,1	57	0,006
Good	24	32,1	91	82,9	115	
Total	48	48,0	124	124,0	172	

Source: Primary Data

Table 6 shows that 172 respondents who have good service quality and good net benefits are 91 people (82.9%). Meanwhile, the quality of service is not good and the net benefit is not good, namely 24 people (15.9%). The results of the chi square test obtained a value of p=0.006 (p Value <0.05), meaning that statistically there is a statistically significant relationship between service quality and net benefits.

Multivariate Analysis

Multivariate analysis was carried out to see the influence between more than one independent variable and one dependent variable. The analysis was carried out using logistic binary regression analysis. The results of the analysis can be seen in table 7.

Table 7. Results of Multivariate Test Analysis

Independent Variable	Sig. (Hosmer and Lemeshow Test)	Sig.	Exp (B)	Negelkerke R Square	Overall Percentage (%)
System Usage	0,270	0,006	3.242	0,212	79,7
User Satisfaction		0,030	2.500		
Quality of Information		0,173	1.829		
Quality of Service		0,013	2.581		

Source: Primary Data

Table 7 shows that in terms of the compatibility of the analysis model with the observation data, the value of sig (Hosmer and Lemeshow test) = 0.270 (sig >0.05) which means that this binary logistics analysis model is suitable for use. Meanwhile, of the four variables that were tested for their influence on Net Benefits, there was one variable that was the most influential with a value of sig= 0.006 and Exp(B) = 3,242, namely System Usage. The negelkere R

Square value shows the magnitude of influence of all independent variables and dependent variables. The results of the analysis showed a value of 0.212 (21.2%) which means that the independent variable in this study had an influence of 21.2% on the dependent variable. In addition, the overall percentage value in the results of this binary logistic test is 79.7%, which means that the accuracy of the analysis model in this study is 79%.

DISCUSSION

Relationship of System Usage to Net Benefits

System usage is the user's attitude when using the capabilities of the existing information system such as the time of use, frequency of use, number of use, user eligibility and purpose of using the information system (21). System usage refers to how often and to what extent users (hospital staff) use SIMRS to carry out operational tasks such as patient recording, medical data management, and hospital administration.

Based on the results of the univariate analysis in table 2, most users (79.1%) felt that the use of SIMRS at Madani Palu Hospital had gone well, indicating that this system was relatively easy to operate and used by the majority of users in supporting their duties and responsibilities. Meanwhile, there are 20.9% of users who still experience problems in using the system, which indicates factors such as lack of training, compatibility of the system with user needs, or technical problems that affect the effectiveness of use. The researcher assumed that respondents who had "poor" use of the system were experiencing problems in terms of accessibility, system navigation, or completeness of features. Some users feel that this system does not fully meet their needs in work or does not optimally support their work processes. This can happen due to a lack of training or socialization on how to use SIMRS effectively, or there are technical problems that have not been resolved such as system speed, access disruptions, or data input errors.

The results of the bivariate research in table 3 show that 172 respondents who have good system use and good net benefits, namely 105 people (98.0%). Meanwhile, the use of the system is not good and the net benefit is not good, namely 17 people (10.0%). The results of the chi square test obtained a value of p=0.007 (p Value <0.05), meaning that statistically there is a statistically significant relationship between the use of the system and net benefits. The researcher assumes that these results show a significant relationship between system usage and net benefits, where the better the system is used, the higher the net benefits obtained. This is supported by the results of the study which shows that the majority of respondents with good use of the system also report good net benefits. This assumption can be based on factors such as ease of use of the system, a good understanding of the system's features, as well as adequate organizational support, all of which contribute to increased net benefits. Conversely, suboptimal use of the system can be caused by barriers such as lack of training, limited technical support, or resistance from users, resulting in a decrease in net benefits.

This research is also in line with several previous studies that state that in the evaluation of human factors for SIMRS, the human factor must be supported by a sufficient number of human resources, the placement of human resources in hospital parts must be in accordance with the educational background and competencies (22–26).

