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# Analyzing Information Systems to Manage Hospitals Through Application Using the HOT-FIT (Human Organisation Technology-FIT) Concept

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INDEXING

**Keywords:**
Operation hospital;
Sistem user;
Human interaction;
Sistem quality;
User satisfaction

ABSTRACT

The Hospital Management Information System (SIMRS) is a technology-based solution that facilitates seamless interaction and coordination among hospital departments. It enhances administrative workflows, reporting accuracy, and overall operational efficiency, while maintaining the integrity and reliability of the data collected. A quantitative research methodology was employed, with data collected through a meticulously designed questionnaire that incorporated closed-ended questions and a Likert scale. The data from 98 respondents were examined using PLS-SEM through SmartPLS 3 software. The analysis revealed several strategies to enhance the performance of SIMRS. User satisfaction and the state of the facilities made up 60.6% of the perceived benefits. System quality, information quality, service quality, and organizational structure collectively had a 61.5% effect on user satisfaction. System quality and user involvement had a 55% effect on the development of the system. System quality, user satisfaction, and leadership support were found to contribute 61.5% to user engagement. Hospital administrators are advised to adopt the HOT-FIT model as a strategic framework for ongoing performance evaluations and assessments. By consistently monitoring system quality, user satisfaction, and organizational backing, they can detect issues early and foster continuous improvements in digital healthcare services.

***Kata kunci:***
*Operasional rumah sakit;*
*Sistem user;*
*Interaksi manusia;*
*Kualitas sistem;*
*Kepuasan pengguna*

*Sistem Informasi Manajemen Rumah Sakit (SIMRS) adalah sistem berbasis jaringan yang secara efisien mengelola dan mengintegrasikan semua proses yang terlibat dalam operasional rumah sakit. Sistem ini membantu memperlancar koordinasi, pelaporan, dan proses administrasi untuk menjamin bahwa data dan informasi yang dikumpulkan akurat serta dapat diandalkan. Penelitian ini bertujuan untuk mengevaluasi efektivitas penerapan SIMRS di RSUD Daya Makassar dengan menggunakan pendekatan model Human-Organization-Technology Fit (HOT-Fit). Metode penelitian yang digunakan adalah pendekatan kuantitatif, dengan pengumpulan data melalui kuesioner tertutup yang dirancang secara sistematis dan menggunakan skala Likert. Responden penelitian adalah 98 orang yang mengisi kuesioner dan analisis data PLS-SEM menggunakan software SmartPLS 3. Hasil penelitian ini memberikan berbagai saran yang bertujuan untuk meningkatkan tingkat keberhasilan SIMRS di RSUD Daya Makassar. Mempertimbangkan konsekuensi argumen, dapat disimpulkan bahwa variabel kepuasan pengguna dan kondisi fasilitas pada manfaat adalah 60,6%. Variabel kualitas sistem, kualitas informasi, kualitas layanan, dan struktur organisasi terhadap kepuasan pengguna sebesar 61,5%. Variabel kualitas sistem dan pengguna sistem terhadap pengembangan sistem adalah 55%. Variabel kualitas sistem, kepuasan pengguna, dan dukungan pemimpin untuk pengguna sistem sebesar 61,5%. Manajemen disarankan menerapkan evaluasi berkala berbasis HOT-FIT untuk meningkatkan kualitas layanan digital rumah sakit.*

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## INTRODUCTION

The Industrial Revolution era had a profound influence on modern medical care (Crane-Kramer & Buckberry, 2023). With increasing industrialization and technological

advancements, quality services are prioritized, particularly the convenience of retrieving data and information (e Melo & Araújo, 2020). Hospitals are organizations that handle a significant amount of data and information. As a complex organization, hospitals must have accurate data and information to serve the public who come to the hospital for health care (Batko & Ślęzak, 2022). As an essential asset, hospital data and information must be managed optimally to support decision-making in hospital patients (Van De Wetering, 2018).

Hospitals use Sistem Management Information Rumah Sakit (SIMRS) to process patient data. SIMRS is an advanced computer network system that efficiently manages and combines all aspects of hospital services, including coordination, reporting, and administrative procedures. Its primary goal is to gather information with utmost precision and accuracy. It is a component of the hospital management technology (Permana et al., 2023). With this system, a hospital leader can take a policy appropriately and accurately based on information from the system used (Setiorini et al., 2021).

The SIMRS system requires strong support and is well-received by the hospital as an organization and its employees as human resources; hospital employees are crucial to the operation of SIMRS (Vantissha et al., 2022). Three fundamental components — technology, organization, and community — synergize to produce effectiveness and efficiency benefits that have a significant impact on healthcare organizations and healthcare service delivery (Bain et al., 2020).

Hospitals' performance in Indonesia is a serious concern due to the numerous complaints from the service user community (Daswati et al., 2021). This condition has decreased public trust in health services, particularly in local public hospitals. Rumah Sakit Umum Daerah (RSUD) must assume greater responsibility for its health services to enhance public confidence in hospital performance, particularly regarding community services. RSUD Daya Makassar is a hospital that currently uses the SIMRS Khanza system.

SIMRS Khanza is SIMKES Khanza (Sistem Informasi Kesehatan-Khanza), an advanced software designed to facilitate the management of hospitals, clinics, health centers, and private practices. Speciali is a cost-free health information system that can be effectively utilized in Indonesian healthcare facilities, contributing to sustainable development (YASKI, 2024). SIMKES Khanza offers comprehensive modules for various healthcare functions, including registration, medical records, outpatient services, emergency room services, inpatient services, laboratory support, radiology, and pharmacy services. The researcher will conduct a study titled, considering previous information, "Analysing information systems to manage hospitals through application using the HOT-FIT (Human Organisation Technology-FIT) concept at RSUD Daya Makassar."

Most previous studies that applied the HOT-Fit model to evaluate the success of SIMRS tended to focus on technological aspects, such as system quality, information, and services. However, the human and organizational aspects are often underpaid, so a comprehensive understanding of the social and organizational factors that affect the acceptance of hospital information systems is limited. Previous research has focused more on using descriptive analysis or simple regression. In contrast, this study employed Partial Least Squares-Structural Equation Modeling (PLS-SEM) to test the relationships between variables simultaneously and comprehensively. From this gap, this research presents a new conceptual model that incorporates system development variables and replaces the organizational environment with

facility conditions and leadership support, which has not been previously applied in regional hospitals in Indonesia.

HOT-Fit is a devised model for evaluating information systems (Yusof & Arifin, 2016). The HOT-Fit method is derived from the 2003 DeLone and McLean system effectiveness model and the Information Technology Organization Fit model (Agustini et al., 2020). This approach is used for categorizing analysis factors, dimensions, and measures. Additionally, the IT-Organization Fit system combines the conformity of analysis factors: users, organization, and technology. Organizational aspects complement the HOT-Fit model by ensuring that the technology supports the organization's goals. Regarding this situation, the organization must possess suitable technology and infrastructure to ensure that the technology effectively supports the organization. Additionally, the organization should ensure that its staff members are equipped to adjust to new technologies or changes through strategic management and leadership support, as well as a well-designed organizational structure.

