ANALYSIS ANALYSIS OF THE EFFECT OF HOT-FIT MODELS ON IMPLEMENTATION OF A HOSPITAL INFORMATION SYSTEM AT PALANGKARAYA CITY HOSPITAL

Sri Astuti¹, Fransiskus Adikara², Rian Adi Pamungkas³
¹²³ Master of Hospital Administration, Universitas Esa Unggul, Jakarta, Indonesia
Email: ¹sryast1993@student.esaunggul.ac.id, ²adikara@gmail.com, ³rian.adi@esaunggul.ac.id

Abstract
This research is based on several problems faced by health workers in 2022 before SIRS is implemented and there are plans to implement SIRS in 2023. The aim of this research is to reveal empirically the influence of perceived benefits, quality of information, organizational support and work engagement on the implementation of SIRS. This research is included in quantitative research with a cross-sectional study design, the population used is 30 health workers, the sampling technique uses a saturated sample which makes the entire population as respondents. The analysis method uses the three box method and PLS-SEM with the help of the Smart-PLS program. The results of the analysis conclude that perceived benefits, quality of information and organizational support have a positive and significant effect both simultaneously and partially on the hospital information system, while work engagement has a negative effect on the implementation of the hospital information system.

Keywords: Perceived benefits, quality of information, organizational support, work engagement, implementation of hospital information systems

Introduction
Based on Minister of Health Regulation no. 24 of 2022, to maximize medical services, each hospital needs to implement Electronic Medical Records (EMR) as a form of SIRS. The development of digital technology in society has resulted in the digital transformation of health services so that medical records need to be held electronically with the principles of security and confidentiality of data and information. Hospitals are required to record and report all their activities in the form of SIRS, this is regulated in Law no. 44 of 2009. So the management and development of SIRS must be useful for improving and supporting hospital services which include: 1) Speed, accuracy, integration, improved service, increased efficiency, ease of reporting in operational
implementation; 2) Speed of decision making, accuracy and speed of problem identification and ease in formulating strategies in managerial implementation; and 3) Work culture, transparency, coordination between units, understanding the system and reducing administrative costs in organizational implementation.

The expected goal of implementing SIRS is as a new policy for health services, one of which is patient safety as regulated in Law no. 44 of 2009 that in an effort to improve the quality of service, hospitals are obliged to implement patient safety standards, for this reason SIRS is implemented in an effort to support the realization of quality service in hospital services. As a system, of course the implementation of SIR records aims to provide accurate patient information, share information more quickly and safely, help increase productivity, reduce hospital budgets, and increase patient comfort (Sittig et al., 2020). Implementation of a technology-based information system will support more effective health service practices and support the creation of patient safety (Feldman et al., 2018), information systems are needed for easy access to information, improved documentation and reduced errors, although the use of this system is faced with several barriers and constraints. (Dash et al., 2019), and related policy implementation is formed based on aspects of communication, resources, disposition and bureaucracy (Edwards, 1980).

Referring to the policy implementation aspects stated above (Edwards, 1980), Minister of Health Regulation no. 24 of 2022 applies rules relating to these aspects as follows: (1) Communication. Referring to article 10 paragraph 1, it is said that the SIRS used in administering electronic medical records must have interoperability capabilities. Interoperability is the capability of an electronic system that can be used for communication. (2) Resources. Referring to Article 10 paragraph 1, it is said that the SIRS used in administering electronic medical records must have compatibility capabilities. (3) Disposition. Referring to disposition issues, it is stated in Article 16 Paragraph 2 that recording on SIRS is carried out completely and clearly. (4) Bureaucracy. Regarding bureaucracy, Article 29 paragraph 1 regulates that the SOP for electronic medical records must comply with the principles of confidentiality, integrity and availability.

Implementing a policy requires preparation so that its objectives can be optimally realized. One level of acceptance of the use of information technology is determined by the perception of benefits. Perceived usefulness is an initial assumption related to an individual’s intention to accept a policy implementation to support maximizing the use of information technology (Ljubicic et al., 2020). When individuals think that information technology has benefits in supporting their work activities, they will easily accept the implementation of the policy (Bolodeoku et al., 2022). In a health service, it is important to build a perception of the benefits of health workers as users of information systems so that they willing to support this implementation for the effectiveness of services running at the hospital (Akwaowo et al., 2022).