Relationship of User Satisfaction to Net Benefits

User satisfaction has a very central role in the development of information systems. The use of user satisfaction to measure system quality will lead to a subjective assessment of the system quality. User satisfaction is more concerned with the user's view of the information system, but not on the technical quality aspect of the system concerned. User satisfaction of information systems can be assessed using the following criteria: adequacy, effectiveness, efficiency, overall satisfaction, enjoyment, information satisfaction, system satisfaction (27–30).

Based on the results of the univariate analysis, most users (68.0%) were satisfied with SIMRS at Madani Palu Hospital, showing that the system has met most of the users' expectations in supporting their work. However, there were 32.0% of respondents who were not satisfied, indicating that there were several aspects in the system that did not fully meet the needs or expectations of users, either in terms of technical performance, ease of use, or quality of services provided. In this study, the researcher assumes that respondents who feel dissatisfied experience several obstacles in using SIMRS. Factors that can affect this dissatisfaction include difficulty accessing certain features, lack of adequate training, technical glitches, or systems that are not always running stably. These issues can hinder users' work effectiveness and lower their level of trust in the system.

The results of the bivariate analysis in table 4 show that 172 respondents who have good user satisfaction and good net benefits are 93 people (84.3%). Meanwhile, user satisfaction is not good and net benefit is not good, namely 24 people (15.3%). The results of the chi square test obtained a value of p=0.003 (p Value <0.05), meaning that statistically there is a statistically significant relationship between user satisfaction and net benefits. The researchers assumed that these results showed that user satisfaction played an important role in determining the extent to which the system was optimally utilized. When users are satisfied with the system, both in terms of ease of use, speed of information access, and technical support, they will be more motivated to use the system more effectively. On the other hand, low satisfaction can trigger a lack of motivation in using the system, which will ultimately reduce the benefits obtained from SIMRS.

This research is in line with several studies that state that there is a relationship between user satisfaction and SIMRS user net benefit (24,31,32). This can be proven by the results of bivariate analysis to test the relationship between user satisfaction and SIMRS user net benefit with the Chi-Square test using the fisher exact which gives a value of p=0.001(<0.05) and X2 Count = 15.331 > X2Table 3.841. This means that there is a relationship between user satisfaction and SIMRS user net benefit.

The Relationship of Information Quality to Net Benefits

Information quality is a factor that measures the quality of the output of an information system. Information quality is related to measuring the value of the information generated by a system. The quality of information also has an effect in increasing the intention to use a technology (33–35).

Based on the results of univariate analysis, most users (75.6%) feel that the quality of information produced by SIMRS is adequate, accurate, and relevant to their operational needs. However, the existence of 24.4% of users who rated the quality of information as poor shows that there are several aspects of the information system that have not met user expectations, especially related to the accuracy, completeness, or ease of access to information. The researcher's assumption that the quality of information is not good indicates a deficiency in certain aspects of the information provided by SIMRS. This can include inaccurate data, information that is not up-to-date, lack of completeness of the information needed, or even systems that are less responsive in providing information in a timely manner. Dissatisfied respondents face obstacles in accessing relevant information, which ultimately hinders work efficiency or quick decision-making.

The results of the bivariate analysis in table 5 above show that 172 respondents who have good information quality and good net benefits are 102 people (93.7%). Meanwhile, the quality of information is not good and the net benefit is not good, namely 20 people (11.7%). The results of the chi square test obtained a value of p=0.002 (p value <0.05), meaning that statistically there is a statistically significant relationship between the quality of information and net benefits. The researcher assumes that this result shows that the quality of information includes data accuracy, completeness of information, relevance of information to user needs, and ease of access to data generated by SIMRS. When the quality of information is high, users are better able to utilize existing data to support more effective decision-making, improve operational efficiency, and ensure that the services provided to patients can be more optimal. This results in increased net benefits, both in terms of time efficiency, service quality, and hospital management effectiveness.

This study is in line with several studies that stated that the results of data analysis between information quality and SIMRS net benefit in hospitals using path coefficient and p-value tests, showed that there was an influence of information quality on SIMRS net benefit in hospitals (36–41). This is because if the information received is valid and reliable, it will make it easier to send records and reports at the hospital and reduce the rate of errors at work so that good information quality will provide net benefits felt by users and have an impact on improving performance.