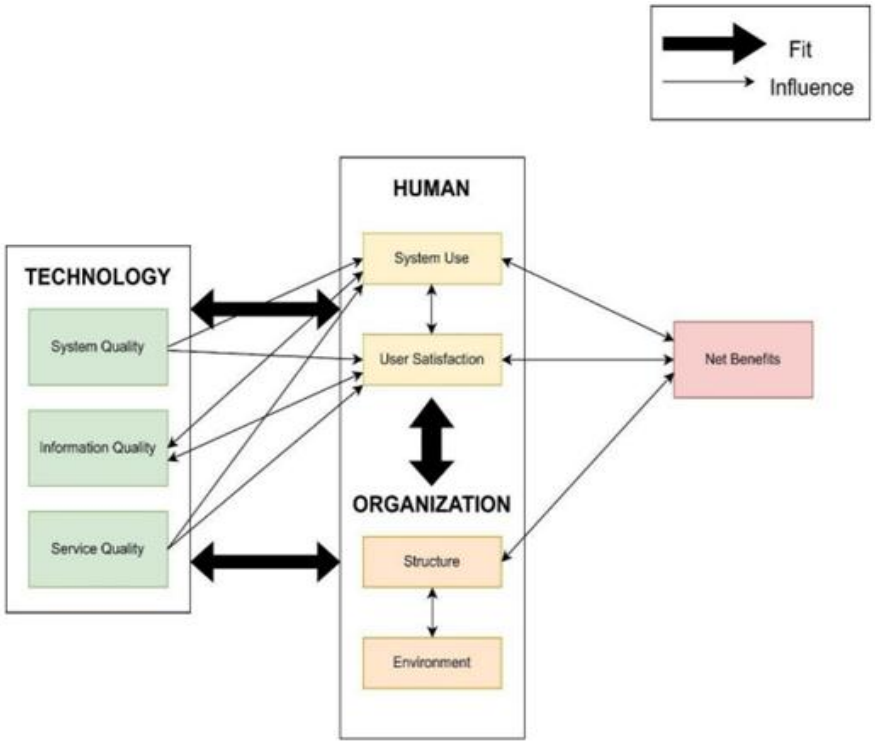


**Figure 1. Human Organization Technology Concept**
***Source:*** *(Tawar et al., 2022)*

Hot-fit models have three dimensions in every aspect, and the relationship between these aspects is presented in Figure 1. There are three technological aspects: System quality, information quality, and service quality. Within the realm of human interaction, two distinct aspects exist: the utilization of the system and the level of contentment experienced by the user. The two primary dimensions of an organization are its structure and environment. The net benefit is measured using these three dimensions. Additionally, research (Kawadha et al., 2020; Yanuarto et al., 2023) considers a human perspective, identifying three key dimensions: system development, system users, and user satisfaction. Their companies were using the HOT-Fit

model, The factors that influence system benefits can be categorized into four main areas: human factors (system usage and user satisfaction), organizational factors (organizational structure, facility conditions, and leadership support), technological factors (system quality, information quality, and service quality), and the overall suitability of these three factors in determining net benefit.

The study's conceptual framework is presented in Figure 2. This study utilized the HOT-Fit model, with several modifications, to assess the success of implementing the SIMRS system. One approach is to eliminate organizational environment variables because they are considered too broad and replace them with variables related to facility conditions and leadership support, such as those found in research conducted. Additionally, variables related to the human dimension, such as the development of systems, can be included.

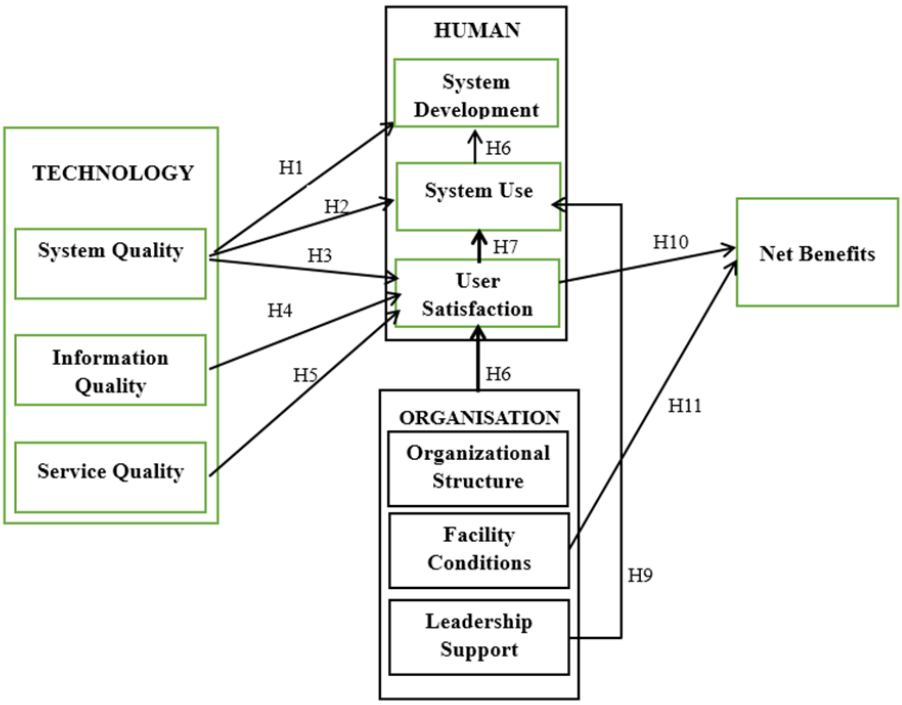


**Figure 2. Displays the Structure of Conceptual Frameworks**

The method used for the analysis technique in this study is to use PLS-SEM 3, which is done with two stages (Harahap et al., 2024):

1. The outer model, also known as the measurement model, is a mathematical representation that explains the relationship between variables, latent variables (or constructs), and indicators. The outer model is used to assess the validity and reliability of the model. The outer model consists of a validity test and a reality test. The validity test consists of convergent validity and discriminant validity. In comparison, reliability tests are carried out using Cronbach's alpha and composite reliability.
2. The structural model (inner model) in the Partial Least Squares (PLS) approach is used to examine the relationship between latent variables. The evaluation of this model was conducted through the analysis of the $R^2$ value for the endogenous variable, the path

coefficient, or the t-value of each inter-construct relationship to test the structural significance, as well as the parameters of the original sample to identify the characteristics and direction of the relationships between the variables.

## RESEARCH METHOD

### *Research Design*

The design of this study is a type of descriptive quantitative research that aims to evaluate the effectiveness of using the Hospital Management Information System (SIMRS) at Daya Makassar Hospital, utilizing the Human-Organization-Technology Fit (HOT-Fit) model. This study was designed to identify the relationship between the technological, human, and organizational dimensions that affect user satisfaction and the benefits respondents felt from using the system. A cross-sectional survey was employed to summarize the perceptions of SIMRS users at a single point in time, consistent with previous research that utilizes the HOT-Fit model in health information systems (Deharja et al., 2020; Vantissha et al., 2022). From this form of research, it can be concluded that the researcher can measure causal relationships through structural modeling techniques and assess the degree of conformity between system, human, and organizational factors (Yusof et al., 2024; Yusof & Arifin, 2016).

