HOSPITAL PHARMACY INFORMATION SYSTEMS EVALUATION FRAMEWORK: *A SYSTEMATIC REVIEW*

Kerangka Evaluasi Sistem Informasi Farmasi Rumah Sakit: A Systematic Review

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ABSTRAK

Sistem informasi farmasi (SIF) rumah sakit merupakan suatu penerapan yang terintegrasi dari sistem informasi manajemen rumah sakit yang berfungsi mendukung pelayanan farmasi klinis yang berorientasi pada pelayanan pasien, penyediaan, dan pengelolaan obat. Tujuan dari tinjauan sistematis ini untuk mengetahui metode metode yang digunakan untuk evaluasi SIF rumah sakit. Tinjauan sistematis ini mengikuti pedoman *Preferred Reporting Items for Systematic Reviews and Meta-Analysis* (PRISMA). Pencarian artikel menggunakan database *Scopus*, dan *Google Scholar* dari tahun 2014 hingga 2024, dengan mempertimbangkan kriteria kelayakan dan inklusi. Pada systematic review ini didapat 7 artikel yang dimasukan dalam penelitian. Tidak ada kerangka evaluasi yang dikembangkan secara khusus untuk evaluasi SIF. Terdapat 4 metode evaluasi yang digunakan yaitu untuk mengevaluasi sistem seperti, HOT FIT,EUCS,TAM, Delone and Mclean,. Metode paling banyak digunakan adalah HOT FIT dengan jumlah 3 artikel. Evaluasi sistem informasi farmasi rumah sakit penting dilakukan untuk memastikan sistem informasi berjalan efektif dan efisien dan memenuhi kebutuhan layanan rumah sakit. Hasil evaluasi menjadi dasar perbaikan dan pengembangan sistem agar rumah sakit dapat memberikan pelayanan kesehatan yang berkualitas.

Kata kunci : HOT FIT, EUCS, TAM, PRISMA

ABSTRACT

Hospital pharmacy information system is an application of an information system designed to support clinical pharmacy services oriented towards patient care, drugs provision and drug management. In the implementation of pharmacy information systems, evaluation is needed to assess the extent to which the information system is beneficial. The purpose of this systematic review is to determine the methods of hospital SIF evaluation framework. This systematic review followed the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines. The article search used Scopus, and Google Scholar databases from 2014 to 2024, taking into account the eligibility and inclusion criteria. eligibility and inclusion criteria. In this Systematic review, 7 articles were obtained included in the study. No evaluation framework was

developed specifically for SIF evaluation. There were 4 evaluation methods used is to evaluate systems such as, HOT FIT, EUCS, TAM, Delone and Mclean. The most widely used method is HOT FIT with 3 articles. Evaluation of hospital information systems is important to ensure the they function effectively and efficiently while meeting the needs of hospital services. The evaluation results serve as a basis for system improvement and development, enabling the hospitals to provide high-quality healthcare services.

INTRODUCTION

Indonesia, as one of the most populous countries in the world, has great potential in the development of technology across various fields, including healthcare. The development of healthcare information systems technology has started to show its benefits in healthcare facilities such as hospitals (Sheikh *et al*., 2021). As a complex organization, hospitals are required to develop a comprehensive and accurate information system to optimize healthcare services (Sari *et al*., 2015). The implementation of information systems in hospitals is expected to help improve healthcare services in an effective and efficient manner (Isfahani *et al*., 2013). A hospital management information system (SIMRS) must be able to integrate across all service units in the hospital, including the pharmacy installation unit (Polii, 2022)

The pharmacy installation in hospitals is one of the units in hospitals that conducts health efforts by providing quality pharmaceutical services (Triputra & Mulyanti, 2023). A well-managed pharmacy installation is characterized by the presence of a good information and management system. The hospital pharmacy information system is an application of Hospital Management Information System (SIMRS) capable of supporting clinical pharmacy services oriented toward patient care, provision, and management of medications (Meraji *et al*., 2022a). By integrating information technology, pharmacists and pharmaceutical personnel can enhance the quality of pharmaceutical services (Ay, 2020). Pharmaceutical services in hospitals involve activities related to pharmaceutical preparations carried out by experts in the field of pharmacy who are directly responsible to patients. According to Minister of Health Regulation No. 72 of 2016 concerning the standards of pharmaceutical services in hospitals, pharmaceutical services include two activities, which are managerial activities in the management of drugs and consumables and clinical pharmacy services. All these activities must be supported by human resources, facilities, infrastructure, and information system technology (Akri, 2024).