Information systems must meet certain standards related to information quality in order to stimulate user interest in supporting information system implementation policies
implemented by management (Masri et al., 2020). The quality of information determines the accuracy of the data, so that they are encouraged to support the implementation of information systems through optimizing their use (Bagayoko et al., 2020), the quality of information explains the advantages that users will get, thus determining the success of implementation implemented by management (Jiang et al., 2021). The existence of quality in the system maximizes the use of information systems to support their work, and to maximize the achievement of information system implementation, efforts are needed to build perceptions of organizational support for its users (Sameer, 2022), employee perceptions of organizational support, determining the success of information system implementation through optimizing its use (Sameer, 2022). Ali et al., 2022).

By implementing SIRS, management hopes that its members can maximize its use for organizational goals, and its members’ support for all policies implemented by management in the work context, is a condition where individuals have work engagement (Mazzetti et al., 2023). It is very important to form work engagement, because it determines the alignment of organizational members to optimally support all policies implemented by management (Neuber et al., 2022). Work engagement is formed from the enthusiasm, dedication and appreciation of organizational members, so that when a management information system is implemented, they support it through the intensity of its use (Maamari & Osta, 2021), and work engagement determines the success of the organization in implementing the management information system (Awan et al., 2020), because work engagement shows individuals who have enthusiasm, dedication and appreciation (Bakker & Leiter, 2015).

Palangkaraya City Hospital is a class D hospital located in Palangkaraya City. The hospital has planned the development of SIRS since 2021, and implementation will begin in 2023. To examine the problems faced by health workers in 2022 before SIRS becomes functional, interviews were conducted with the service quality department, they raised several problems faced by health workers, such as overcrowding, outpatients which occurs due to the long registration time, there are often differences in data on the number of available inpatient rooms and the administration department, resulting in patients not getting rooms and intensive care in inpatient installations, errors in giving prescriptions to patients, errors in the results of diagnosing the disease. Suffered by patients, a lot of patient medical record data is lost or hidden, so it takes time to find it.

Based on this information, a preliminary survey was conducted on 10 health workers consisting of general practitioners, inpatient and outpatient nurses, pharmacy departments and administrative officers with 2 health workers each on November 30 2022 for their initial perception regarding the objectives of SIRS implementation. Which will be implemented comprehensively by management at the end of 2023:

1. There are 65% of health workers who have problems with communication aspects.
2. There are 60% of health workers who have problems with resource aspects.
3. There are 65% of health workers who have problems with the disposition aspect.
4. There are 65% of health workers who have problems with bureaucratic aspects which reflect their lack of agreement that SIRS will be implemented.
Referring to the results of the preliminary survey, the problems of health workers in all aspects of SIRS implementation illustrate that health workers are doubtful about the benefits that SIRS can provide to support the effectiveness and efficiency of their work. Based on the problems that will occur in the year 2022, it is imperative that SIRS be implemented immediately, so that all aspects of services related to information can run effectively and efficiently, and referring to the results of the preliminary survey, describing the negative perception of health workers regarding the purpose of implementing SIRS for support the effectiveness of their work related to information. Therefore, in this research, it will be reviewed and analyzed further regarding perceived benefits, quality of information, organizational support and work engagement which have an influence on the implementation of the hospital information system at Palangkaraya City Regional Hospital.

Research Methods

This research was conducted at the Palangka Raya City Regional General Hospital, which is located on Jl. Trans Kalimantan, Kalampangan, Sebangau, Kalampangan, Kec. Sebangau, Palangka Raya City, Central Kalimantan 74874. The research was carried out from November 2022 to January 2023. This type of research is included in quantitative research with a cross sectional study approach which functions to examine whether there is a relationship between two separate events. This research consists of 4 independent variables, namely perceived benefits (X1), information quality (X2), organizational support (X3) and work engagement (X4), which will measure their influence on the dependent variable, namely the implementation of the hospital information system (Y).

Figure 1. Research Constellation

The population in this study were health workers at the Palangkaraya City Hospital with a total population of 30 health workers, consisting of 3 general practitioners, 14 nurses, 3 pharmacy staff and 10 administrative officers. The sample size was determined as 30 respondents by taking samples using purposive sampling, with (a) Inclusion Criteria: (1) Health workers consisting of general practitioners, nurses, pharmacy staff and administrative officers. (2) On duty when the survey was conducted.
(b) Exclusion Criteria: (1) Work units that are not related to SIRS. (2) Management level in the hospital.