### *Population and Sampling*

The study included 98 respondents, all users of the SIMRS system at Daya Makassar Hospital, comprising administrative staff, healthcare workers, and staff whose duties required daily use of this application. With a relatively small number of respondents, the researcher employed a census technique, where the entire population became the sample for this study. All internal stakeholders of the hospital are well represented and help reduce sampling bias. The research was conducted between January and March 2024, with approval from the Faculty of Health Sciences (number 002/UMP/C.9/2023) and a permit (number 013/YM-RSUD-DAYA-MKS/XII/2023). This census method is commonly used in the study of health information systems when the group of respondents is small and sufficiently uniform (Ferdianti et al., 2022; Nasution & Chairunnisa, 2023).

### *Data Collection Instrument*

Data collection uses a questionnaire that is structured with a closed reporting method, so that it can be used to test the HOT-Fit model that has been prepared in such a way that its modifications can include variables such as system quality, information quality, service quality, system development, user satisfaction, facility conditions, and leadership support. The questionnaire compiled contains questions that use the Likert scale, with a range of 1 to 5. The numbers correspond to the following meanings: 1 = strongly disagree, 2 = disagree, 3 = neutral, 4 = agree, and 5 = strongly agree. To ensure that the questionnaire used has been tested on similar samples or has the same characteristics, thereby obtaining a questionnaire that yields valid and reliable results (Agustini et al., 2020; Memon, Salleh, et al., 2020; Memon, Ting, et al., 2020). The design of the questionnaire instrument was compiled based on indicators used in various previous research studies related to HOT-Fit, which positively and significantly capture the multidimensional nature of human, technological, and organizational interaction in hospital information systems (Setiorini et al., 2021; Yusof et al., 2024).

### *Data Analysis Procedure*

The data analysis in this study used the Structural Equation Modeling technique with Partial Least Squares (SEM-PLS). This analysis utilized SmartPLS 3 software as a tool. The stages of using this application include the Outer Model, the inner model, and the hypothesis test (Harahap et al., 2024; Khaddapi et al., 2022).

a. The outer model is employed using PLS Algorithm techniques, assessing the validity and reliability of the indicator through convergent and discriminant validity, Cronbach's Alpha test, and Composite Reliability (CR), ensuring that all loading factor values are greater than 0.7 and AVE values are greater than 0.5.
b. The inner model, employing bootstrapping as the technique, tests the hypothesis among latent variables using path coefficients, statistical T-values, and P-values, with significance at $p < 0.05$ (Memon et al., 2021).

By using these two models, this structural analysis will produce a strong model for analyzing a model that corresponds to several latent variables. The use of PLS-SEM is particularly significant in complex models and medium sample sizes, which aligns with the nature of health information system research (Meraji et al., 2022; Ramayah et al., 2017).

## RESULTS AND DISCUSSION

### *Research Results*

The study described the respondents' characteristics, with a focus on their gender and educational level. The identity of the respondents is described accordingly in Table 1**.**

**Table 1. Description of Respondent Overview**

| Category | | Frequency | % |
|---|---|---|---|
| Gender | Man | 66 | 67.34 |
| | Female | 32 | 32.66 |
| **Age** | 21-30 Years | 6 | 6.13 |
| | 31-40 Years | 51 | 52.04 |
| | 41-50 Years | 23 | 23.47 |
| | Over 50 years old | 18 | 18.36 |
| **Education** | SMA | 8 | 8.16 |
| | D3 | 20 | 20.42 |
| | S1 | 58 | 59.18 |
| | S2 | 12 | 12.24 |

***Source:*** *Research results (2024)*

According to the data presented in Table 1, the total number of male respondents was 66 (67.34%), and females comprised 32 (32.66%). The age group of 31–40 comprises 51 (52.04%), 21–30 comprises 6 (6.13%), and 41–50 comprises 18 (18.36%) people. In terms of education, the distribution is as follows: S1 (58, 59.18%), SMA 8 (8, 8.16%), D3 (20, 20.42%), and S2 (12, 12.24%) individuals.

### *Inferential Analysis*

The research findings obtained using the Partial Least Squares (PLS) application for conducting measurement model and outer model tests are determined by the outer loading value of each variable indicator. The determination values are valid if the outer loading is > 0.7 (Memon et al., 2021). Table 2 existing the results of the study found that the outer loading

value of all variable indicators of System Quality (SQ), Information Quality (IQ), Service Quality (SEQ), System Development (SD), System User (SU), User Satisfaction (US), Organizational Structure (OS), Facility Conditions (FC), Leader Support (LS) and Net Benefit (NB) was > 0.7.

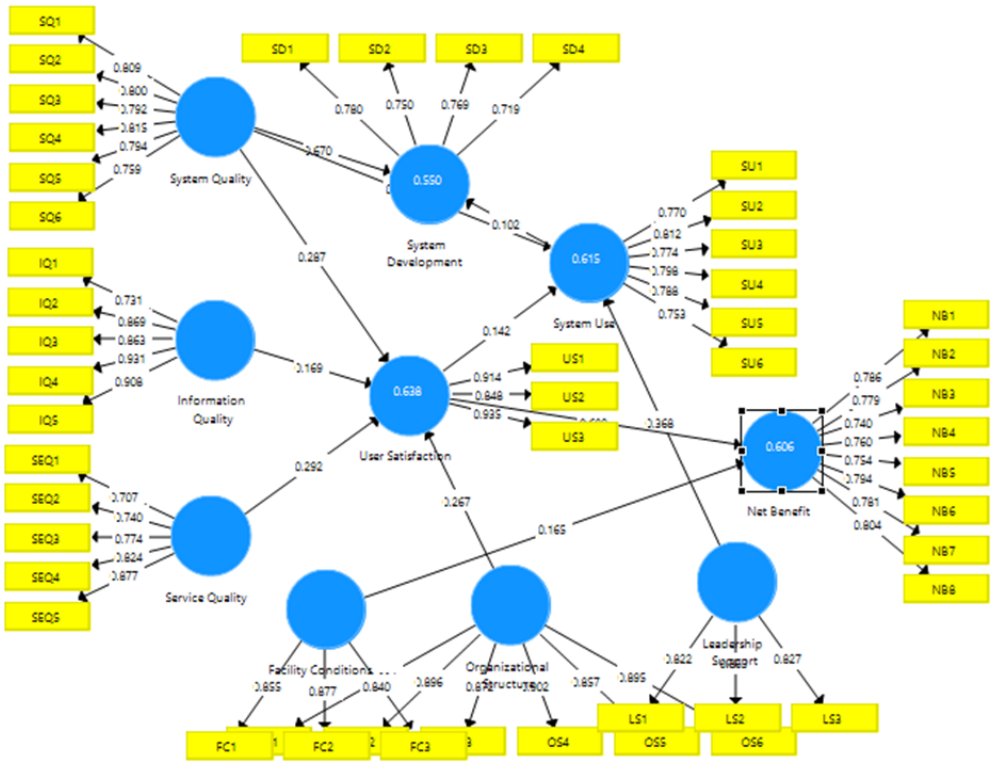


**Figure 3. Results PLS Outer Loading**

According to Figure 3, it is evident that all items of the construct have a loading factor value greater than 0.7. All variable items have met the convergent validity requirements to be considered valid. In addition, convergent validity is achieved when the average extracted variance (AVE) of the obtained value is greater than 0.5 (Ramayah et al., 2017). The following is described for each outer model value and the AVE value for each variable.

