

# Hospital Information System (SIRS) Using Human Model Organization Technology-Fit (Hot-Fit) in Pharmaceutical Installation

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Article information	Abstract
<p><b>Article history:</b> Received: Desember 23<sup>th</sup>, 2023 Revised: July 24<sup>th</sup>, 2024 Accepted: September 21<sup>th</sup>, 2024</p> <p><b>Corresponding author:</b> Name: Fransiskus Adikara Address: Universitas Bunda Mulya. Jl. Lodan Raya No.2, RT.12/RW.2, Ancol, Kec. Pademangan, Jkt Utara, Daerah Khusus Ibukota Jakarta 14430 E-mail: fadikara@admin.ubm.ac.id</p>	<p><b>Background:</b> The application of information technology systems integrates the entire IFRS service process. Evaluation is needed to find out the benefits of SIRS in IFRS using the Human, Organization, Technology (HOT) Fit evaluation framework <b>Objective:</b> The study aimed to analyze the influence of Human, Organizational, Technology factors on Net Benefit in the Dinda Hospital Pharmacy Installation. <b>Method:</b> This research uses a quantitative approach with a causal research design using PLS SEM. The sample in this study was 30 staff who worked in IFRS. The research instrument uses a questionnaire and is measured using a Likert scale. <b>Result:</b> Based on the results of the t-statistical test, there is a discrepancy that appears in the form of an insignificant direct effect between the influence of information quality on system use (p-value 0.199), information quality on user satisfaction (p-value 0.480), service quality on user satisfaction (p-value 0.276), system quality to structure (p-value 0.414), information quality to structure (p-value 0.431), and environment to net benefit (p-value 0.450). <b>Conclusion.</b> improving the quality of user capabilities can directly influence the quality of the information produced. Quality information can be used directly by organizations in making decisions to fulfill and improve pharmaceutical services at Tangerang Hospital. <b>Recommendation.</b> Further research needs to be conducted with different population sizes and the use of HOT-fit models needs to be maximized by using more complex variables by combining existing methods with methods from another research.</p>
<p>International Journal of Nursing and Health Services (IJNHS), Volume 8, Issue 1, 2025 DOI: 10.35654/ijnhs.v8i1.767 E-ISSN: 2654-6310</p>	<p><b>Keywords:</b> Human, Net-Benefit, Organization, Tangerang Hospital Pharmacy Installation, Technology</p> <p>This is an Open Access article distributed under the terms of the <a href="https://creativecommons.org/licenses/by-nc/4.0/">Creative Commons Attribution-Non-Commercial CC BY-NC 4.0</a></p>



## Background

Regulation of the Minister of Health of the Republic of Indonesia (2013) Number 82 of 2013 Article 1 Paragraph 2 [1] describes the Hospital Information System (SIRS) is a communication information technology system that processes and integrates the entire process flow of Hospital services in the form of coordination networks, reporting and administrative procedures to obtain information precisely and accurately, and is part of the Health Information System. According to [2], SIRS must also be planned and implemented according to the needs of the hospital so that the vision and mission of the organization can be achieved. The success of SIRS implementation depends on end users, organizational support and the capabilities of the SIRS technology itself.

Dinda Hospital is a type C general hospital located at Jl. Galuh No.2, RT.02/RW.02, Jatiuwung, Kec. Cibodas, Tangerang City, Banten 15134, has medical service and medical support facilities, one of which is a pharmaceutical installation. Activities at this installation consist of pharmaceutical services including planning, procurement, storage of pharmaceutical supplies, drug dispensing, quality control, distribution control of general and specialist services, direct service to patients and clinical services which constitute the overall Hospital program. In order to meet service needs in pharmaceutical installations, Dinda Hospital management has created an integrated Information System to maintain and improve service quality by 2022.

To find out the achievements of the implementation of an information system and to plan further actions to improve the performance of its implementation, an evaluation action is carried out. The information system evaluation methods used are the Technology Acceptance Model (TAM) method, HOT-Fit, the PIECES method, and others.

The HOT Fit model explains comprehensively in the form of an

interpretation of complexity, interrelationships between people, organizations and technology. The components of the HOT-Fit Model used in this scientific research are human (System Use, User Satisfaction), organization (Organizational Structure), technology (System Quality, Information Quality, Service Quality) and the suitability of these three factors influences the benefits (net benefits). Based on the results of SIRS observations at the Dinda Hospital Pharmacy Installation found that in the human aspects (System Usage, User Satisfaction), organizational and technological aspects, there were still some user inconveniences in using SIRS. [3] in their research revealed that human, organization, and technology significantly affect net benefits.