Relationship of Service Quality to Net Benefits

Service quality focuses on the overall support received by the service provider, system, or technology. Service quality can be assessed by the speed of response, assurance, empathy and follow-up of service. Service quality focuses on the needs and desires of users. A system that provides a sense of security to users when accessing and sending data can provide satisfaction to information system users. The speed of response from the system provider can also affect user satisfaction (42–44).

Based on the results of univariate analysis, the majority of SIMRS users (66.9%) are satisfied with the quality of services provided, showing that SIMRS services in general are quite adequate in supporting hospital operations. However, the existence of 33.1% of respondents who felt that the service was not good indicated that there were still obstacles in several aspects of the service, such as technical support, response speed, or system maintenance. The researcher assumes that respondents who rated the quality of service as "poor" indicated that there were significant problems in some aspects of SIMRS services. These issues may be related to a lack of responsive technical support, frequency of system outages, or lack of maintenance leading to system instability. Users who experience this problem may face obstacles in completing their tasks, which ultimately affects their level of satisfaction with the system

The results of the bivariate research in table 6 above show that 172 respondents who have good service quality and good net benefits are 91 people (82.9%). Meanwhile, the quality of service is not good and the net benefit is not good, namely 24 people (15.9%). The results of the chi square test obtained a value of p=0.006 (p value < 0.05), meaning that statistically there is a meaningful relationship between service quality and net benefits. The researcher assumes that these results show that the quality of service includes reliability, responsiveness, technical support, as well as the system's ability to meet user needs in a timely manner. When the quality of the service provided is high, users tend to feel satisfied and more optimal in utilizing the system. This directly contributes to increased net benefits, such as work efficiency, increased productivity, and the quality of data-driven decision-making.

This study is also in line with several previous studies which stated that the influence of service quality variables on the net benefit variable showed a t-count value of 2.939 > 1.664 with a P value of 0.003 < 0.05 (45–47). Therefore, t-calculate > t-table with a P value of < 0.05, thus this study accepts H2 and rejects H0 that service quality has a significant effect on net benefit. Satisfaction reflects a person's value about the performance of the product or service he or she perceives, or the results and their relationship to expectations. Customer satisfaction will reach if the fundamental perception of consumers or customers towards the expected product is now the utilization of SIMRS.

Implications for Public Health

Improved Health Service Delivery: Effective utilization of HMIS can significantly enhance the efficiency and quality of health services provided to the community. A well-functioning HMIS ensures quick access to patient information, reduces waiting times, and supports streamlined coordination between different hospital departments.

Data-Driven Decision-Making: With accurate and real-time data, healthcare management can make informed decisions for policy and service improvement. This allows for more effective resource allocation, better patient care strategies, and the identification of areas requiring attention, thereby improving overall hospital performance and public health outcomes.

Enhanced Patient Experience and Satisfaction: The implementation of HMIS improves service delivery processes, reduces administrative burdens on both staff and patients, and supports patient-centered care. This leads to increased patient satisfaction and trust in the healthcare system, which is critical for public health outcomes.

Efficient Management of Hospital Resources: HMIS provides accurate tracking and reporting of hospital resources, including medical supplies, staff availability, and facility usage. Efficient resource management not only reduces operational costs but also ensures that resources are optimally utilized to meet the needs of the community.

Facilitates Health Information Exchange: Integration with other healthcare platforms (such as BPJS) and stakeholders (primary healthcare facilities, private practitioners) through HMIS improves the continuity of care. This ensures that patient information is readily available across different health settings, contributing to more comprehensive care and reducing redundancies in the public health system.

Identification of Areas for System Improvement: The evaluation highlights areas where the HMIS is lacking, such as user satisfaction, data backup, and system integration. Addressing these challenges is crucial to enhancing the system’s functionality and ensuring it meets the demands of hospital staff and patients effectively.

Training and Capacity Building for Health Workers: Identifying gaps in system usage among different age groups of staff members underscores the need for targeted training programs. Building capacity among healthcare workers to effectively use the HMIS can lead to greater acceptance and better use of the system, ultimately improving service delivery.