Although the implementation of a pharmacy information system offers significant benefits, various problems often arise in its application (Sihole *et al*., 2024). A common issue is that existing information systems can complicate the users' work. To enhance the efficiency and effectiveness of the information system, routine evaluations need to be conducted (Ogundipe *et al*., 2023). There are several types of evaluation framework methods for information systems,

such as: (1) *Technology Acceptance Model* (TAM) (Jober, 2021), (2) *End User Computing Satisfaction* (EUCS)(Al-Hashimi and Aqleh, n.d.), (3) Delone and McLean Model (Soraya *et al*., 2019), (4) *Human-Organizational Technology* (HOT) Fit Model (Meraji *et al*., 2022), and several other methods or models. This article presents literature on the types of evaluation methods for pharmacy management information systems in Indonesia, focusing on the implementation and evaluation of the Hospital Management Information System (SIMRS). This research aims to evaluate and compare the methods or frameworks for assessing pharmacy information systems in Indonesian hospitals."

METHODS
Study design

This study was conducted using a systematic review approach to examine and describe the types of evaluation frameworks used in pharmaceutical management information systems in hospitals. The study employed the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) methodology to review relevant articles. Reference searches were conducted in December 2024 using the Google Scholar and Scopus databases. The sources included scientific publications, research articles, and other related documents. The article search was conducted using the following keywords:

Table 1. Article Search Keywords

No	Database	Keywords
1	Scopus	"Evaluation" AND "Framework" AND "Pharmacy Information Systems" AND "
2	Google Scholar	"Evaluation" AND "Pharmacy Information Management Systems"

TOOL AND MATERIAL
Eligibility criteria

Only relevant articles that meet the eligibility criteria were included in the study. The articles used met the following criteria: (1) the article discusses evaluation frameworks considered relevant for hospital information systems in the pharmaceutical unit; (2) the pharmaceutical information system is used in pharmaceutical service activities in hospitals; (3) the article includes research target groups of pharmaceutical. The exclusion criteria included studies on pharmacy information systems that were not implemented in hospital settings, as well as studies on information systems that were not specifically related to pharmacy

Quality assessment

The quality assessment of the articles used in this systematic review was conducted using the evaluation tool from the Joanna Briggs Institute (JBI) for cross-sectional studies. The quality assessment included an analysis of various aspects, such as research methodology, clarity of research questions, participant selection, study design, data analysis, as well as the interpretation and conclusion of the results. This evaluation process aims to ensure that the research

methodology used in these journals meets the quality standards set by JBI.

Result And Discussion

Data were independently extracted based on inclusion criteria, titles, and abstracts. Articles using the cross-sectional study method were considered in this systematic review. Subsequently, full-text articles were retrieved and evaluated by the researchers according to the predetermined eligibility criteria. Articles that did not meet the criteria and duplicate articles were excluded from the study. To extract data for our research, we used a form with the following items: title, year, researcher's name, hospital name, evaluation method, respondents, and sample size.

Study selection

The selection of articles and the identification process were based on the PRISMA guidelines, as illustrated in Figure 1. The article search using keywords resulted in 385 articles (27 from Scopus and 358 from Google Scholar). The articles included were published between 2014 and 2024 in both Indonesian and English. The use of articles from the last 10 years is recommended to ensure that the references are current, relevant, and reflect the latest developments in research and knowledge.

Titles and abstracts were independently assessed, and after an independent review, 297 duplicate articles were identified. Further screening was conducted on the remaining 88 articles, resulting in the exclusion of 73 articles that did not meet the inclusion criteria. These exclusions were due to factors such as the study not being conducted in hospitals, the articles being systematic reviews or literature reviews, and the articles being irrelevant to the research topic.

Study characteristic

The characteristics of the 7 articles in this study can be seen in Table 3. The research was conducted in several hospitals in Indonesia, specifically in different cities across the provinces of Central Java (4 articles), West Java (1 article), DI Yogyakarta (1 article), and Sumatra (1 article). The largest sample size was 233 participants, while the smallest was 14 participants. The evaluation methods used were HOT-FIT, TAM, EUCS, and DeLone Mclean.

