

Analysis of SI PENDEKAR Implementation with Technology Acceptance Model at Dr. Soedono General Hospital

Abdul Rohim¹, Ansarul Fahrudda¹, Heru Suswojo¹, Pipit Festi Wiliyanarti²

¹ Department of Hospital Administration, Faculty of Medicine, Universitas Muhammadiyah Surabaya, Indonesia

² Department of Community Nursing, Faculty of Nursing, Universitas Muhammadiyah Surabaya, Indonesia

Correspondence should be addressed to:
Pipit Festi Wiliyanarti
pipitfestiwiliyanarti@um-surabaya.ac.id

Abstract:

Health information systems are important in providing efficient and effective services in the era of rapid development of information technology today. This study analyzed healthcare workers' acceptance of the benefits of implementing the Integrated Outpatient Revisit Patient Service Information System (SI PENDEKAR) at the outpatient clinic in Dr. Soedono General Hospital. This study used quantitative analysis with a cross-sectional approach. The questionnaire used a Technology Acceptance Model (TAM) instrument to evaluate officer acceptance of SI PENDEKAR innovation. The research subjects included 30 healthcare workers related to the use of innovation on officers' attitudes towards using (path coefficient = 0.578, $p=0.001$) and perceived usefulness on behavioral interest in using (path coefficient = 0.651, $p=0.001$). The healthcare worker's perception of the benefits of this innovation will increase the attitude of acceptance and attitude of use, which can increase the speed of services in the outpatient clinic.

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INTRODUCTION

As public service providers, hospitals are responsible for delivering safe, equitable, and effective healthcare services aligned with professional standards and patient-centered principles. This obligation necessitates continuous reforms to enhance service quality, accessibility, and efficiency across all societal levels (Cahyono, 2020). These reforms are central to adopting good governance practices, which address systemic challenges while ensuring adherence to ethical and operational benchmarks. Effective healthcare systems must prioritize patient satisfaction by maintaining robust service principles, as infrastructure, human resources, or technology weaknesses can undermine overall service excellence (Bahroun & Ahmed, 2024).

The digital transformation of healthcare services has emerged as a pivotal strategy to modernize operations and improve outcomes (Kraus et al., 2021). By leveraging information technology, hospitals can replace manual data management with computerized systems, enhancing accuracy, speed, and decision-making capabilities (Amiri, 2024). This shift not only streamlines administrative processes but also empowers healthcare providers to adapt to the rapid dissemination of information, fostering transparency and responsiveness in service delivery (Avinash & Joseph, 2024). The integration of digital tools has thus become indispensable in addressing contemporary healthcare challenges, particularly in high-demand settings like outpatient departments (Varnosfaderani & Forouzanfar, 2024).

A cornerstone of this digital evolution is the Hospital Management Information System (HMIS), a technology-driven framework designed to coordinate clinical, administrative, and operational workflows (Neeragatti & Dehury, 2023). HMIS integrates data processing, reporting, and communication networks to support managerial decision-making, quality control, and resource optimization (Seifermann et al., 2022). By transforming raw data into actionable insights—such as performance metrics or patient care trends—these systems enable hospitals to refine service delivery, allocate resources efficiently, and align clinical practices with evidence-based standards (Guo et al., 2024). Furthermore, HMIS facilitates clinical research, staff training, and interdepartmental collaboration, underscoring its multifaceted utility in healthcare ecosystems (Alleyne, 2023).

Prior research employing the Hot-Fit method has highlighted the influence of organizational and technological factors on the effectiveness of health information systems (Yusof et al., 2024). Organizational factors, including structural dynamics and environmental adaptability, shape how institutions evaluate and integrate new technologies. Simultaneously, technological factors—such as system quality, information reliability, and service efficiency—determine user satisfaction and system usability (Putro et al., 2024). These insights underscore the need to balance institutional readiness with technical capabilities when implementing digital innovations, ensuring alignment with operational demands and end-user expectations (Zhai et al., 2022).

Dr. Soedono General Hospital in Madiun, a provincial government-owned facility in East Java, Indonesia, launched the Integrated Outpatient Revisit Patient Service Information System (SI PENDEKAR) in 2022 to address persistent challenges in outpatient services. Designed as an integrated revisit patient service platform, SI PENDEKAR aims to mitigate complaints related to long queues, excessive waiting times, and low patient satisfaction scores, particularly those stemming from communication inefficiencies compared to other hospital departments (Barretiri et al., 2021). Despite its potential, no comprehensive evaluation has been conducted to assess healthcare professionals' acceptance of this innovation since its implementation, leaving gaps in understanding its practical efficacy and user experience.