The data collection technique uses a survey method directly to respondents in stages using a data collection tool in the form of a questionnaire as primary data using a 4 - 1 point Likert scale. After the questionnaire is formed, the validity and reliability of the questionnaire formed is tested. The analysis technique is carried out using SmartPLS software.

Results and Discussion
Results of Descriptive Statistical Analysis

Descriptive statistical analysis in this research was carried out using three box method analysis, to determine the condition of each research instrument, a quality range was formed which was divided into three quality interval ranges with the following calculations: Index value: \( \{(F1 \times 1) + (F2 \times 2) + (F3 \times 3) + (F4 \times 4) \}/4 \)

Keterangan:
F1 = Frequency of respondents who answered 1
F2 = Frequency of respondents who answered 2
F3 = Frequency of respondents who answered 3
F4 = Frequency of respondents who answered 4
(1) Top stretch = \(30 \times 4/4 = 30\)
(2) Low stretch = \(30 \times 1/4 = 7.5\)

Table 1. Three Box Method Quality Interval

<table>
<thead>
<tr>
<th>Index</th>
<th>Category</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>7.5 – 15</td>
<td>Low</td>
<td>R</td>
</tr>
<tr>
<td>15.1 – 22.5</td>
<td>Currently</td>
<td>S</td>
</tr>
<tr>
<td>22.6 – 30</td>
<td>High</td>
<td>T</td>
</tr>
</tbody>
</table>

The respondent's behavior can be explained in accordance with the applicable indices and theories, as follows:
1. The variable perception of benefit is in the medium category, referring to the opinion that perception of benefit is the level at which individuals believe that the use of certain technology will improve performance (Davis et al., 2024), the medium index shows the behavior of health workers who are quite confident in the benefits that will be obtained from SIRS which will be implemented by management.

2. The information quality variable is in the medium category, referring to the opinion which states that information quality is a benchmark for determining the quality of output from information systems in the form of reports, and functions to determine user satisfaction (Delone & McLean, 2016), the medium index shows behavior health workers who are quite satisfied with the quality of the information they will get from SIRS which will be implemented by management.
3. The organizational support variable is in the medium category, referring to the opinion which states that organizational support is employees' perceptions regarding the extent to which the organization values their contribution, provides support and cares about their welfare, and individuals who feel they have organizational support will be encouraged to help the organization achieve its goals (Eisenberger & Stinglhamber, 2011), the moderate index shows the behavior of health workers who are sufficiently encouraged by the organizational support provided so that SIRS implementation runs optimally.

4. The work engagement variable is in the medium category, referring to the opinion which states that work engagement is a condition where employees favor their work and actively participate in it, and consider that the work is important to them (Robbins & Judge, 2017), the medium index shows energy behavior. Health which is quite active in participating in supporting SIRS which will be implemented by management.

5. The SIRS implementation variable is in the high category, referring to the opinion which states that implementation is the activity of providing the means to carry out a policy and the possibility of having an impact or influence on something (Johnson & Easttom, 2020), the medium index shows the behavior of health workers who support SIRS implementation. will be implemented by management.

**Outer Model Results**

The tests carried out on this outer model are as follows:

1. **Convergent Validity**

   At this stage, a validity test will be carried out for each indicator contained in each variable to determine the validity of each relationship between indicators and the latent variable construct. SIRS implementation variables, there are indicators that have a factor loading value of <0.70, namely the SIRS2 and SIRS3 indicators, so that indicators that have a factor loading value of <0.70 are not included in further research, because they cannot describe the relationship between indicators and variable constructs. latent. Henceforth, these four indicators were not included in the outer model test.

2. **Construct Validity and Reliability Test**

   Test the validity and reliability of the construct to measure how well the indicator can be used to measure each latent variable studied.