**Table 2. Test Measurement Model**

| Variables | Item | Loading factor | AVE |
|---|---|---|---|
| System Quality | SQ1 | 0.809 | 0.632 |
| | SQ2 | 0.800 | |
| | SQ3 | 0.792 | |
| | SQ4 | 0.815 | |
| | SQ5 | 0.794 | |
| | SQ6 | 0.759 | |
| Information Quality | IQ1 | 0.731 | 0.745 |
| | IQ2 | 0.869 | |
| | IQ3 | 0.863 | |
| | IQ4 | 0.931 | |
| | IQ5 | 0.908 | |

**Table 2. Test Measurement Model (cont')**

| Variables | Item | Loading factor | AVE |
|---|---|---|---|
| Service Quality | SEQ1 | 0.707 | 0.619 |
| | SEQ2 | 0.740 | |
| | SEQ3 | 0.774 | |
| | SEQ4 | 0.824 | |
| | SEQ5 | 0.877 | |
| System Development | SD1 | 0.780 | 0.570 |
| | SD2 | 0.750 | |
| | SD3 | 0.769 | |
| | SD4 | 0.719 | |
| System User | SU1 | 0.770 | 0.613 |
| | SU2 | 0.812 | |
| | SU3 | 0.774 | |
| | SU4 | 0.798 | |
| | SU5 | 0.788 | |
| | SU6 | 0.753 | |
| User Satisfaction | US1 | 0.914 | 0.809 |
| | US2 | 0.848 | |
| | US3 | 0.935 | |
| Organizational Structure | OS1 | 0.894 | 0.786 |
| | OS2 | 0.896 | |
| | OS3 | 0.872 | |
| | OS4 | 0.902 | |
| | OS5 | 0.857 | |
| | OS6 | 0.896 | |
| Facility Condition | FC1 | 0.855 | 0.735 |
| | FC2 | 0.877 | |
| | FC3 | 0.840 | |
| Leadership Support | LS1 | 0.822 | 0.702 |
| | LS2 | 0.863 | |
| | LS3 | 0.827 | |
| Net Benefit | NB1 | 0.786 | 0.601 |
| | NB2 | 0.779 | |
| | NB3 | 0.740 | |
| | NB4 | 0.760 | |
| | NB5 | 0.754 | |
| | NB6 | 0.794 | |
| | NB7 | 0.781 | |
| | NB8 | 0.804 | |

Table 2 shows that the outer loading value of each indicator is more significant than 0.7, implying that all indicators are accurate and reliable. In addition, for the AVE value, the result of each variable's AVE value is > 0.5, which means that all variables can achieve convergent validity. In addition to assessing convergent validity, the researchers also conducted a discriminant validity analysis using the AVE as a more substantial criterion for the root value. Table 3 shows that the AVE root value of each variable is greater than the AVE root in terms of its correlation with other variables, thereby meeting the validity discrimination criterion. Model testing is reliable if Cronbach's Alpha value is greater than 0.6 and composite reliability (CR) is higher than 0.07. The results showed that Cronbach's Alpha values ranged from 0.750 to 0.946, and the CR values of each construct were in the range of 0.841 to 0.956, indicating

that reliability could be achieved. Based on Table 4, when conducting reliability testing for the variable in question, all variables meet the requirements in terms of Cronbach's Alpha and Composite Reliability.

**Table 3. Discriminant Validity**

| Variables | FC | IQ | LS | NB | OS | SEQ | SD | SQ | SU | US |
|---|---|---|---|---|---|---|---|---|---|---|
| FC | 0.857 | | | | | | | | | |
| IQ | 0.378 | 0.863 | | | | | | | | |
| LS | 0.491 | 0.424 | 0.838 | | | | | | | |
| NB | 0.510 | 0.411 | 0.553 | 0.775 | | | | | | |
| OS | 0.443 | 0.484 | 0.564 | 0.755 | 0.887 | | | | | |
| SEQ | 0.412 | 0.230 | 0.455 | 0.715 | 0.616 | 0.787 | | | | |
| SD | 0.394 | 0.278 | 0.319 | 0.589 | 0.418 | 0.392 | 0.755 | | | |
| SQ | 0.483 | 0.284 | 0.370 | 0.755 | 0.513 | 0.605 | 0.738 | 0.795 | | |
| SU | 0.636 | 0.345 | 0.625 | 0.782 | 0.529 | 0.670 | 0.547 | 0.664 | 0.783 | |
| US | 0.506 | 0.447 | 0.670 | 0.765 | 0.676 | 0.670 | 0.454 | 0.649 | 0.672 | 0.900 |

Description: NB= Net Benefit, LS= Leader Support, US= User Satisfaction, FC= Facility Condition, IQ= Information Quality, SEQ= Service Quality, SQ= System Quality, SD= System Development, SU= System User, OS= Organizational Structure

**Table 4. Construct Reliability Test**

| Variables | Cronbach's Alpha | Reliability Composite |
|---|---|---|
| FC | 0.821 | 0.893 |
| IQ | 0.916 | 0.936 |
| LS | 0.788 | 0.876 |
| NB | 0.905 | 0.923 |
| OS | 0.946 | 0.957 |
| SEQ | 0.844 | 0.890 |
| SD | 0.750 | 0.841 |
| SQ | 0.884 | 0.911 |
| SU | 0.874 | 0.905 |
| US | 0.882 | 0.927 |

**Table 5. R-Square**

| Variable | R Square |
|---|---|
| Net Benefit | 0.606 |
| System Development | 0.550 |
| System User | 0.615 |
| User Satisfaction | 0.638 |

The data presented in Table 5 display the R-Square value, which indicates the relationship between the variable of user satisfaction and other factors. The facility conditions benefit is 60.6%. The variables of system quality, information quality, service quality, and organizational structure contributed to user satisfaction, accounting for 61.5%. The variable of system quality and system users in system development is 55%. The variables of system quality, user satisfaction, and leader support for system users amounted to 61.5%.

***Hypothesis Testing***

The inner or structural model is evaluated to ascertain the hypothesized relationship between constructs in the study. The R-square value is a useful metric for evaluating the

influence of the independent latent variable on the dependent latent variable and determining if it has a significant effect. The results of path bootstrapping, specifically the value of the inner model for this study, are presented in Figure 4.