Policy Development for Healthcare Quality: Findings from the evaluation of HMIS can inform hospital management and public health policymakers in developing and implementing policies that support healthcare quality

improvement. This ensures that technological advancements are aligned with public health goals, leading to sustainable healthcare improvements

Limitations and Cautions

Limited User Familiarity and Skill Levels: One key limitation is the variation in user familiarity and skill levels in operating the HMIS. Staff with limited exposure to information technology may face challenges in using the system effectively, impacting data accuracy and overall system utilization. This limitation highlights the need for ongoing training but also suggests caution in interpreting data entered by users with lower skill levels.

System Usability and User Experience Issues: Initial observations indicate that some users are dissatisfied with the HMIS interface and functionality, which may affect system usage consistency and data entry quality. If the system is not user-friendly or tailored to meet the needs of its diverse user base, it may result in underutilization or incorrect usage, thereby affecting the reliability of the information generated by the system.

Potential Data Quality and Backup Concerns: While HMIS aims to provide comprehensive and up-to-date information, issues such as incomplete data backup and inconsistent data entry can compromise data quality. This raises concerns about the accuracy and integrity of the data collected, which is critical for decision-making and effective patient care.

Recommendations for Future Research

Considering that system usage is the most influential factor in the utilization of HMIS, it is recommended that the hospital enhance training and mentoring programs for all staff to optimize their use of the system. This training should cover all operational aspects of HMIS, enabling users to fully utilize all available features.

Madani Regional General Hospital should conduct regular evaluations of IT service performance related to HMIS. Maintaining high-quality services, such as system responsiveness, availability of technical support, and bug fixes, will increase user satisfaction and support the hospital's operational efficiency.

It is hoped that future research can expand the study variables by including external factors that may influence HMIS utilization, such as organizational culture or top management support, to gain a more comprehensive perspective.

CONCLUSION

This study concludes that the use of HMIS at Madani Regional General Hospital, Palu, provides significant benefits in terms of the efficiency and effectiveness of hospital services. System usage is the most dominant factor influencing the utilization of HMIS, followed by user satisfaction, information quality, and service quality. It is recommended to continually improve the quality of system usage by providing ongoing training for hospital staff.

AUTHOR'S CONTRIBUTION STATEMENT

The author takes full responsibility for the integrity and accuracy of the data and content presented in the study.

CONFLICTS OF INTEREST

The author declares no conflicts of interest regarding the publication of the study Evaluation of the Utilization of the Hospital Management Information System (HMIS) at Madani Regional General Hospital, Palu. All aspects of the research, analysis, and conclusions were conducted impartially and without any influence from external parties that could affect the integrity or objectivity of the study.

SOURCE OF FUNDING STATEMENTS

The study titled Evaluation of the Utilization of the Hospital Management Information System (HMIS) at Madani Regional General Hospital, Palu did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors. The research was conducted independently without financial support that could influence the study's design, data collection, analysis, or publication.

ACKNOWLEDGMENTS

The author would like to express sincere gratitude to all the staff at Madani Regional General Hospital, Palu, for their support and cooperation throughout the research process. Special thanks to the hospital's IT department for their assistance in providing access to the necessary data and information regarding the Hospital Management Information System (HMIS).

The author also wishes to thank colleagues and mentors who provided valuable insights and feedback, contributing to the development of this study. Finally, appreciation is extended to all respondents who participated in the survey, without whom this research would not have been possible.