Quality Assessment

The quality assessment of the articles is presented in Table II. Based on the JBI assessment results, there was no significant bias found in this study, and all the studies included in our research were of good quality. The JBI assessment tool (eight items) was used to evaluate the methodological quality of the included studies. Each item was marked as "Yes" if the article met the criteria for that item; "No" if it did not meet the criteria; "Unclear" if there was insufficient information to make an assessment; and "Not Applicable" if the item was not relevant to the article, as shown in the table
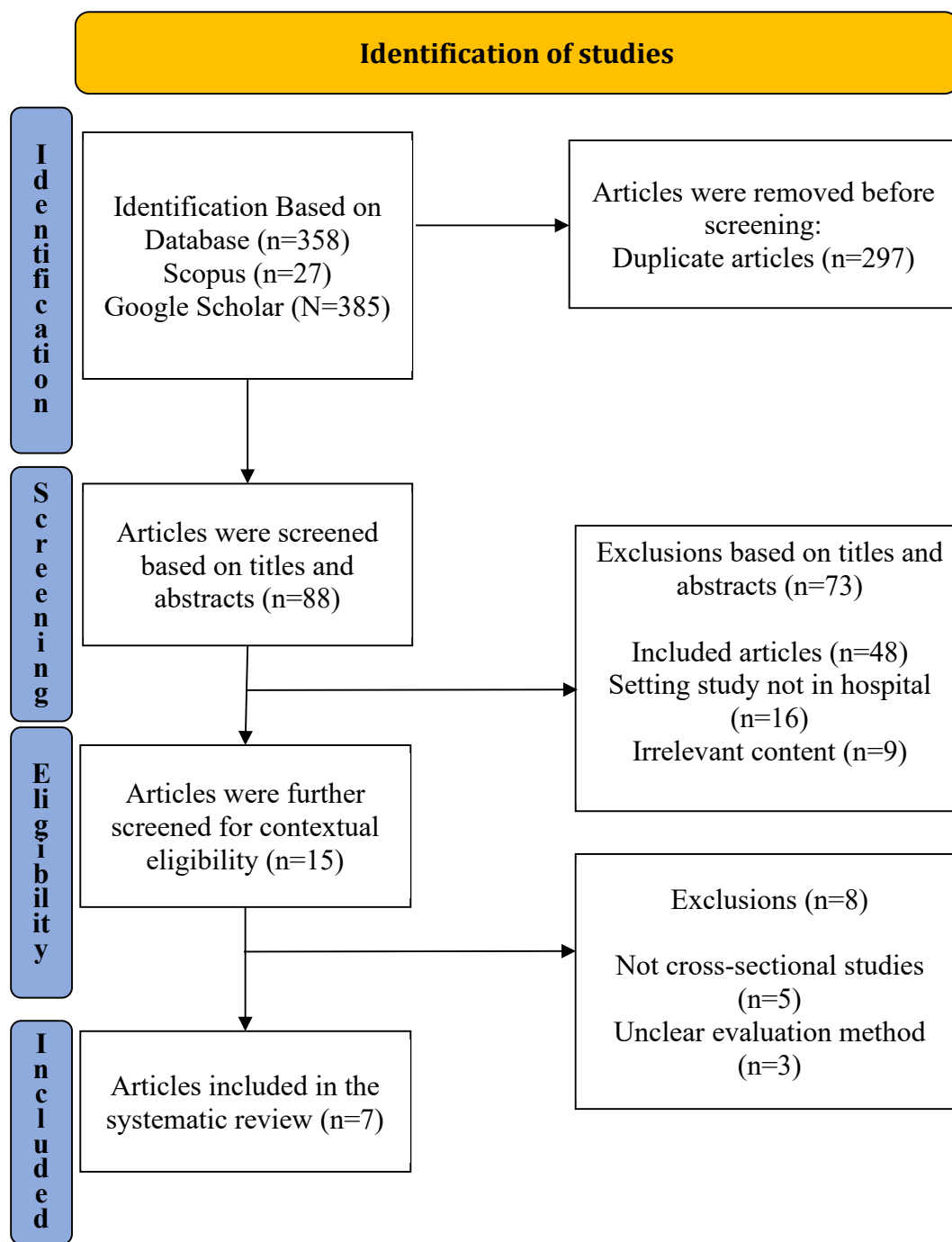
Identification of studies

Identification

Identification Based on Database (n=358)
Scopus (n=27)
Google Scholar (N=385)

Articles were removed before screening:
Duplicate articles (n=297)

Screening

Articles were screened based on titles and abstracts (n=88)

Exclusions based on titles and abstracts (n=73)

Included articles (n=48)
Setting study not in hospital (n=16)
Irrelevant content (n=9)

Eligibility

Articles were further screened for contextual eligibility (n=15)

Exclusions (n=8)

Not cross-sectional studies (n=5)
Unclear evaluation method (n=3)