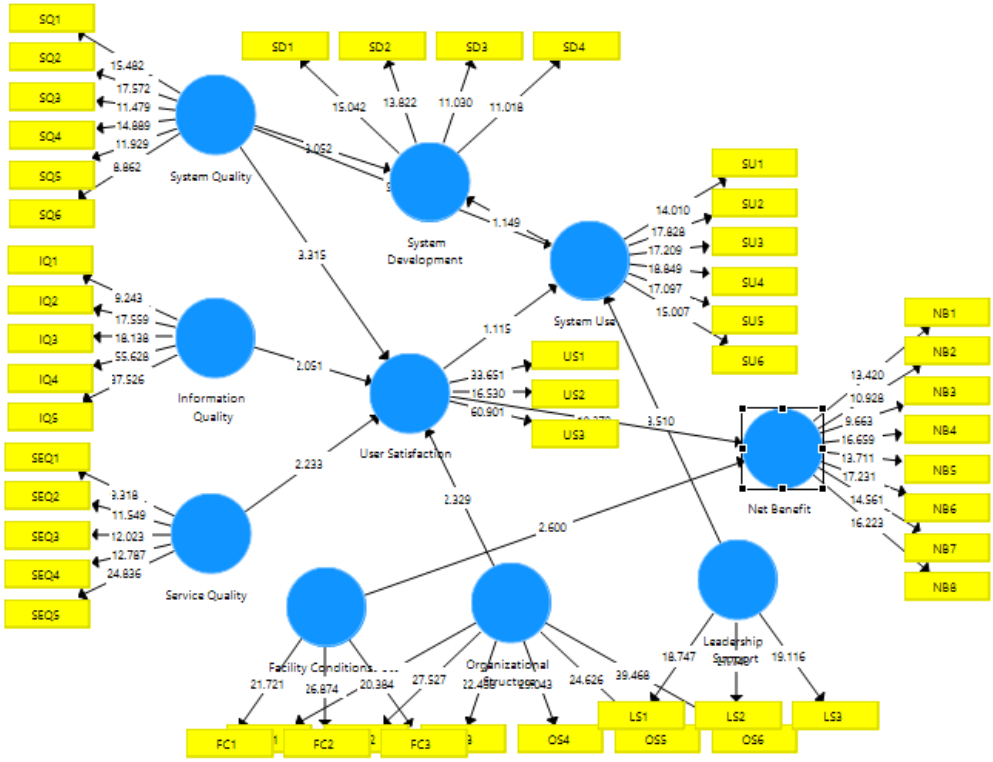


**Figure 4. Bootstrapping Diagram Path**

Hypothesis testing using SEM applications is shown in Table 6. The β value in each variable shows a positive relationship. The value of the T-value is used to determine the relationship between variables. The P-value shows the significance level between variables; if the P-value is < 0.05 (Memon, Ting, et al., 2020). The relationship between variables is significant.

**Table 6. Hypothesis Testing**

| Hipotesis | Relationship | β | T Statistics | P Value | Information |
|---|---|---|---|---|---|
| $H_1$ | SQ→SD | 0.670 | 8.052 | 0.000 | Approved |
| $H_2$ | SQ→SU | 0.435 | 5.511 | 0.000 | Approved |
| $H_3$ | SQ→US | 0.287 | 3.315 | 0.001 | Approved |
| $H_4$ | IQ→US | 0.169 | 2.051 | 0.041 | Approved |
| $H_5$ | SEQ→US | 0.292 | 2.233 | 0.026 | Approved |
| $H_6$ | SU→SD | 0.102 | 1.149 | 0.251 | Declined |
| $H_7$ | US→SU | 0.142 | 1.115 | 0.265 | Declined |
| $H_8$ | OS→US | 0.267 | 2.329 | 0.020 | Approved |
| $H_9$ | LS→SU | 0.368 | 3.510 | 0.000 | Approved |
| $H_{10}$ | US→NB | 0.682 | 10.372 | 0.000 | Approved |
| $H_{11}$ | FC→NB | 0.165 | 2.600 | 0.010 | Approved |

***Source:*** *Research results in SmartPLS*

## Discussion

The results of the data analysis, based on the findings of this study, were then examined by the researcher and statistically evaluated. Based on the results of this analysis, the researcher examines the relevant and interrelated theories that are supported by the findings. This basis serves as a guide to analyze all the data obtained during the research process. This theoretical interpretation is indispensable for comparing empirical evidence with the conceptual framework prepared by the researcher, allowing this research to provide meaningful contributions to the development of hospital systems. By juxtaposing the findings with the Human Organization Technology Fit (HOT-Fit) model, this study examines in depth how the dimensions of technology, people, and organizations interact to influence the effectiveness of the systems being used. Furthermore, the discussion focused on previous research to contextualize the results, identify consistency as well as differences, and reveal gaps in the literature. This approach not only strengthens the validity of the conclusions but also provides the basis for future research directions and practical implications in the management of hospital information systems.

### *Effect of System Quality on System Development*

They applied relevant theories to analyze and interpret the findings, thereby linking the field observations with their conceptual framework. It, therefore, generates insight into how the system could be meaningfully improved. It analyzed factors of technology, people, and organizational dimensions that worked together through the HOT-Fit model and influenced effectiveness toward systems. The discussion compared these findings with earlier studies to highlight similarities, differences, and gaps in existing research. This approach not only makes the conclusion more robust but also guides future studies and practical interventions in hospital information system management.

The researchers tied the results to relevant theories and linked the analysis outcome to their conceptual framework, thereby drawing valid conclusions for system improvement (Yusof et al., 2024). They utilized the HOT-Fit model to assess the interactions and influences of technological, human, and organizational elements on achieving effective systems. The results were compared with those of previous studies to identify trends, differences, and gaps in the existing literature. This comparison validated the results and provided explicit direction for future research, as well as potential real-world improvements in hospital information system management.

The researchers tied the results to relevant theories and linked the analysis outcome to their conceptual framework, thereby drawing valid conclusions for system improvement. They utilized the HOT-Fit model to assess the interactions and influences of technological, human, and organizational elements on achieving effective systems. In a study conducted at RSIA Asih Balikpapan, a private hospital, Marisa Putri & Aisyah (2024), the results were compared with previous studies to look for trends, differences, and gaps in the literature; therefore, this comparison validated results and outlined explicitly that future research has a direction together with real applied improvement toward hospital information system management.

Wujani et al. (2024) explained that by using the HOT-Fit framework with quantitative research techniques at Dharma Kerti Hospital in Bali. The results revealed that the system comprises four main components: human, organizational, technological, and hygiene benefits, all of which are positively assessed. Apart from this, it was noted that there were problems

concerning system performance, including slow response times and frequent errors. The paper also highlights another weakness of public hospitals, whereby regular evaluations and infrastructure upgrades that are supposed to be carried out are often postponed due to bureaucratic hurdles accompanied by inadequate funding.

According to (Anwar et al., 2023), private hospitals will focus more on improving technology and digital-based services by collaborating in the long term with parties that ensure the system runs smoothly. Meanwhile, public hospitals tend to rely on decisions made by stakeholders, namely government officials, to ensure accurate use of the system, employ skilled staff, and maintain good facility conditions to keep their systems running properly. The results of this study also suggest that providing targeted training and improving infrastructure are effective ways to enhance the performance of SIMRS in the hospitals where the research is conducted.

Using a system with the HOT-Fit model can be useful in evaluating hospital information systems, such as SIMRS. A model like this previously had to be adjusted to suit the specific conditions and characteristics of each hospital. Privately owned hospitals tend to benefit from flexible structures and are more likely to adopt new technologies quickly. On the other hand, regional public hospitals that are hierarchically managed by the Regional Government, whether at the provincial, district, or city level, often require stronger organizational support and consistent investment in infrastructure and human resources. The results suggest that this comparison offers valuable insights for policymakers, particularly hospital directors, in making informed decisions to enhance health information systems in various healthcare settings in Indonesia.

***Effect of System Quality on System Users***

The findings from the SEM analysis of the influence of system quality variables on system users at Daya Makassar Hospital yielded an original value of $\beta = 0.435$ and a statistical value of $T = 5.511$, which exceeds the table value of 1.980 T and a P-value of 0.000, all of which are significant at $p < 0.05$. These results indicated that system quality variables have a positive and significant impact on system users at RSUD Daya Makassar. The study's results align with the research (Meraji et al., 2022), which states that the quality of the system affects its users. System quality can be defined as the extent to which a system meets the needs of its users. Similarly, service quality refers to a system's ability to deliver products and services that meet the needs and expectations of its users.