   **Table 2. Validity Test and Construct Reliability**

<table>
<thead>
<tr>
<th>Variabel</th>
<th>Cronbach’s Alpha</th>
<th>CR</th>
<th>AVE</th>
</tr>
</thead>
<tbody>
<tr>
<td>X1</td>
<td>0.936</td>
<td>0.947</td>
<td>0.692</td>
</tr>
<tr>
<td>X2</td>
<td>0.909</td>
<td>0.926</td>
<td>0.612</td>
</tr>
<tr>
<td>X3</td>
<td>0.940</td>
<td>0.950</td>
<td>0.705</td>
</tr>
<tr>
<td>X3</td>
<td>0.968</td>
<td>0.974</td>
<td>0.863</td>
</tr>
</tbody>
</table>
Based on the table above, it can be seen that all AVE values are > 0.50, in accordance with the decision making assumptions, so all indicators in each variable are homogeneous from each research variable. Apart from that, it is known that the Cronbach's Alpha value and CR value are > 0.70, so it can be concluded that all research variables are reliable and the indicators of all research variables used are good constructs in forming a latent variable.

3. Uji Fit Model

<table>
<thead>
<tr>
<th>Y</th>
<th>0.889</th>
<th>0.915</th>
<th>0.644</th>
</tr>
</thead>
</table>

The inner model is evaluated using SmartPLS. The research model can be seen in the following picture:

**Table 3. Model Fit Test Results**

<table>
<thead>
<tr>
<th></th>
<th>Saturated Model</th>
<th>Estimation Model</th>
</tr>
</thead>
<tbody>
<tr>
<td>SRMR</td>
<td>0.080</td>
<td>0.080</td>
</tr>
</tbody>
</table>

Based on the table above, the SRMR value shows a value of <0.1, so these results explain that the research model can be said to be fit for measuring the relationship between latent variables and observed variables.
Influence | $R^2$ Value | $T$ Value | Conclusion
--- | --- | --- | ---
Perceived benefits, quality of information, organizational support and work engagement $\rightarrow$ SIRS Implementation | 0.755 | | H1 Accepted
Perceived benefits $\rightarrow$ Implementation of SIRS | 2.867 | | H2 Accepted
Information quality $\rightarrow$ SIRS implementation | 4.534 | | H3 Accepted
Organizational support $\rightarrow$ SIRS Implementation | 2.109 | | H4 Accepted
Work engagement $\rightarrow$ SIRS implementation | 5.446 | | H5 Accepted

1. The simultaneous influence of perceived benefits, quality of information, organizational support and work engagement of SIRS implementation shows an $R^2$ value of 0.755, which means that perceived benefits, quality of information, organizational support and work engagement have an influence on SIRS implementation of 75.5% with a strong level of influence. (Hair et al., 2014), and falls into the H1 acceptance category.

2. The influence of information quality on SIRS implementation shows a comparison of $T$ value of 4.534 > 1.96, which means that information quality has a significant effect on SIRS implementation, so it is included in the acceptance category H3.

3. The influence of organizational support on SIRS implementation shows a comparison of the $T$ value of 2.109 > 1.96, which means that organizational support has a significant effect on SIRS implementation, so it is included in the H4 acceptance category.
4. The influence of work engagement on SIRS implementation shows a comparison of TV value 5.466 > 1.96, which means that work engagement has a significant effect on SIRS implementation, so it is included in the H5 acceptance category.

The Influence of Perceived Benefits, Information Quality, Organizational Support and Work Engagement on SIRS Implementation

The results of the analysis conclude that perceived benefits, quality of information, organizational support and work engagement have a strong influence in influencing the effectiveness of the implementation of the hospital information system that will be implemented by Palangkaraya City Regional Hospital at the end of 2023 to support electronic-based information facilities for health workers. This happens because health workers show behavior that is quite confident in the benefits generated and quite satisfied with the quality of information from SIRS that will be implemented. Apart from that, health workers also feel sufficient encouragement from organizational support and show quite active behavior to support the implementation of SIRS at Palangkaraya Regional Hospital.

Referring to the Technology Acceptance Model (TAM) proposed by Fred Davis in 1989 which states that the level of acceptance of the use of information technology is determined by several constructs, namely, perceived benefits, attitudes towards using it, behavior to continue using it, and real conditions of system use, these results show harmony because with the formation of health workers' perceptions of the benefits they will get by using SIRS, their assessment of the quality of the information they will get by using SIRS, health workers' perceptions of the organizational support that supports them in mastering the use of SIRS.