Included

Articles included in the systematic review (n=7)

Figure 1. PRISMA Diagram

Table 2. Result of *JBI Critical Appraisal Checklist for Analytical Cross-Sectional Studies*

Author/Question	1	2	3	4	5	6	7	8	Score
Soraya, dkk 2019 [15]	Y	Y	Y	Y	Y	Y	Y	Y	8
Antika, dkk 2024 [16]	Y	Y	N	Y	Y	Y	N	Y	6
Sholistiyawati, dkk 2023 [17]	Y	Y	N	Y	Y	Y	N	Y	6
Jamroni, 2023 [18]	N	Y	Y	Y	Y	Y	Y	Y	7
Saputra, dkk 2024 [19]	Y	Y	Y	Y	Y	Y	Y	Y	8
Putri, dkk 2022 [20]	Y	Y	Y	Y	Y	Y	Y	Y	8
Siada, dkk 2023 [21]	Y	Y	Y	Y	Y	Y	Y	Y	8

Table 3. Characteristics of Articles Based on Determinants of Satisfaction

	TITLE	EVALUATION METHOD	SAMPLE	VARIABLES	RESEARCH RESULT
1.	Hot Fit Model Testing on Drug Management Information System at RSGMP Unsoed Purwokerto Pharmacy Installation (Soraya *et al.*, 2019)	HOT fit	Officers directly related to the pharmacy SIM number 43 people. Consists of 2 ● (2) Pharmacist ● TTK ● Pharmaceutical warehouse section ● Pharmaceutical procurement section ● Doctor, ● (10) Emergency Nurse ● (5) Dentist ● (7) General service nurse ● (11) Doctor PJ patient ● (3) Integration nurse	*Human* variables consist of system usage and user satisfaction, Organizational variables consist of organizational structure and environment, Technology variables consist of system quality, information quality, and service quality, as well as Net benefit variable	The results of this study indicate that all hypothesis paths in the HOT Fit model framework that were tested have an influence on each other, except for the organizational variable which has no influence on the utility variable. RSGMP Unsoed can also further improve the quality and quality of technology, both system quality, information quality and service quality of the system so that the system can be useful for users.
2	Evaluation of the Implementation of Hospital Management Information Systems at the Pharmacy Installation of Cilacap Regional Hospital Using the End User Computing Satisfaction (EUCS) Method (Antika *et al.*, 2024)	EUCS	The population and sample amounted to 48 people ● (16) pharmacists and ● (32) Pharmaceutical Technical Personnel (TTK)	The EUCS method consists of 5 variables, namely content , accuracy , format, ease of use , and timeliness	Based on the results of the study on the Evaluation of the Level of Satisfaction of Users of the Hospital Pharmacy Management Information System at Cilacap Regional Hospital Using the End-to-End Method User Computing Satisfaction , the following conclusions were obtained : Content , accuracy , appearance (format), ease of use (ease of use). of use), time (timeliness) has a significant relationship that simultaneously influences the level of satisfaction of SIMRS users.

	TITLE	EVALUATION METHOD	SAMPLE	VARIABLES	RESEARCH RESULT
3	Relationship between Human, Organization and Technology Factors (Hot-Fit Model) and the Performance of the Pharmacy Management Information System at BWT Hospital Semarang (Sholistiyawati *et al*., 2020)	HOT fit	14 users of the pharmaceutical management information system. ● (11) TTK ● (3) Pharmacist	Human, Organization , Technology variables based on the HOT FIT method	The results of this study indicate that there is a relationship between technology and humans (p=0.021), technology and organization (p=0.0001), humans and organization (p=0.006) and human performance with information systems (p=0.005), while there is no relationship between the organization and the performance of the pharmaceutical management information system (p=0.530). The achievement index score for each variable is 69.21% for the pharmaceutical management information system performance variable , 56.83% for the human variable, 57.35% for the organization variable , and 60.08% for the organizational variable. technology . This shows that the pharmacy management information system in the hospital is good.
4	Perception of Usefulness and Ease of Use of Acceptance of Hospital Information System Technology in Pharmacy installations (Jamroni, 2023)	TAM	The total number of employees at the Pharmacy Installation of PKU Muhammadiyah Yogyakarta Hospital is 41 people. ● (17)outpatient pharmacy ● (14) inpatients ● (10) pharmaceutical warehouse section ● 5 high school students, 26 SMF students, 4 D3 students, 6 S1 pharmacist students.	TAM variables perception of ease and user friendliness	The results of the respondents' assessment of the perception of usefulness above, it is known that most respondents (61%) consider hospital information system technology useful. Meanwhile, in the perception of ease of use, it is known that most respondents (65.8%) This shows that the perception of usefulness (perceived usefulness) has a positive and significant influence on technology acceptance acceptance), as well as perceived ease of use (perceived ease of use) has a significant influence on the acceptance of technology (technology) acceptance).