This study seeks to analyze healthcare officers' acceptance of SI PENDEKAR through the Technology Acceptance Model (TAM) lens, posing that perceived usefulness and ease of use are key determinants of technology adoption. By examining how TAM constructs—such as perceived efficiency gains, user-friendly design, and institutional support—influence healthcare workers' engagement with SI PENDEKAR, this research will provide actionable insights for optimizing the system's functionality. Furthermore, it bridges a critical knowledge gap by evaluating the interplay between organizational readiness, technological features, and user behavior in a public hospital context (Lee et al., 2024). This investigation contributes to the broader discourse on digital health innovation by demonstrating how TAM-based frameworks can inform the successful implementation of HMIS solutions (Bogale et al., 2023). By linking theoretical models with real-world applications, the findings will offer valuable guidance for policymakers and hospital administrators seeking to enhance service delivery through technology-driven reforms. The study also highlights the importance of contextual factors in shaping technology adoption, emphasizing the need for tailored strategies that address both technical and human-centric dimensions of healthcare digitization.

METHOD

This cross-sectional study employed the Technology Acceptance Model (TAM) to evaluate healthcare workers' acceptance of SI PENDEKAR, an integrated outpatient revisit patient service system at Dr. Soedono General Hospital, Madiun. The research population comprised specialist

doctors and nurses working in the outpatient clinic, with a sample size of 30 healthcare workers selected through non-probability sampling using a purposive sampling approach. Participants were chosen based on predefined criteria, such as direct involvement in SI PENDEKAR operations, to ensure the relevance and richness of data. The study focused on four TAM constructs: perceived usefulness (the degree to which users believe SI PENDEKAR enhances service efficiency), perceived ease of use (user-friendliness of the system), attitude toward usage (positive or negative perceptions of adopting the technology), and behavioral intention (likelihood of continued system utilization).

Data collection was conducted via a structured questionnaire incorporating Likert-scale items (1–5) to quantify participants' perceptions, attitudes, and behavioral intentions toward SI PENDEKAR. Each variable is aligned with TAM elements, with statements that capture system functionality, interface design, and workflow integration dimensions. For instance, a score of 1 indicated "strongly disagree," while five represented "strongly agree," allowing nuanced measurement of user experiences. Quantitative analysis involved descriptive statistics to summarize demographic and usage patterns, followed by path analysis using Structural Equation Modeling with Partial Least Squares (SEM-PLS) to examine relationships between TAM constructs. This approach enabled the identification of key predictors influencing user acceptance and system effectiveness.

The research protocol adhered to ethical guidelines, with approval from the Faculty of Nursing Ethics Committee, Universitas Muhammadiyah Surabaya. Procedural steps included obtaining institutional permissions, administering informed consent forms, distributing questionnaires to respondents, and ensuring the confidentiality of collected data. Participants were briefed on the study's objectives and voluntarily agreed to contribute. Data processing was conducted systematically to validate responses and minimize bias. By integrating TAM theoretical frameworks with empirical analysis, this study aimed to provide actionable insights into optimizing SI PENDEKAR's implementation and addressing barriers to technology adoption in healthcare settings.

RESULT

The survey results are obtained from the characteristics of the respondents, as shown in Tables 1 and 3 below.

Table 1. Respondent criteria by age

No	Age	Frequency	Percentage
1	< 40 years	7	23.3 %
2	41-45 years	6	20.0 %
3	46-50 years	5	16.7 %
4	> 50 years	12	40.0 %
Total		30	100 %

Table 2. Respondent criteria based on education

No	Education	Frequency	Percentage
1	Vocational Nurse	2	6.7 %
2	General Nurse	6	20.0 %
3	S2/ Specialist Doctor	17	56.7 %
4	S3/ Consultant Specialist	5	16.7 %
Total		30	100 %

Table 3. Respondent Criteria Based on Length of Work

No	Length of Work	Frequency	Percentage
1	< 10 Years	4	13.3 %
2	11-15 Years	6	20.0 %
3	16-20 Years	8	26.7 %
4	> 20 Years	12	40.0 %
Total		30	100 %

The path coefficient result showed there was a correlation between perceived usefulness and attitude towards use, and perceived usefulness and behavioral interest in using (Table 4).

Table 4. SMART PLS Path Coefficient and p-Value result

Correlation	Path coefficient	p-value
Perceived usefulness - attitude toward the use	0.578	0.001
Perceived ease of use - attitude toward use	0.084	0.346
Perceived usefulness - behavioral interest in using	0.651	0.001
Perceived ease of use - behavioral interest in using	0.026	0.451
Attitude in use - behavioral interest in using	0.118	0.247

DISCUSSION

This research was conducted at the Outpatient clinic of Dr. Soedono General Hospital Madiun to evaluate the behavior of technology acceptance by officers in the form of an Integrated Outpatient Revisit Patient Service Information System (SI PENDEKAR), which is expected to be in line with the desire to provide excellent, fast, precise, effective, efficient and quality service to patients as hospital customers. Most respondents were over 50 years old, comprising 40%, which is related to the policy of rewarding hospital service staff, especially more senior nurses, assigned to installations without night service rotations. This also caused most respondents' service length to be over 20 years. It was found that most respondents have S2 / Specialist education levels because they are the leading service providers in all polyclinics in the outpatient installation clinic.