BIBLIOGRAPHY

1. Townley B. Foucault, power/knowledge, and its relevance for human resource management. In: Postmodern management theory. Routledge; 2019. p. 215–42.
2. Organization WH. Health policy and system support to optimize community health worker programmes for HIV, TB and malaria services: an evidence guide. 2020;
3. Rosenberg CE. The care of strangers: The rise of America's hospital system. Plunkett Lake Press; 2023.
4. Afni N, Rahayu S. Analysis of risk factors for death of COVID-19 patients at Undata Hospital Palu. J Public Heal Pharm. 2022;2(2):24–9.
5. Sudirman S, Yusuf H, Nurhidayati N, Ariandini M. Dental Service Quality and Patient Satisfaction: Insights From Anutapura General Hospital, Palu City. J Public Heal Pharm. 2024;4(1):56–63.
6. Hadi M, Rahmawati D, Purwati NH, Natashia D, Slametiningsih S, Hasanah I. The Quality of Competence Through Nursing Career Paths Among Indonesian Nurses in Hospital Settings. J Public Heal Pharm. 2024;4(2):160–71.
7. Rao TR, Mitra P, Bhatt R, Goswami A. The big data system, components, tools, and technologies: a survey. Knowl Inf Syst. 2019;60:1165–245.
8. Carlof C, Mulyanti D. Inovasi Teknologi Dalam Manajemen Kesehatan: Pemanfaatan Sistem Informasi Kesehatan Elektronik Di Rumah Sakit. J Manag Soc Sci. 2023;2(2):50–62.
9. Ghaffarzadeh SAM. Decision making based on management information system and decision support system. J Manag Res Anal. 2015;2(1):98–107.
10. Islam MR. Impacts of Management Information System on Decision Making of the Organization. Int J Bus Soc Sci Res. 2018;6:56–61.
11. Aslan M. Management Information Systems and Strategic Decision-Making. Mert, G, Şen, E, Yılmaz, O(Editörler) Data, Inf Knowl Manag. 2020;175–200.
12. Ada S, Ghaffarzadeh M. Decision making based on management information system and decision support system. TRANS Asian J Mark Manag Res. 2017;6(1):25–38.
13. ALMOTAWKEL MRNAA. Impact of Information Systems on Management Decision Making Strategy. DR. BABASAHEB AMBEDKAR MARATHWADA UNIVERSITY AURANGABAD; 2021.
14. Nurhandayani D. Management Information Systems for Decision Making in Vocational High School. In: Proceeding of International Conference on Research of Educational Administration and Management (ICREAM). 2021. p. 141–9.
15. Vantissha D, Azizah AH, Arifin S. Assessing Hospital Management Information Systems Success Using Human Organization and Technology Fit Model. Appl Inf Syst Manag. 2022;5(1):37–44.
16. Handayani PW, Hidayanto AN, Pinem AA, Sandhyaduhita PI, Budi I. Hospital information system user acceptance factors: User group perspectives. Informatics Heal Soc Care. 2018;43(1):84–107.
17. Shangala V. Effect of Hospital Management Information System Functionalities on the Performance of Health Care Institutions in Kenya: A Case of the Nairobi Hospital. Daystar University, School of Business and Economics.; 2020.
18. Barzegari S, Ghazisaeedi M, Jesmi AA, Gandomani HS, Hasani A. Hospital information system acceptance among the educational hospitals. J Nurs Midwifery Sci. 2020;7(3):186–93.
19. Gu D, Deng S, Zheng Q, Liang C, Wu J. Impacts of case-based health knowledge system in hospital management: The mediating role of group effectiveness. Inf Manag. 2019;56(8):103162.
20. RSUD Madani Palu. Profil RSUD Madani Palu, 2022. 2022.