	TITLE	EVALUATION METHOD	SAMPLE	VARIABLES	RESEARCH RESULT
5	Level of User Satisfaction of Management Information System for Pharmaceutical Services at Salatiga Regional Hospital (Saputra and Dyahariesti, 2024) [19]	EUCS	The respondents were 30 officers from the Pharmacy Installation of Salatiga City Hospital. ● 5 Pharmacists ● 25 Pharmacy staff .	There are 4 indicators in the questionnaire, namely system quality, information quality, user satisfaction and organizational environment.	The results of the study obtained the level of satisfaction of pharmaceutical installation officers on the system quality indicator of 74%, information quality 74%, user satisfaction 70%, and organizational environment 76%. The overall level of satisfaction of 73% is in the sufficient category. With the existence of a management information system at Salatiga Regional Hospital, it can basically help to lighten the workload of employees and minimize costs, but the current system is not yet satisfactory because the data is less accurate, less real time and updated , and the features in the system are still lacking.
6	Evaluation of management information systems for pharmaceutical inventory control at hospital (Putri *et al*., 2021).	De Lone and McLean	All pharmacy staff at Hospital X with a total of 31 pharmacy staff respondents	The main variables are system quality, information quality, service quality, convenience, user satisfaction and profit .	The main variables in this study consisted of , system quality 75%, information quality 83.30%, service quality 97.20%, usage 58.30%, users 100% satisfaction , and benefits 77.78% with a moderate percentage level.Based on the research that has been conducted, it can be concluded that the level of respondent satisfaction has increased in its variables, the satisfaction variable has a perception of satisfaction in the medium category of 100% and a high category of 0%, but after the development of the

	TITLE	EVALUATION METHOD	SAMPLE	VARIABLES	RESEARCH RESULT
					pharmaceutical inventory control system, the level of respondent satisfaction in the high category increased by 27.78%, so it is necessary to develop a management information control system.
7	Analysis of the Determinants of Implementing a Pharmacy Management Information System and its Impact on the Benefits of Pharmaceutical Services at Hospital X Bandung (Siada *et al.*, 2023).	HOT fit	The sample size was 223 respondents.	*Human, Organization , Technology* variables based on the HOT FIT method	The results of the study showed that almost all variables had an influence except for the Information Quality (KI) of Pharmacy SIM and Service Quality (KL) of Pharmacy SIM did not have a significant effect on the benefits of pharmaceutical services; the Pharmacy SIM variable did not have a significant effect on the benefits of pharmaceutical services through the Pharmacy SIM user variable; the Organization variable did not have a significant effect on the benefits of pharmaceutical services through the User Satisfaction (KP) variable; and User Satisfaction (KP) did not have a significant effect on the benefits of pharmaceutical services.

DISCUSSION
Information system evaluation methods

The implementation of a pharmaceutical information system requires evaluation to ensure that the running system meets user needs or not. Various types of evaluation methods have been widely used to evaluate systems such as *HOT FIT, EUCS, TAM, Delone and Mclean* , and others. These evaluation methods determine whether the implementation of the information system is in accordance with the initial objectives. Various methods have different assessments and final results (Diphan and Ikasari, 2023).

In the HOT FIT method, an evaluation is carried out by assessing 3 factors, namely (*human*), (*organization*) and (*technology*). While the EUCS method focuses on end-user satisfaction with the system implemented. The TAM method focuses more on the acceptance of a system that has been implemented. While the *Delone method Mclean* explains that system quality will affect system usage and user satisfaction.

Human Organization Technology (HOT FIT)

In this study there are 3 articles that use the HOT FIT method to evaluate the pharmacy information system. The main focus in this study is on the relationship between the *Human aspect* , the *Organization aspect , the Technology* aspect . In the study (Siada et al., 2023). conducted an analysis of the implementation of the pharmacy management information system and its influence on pharmacy services at hospital X in Bandung. The results of the study showed that aspects in the HOT FIT method had a good influence on pharmacy service

activities in the hospital. This is indicated by the data analysis that the quality of the pharmacy information system has a significant effect on pharmacy services, the quality of SIF information with service quality does not have a significant effect.