The results of this study reinforce the findings of a previous study at RSKIA Sadewa, Yogyakarta, where *system quality* was also shown to significantly affect EMR user satisfaction ($\beta = 0.213$; $p < 0.05$), although the effect size was lower. The study also revealed that the joint contribution of system quality and information quality to user satisfaction accounted for 81.1% of the variance ($R^2 = 0.811$) (Putri & Sutrisno, 2024). The results showed that the use of EMR/SIMRS in regional hospitals remains dependent on the technical quality of the system, despite variations in context and resources.

In addition, other studies, such as "Evaluating User Satisfaction with Hospital Management Information Systems: A PIECES Framework Analysis at Wates General Hospital," also demonstrate that system performance is a dominant factor affecting IMRS user satisfaction, alongside control and security elements (Ferdiana & Pramono, 2024). The methodological differences (PIECES framework vs HOT-Fit) make the results of this study

emphatically specific to *the variable system users*, not only user satisfaction, thus expanding the understanding that *system quality* not only satisfies user perception, but also strengthens the active use of the system by users. Thus, this study presents novelty because it measures the direct effect of system quality on system users at Daya Makassar Hospital and obtains a relatively strong effect measure compared to previous research. The findings also stated that the quality of the system is not just a matter of features or appearance, but also reliability, stability, and real technical support, which seem to be less pronounced at some other area hospitals.

***The Effect of System Quality on User Satisfaction***

From the results of data analysis of the influence between System Quality and user satisfaction at RSUD Daya Makassar, with an original β value of 0.287 and T statistical value of 3.315 > 1.980 T table and P value of 0.001 < 0.05. These results indicated that system quality variables have a positive and significant impact on user satisfaction at RSUD Daya Makassar. The results conformed to the research findings (Lestariningsih et al., 2020; Marisa Putri & Aisyah, 2024) that the system's quality affects user satisfaction. Improvements to the information system and its stability by service providers will enhance system utilization and result in user satisfaction, specifically among patients of RSUD Daya Makassar.

In a previous study conducted by Kosasih et al. (2023) at a public hospital owned by the Bogor local government, namely the Goenawan Partowidigdo Lung Special Hospital, the results of the study found that organizational structure and environment have a positive influence on net benefits, while, on the other hand, the quality of information and user satisfaction were moderate. The results showed the importance of training, accessibility, and leadership support in improving system performance. This situation often happens in public institutions because bureaucratic flows are a factor that slows down the adoption of technology.

Wardhana et al. (2025) evaluated the HMIS work system in depth at RSIGM Sultan Agung Semarang, a privately owned hospital in Semarang. The research technique used was a mixed-methods approach. The results showed that technology and organizational factors have a positive and significant effect on the net benefit. In contrast, the human resource factor has a negative impact due to the numerous obstacles that hinder the system's smooth operation. Private hospitals will prioritize system efficiency and strategic adjustments, but still face obstacles in engaging and training human resources who use the system to keep it running as it should. In addition, Fajri et al. (2025) conducted a study by evaluating the implementation of electronic medical records at Sawerigading Palopo Hospital using the HOT-FIT model. The four dimensions — human, organizational, technological, and net benefit — have interrelated relationships with each other due to the limited ability of human resources in digital information technology.

The results underlined the need for contextual adaptation of the HOT-FIT model. While private hospitals benefit from faster decision-making and technology investments, regional public hospitals need stronger organizational support, leadership engagement, and capacity-building efforts to ensure the successful implementation of SIMRS. The results at Daya Makassar Hospital will make a significant contribution to evaluating the HOT-FIT model in the hospital environment, and it is expected to provide empirical evidence supporting the need for a tailored strategy in evaluating health information systems.

***The Impact of Information Quality on User Satisfaction***

The data analysis results indicate a correlation between information quality and user satisfaction at RSUD Daya Makassar, with an original β value of 0.169 and a T-statistic value of 2.051 > 1.980 T table and a P value of 0.041 < 0.05. These results showed that the variable of information quality has a positive and significant effect on user satisfaction at RSUD Daya Makassar. The results aligned with the research findings (Fauzan & Noviandi, 2020; Novita et al., 2022. The quality of information generated from the SIMS system can satisfy system users with information that is convenient for them in their daily tasks, serving patients at RSUD Daya Makassar.

In this study, *the information quality* variable was proven to have a positive and significant influence on *user satisfaction* at Daya Makassar Hospital (β = 0.169; T = 2.051; p < 0.05). Although the effect is more moderate than that of system quality, information quality remains a significant factor in determining SIMRS user satisfaction. The study at RSKIA Sadewa, Yogyakarta, supports similar findings: their *information quality* also has a significant positive effect on EMR user satisfaction (β = 0.199; p < 0.05), and together with *system quality* explains more than 80% variation in user satisfaction ($R^2$ = 0.811) (Putri & Sutrisno, 2024).

In addition, research at Royal Prima General Hospital found that *information quality* is one of three variables (along with system quality and service quality) that positively and significantly affect the satisfaction of Management Information System users. Although the study employed multiple linear regression methods and local samples, the results consistently showed that accurate, relevant, timely, and easily accessible data strengthened information system user satisfaction (Novita et al., 2022).

***The Effect of Service Quality on User Satisfaction***

From the results of data analysis of the effect of service quality on user satisfaction at Daya Makassar Hospital, with an original β value of 0.292 and a T statistic value of 2.233 > 1.980 T table and a P value of 0.026 < 0.05. These results indicated that the service quality variable has a positive and significant impact on user satisfaction at RSUD Daya Makassar. Deharja et al. (2020) stated that service quality affects user satisfaction. The quality of services that RSUD Daya Makassar provides satisfies respondents, enabling them to perform their work effectively. Quality of service describes how a system provider is reliable, responsible, and empathetic.

The service quality variable has a positive and significant influence on user satisfaction at Daya Makassar Hospital (β = 0.292; T = 2.233; p < 0.05). This finding aligns with the results of a study at Raja Ahmad Thabib Hospital in the Riau Islands, which revealed that service quality significantly affects inpatient satisfaction, serving as an intervening variable between facilities/competencies and patient satisfaction. From the results, a high value of satisfaction in service quality, specifically in responsiveness, reliability, and empathy factors, can be a determining factor in user satisfaction (Wardeni et al., 2024).

Furthermore, a study at Balimed Hospital Denpasar, which evaluated the relationship between information quality and user satisfaction, also noted that the service quality aspect is closely related to SIMRS/HMIS user satisfaction, particularly in terms of service reliability, timeliness, and system technical support capabilities. Although the study's main focus was information quality, service quality emerged as an important supporting factor that reinforced the effect of information quality on satisfaction (Vierda et al., 2024).

Thus, the results of this study reinforce the global consistency that *service quality* is an important dimension in the HOT-Fit model and the success model of health information systems: reliable, responsive, empathetic, and user satisfaction-oriented service aspects are not just complementary, but components that are empirically proven to improve user satisfaction in the context of hospitals in Indonesia and other regions.