Referring to research which concludes that work engagement is very important to form, because it determines the alignment of organizational members to optimally support all policies implemented by management (Neuber et al., 2022), the lack of dedication of health workers to support the effectiveness of SIRS implementation, shows an attitude of lack of responsibility as well as the loyalty of health workers to help the organization achieve its goals through optimizing the use of SIRS, because dedication is related to the condition of workers who perceive their role as fully dedicating themselves to carrying out their duties optimally and achieving organizational goals (Bakker & Leiter, 2015).

The Influence of Perceived Benefits on SIRS Implementation

The perception of benefits that has developed in the minds of health workers currently shows a behavior that is quite confident that SIRS which will be implemented by management at the Palangkaraya City Regional Hospital has benefits in making their work easier, increasing work productivity, increasing effectiveness and improving performance, so that this makes health workers support the implementation of SIRS because they feel that SIRS is aimed at minimizing the risk of losing patient data, and this situation is in line with research which concludes that when individuals think that information technology has benefits in supporting their work activities, they will easily
accept the implementation of the policy (Bolodeoku et al., 2022). In a health service, it is important to build a perception of the benefits of health workers as users of information systems so that they are willing to support the implementation for the effectiveness of services running in hospitals (Akwaowo et al., 2022).

Referring to the opinion which concludes that perceived usefulness is the level at which individuals believe that the use of certain technology will improve performance (Davis et al., 2024), meaning that health workers have the belief that when SIRS is implemented by management, this will determine its effectiveness in obtaining the information they need, and this is proven by the opinion of health workers that SIRS will help reduce errors in patient handling as the most dominant indicator of the perceived benefit variable.

The Influence of Information Quality on SIRS Implementation

The quality of information perceived by health workers forms support for health workers to optimize the use of SIRS in carrying out their work activities related to information systems, especially the opinion of health workers that the SIRS that will be implemented will help search for patient information, so that they will maximize its use to minimize the risk of losing patient data. This situation is in line with research which concludes that information systems must meet certain standards relating to information quality in order to stimulate user interest in supporting information system implementation policies implemented by management (Masri et al., 2020), information quality determines data accuracy, so that they driven to support the implementation of information systems through optimizing their use (Bagayoko et al., 2020), the quality of information explains the advantages that users will get, thus determining the success of implementation implemented by management (Jiang et al., 2021).

Refers to the opinion that information quality is a benchmark for determining the quality of output from an information system in the form of reports, and functions to determine user satisfaction. (Delone & McLean, 2016), meaning that when the perception of health workers feels that the information produced by SIRS is in line with their expectations in supporting service activities, especially those related to information, then satisfaction will be formed and determine the support of health workers to optimize the use of SIRS through its optimal use.

The Influence of Organizational Support on SIRS Implementation

The perception of organizational support felt by health workers makes them quite motivated to support the SIRS implementation policy set by the management of Palangkaraya City Regional Hospital. This result is in line with research which concludes that employee perceptions of organizational support determine the success of information system implementation through optimizing its use (Ali et al., 2022), organizational support changes the behavior of organizational members to implement policies implemented by the organization (Huang, 2022), and organizational support is a
determining indicator of an organization's success in implementing an information system as a policy (Abell et al., 2023).

Refers to the opinion which states that organizational support is an employee's perception of the extent to which the organization values their contribution, provides support, and cares about their welfare, and individuals who feel they have organizational support will be encouraged to help the organization achieve its goals (Eisenberger & Stinglhamber, 2011), meaning that health workers feel organizational support, especially support from superiors, to encourage the use of SIRS for quality services and provide health workers with the opportunity to understand the actual function of SIRS, so that they are encouraged to maximize the use of SIRS to minimize the risk of losing patient data when SIRS is implemented in hospitals.

The Influence of Job Interest on SIRS Implementation

The work engagement of health workers causes their support for the implementation of SIRS to decrease, where they feel there is a problem with their enthusiasm, dedication and appreciation, which makes their interest in maximizing the use of SIRS in the Palangkaraya City Regional Hospital decrease, this is contrary to the opinion which concludes that work engagement is a condition where individuals have positive thoughts so that they are able to express themselves physically, cognitively and affectively in carrying out their work and work engagement is characterized by enthusiasm, dedication and appreciation for their work (Bakker & Leiter, 2015).