The use of the HOT FIT method in the study (Sholistiyawati *et al.*, 2020) aims to prove whether there is a relationship between the three aspects of the HOT FIT method and the pharmacy management information system at Bhakti Wira Tamtama Hospital. The results show that there are unrelated factors, namely *organization* and the performance of the pharmacy management information system, so it is necessary to improve the features of the information system according to user needs.

Another study conducted by Soraya (Soraya *et al*., 2019) tested the HOT FIT model on the drug management system at the RSGMP UNSOED Purwokerto installation. The results of the study showed that all aspects of the HOT FIT method had an influence on each other and a positive influence, except for the organizational variable which had no influence on the benefit variable. So that hospitals need to pay more attention to the *human element* by holding training for SIM users.

End User Computing Satisfaction (EUCS)

End User Computing Satisfaction (EUCS) is a method that measures the level of satisfaction of end users of information systems. Overall, the EUCS method is an evaluation of information system users based on their experience in using the system, proposed by *Doll and Torkzadeh* (Aggelidis and Chatzoglou, 2012). The variable aspects

of this model are *content , format, accuracy , ease of use and timeliness* (Doll and Torkzadeh, 1988). This method emphasizes more on the satisfaction *of* end users towards the technological aspects of the information system. In this study, there are 2 articles that use the EUCS method to evaluate the pharmacy information system. The study conducted by Antika *et al*. evaluated the implementation of the Hospital Management Information System at the Pharmacy Installation of Cilacap Regional Hospital. The purpose of this study was to compare the expectations and realities of SIM users so that the level of user satisfaction was known. Based on the results of data analysis, aspects of content, accuracy, format, ease of use, and timeline have a significant relationship with the level of satisfaction of SIMRS users. This shows that the implementation of SIM is good and in accordance with user needs. While in Saputra's study , the EUCS method was used to determine the Level of Satisfaction of Users of the Management Information System for Pharmaceutical Services at Salatiga Regional Hospital. The purpose of this study was to determine the implementation of the pharmacy management information system at Salatiga City Hospital in order to improve the efficiency and quality of health services. Based on the research data obtained, it can be concluded that respondents have a level of satisfaction with the quality of the system of 74% (sufficient category), information quality of 74% (sufficient category), satisfaction with use of 70% (sufficient category), and the organizational environment of 76% (good category). The average value obtained was in the sufficient category with a percentage of 73%.

Technology Acceptance Model (TAM)

Technology Acceptance Model (TAM) is a model of SIM user (Cahyani *et al*., 2020). This method answers the question of why many information technology systems fail to be implemented because users do not have behavioral interest (*Behavioral) Intention*) to use it. The TAM method has an aspect of user perception of benefits (*perceived usefulness*), perceived ease of use (*perceived ease of use*), perception of attitude towards using SIM (*attitude) towards using*), perception of interest in using SIM (*behavioral) intention to use*), and perceptions of actual SIM *usage usage*) (Gea *et al*., 2022). In this study, there is 1 article that uses the TAM method, namely in Jamroni's study. The study aims to analyze the perception of usefulness and ease of use of the acceptance of hospital information system technology in the pharmacy installation at the PKU Muhammadiyah Hospital in Yogyakarta. The results of this study indicate that the perception of usefulness (*perceived usefulness*) has a positive and significant influence on technology *acceptance acceptance*), as well as perceived ease of use (*perceived ease of use*) has a significant influence on the acceptance of technology (*technology) acceptance*). From the results of the multivariate test , the variable of perception of usefulness has a more dominant influence on the acceptance of technology in the application of the Hospital information system in the pharmacy installation of PKU Muhammadiyah Hospital Yogyakarta.

Delone Mcclean

Delone & McLean method is one of the evaluation methods first proposed by William H. DeLone and Ephraim R. McLean . This method has 6 aspects, namely *System Quality , Information Quality , Use, User Satisfaction , Individual Impact* and *Organizational Impact*("The DeLone and McLean Model of Information Systems Success," 2003). In this study there is 1 article that uses the Delone & McLean method in evaluating pharmaceutical information systems. Research by Putri *et al*, (2021) aims to evaluate the existing pharmacy SIM in one of the hospitals in Lampung. The results of the study showed that the level of respondent satisfaction category experienced an increase in its variables, the satisfaction variable had a perception of satisfaction in the medium category of 100% and a high category of 0% . However, after the development of the pharmaceutical inventory control system, the level of respondent satisfaction in the high category increased by 27.78%, so that the hospital needs to develop a management information system according to user needs.