***The Influence of System Users on System Development***

From the results of data analysis of the influence of system users on system development at RSUD Daya Makassar, with an original β value of 0.102 and T statistical value of 1.149 < 1.980 T table and P value of 0.251 > 0.05. These results show that system user variables have a positive but insignificant effect on system development. The results showed that the use of the HMRS system at RSUD Daya Makassar increased the development of the existing system; however, it was not significantly able to enhance the current system that had been in use. These results are inconsistent with the findings of the research conducted by Sari et al. (2020) with the research title "Human-Organization-Technology (HOT) analysis on the primary care application users", where the results obtained show that all aspects that support the use of technology are interrelated and have a positive and significant impact.

Statistical inverse analysis with SEM revealed that the system users variable had a positive, albeit non-statistically significant, effect on system development at Daya Makassar Hospital (β = 0.102; T = 1.149; p = 0.251). Even if the system's use by users increases, it is not yet strong enough to drive further development of the system, whether in terms of features, updates, or system expansion. Sari et al. (2020) revealed that all aspects of technology users (including *use/system users*) are interrelated and significantly affect system development in the use of primary service applications, where *system users* are an important part of the system development feedback loop.

Other research studies by taking titles "Factors Influencing Clinicians' Use of Hospital Information Systems for Infection Prevention and Control: Cross-Sectional Study Based on the Extended DeLone & McLean Model" (Zheng et al., 2023) found that *user satisfaction* and *use intention* have a significant influence on *system usage*, but *the system users* variable (if system usage is active or participation in system development) is not always directly measured as a predictor of *system development*. The analysis results found that, although system use is high, user involvement in the system's development or adaptation is often limited by technical support and institutional policies. In addition, the research "Critical success factors of hospital management information system (HMIS) implementation in developing countries" by (Ariwibowo & Ayuningtyas, 2019) emphasizes that user involvement in the design, training, and operational feedback phases is one of the key success factors in system development. However, the study also found that involvement, even if it existed, was not directly measured, as system users influenced system development in its statistical model; the effect emerged through the mediation of other variables, such as managerial support and organizational readiness.

***The Effect of User Satisfaction on The System User***

Based on the findings of the data analysis on the relationship between user satisfaction and system users at RSUD Daya Makassar, with an original β value of 0.142 and a T-statistic value of 1.115 < 1.980 T table and a P value of 0.265 > 0.05. These results indicated that the user satisfaction variable does not have a positive and significant effect on system users at

RSUD Daya Makassar. This study obtained different results from the previous research conducted at Langsa General Hospital, Aceh, by Nasution & Chairunnisa (2023), which stated that user satisfaction significantly affects system users. User satisfaction with obtaining information is reasonable. Still, there needs to be an increase in system users through training, which does impact user satisfaction.

A recent study from Madani Regional General Hospital, Palu, supports the finding that user satisfaction is generally positively related to the utilization of hospital information systems. Additionally, system usage, information quality, and service quality are significantly predictive of the net benefit of HMIS. However, the user satisfaction variable was not the most dominant in the model terhadap system usage emerged as a stronger predictor (Rifial et al., 2024).

Thus, there is a relationship where user satisfaction has not been the main driver of system usage. It is possible that other factors, such as training, user motivation, ease of use, or supporting facilities, may be more influential on active use. It opens up a relevant gap: further studies need to explore moderator variables or mediating variables such as intention to use, technological anxiety, or user training in order to understand the conditions under which user satisfaction can be translated into real use of the system.

***The Effect of Organizational Structure on User Satisfaction***

The results of the statistical analysis revealed that the organizational structure variable had a positive and significant influence on user satisfaction at Daya Makassar Hospital ($\beta = 0.267$; $t = 2.329$; $p < 0.05$). A good organizational structure that incorporates aspects of formalization, role distribution, communication between units, and managerial support will enhance how users perceive the benefits and comfort in using SIMRS. Ferdianti et al. (2022) also demonstrated that organizational structure impacts user satisfaction, particularly in terms of how task management and institutional support are provided.

Other research with the title, "*Organizational Effect on the Implementation of SIMRS (Hospital Management Information Systems) in Hospital: A Systematic Review*" by Windari et al. (2023) found that organizational aspects, including organizational structure and organizational environment, are important factors that can improve the success of SIMRS implementation in hospitals in Indonesia. The systematic research concluded that hospitals with a clear organizational structure and management support are more likely to be successful in implementing hospital information systems. The results of other studies focus more on the implementation of the management with the title *"Success Factors for Implementing Hospital Management Information Systems (SIMRS)"* (Syafira et al., 2024) mentioned that *organizational structure* emerged as one of several critical factors in the literature for the success of SIMRS, along with service quality, user satisfaction, and technological/managerial support. The study found that hospitals with supportive organizational structures (characterized by a division of duties, formal authority, and structured communication between units) had higher rates of SIMRS use and adoption.

The results of the research at Daya Makassar Hospital, which showed the positive influence of organizational structure on user satisfaction, align with the evidence from Tun & Madanian's (2023) research, which identifies the organizational aspect as the primary determinant of the successful implementation of the health information system. This study examined Clinical Information Systems (CIS), emphasizing that organizational factors, including governance, authority structures, and clinical coordination mechanisms, often

facilitate adoption and user satisfaction when well-structured and supported by clear internal policies.

In addition, recent studies on data quality and information governance confirm that organizational structures that provide clear roles and responsibilities for data management (data stewards, IT units, and standard procedures) improve the accuracy, timeliness, and reliability of dimensional information that directly affects the satisfaction of health information systems users (Ghalavand et al., 2024). These findings are relevant to the condition of Daya Makassar Hospital, where improvements in organizational structure can strengthen information workflows and increase user confidence in SIMRS output. Evaluative studies of the implementation and utilization of HIS also noted that organizational support (formal structure, managerial commitment, and oversight mechanisms) correlates with utilization rates and user satisfaction in hospitals in developing countries. However, the effects may vary depending on organizational readiness and human resource capacity (Addo & Agyepong, 2024). It strengthens the practical implications for improving the organizational structure at Daya Makassar Hospital (clarification of roles, communication channels, and managerial support) with a real opportunity to increase SIMRS user satisfaction and ultimately the net benefits of the system.

***Effect of Lead Support on System Users***

From the results of data analysis of the influence of leadership support for system users at RSUD Daya Makassar, with an original β value of 0.368 and a T statistical value of 3.510 > 1.980 t table, and a P value of 0.000 < 0.05. These results show that the variable of leadership support has a positive and significant effect on system users at RSUD Daya Makassar. The study's results conform to the research (Ferdianti et al., 2022), which states that leadership support affects system users. The endorsement from the management of RSUD Daya Makassar can expedite the implementation and utilization of the SIMRS system.

The results showed that *leadership support* has a positive and significant effect on *system users* at Daya Makassar Hospital. These findings are consistent with studies (Zhao et al., 2024, where leadership support is defined as the provision of resources, support for the work environment, and facilitation of decision-making, which has a strong influence on the job satisfaction of health workers. Although the focus is not directly on system users, this aspect of leadership creates a supportive environment that enables the effective use of information systems in hospitals.

Research conducted by Alanaz (2022) with a focus on Leadership in Health Services, with the title *"Digital Leadership: Attributes of Modern Healthcare Leaders,"* Strengthening the relationship between digital capability and patient-centered care, with *leadership support* for digital adoption as one of the main predictors. Although the focus is slightly different (focusing on the quality of patient service), the study found that hospital leadership that supports digital adoption and provides ICT training has a positive effect on the quality of patient services. When leadership supports SIMRS in real terms, system users at Daya Makassar Hospital will be encouraged to use the system effectively.