There was a significant effect of the perceived usefulness of SI PENDEKAR on the attitude of officers in using this innovation, as shown by the technology acceptance model of the Outpatient Installation officers towards SI PENDEKAR, the path coefficient = 0.578 and $p = 0.001$. Usefulness and organizational support significantly impact information system behavior (Yoo et al., 2022). The results of this study are not in line with the research of Aula & Sulistyawati (2022), which states that the perception of user benefits that consider SIMRS can accelerate the search for information on visits and service implementers, accelerate the search for medical record data, help improve performance in managing hospital data, and facilitate the management of patient data has no effect on employees in using SIMRS.

There was no significant effect of perceived ease of use on the attitude of officers in using SI PENDEKAR. The results of this study indicate that ease of use of technology does not always correlate with positive user attitudes toward technology. Other factors, such as perceived benefits, also shape user attitudes towards technology use. These results differ from research conducted by Aula & Sulistyawati (2022), which states that users believe using information systems can improve their performance. This describes the benefits of the system to its users in various aspects. The perceived ease of use forms a belief in whether to continue using the information system and is expected to influence behavioral intentions in using technology.

The results of the SEM PLS analysis showed a correlation between perceived usefulness and behavioral intention to use SI PENDEKAR. Officers with a high perception of the ease of use of SI PENDEKAR will be more likely to use this innovation. The relationship between perceived ease of use and behavioral intention to use has been proven by previous research conducted by Aula & Sulistyawati (2022) that SIMRS can provide benefits to hospitals, good feelings towards a system helping improve data storage security, and makes work more interesting, has an influence on employee intentions in using SIMRS. This intention to use is in the form of intention to use it in work, continued intention to use it in the future, and plans to use SIMRS consistently during a career. The relationship between perceived usefulness and technology acceptance has been observed in various studies. A previous study on the acceptance of health applications found that perceived benefits significantly influenced users' attitudes towards using the system (Utami, 2021). Similarly, in the context of electronic medical records, the perceived benefits of the system were found to positively influence its acceptance among healthcare professionals. System utilization should not be used as an option for employees to want to use the system or not use it for this reason; the system should be considered more for the benefits and ease of system operationalization, because employees have no interest in utilizing the system (Aula & Sulistyawati, 2022).

The result of the SEM PLS analysis on the effect of perceived use on office behavior does not significantly influence office behavior. Information technology is no longer new in developing hospital information systems; officers always accept service innovation based on information technology. The benefits of technology will increase with the development of the field of work, with the belief that the development of SIMRS will increase sustainability in using SIMRS (Lumingkewas et al., 2023). This is supported by the fact that the better users implement a system, the more performance productivity will increase. Backup or processed and detailed patient data will increase the number of users searching for data. Thus, users will search again with data stored in SIMRS. Increased user productivity in SIMRS completely and helped save time recording patient data. User perceptions of the ease of use of technology contribute to the belief that using it will not require much effort. The system must be simplified for officers to use in order to reduce rejection from system users (Meiryani et al., 2022).

The effect of attitude in using SI PENDEKAR does not affect behavioral interest. TAM has been extensively studied and applied in various contexts, including healthcare, to understand the acceptance and use of technology. Factors such as perceived usefulness, ease of use, and social influence have significantly influenced their intention to accept and use new technology (AlQudah & Shaalan, 2020). The result of this study differs from other studies in that attitudes towards using technology affect behavioral interest in using technology in hospital management information systems; attitudes towards using technology significantly affect the intensity of behavior in using.

CONCLUSION

It is concluded that the officer perceptions of the benefits of implementing SI PENDEKAR innovation as a technology acceptance model in the outpatient clinic at Dr. Soedono General Hospital, Madiun, are as follows: There is a significant effect of perceived usefulness of SI PENDEKAR on attitudes towards the use of SI PENDEKAR by officers, and perceived usefulness of SI PENDEKAR on the intensity of behavior using SI PENDEKAR. However, there are no significant effects of perceived ease of use SI PENDEKAR on the attitude of using SI PENDEKAR by officers, perceived usefulness of SI PENDEKAR on the intensity of behavior of using SI PENDEKAR, and attitude using SI PENDEKAR on the intensity of behavior in using SI PENDEKAR.

This study shows that perceived ease of use is an important factor influencing officers' attitudes and intentions toward technology use. Officers' perceptions of the benefits of SI PENDEKAR innovation will increase acceptance attitudes and usage attitudes, which have an impact on increasing service speed in outpatient care. It is recommended that Dr. Soedono Madiun's management provide optimal support in accelerating the transformation of digital health services through the development of hospital information systems. This research still requires improvement by increasing the number of samples and other necessary variables.

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CONFLICT OF INTEREST

Abdul Rohim, Ansarul Fahrudha, Heru Siswojo, and Pipit Festi Wiliyanarti declare no conflicts of interest related to this manuscript. Journal policies have disclosed all potential competing interests.

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