CONCLUSION

The implementation of pharmaceutical information systems in hospitals has both strengths and weaknesses in each system. Evaluation is crucial to ensure that the information system operates effectively and efficiently to meet the needs of pharmaceutical services in hospitals. The purpose of the evaluation is to identify the weaknesses of the information system to reduce the risk of errors during its implementation and to ensure that the system aligns with user needs. This article examines several perspectives from the results of evaluation methods, with a focus on user satisfaction, user acceptance, human (user), technology, and the organization involved. The evaluation results serve as the basis for system improvements and developments, enabling hospitals to provide quality healthcare services. This systematic review provides an overview of evaluation frameworks in health ICT literature. The most commonly used evaluation frameworks are HOT-FIT = 3, EUCS = 2, TAM = 1, and DeLone & McLean = 1.

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REFERENCES

Akri, Y.J. (2024). Analisis Pelayanan Bidang Farmasi Menggunakan Indikator Layanan Berbasis Who: Tinjauan Sistematis: Analysis Of Pharmaceutical Services Using Who-Based Service Indicators: A Systematic Review. *Assyifa J. Ilmu Kesehatan.* 1, 201–209. https://doi.org/10.62085/Ajk.V1i1.36

Al-Hashimi, M., Aqleh, M.M., N.D. (2017). End-Users' Satisfaction With The Quality Of Innovative Healthcare Technologies In Bahrain: A Case Study Of Hospital Information Systems. *International Journal of Food Nutrition.* 9, 81-91. https://doi.org/10.47556/J.IJFNPH.9.2.2017.2

Antika, W., Peranginangin, J. M., & Rsp, P. (2024). Evaluasi Penerapan Sistem Informasi Manajemen Rumah Sakit Pada Instalasi Farmasi Rsud Cilacap Dengan Metode End User Computing Satisfaction (Eucs). - *Najat* 2, 12–26. https://doi.org/10.59841/An-Najat.V2i3.1421

Ay, G. (2020). Evaluation Of Views Regarding Pharmacy Information Management Systems Implementation And Systemic Issues In Community Pharmacies. Int. J. Emerg. *Trends Health Sci.* 4, 68–76. https://doi.org/10.18844/Ijeths.V4i1.4522

Cahyani, A.P.P., Hakam, F., Nurbaya, F. (2020). Evaluasi Penerapan Sistem Informasi Manajemen Puskesmas (Simpus) Dengan Metode Hot-Fit Di Puskesmas Gatak. *J. Manaj. Inf. Dan Adm. Kesehat. Jmiak* 3. https://doi.org/10.32585/Jmiak.V3i2.1003

Diphan, R., Ikasari, I.H. (2023). Literature Review Evaluasi Sistem Informasi Manajemen Rumah Sakit. *JURIHUM: Jurnal Inovasi dan Humaniora.* 1, 155-160. https://jurnalmahasiswa.com/index.php/Jurihum/article/view/273

Doll, W.J., Torkzadeh, G. (1988). The Measurement Of End-User Computing Satisfaction. *Mis Q.* 12, 259. https://doi.org/10.2307/248851

Gea, S. H., Adhikara, F., Hilmy, R. (2022). Penerapan Metode Tam (Technology Acceptance Model) Dalam Aktualisasi Sistem Informasi Rumah Sakit (Simrs). *J. Health Sains* 3, 495–503. https://doi.org/10.46799/Jhs.V3i3.455

Isfahani, S., Raeisi, A., Ehteshami, A., Janesari, H., Feizi, A., Mirzaeian, R., (2013). The Role Of Evaluation Pharmacy Information System In

Management Of Medication Related Complications. *Acta Inform*. Medica 21, 26. https://doi.org/10.5455/Aim.2012.21.26-29

Jamroni. (2023). Persepsi Kegunaan Dan Kemudahan Penggunaan Terhadap Penerimaan Teknologi Sistem Informasi Rumah Sakit Di Instalasi Farmasi.Pdf. *J. Ilm. Permas J. Ilm. Stikes Kendal* 13, 1. http://Journal.Stikeskendal.Ac.Id/Index.Php/Pskm

Jober, N.F. (2021). Evaluasi Simrs Menggunakan Metode Technology Acceptance Model (Tam) Pada Bagian Rawat Inap Rsud Abepura Jayapura Provinsi Papua. *J. Inf. Syst. Public Health* 5, 1. https://doi.org/10.22146/Jisph.31199

Meraji, M., Tabesh, H., Jamal, N., Fazaeli, S., Ebnhosini, Z. (2022a). An Evaluation Of The Pharmacy Information System In Teaching Hospitals Based On The Hot-Fit Model 25. *Journal of Health Administration Summer.* 25, 95-118. https://doi.org/10.22034/25.2.95.