Work engagement is formed from the enthusiasm, dedication and appreciation of organizational members, so that when a management information system is implemented, they support it through the intensity of its use (Maamari & Osta, 2021), and work engagement determines the success of the organization in implementing the management information system (Awan et al., 2020), for this reason, the dedication of health workers must be built so that health workers can support the implementation of SIRS through optimizing its use, because dedication is related to the condition of workers who feel their role is to fully dedicate themselves to carrying out their duties optimally and achieving organizational goals (Bakker & Leiter, 2015).

Conclusion

Based on the research results and discussions that have been presented, the conclusions in this research are as follows:

1. Perceived benefits, quality of information and organizational support have a positive influence on the implementation of SIRS, while work engagement has a negative influence, so that by increasing the perception of benefits, quality of information and organizational support, as well as improving the level of work engagement of health workers, the implementation of SIRS can run effectively.
2. Perceived benefits have a positive influence on SIRS implementation, so that by increasing health workers' perceptions of the usefulness of SIRS, the effectiveness of SIRS implementation can increase.
3. Information quality has a positive effect on SIRS implementation, so that by increasing the knowledge of health workers about the quality of SIRS information, the effectiveness of SIRS implementation can increase.

4. Organizational support has a positive effect on SIRS implementation, so that by building health workers’ perceptions of organizational support, the effectiveness of SIRS implementation can increase.

5. Work engagement has a negative effect on the implementation of SIRS, so that with efforts to improve the enthusiasm, dedication and appreciation of health workers, the effectiveness of SIRS implementation can be achieved.

Implication

1. Theoretical Implications

Perceived benefits is the initial assumption that the SIRS to be implemented has useful value in making work easier, increasing productivity, increasing effectiveness and improving performance. Information quality describes that the information produced by SIRS is in accordance with what health workers expect through its use, so that they get information that is relevant, accurate, timely and trustworthy. Organizational support is a form of organizational support to enable health workers to master the use of SIRS in the form of fairness, superior support, organizational appreciation and conducive working conditions, so that with a positive perception of organizational support, health workers are willing to make the implementation of SIRS a success through optimizing its use.

Work engagement determines the level of dedication of health workers to support the achievement of effective SIRS implementation through optimizing its use. The implementation of SIRS will run effectively when users feel that there are positive benefits from SISR compared to working manually without an electronic-based information system, and the perception of SIRS’ superiority in informing what health workers are stuck on, will stimulate health workers' interest in using it, and the level of perception of health workers. on organizational support and the level of work engagement, determining their alignment to support the implementation of SIRS through optimizing its use.

2. Managerial Implications

a. The aspect of making work easier is the weakest in the perception of benefits variable, so improvements need to be made to the training system.

b. The accuracy aspect is the weakest in the information quality variable, so improvements need to be made to the competency development system by carrying out cross training between health workers.

c. The working conditions aspect is the weakest in the organizational support variable, so improvements need to be made to the non-physical work environment system in order to create effective cooperative relationships between work units.
d. The dedication aspect is the weakest in the work engagement variable, so improvements need to be made to the leadership system by taking an approach to build the commitment of health workers.

e. The bureaucratic aspect is the weakest in the SIRS implementation variable, so improvements need to be made to the work culture system by instilling a digital-based work culture.

Suggestion

Berdasarkan hasil penelitian dan kesimpulan, adapun saran dalam penelitian ini adalah sebagai berikut:

1. It is recommended that management carry out outreach and promotion regarding the objectives of SIRS implementation.
2. It is recommended that management provide separate training between work units using SIRS.
3. It is recommended that management build a conducive work environment by implementing fairness so that SIRS is required to be used by all work units.
4. It is recommended that management begin to form SOPs regarding the obligations of health workers to maximize the use of SIRS.
5. It is recommended that management conduct simulations of SIRS users in each work unit on a regular basis, in order to build health workers' perceptions about the usefulness of SIRS.
BIBLIOGRAFI


Analysis of The Effect of Hot-Fit Models on Implementation of A Hospital Information System at Palangkaraya City Hospital


Copyright holder:
Sri Astuti, Fransiskus Adikara, Rian Adi Pamungkas (2022)

First publication right:
Syntax Literate: Jurnal Ilmiah Indonesia