21. Sebetci Ö. Enhancing end-user satisfaction through technology compatibility: An assessment on health information system. Heal Policy Technol. 2018;7(3):265–74.
22. Suryana A, Adikara F, Arrozi MF, Taufik AR. Model of improving the utilization of hospital management information system (SIMRS) based on human, organization technology-fit (HOT-FIT) method at rspi prof. Dr. Sulianti Saroso. J Public Heal Educ. 2022;1(2):103–16.
23. Arifin MA, Palutturi S, Thamrin Y, Leida I. Analysis of the Implementation of the Use of Hospital Management Information Systems (Simrs) in Hospitals Kindergarten IV Dr Sumantri Parepare. Pharmacogn J. 2024;16(4).
24. Munjirin M, Intisari AD, Aji B. Evaluation of the implementation of the hospital management information system (SIMRS) using the hot fit method: Systematic review. Sci Midwifery. 2024;12(3):1100–8.
25. Lumingkewas PH, Umboh A, Manampiring AE. SIMRS Analysis of Hospital Management Information System Implementation In Manembo-Nembo General Hospital, Bitung City. Gema Wiralodra. 2023;14(2):832–9.
26. Taidi R, Koton YP, Kadir L. Evaluation of the Implementation of Pharmaceutical Service Standards at the Toto Kabila Regional General Hospital, Bone Bolango Regency. Int J Heal Econ Soc Sci. 2023;5(4):546–54.
27. Achmadi A, Siregar AO. The effect of system quality, information quality and service quality on user satisfaction of e-learning system. Int J Bus Rev (The Jobs Rev. 2021;4(2):103–20.
28. Salam M, Farooq MS. Does sociability quality of web-based collaborative learning information system influence students' satisfaction and system usage? Int J Educ Technol High Educ. 2020;17(1):26.
29. Ithnin FZ, Hassan A, Ismail N. Relationship between Organizational and Information System Users' Satisfaction Variables: A Literature Review. Int J Acad Res Progress Educ Dev. 2023;12(4).
30. Li F, Lu H, Hou M, Cui K, Darbandi M. Customer satisfaction with bank services: The role of cloud services, security, e-learning and service quality. Technol Soc. 2021;64:101487.
31. Setiorini A, Natasia SR, Wiranti YT, Ramadhan DA. Evaluation of the application of hospital management information system (SIMRS) in RSUD Dr. Kanujoso Djatiwibowo using the HOT-Fit method. In: Journal of Physics: Conference Series. IOP Publishing; 2021. p. 12011.
32. Putri RM, Aisyah M. Implementing the HOT-Fit method in Hospital Management Information Systems Evaluation. In: Proceeding International Conference on Accounting and Finance. 2024. p. 25–36.
33. Aggelidis VP, Chatzoglou PD. Hospital information systems: Measuring end user computing satisfaction (EUCS). J Biomed Inform. 2012;45(3):566–79.
34. Zhang P, Li T, Yuan Z, Deng Z, Wang G, Wang D, et al. A possibilistic information fusion-based unsupervised feature selection method using information quality measures. IEEE Trans Fuzzy Syst. 2023;31(9):2975–88.
35. Yagci IA, Das S. Measuring design-level information quality in online reviews. Electron Commer Res Appl. 2018;30:102–10.
36. Mangindara M. The Effect of Human Organization Technology on Net benefit HMIS at Pelamonia Hospital Makassar. Miracle J Public Heal. 2023;6(2):87–101.
37. Farras A, Hustinawati H. Analyzing Hospital's Management Information System Based on Patient's and Employee's Perception Using EUCS Method. Indones J Multidiscip Sci. 2022;2(1).
38. Melgis SA, Aryani R, Lestari D, Abdulnazar MNA. Analyzing the Quality of Academic Information Systems on System Success. INTENSIF J Ilm Penelit dan Penerapan Teknol Sist Inf. 2024;8(1):140–61.
39. Musawir S, Kadir S, Tuloli TS. Evaluation of The Implementation of The Laboratory Information System Using the Hot Fit Method in Maxima Clinical Laboratory. Int J Med Sci Clin Res Stud. 2024;4(06):1034–42.
40. Hardiyanti C, Kusumadewi S, Kurniawan R. Evaluation of Success and Failure Factors for Maternal and Child Health in Integrated Healthcare Center Information Systems (IHCIS) Using the HOT-Fit Method. J Inf Syst Eng Bus Intell. 2024;10(1).
41. Ferdianti DL, Nasution SLR, Girsang E, Suryono T. Implementation Of Hospital Management Information System (SIMRS) At Royal Prima Hospital. Int J Heal Pharm. 2022;2(3):540–5.
42. Ladhari R. Developing e-service quality scales: A literature review. J Retail Consum Serv. 2010;17(6):464–77.
43. Martínez JA, Martínez L. Some insights on conceptualizing and measuring service quality. J Retail Consum Serv. 2010;17(1):29–42.
44. Ramya N, Kowsalya A, Dharanipriya K. Service quality and its dimensions. EPRA Int J Res Dev. 2019;4(2):38–41.

45. Maslar DA, Obaid K, Pukthuanthong K. US Coins Market: Historical Performance and Anomalies. Available SSRN 3492347. 2020;
46. Na HJ, Lee KC, Choi SU, Kim ST. Exploring CEO messages in sustainability management reports: Applying sentiment mining and sustainability balanced scorecard methods. Sustainability. 2020;12(2):590.
47. Hossain S, Peng Z. Auditors' Portfolio Risks, Audit Fees, and Audit Quality: A Study of SECs Mandatory Risk Factor Disclosures. In: ISAR. 2023.