Based on previous research, TAM analysis, HOT Fit and PIECES are usually used to measure the usefulness, weaknesses, strengths and evaluation of Hospital Information Systems (SIRS) used by an agency to help improve the quality of hospital services. The difference between the research that will be carried out compared to previous research is that this research uses HOT Fit analysis as a measuring tool to see the function of the Pharmacy Hospital Information System using a second order system or HOT-Fit dimensions that will be measured. In this research, using HOT Fit analysis which consists of technology (system quality, information quality and service quality), then human (system use and user satisfaction), organization (structure and environment) and net benefit where the unit to be studied is the Pharmacy Installation.

## OBJECTIVE

This study Analyzing the effect of using the Hospital Information System (SIRS) using the Human, Organization Technology-fit (Hot-Fit) model on Net Benefit at the Dinda Hospital Pharmacy Installation

## **METHOD**

### **Design**

This research design uses a quantitative approach with a hypothetical deductive research design, namely a causal design to identify factors related to the net benefit of patients at Dinda Hospital.

### **Sample, Sample Size, and Sampling Technique**

The sample in this study was a saturated sample involving 130 Dinda hospital pharmacy installation staff.

The sampling technique in this study uses total sampling, namely, sampling technique when all members of the population are used as samples. Samples must meet the inclusion criteria and exclusion criteria. Inclusion Criteria: 1) Is a Dinda Hospital Service Staff who is on duty or related to a pharmaceutical installation, 2) Willing to be interviewed and fill out a questionnaire. Exclusion criteria: 1) Outsourcing staff (3rd person), 2) Staff who are on maternity leave or exposed to Covid-19, 3) Doctors at the X Tangerang hospital, 4) Staff who are not related to the Pharmacy Installation

### **Instrument for data collection**

The data collection was conducted within one month. The researchers were assisted with the research assistant during data collection process. All respondents who are willing to participate in this study received the information regarding the objective of this study and also benefits of this study. The informed consent also must be signed by the researcher who agreed to participate in this study

The variables in this study are the independent technology variables which consist of system quality, information quality and service quality. Intervening variables consisting of system quality and user satisfaction and organization consisting of structure and environment and the dependent variable net benefit.

The instrument (measuring tool) used to collect data in the study was in the form of a questionnaire which would be distributed to all samples containing 38 questions, each question containing answers with gradations from strongly agree to strongly disagree. Based on the Likert scale, the answer scores are as follows: a) Strongly agree answer = 5, b) Agree answer = 4, c) Neutral answer = 3, d) Disagree answer = 2, e) Strongly disagree answer = 1.

The instrument consists of 17 question items on technology, 8 on human, 9 on organization, 4 on net benefits.

### **Data analysis technique**

The descriptive statistical analysis was used to describe the characteristic of respondents[4]. Data analysis in this study used VB-SEM with PLS.

PLS as a predictive model does not assume a certain distribution to estimate parameters and predict causality relationships. With that, parametric techniques to test the significance of parameters are not needed and the evaluation model to estimate is nonparametric. Then the PLS model evaluation will be carried out using outer linear model and inner model evaluation [5].

## **RESULT**

### **Characteristic of respondents**

Table 2 describes the characteristic of respondents. The result found that based on gender, women dominated in this study as many as 18 people (60.00%), while the smallest number of respondents were men as many as 12 people (40.00%). Characteristics based on the age of the respondents, the majority aged <30 years were 17 people (56.67%), while the smallest number of respondents aged between 30-39 years was 13 people (43.33%). Characteristics based on the education of the respondents, most of them had the last education D3 as many as 16 people (53.33%), while the smallest number had the last education masters as many as 1

person (3.33%). Characteristics based on employment status, most have the status of contract employees as many as 25 people (83.33%), while the smallest number have the status of permanent employees as many as 5 people (16.67%).

**Table 2. Characteristic of Respondents**

Variables	n	%
<b>Gender</b>		
Male	12	40.00
Female	18	60.00
<b>Aged</b>		
<30 year	17	56.67
30-39 year	13	43.33
<b>Education background</b>		
Senior high school/equivalent	3	10.00
D3	16	53.33
Bachelor	13	43.33
Master	1	3.33
<b>Working status</b>		
Permanent employee	5	16.67
Non-permanent employees	25	83.33

### Data analysis prerequisite testing

Prerequisite testing in this research uses validity tests and reliability tests

#### a) Instrument Validity Test

Based on the results of validity tests on all sub-variables of technology (system quality, Information Quality, and Service Quality), human (system use and User Satisfaction), organization (structure and Environment), and net benefit, it was found that all statement items had higher r calculated values. The value of r-table (n) for 30 respondents is 0.361, so it can be concluded that all statement items in these sub-variables can be declared valid as research measuring tools.