Meraji, M., Tabesh, H., Jamal, N., Fazaeli, S., Ebnhosini, Z. (2022b). An Evaluation Of The Pharmacy Information System In Teaching Hospitals Based On The Hot-Fit Model. *Journal of Health Administration Summer.* 25, 95-118. https://doi.org/10.22034/25.2.95.

Ogundipe, A., Sim, T.F., Emmerton, L. (2023). Health Information Communication Technology Evaluation Frameworks For Pharmacist Prescribing: A Systematic Scoping Review. *Res. Soc. Adm. Pharm.* 19, 218–234. https://doi.org/10.1016/J.Sapharm.2022.09.010

Putri, D.K., Peranginangin, J.M., Pribadi, P. (2021). Evaluation Of Management

Information Systems For Pharmaceutical Inventory Control At The Hospital. *J. Aisyah J. Ilmu Kesehat.* 7. https://doi.org/10.30604/Jika.V7is1.1191

Poliii, S.V., Ratag, G.A., & Fatimawali, F. (2022). Kajian Pemanfaatan Sistem Informasi Manajemen RUmah Sakit di Instalasi Farmasi dan Pengadaan Peralatan Medik di RSU GMIM Siloam Sonder. *E-clinic*. 11, 124-135. https://doi.org/10.35790/ecl.v11i1.44334

Saputra, I., Dyahariesti, N. (2024). Tingkat Kepuasan Pengguna Sistem Informasi Manajemen Terhadap Pelayanan Kefarmasian Di Rsud Salatiga. *Usadha J. Pharm*. 199–208. https://doi.org/10.23917/Ujp.V3i2.331

Sari, M.M., Sanjaya, G.Y., Meliala, A., 2015. Evaluasi Sistem Informasi Manajemen Rumah Sakit (Simrs) Dengan Kerangka Hot - Fit. *SESINDO*.

Sheikh, A., Anderson, M., Albala, S., Casadei, B., Franklin, B.D., Richards, M., Taylor, D., Tibble, H., Mossialos, E. (2021). Health Information Technology And Digital Innovation For National Learning Health And Care Systems. *Lancet Digit Health*. 3, E383–E396. https://doi.org/10.1016/S2589-7500(21)00005-4

Sholistiyawati, A., Mawarni, A., Dharmawan, Y., (2020). Hubungan Faktor Human, Organization Dan Technology (Hot-Fit Model) Dengan Kinerja Sistem Informasi Manajemen Farmasi Di Rumah Sakit Bwt Semarang. *Jurnal Kesehatan Masyarakat.* 8, 188-195. https://doi.org/10.14710/jkm.v8i2.26153

Siada, M., Sitanggang, M.L., Putriana, L. (2023). Analysis Of The Determinants Of Implementing A Pharmacy Management Information System And Its Impact On The Benefits Of Pharmaceutical Services At Hospital X Bandung. *Jurnal Info Sains: Informatika dan Sains.* 13, 680-690. https://ejournal.seaninstitute.or.id/index.php/InfoSains/article/view/3323.

Sihole, P.O., Lesmana, A.E., Wasir, R., (2024). Strategi Dan Evaluasi Sistem Informasi Kesehatan Di Indonesia : Tinjauan Literatur. *Jurnal Kesehatan Tambusai.* 5, 4811-4819. https://doi.org/10.31004/jkt.v5i2.28213.

Soraya, I., Adawiyah, W.R., Sutrisna, E. (2019). Pengujian Model Hot Fit Pada Sistem Informasi Manajemen Obat Di Instalasi Farmasi Rsgmp Unsoed Purwokerto. *J. Ekon. Bisnis Dan Akunt.* 21. https://doi.org/10.32424/Jeba.V21i1.1261

The Delone And Mclean Model Of Information Systems Success: A Ten-Year Update (2003). J. Manag. Inf. Syst. 19, 9–30. Https://Doi.Org/10.1080/07421222.2003.11045748

Triputra, J., & Mulyanti, D. (2023). Pengembangan Sistem Manajemen Farmasi Di Pelayanan Kesehatan Rumah Sakit: Studi Teoritis. J. Kesehat. *Amanah* 7, 61–67. https://doi.org/10.57214/Jka.V7i1.2