International Journal of Advances in Applied Sciences (IJAAS)
Vol. 14, No. 2, June 2025, pp. 523~532
ISSN: 2252-8814, DOI: 10.11591/ijaas.v14.i2.pp523-532

Bridging technology and healthcare: user acceptance of a surgical site infection system

Afan Fatkhur Akhmad[1,2], Maria Ulfa[3]
[1]Master of Hospital Administration, Postgraduate Program, Universitas Muhammadiyah Yogyakarta, Yogyakarta, Indonesia
[2]RSUD Haji Provinsi Jawa Timur, Surabaya, Indonesia
[3]School of Medicine, Faculty of Medicine and Health Sciences, Universitas Muhammadiyah Yogyakarta, Yogyakarta, Indonesia

Article Info

Article history:

Received Nov 25, 2024
Revised Apr 17, 2025
Accepted May 10, 2025

Keywords:

Infection control
Information system
Medical informatics applications
Surgical wound infection
Technology transfer

ABSTRACT

Surgical site infections (SSI) continue to be a problem for surgeons, and unfortunately, SSI information systems are underutilized. This study analyzed the user acceptance of the SSI information system based on the extended technology acceptance model (TAM2). A cross-sectional questionnaire-based study. The variables studied intention to use (IU), perceived ease of use (PEOU), demographic factors (FD), subjective norm (SN), Image (I), job relevance (JR), output quality (OQ), result demonstrability (RD), perceived usefulness (PU). Data were collected by filling out questionnaires and then analyzed using smart-partial least squares (PLS). In total, 61 nurses were included. Most respondents are aged 31-35 (26.23%), and most working periods are between 11-15 years (27.87%). There were significant positive effects on SN to PU (β=0.12; p <0.01) and I (β=0.739; p <0.01), JR to PU (β=0.058; p <0.05), RD to the PU (β=0.364; p <0.01), PU to IU (β=0.322; p <0.01), PEOU to IU (β=0.565; p <0.01) and PU (β=0.476; p <0.01), FD to IU (β=0.109; P <0.01) and PU (β=0.03; p <0.05). The relationship between SN and IU (β=-0.054; p <0.05) and OQ to PU (β=-0.075; p <0.01) were significantly negative. Image has no significant effect on PU (p >0.05). This study concluded that PEOU is the most influential variable in the IU the SSI information system.

Corresponding Author:

Maria Ulfa
School of Medicine, Faculty of Medicine and Health Sciences, Universitas Muhammadiyah Yogyakarta
Jl. Brawijaya, Kasihan, Bantul, Yogyakarta, 55183, Indonesia
Email: mariaulfa@umy.ac.id

1. INTRODUCTION

Infectious diseases continue to pose a profound challenge to global public health, especially within developing nations such as Indonesia [1]. The prevalence and impact of these diseases highlight the need for enhanced health infrastructure, surveillance, and intervention strategies to effectively address and mitigate their effects on vulnerable populations. Despite advancements in medical technology and infection control protocols, surgical site infections (SSIs) continue to present a significant challenge for healthcare professionals, underscoring the need for ongoing research and improvement in preventive strategies [2], [3]. SSI can increase morbidity, mortality, and treatment costs due to the treatment length and other complications [4]. Despite advances in prophylactic antibiotics, better anesthesia, advanced equipment, and increased postoperative vigilance, SSI remains common [4]. According to WHO, more than one in ten people in developing countries who undergo surgery are affected by SSI, while in developed countries, it occurs in 500,000 people per year. Regional data underscore the gravity of the issue at hand; for instance, the rates of SSI are documented at approximately 1% in the Americas, compared to a significantly higher rate of 6.3% in

Morocco [5]. In Indonesia, various studies have indicated that the incidence rates of SSI in clean and clean-contaminated surgical procedures range between 5.32 and 13.9% [6]. At Cipto Mangunkusumo Hospital, the prevalence of postoperative SSIs following abdominal surgeries was 7.2% from 2009 to 2011. In contrast, Haji Hospital in East Java Province recorded an SSI incidence of 0.31% during the first half of 2022. Given the ongoing challenges posed by SSIs, the implementation of effective surveillance and monitoring tools is essential for controlling and preventing these infections.