#### b) Instrument Reliability Test

Based on the results of the reliability test above, it can be seen that all variables obtained a Cronbach alpha reliability coefficient value of >0.700. So it can be stated that the variables in the research can be declared reliable.

**Table 3. Realibility test**

Sub Variable	CA	Critical value	Con.
System quality	0.931	0.700	Reliable
Information quality	0.877	0.700	Reliable
Service quality	0.867	0.700	Reliable
System use	0.932	0.700	Reliable
User satisfaction	0.854	0.700	Reliable
Structure	0.882	0.700	Reliable
Environment	0.879	0.700	Reliable
Net benefit	0.876	0.700	Reliable

### Data analysis

The data analysis technique in this research uses Structural equation modeling (SEM) using partial least squares (PLS). Then the PLS model evaluation will be carried out using outer linear model and inner model evaluation.

#### a) Outer linear model

From the test results on the outer model, the final research model is obtained based on measurements, which can be seen in the following picture:

### DISCUSSION

This study's main finding showed a positive association between the effect of knowledge, attitude, and hospital management support on initial nutrition screening implementation simultaneously. It was due to increasing knowledge, positive attitude, and support from hospital management that impacted positive motivation to implement the initial nutrition It was

Figure 1. Outer research model (final)

#### b) Inner model

Inner model testing has 4 types of evaluation carried out, namely R-square, Q-square, goodness of fit and path coefficient, using the help of

SmartPLS software. Following are the results of the inner model which can be seen in the image as follows:

of the percentage of user satisfaction can be explained by system quality, information quality, service quality and system use. While the lowest R-square value is the net benefit variable, which is 0.757. This shows that 75.7%

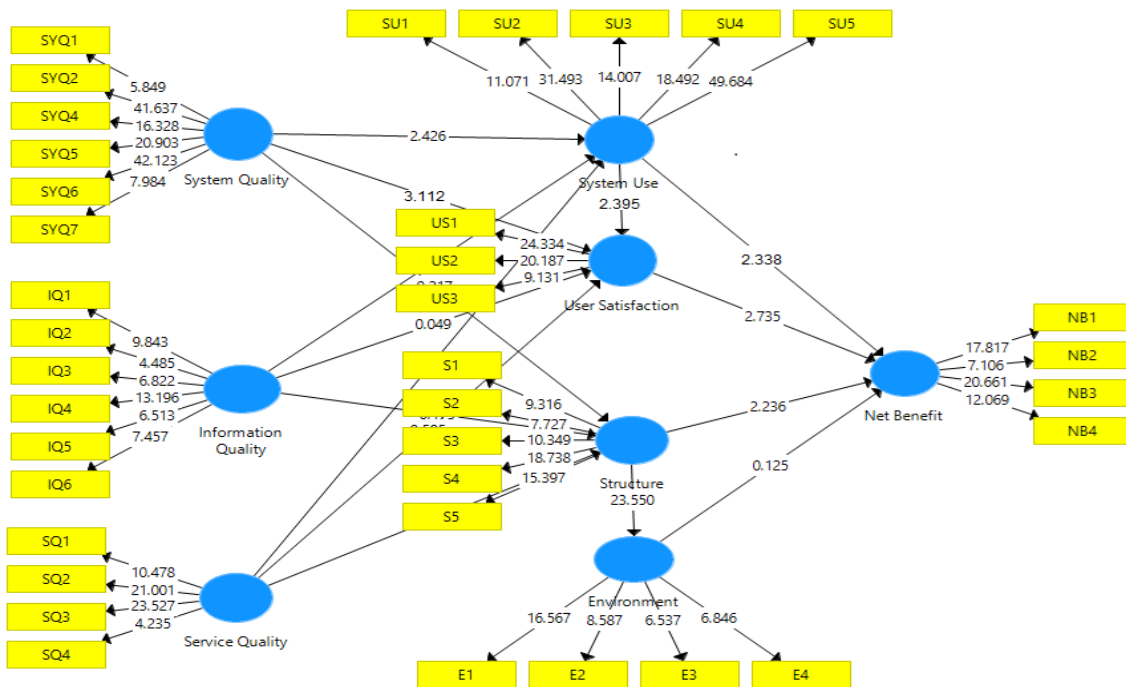


Figure 1. Inner research model (final)

The inner model shows the specification of the causal relationship between latent variables (structural model). Structural model testing (inner model) is done by looking at the relationship between constructs. Changes in the R-Square value can be used to assess the influence of certain exogenous latent variables on independent variables whether they have a substantive influence. Inner model testing has 4 types of evaluations carried out, namely R-square, Q-square, goodness of fit and path coefficient, using the help of Smart PLS software.