***The Effect of User Satisfaction on Net Benefits***

From the results of data analysis of the effect of user satisfaction and benefits at RSUD Daya Makassar, with an original β value of 0.682 and T statistical value of 10.372 > 1.980 T table and P value of 0.000 < 0.05. The variable of user satisfaction has a positive and significant

effect on the benefits. (Singh & Wanasida, 2023) indicated that user satisfaction has a favorable and substantial influence on benefits. As user satisfaction increases, so do the benefits obtained. The SIMRS system is designed to help users efficiently and effectively complete their daily tasks, thereby enhancing their productivity and enabling them to achieve their objectives.

These results indicate that user satisfaction has a positive and significant impact on the benefits at Daya Makassar Hospital ($\beta = 0.682$; $T = 10.372$; $p < 0.05$). The higher the level of user satisfaction with SIMRS, the greater the benefits users will experience in terms of work efficiency, ease of data access, and increased productivity. Kurniawan & Arini (2024) explained the implementation of EMR in private hospitals in Indonesia, suggesting that user satisfaction contributes significantly to the perception of the effectiveness and benefits of the system for health services and the performance of service professionals.

In global research, the study "The Impact of Digital Hospitals on Patient and Clinician Outcomes" (Canfell et al., 2024) highlights that hospitals with well-received digital systems gain clear benefits, including reduced administrative time, increased clinical collaboration, and increased job satisfaction among healthcare workers. Although the focus is broader (including the impact on patients), the study shows that system user satisfaction is one of the important pathways to the benefits of digital systems in hospitals. Thus, the results are in accordance with the statement that user satisfaction is not merely a subjective indicator, but rather one of the primary drivers of *the benefits* of hospital information systems. This new contribution lies in the relatively strong effect size ($\beta = 0.682$) and the location of the research in regional hospitals with the SIMRS system, which adds to the evidence that, at various hospital scales (including non-large hospitals), user satisfaction remains the primary link to the real benefits provided by digital systems.

***Facility Conditions to Net Benefit***

Based on the data analysis, the relationship between the condition of facilities and the resulting benefits has been examined at RSUD Daya Makassar with an original $\beta$ value of 0.165 and T statistical value of 2,600 > 1,980 T table and P value of 0,000 < 0.05. These results show that the variable condition of the facility has a positive and significant effect on the benefits. Joseph et al. (2022) stated that the condition of the facility affects the benefits. The condition of facilities that support the implementation of the SIMRS system at RSUD Daya Makassar can provide benefits that users of the SIMRS system can feel.

The results of the research at Daya Makassar Hospital confirmed that the condition of the facilities (IT infrastructure, hardware, network, and technical maintenance) enhances the benefits felt by SIMRS users, such as increased data access reliability and improved work efficiency. The results of this study are in line with an evaluative study that emphasizes that the implementation and utilization of Health Information Systems will only produce real benefits if supported by the readiness of infrastructure and operational facilities, a comprehensive evaluation study of HIS implementation states that technical facilities are one of the main determinants of the successful implementation and realization of system benefits (Addo & Agyepong, 2024).

In addition, research on the variables of hospital digital transformation states that infrastructure capabilities (network infrastructure, system interoperability, and server/cloud capabilities) moderate the impact of technology on clinical and operational outcomes, meaning that without adequate facility conditions, the potential digital benefits will not be fully realized.

The study that discusses "Digital Hospitals" also found empirical evidence that hospitals with digital facilities are more likely to benefit from reduced administrative time, increased clinical collaboration, and staff productivity, which supports your argument about the role of facilities in generating *net benefits* (Canfell et al., 2024). More broadly, an integrative review of the Health Informatics literature emphasizes that investment in facilities and digital readiness (including technical training, IT support, and maintenance policies) is a prerequisite for HIS benefits to be sustainable. By comparing the findings of this study with relevant studies by Javaid et al. (2024), a practical recommendation emerged: focus on improving facilities (hardware upgrades, network, backup & maintenance) along with the capacity building program so that the benefits of SIMRS at Daya Makassar Hospital can increase faster and more sustainably.

***Implication Managerial***

The results of this research, which can serve as a reference, indicate that Daya Makassar Hospital should first strengthen the quality of its system and the adoption of technology, information systems, and system services. To improve the quality of service, user satisfaction with the system that has been built and runs smoothly must prioritize ease of use. Second, it must improve human resources through continuous training to enhance competence in using the applications that have been built. Third, the management of Daya Makassar Hospital has a very large role in the implementation of SIMRS; Therefore, careful planning is needed, so that it can be implemented, as well as evaluated in depth through the organizational structure, the role of policy makers in providing facilities that can create satisfaction and net benefits for Daya Makassar Hospital.

***Limitations of the Study and Future Research Direction***

This research is currently being conducted at a limited level, specifically at Daya Makassar Hospital, where the ability to develop an information system is very limited. Research data collected through online questionnaires given to respondents has the potential to introduce bias in the respondents' results and answers. This study primarily focuses on quantitative analysis using the HOT-Fit model, with limited attention to qualitative aspects such as organizational culture and leadership, which are influenced by real conditions at the research site. In addition, the cross-sectional design is expected to minimize errors in conclusions, as the hospital has only used digital-based application devices with information systems.

To identify more significant differences in the use of HMIS, future research could be conducted by comparing the management levels of private hospitals with those of government-owned hospitals as a comparative material. Through a differential test method that combines PLS-SEM with questionnaires and human resource targets, the ease of using a digital-based information management system, such as change management or digital literacy, can be implemented. This approach can increase the predictive power of the HOT-Fit model.

## CONCLUSION

Based on the results of tests and inferential statistical analysis, the implementation of the Hospital Management Information System (SIMRS) at Daya Makassar Hospital is highly dependent on the readiness of human resource management to adopt continuous innovation and training as explained through the Human–Organization–Technology Fit (HOT-Fit) model. The results found that user satisfaction and facility conditions had a direct impact of 60.6% on system benefits. In contrast, system quality, information quality, service quality, and

organizational structure had a direct impact of 61.5% on user satisfaction. System quality and system users have a slightly more significant impact, accounting for 55% of system development. Meanwhile, system quality, user satisfaction, and leadership support are crucial for implementing the system effectively, enabling it to deliver significant results, which account for 61.5% of the overall results.

On the other hand, the influence of system users on system development, as well as the relationship between user satisfaction and system usage, yielded insignificant results. Support for digital literacy and active user involvement in the system development process is needed. Overall, the results demonstrated that it is essential to continually improve system quality, organizational support, and facility readiness to consistently optimize the benefits of SIMRS. The support of the hospital director demonstrates that it plays a significant role in encouraging user participation and motivation, which in turn impacts the overall effectiveness of the normal running system. Therefore, this research makes a real contribution in expanding the application of the HOT-Fit model in regional hospitals in Indonesia, by focusing on research that aims to test human resources that integrate system development strategies, improve service quality, and invest in supporting facilities so that the health sector can easily carry out digital transformation in carrying out a servant management system at all levels. Additionally, it offers tangible benefits for institutions, medical personnel, and patients.

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