The advancement of health information systems has significantly improved the management of medical data, resulting in enhanced infection surveillance [7]. A prominent example is the SSI information system implemented at Haji Hospital in East Java, which is designed to monitor SSI by meticulously capturing preoperative, intraoperative, and postoperative data for systematic tracking of infection rates. However, since its introduction in 2019, the system has not undergone a comprehensive evaluation or enhancement, and the transition from manual documentation to an electronic format has posed challenges for healthcare personnel, affecting both adoption and effective utilization [8]. Various theoretical models have been utilized in healthcare technology acceptance, notably, the technology acceptance model (TAM) developed by Davis, which elucidates user acceptance based on perceived usefulness (PU) and ease of use [9]. Expanding on TAM, incorporating additional elements such as subjective norms (SN) and cognitive processes, thus offering a more holistic understanding of technology acceptance [10], [11]. Research suggests that factors like organizational support, training, and system usability are crucial for the adoption of electronic health records [12]–[14]. However, there is a notable lack of studies assessing the acceptance of SSI surveillance systems, underscoring a significant area that needs further investigation.

The examination of behavior change strategies related to technology acceptance largely relies on the TAM, a framework that enables us to predict human behavior by analyzing the various factors that influence the acceptance of information systems [9], [15]. Building on this foundational model, Venkatesha and Davis developed TAM2, which incorporates additional theoretical constructs that enhance our understanding of user acceptance [16]. This includes the dynamics of social influence as SNs, voluntariness, and social image alongside cognitive instrumental processes that assess the relevance of tasks, quality of outputs, verifiability of results, and perceived ease of use (PEOU) of the technology [16]. This multifaceted approach fosters a deeper insight into how users engage with innovations. Despite the implementation of the SSI information system at Haji Hospital in East Java, recent reports indicate a concerning trend: from 2019 to 2022, the system's utilization has consistently fallen short of expected targets. However, there is a paucity of research examining the acceptance of SSI monitoring systems among healthcare professionals. Unlike previous research primarily focused on general electronic health records or other health management systems, this study investigates explicitly an SSI surveillance application. By employing the TAM2 framework, the research evaluates the influence of social factors (such as SNs and voluntariness) and cognitive instrumental processes (including perceived relevance, output quality (OQ), and result verifiability) on the system's acceptance among healthcare workers. The findings from this research are anticipated to enhance the system’s usability and effectiveness, ultimately facilitating improvements in SSI monitoring and prevention efforts. Understanding the factors influencing the adoption of such systems is crucial, as their practical implementation can lead to improved infection control and patient outcomes. This study aims to address a significant research gap by analyzing user acceptance of the SSI information system through the lens of the TAM2 model.

2. METHOD

2.1. Study design and setting

This study was systematically designed as a cross-sectional, questionnaire-based investigation aimed at assessing the adoption of a specific application among members of the Infection prevention and control link nurse (IPCLN) Team at Haji Hospital, situated in East Java Province, Indonesia. The cross-sectional design facilitated data collection at a single time point, thereby enabling an evaluation of the relationships between various study variables [17], [18]. This study was conducted from January to March 2023; the research took place at Haji Hospital, a prominent regional referral institution recognized for its well-established infection prevention and control (IPC) program. The study population comprised 61 registered nurses integrals to the hospital's IPCLN team. These nurses play a critical role in implementing infection prevention protocols and enforcing compliance with hospital infection control guidelines, which are essential for maintaining patient safety and enhancing overall healthcare quality within the institution. The inclusion criteria for this study comprised all active members of the IPCLN team at Haji Hospital in East Java Province who expressed a willingness to participate. In contrast, the exclusion criteria stipulated that nurses with previous experience using the application under examination would be excluded to ensure that the responses gathered accurately represented the perceptions of first-time users.