The largest R-square score in this study is the user satisfaction variable, which is 0.853. This shows that 85.3%

The Q-square of the PLS model can be evaluated by looking at the Q-square predictive relevance for the variable model. Q-square measures how good the observation values produced by the model and also its parameter estimates are. A Q-square value greater than 0 (zero) shows that the model has a predictive relevance value, while a Q-square value less than 0 (zero) shows that the model has less predictive relevance. However, if the calculation results show a Q-square value of more than 0 (zero), then the model can be said to have a relevant predictive value. Based on the results of data processing, the results of the Q-square calculation are obtained as follows:

$$\begin{aligned}
Q\text{-square} &= 1 - (1-R21) \times (1-R22) \times (1-R23) \\
&\quad \times (1-R24) \times (1-R25) \\
&= 1 - (1-0.766) \times (1-0.853) \times (1-0.779) \\
&\quad \times (1-0.805) \times (1-0.757) \\
&= 1 - 0.00036 \\
&= 0.999 \text{ atau } 99.9\%
\end{aligned}$$

The calculation results show that the Q-square value is 0.999, meaning that based on the diversity of research data, it can be explained by the structural model developed in this study by 99.9%. Based on these results, the structural model in the study has good goodness of fit.

## DISCUSSION

Previous research stated that the Hospital Information System (SIRS) was proven to provide convenience in carrying out work and information about things needed to make decisions. This Hospital Information System (SIRS) can also manage patient data, patient registration, doctors, doctor's schedules, anamnesis,

diagnoses, medical records, medications, incoming medications, patient medications, and payments. This information system can simplify the admin's work in making reports on patient data, medicines, incoming medicines, payments and printing reports. This Hospital Information System (SIRS) can also help managers receive reports and help make decisions. This has been proven through several previous studies found that Hospital Information System (SIRS) was significantly help for making the crucial decision [6-7]. It was consistent with the study which evaluate the implementation of Hospital Information System (SIRS) approach in Praya Hospital Lombok Tengah Nusa Tenggara Barat [8]. Modeling the Acceptance of Hospital Information Systems among Nurses: an Modeling the Acceptance of Hospital Information Systems among Nurses an Extended Technology Acceptance Model [10].

- a) Hypothesis on the Influence of Technology on Humans  
The results of testing the structure of the influence of technology on

**Table 4. The results of hypothesis testing**

Correlation between variables	Original sample results	t-statistical results	P-value
H1 (Technology on human)	0.548	2.426	0.008
H2 (Technology on organizations)	0.405	3.117	0.003
H3 (Human on net benefit)	0.071	0.217	0.414
H4 (Organization on net benefit)	-0.225	0.845	0.199
H5 (Quality of information on user satisfaction)	0.014	0.049	0.480
H6 (Quality of information on system use)	0.043	0.175	0.431
H7 (Service quality on system use)	0.545	2.395	0.029
H8 (Service quality on user satisfaction)	0.197	0.595	0.276
H9 (Service quality on structure)	0.777	0.2677	0.004
H10 (System use on user satisfaction)	0.348	2.854	0.035
H11 (User satisfaction on system use)	0.477	2.250	0.002
H12 (Structure on environment)	0.897	23.550	0.000
H13 (Environment on structure)	0.566	2.462	0.007
H14 (System use on net benefits)	0.494	2.338	0.011
H15 (User satisfaction on net benefits)	0.174	2.735	0.003
H16 (Structure on net benefits)	0.680	2.236	0.013
H17 (environment on net benefits)	-0.053	0.125	0.450

humans, obtained from the path coefficient results that there is a significant influence of system quality on system use, there is a significant influence of system quality on user satisfaction, there is a significant influence of service quality on system use. This is also in line with research by [3] which states that the human system is influenced by technological aspects. In particular, all technological aspects of the system, namely system quality, information quality, and service quality provided by the system, have a significant impact on aspects of user satisfaction.