Data were collected using a structured questionnaire adapted from the TAM as extended by Venkatesh and Davis [16], administered in both paper-based and digital formats to accommodate participant preferences. The methodologies employed in this study are consistent with previous research that has utilized the TAM to evaluate hospital information management systems (HIMS) [19], [20]. The questionnaire comprised two main sections: demographic information, including age and length of service in years, and TAM constructs, which included intention to use (IU), PEOU, factor demographic (FD), SN, image (I), job relevance (JR), OQ, result demonstrability (RD), and PU [16]. Each construction was assessed using a 7-point Likert scale (1=strongly disagree to 7=strongly agree). The questionnaire was distributed in person during scheduled IPCLN team meetings and through online survey platforms, with participants receiving detailed instructions and encouragement to seek clarification as needed. All responses were anonymized to maintain confidentiality and completed questionnaires were securely stored in a digital repository for analysis.

2.2. Data analysis

In this study, structural equation modeling (SEM) was utilized to investigate the relationships between various variables through path analysis, incorporating several critical assessments [21]. The measurement model was scrutinized for reliability and validity, with factor loadings above 0.5 considered acceptable [22], [23], composite reliability (CR) values exceeding 0.7, confirming internal consistency, and average variance extracted (AVE) values greater than 0.5, indicating convergent validity. Furthermore, Cronbach's alpha values above 0.7 established scale reliability, while discriminant validity was assessed using the Fornell-Larcker criteria alongside cross-loading analysis. The structural model evaluated path coefficients to determine the strength and significance of relationships, ensuring that all variance inflation factor (VIF) values remained below 5 to mitigate multicollinearity, with statistical significance recognized at a p-value threshold of <0.05 [22], [24]. Additionally, both direct and indirect effects were analyzed, and model validity was affirmed through various goodness-of-fit measures, which collectively established the findings as robust, reliable, and replicable. Additional data tables and detailed model outputs are available upon request.

2.3. Ethical clearance

This study was granted ethical approval by the Institutional Ethics Committee of Haji Hospital in East Java Province (Ethics Committee File No. 073/32/KOM.ETIK/2023). Before the commencement of data collection, all participants were provided with a thorough explanation of the study's objectives, potential risks, and associated benefits to ensure informed participation. Written informed consent was obtained from all individuals, thereby affirming the voluntary nature of their involvement. To uphold data confidentiality, participant responses were anonymized, and all collected data were securely stored to prevent unauthorized access. The study complied with the ethical principles delineated in the Declaration of Helsinki and Indonesian national research ethics guidelines. By adhering to these rigorous methodological and moral standards, we endeavor to ensure that this research's findings are valid and reproducible while maintaining an unwavering commitment to ethical integrity in research practices.

3. RESULTS AND DISCUSSION

3.1. Demographic respondents

The analysis presented key insights into user acceptance of the SSI system. Table 1 shows the demographic data revealing that most respondents were aged between 31 and 35 (26.23%) and had 11 to 15 years of experience in the hospital setting (27.87%). This suggests that a significant proportion of the study participants were seasoned healthcare professionals, which may influence their acceptance of the SSI system.

The descriptive statistics for all variables are systematically presented in Table 2. The total score for the SN variable reached 641, yielding an average of 10.508. These measurement results indicate that the average score for SN is comparatively elevated, suggesting that respondents perceive a significant influence from individuals of importance regarding their beliefs about whether certain behaviors should or should not be enacted. A similar trend is observed across the remaining variables, including JR, OQ, RD, PU, PEOU, and IU, all of which also exhibit high mean values. In contrast, the variable pertaining to I garnered a moderate rating, with a mean score of 14.902. The variables are categorized as follows: low* (SN: 2-5; I: 3-8; JR: 2-5; OQ: 2-5; RD: 4-11; PU: 4-11; PEOU: 4-11; IU: 2-5), moderate** (SN: 6-9; I: 9-14; JR: 6-9; OQ: 6-9; RD: 12-19; PU: 12-19; PEOU: 12-19; IU: 6-9), and high*** (SN: 10-14; I: 15-21; JR: 10-14; OQ: 10-14; RD: 20-28; PU: 20-28; PEOU: 20-28; IU: 10-14).