Based on the results of the hypothesis in this research, the results showed that there was no significant influence of technology (information quality) on system use, there was no significant influence of information quality on user satisfaction and that there was no significant influence of service quality on user satisfaction in the Dinda Hospital Pharmacy Installation. Currently, all staff members use the General Practice Information System which displays electronic patient records as well as services and management for doctors. Compared to SIRS, the legacy system his previous workplace used was "template-based and made typing and entering data much easier." In contrast to SIRS, the ease of use of SIRS is immediately apparent as its user-friendly and easy-to-use interface and straightforward data entry mode. The captured images can be manipulated, saved and attached to patient records. However, the inefficiency of FIS is seen from the inconvenience of storage capacity. The frequent need to delete and transfer files from a small memory card (attached to the camera) to the hard drive when it is full is considered tedious and time consuming [11].

#### b) Hypothesis on the Influence of Technology on Organizations

Based on the results of statistical calculations and interview observations with pharmacy staff regarding the rejected hypothesis, it shows that there is no significant influence of System Quality on Structure and there is no significant influence of Information Quality on Structure in the Dinda Hospital Pharmacy Installation because SIRS cannot predict the trend of drug needs based on disease trends. SIRS in pharmaceutical installations can easily provide information related to procurement planning for management and finance based on usage consumption figures but cannot be used 100% in deciding procurement planning due to disease trend factors which SIRS cannot yet fulfill. So, apart from the information data from SIRS, the Head of the Pharmacy Installation will also make a procurement plan by looking at disease trends that have occurred in the last few weeks and discussing with the finance department regarding nominal submissions for routine procurement at the Pharmacy Installation.

In research by [12] at Dinda Tangerang Hospital, it was stated that there was a simultaneous influence between the Human, Organization, Technology variables on Net Benefit or SIRS implementation performance. This means that humans, organizations and technology are simultaneously improving, so that the performance of SIRS implementation will also increase. In this research, it was found that the greatest influence was the direct influence of technology on SIRS performance, where the role of technology on Net Benefit did not significantly influence organizations and humans.

#### c) Hypothesis on Human Influence on Net Benefit

The results of testing the structure of the influence of humans on net benefits, the results show that there is a significant influence of system use on net benefits, there is a significant influence of user

satisfaction on net benefits, there is a significant influence of system use on user satisfaction and there is a significant influence of user satisfaction on system use in installations Dinda Hospital Pharmacy.

Net benefit or net benefit in the HOT FIT model is to capture the balance of positive and negative impacts on users, which include managers and IT, staff, system developers [2]. Individual impact is the effect of information on recipient behavior. This is related to performance as well as changes in user tasks such as work performance, changes in work activities and increased productivity [13].

In other research conducted by [14] stated that all independent variables simultaneously have a significant influence on the dependent variable, namely human, organizational, technological, leadership and regulatory factors influence net benefit.

#### d) Hypothesis on the Influence of Organization on Net Benefit

The results of testing the influence of structure on the organization on net benefits, showed that there was a significant influence of structure on net benefits, there was a significant influence of structure on the environment and there was a significant influence of the environment on structure. Furthermore, other test results found that there was no significant influence of the environment on the Net Benefit in the Dinda Hospital Pharmacy Installation.

Organizational culture is often described in terms of shared meaning. Thus, an organizational culture that supports the integration of information technology and organizational growth can be a success factor in developing information system implementation. Organizational culture and information systems can influence each other, and the components of information systems are part of organizational culture. The hospital as an organization can optimally provide SIMRS services so that employees

can complete their work more easily and better.

[15] in their research stated that there is an influence of organizational factors on the benefits of implementing SIMRS RSPI Prof. Dr. Sulianti Saroso. Shows that the hospital as an organization can optimally provide SIMRS services so that employees can complete their work more easily and better.

## CONCLUSION

Improving the quality of user capabilities can directly influence the quality of the information produced. Quality information can be used directly by organizations in making decisions to fulfill and improve pharmaceutical services at Tangerang Hospital.

## IMPLICATION

- a) Management from a human perspective can monitor and evaluate employee knowledge and compliance in using SIRS
- b) Management from an organizational perspective can carry out a SWOT analysis of the current SIRS, the need to improve SIRS in providing information to answer hospital service needs can help organizations make decisions based on valid information data.
- c) Management from a technological perspective is able to monitor and evaluate SIRS deficiencies and then upgrade them according to user convenience in improving staff performance in the service.
- d) In terms of benefits, management can consolidate with unit leaders to see what shortcomings and needs are in implementing SIRS, in order to increase the benefits of the integrated SIRS function.

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