Table 1. Demographic respondents

Characteristics	Frequent (N=61)	Percentage (%)
Age (Years)		
20-25	4	6.56
26-30	10	16.39
31-35	16	26.23
36-40	11	18.03
41-45	3	4.92
46-50	13	21.31
51-55	4	6.56
Length of work in the hospital (Years)		
1-5	11	18.03
6-10	12	19.67
11-15	17	27.87
16-20	8	13.11
21-25	6	9.84
26-30	5	8.20
>30	2	3.28

Table 2. Descriptive statistics

Variable	Minimum	Maximum	Mean	Sum	Standard deviation
FD	2	14	7.033	429	3.311
SN	2	14	10.508***	641	3.389
I	3	21	14.902**	909	4.679
JR	9	14	12.459***	760	1.444
OQ	6	14	10.803***	659	2.197
RD	12	28	21.066***	1.285	3.209
PU	15	28	24.098***	1.470	3.404
PEOU	14	28	22.639***	1.381	3.899
IU	6	14	12.066***	736	1.632

3.2. Outer analysis

Figure 1 explains the mandatory design of an outer model. This is because the nature of the indicators of each variable FD, SN, I, JR, OQ, RD, PEOU, PU, and IU is reflexive. The direction of the arrow on the measurement model is from the direction of the construe to the indicator, and the outer model is designed using smart-partial least squares 4 (PLS) software.

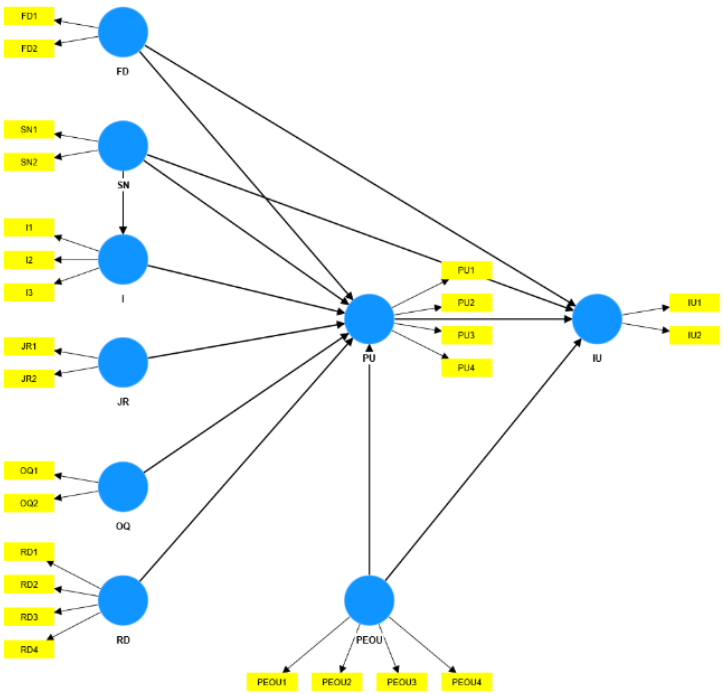

Figure 1. Outer model design with smartPLS 4 software

In the interim, Figure 2 provides a detailed representation of the initial execution of model loading factors. Notably, one indicator, the RD4 indicator, has a loading factor value of less than 0.5. This result suggests that the RD4 indicator does not meet the accepted threshold for construct validity, necessitating its exclusion from subsequent analyses.

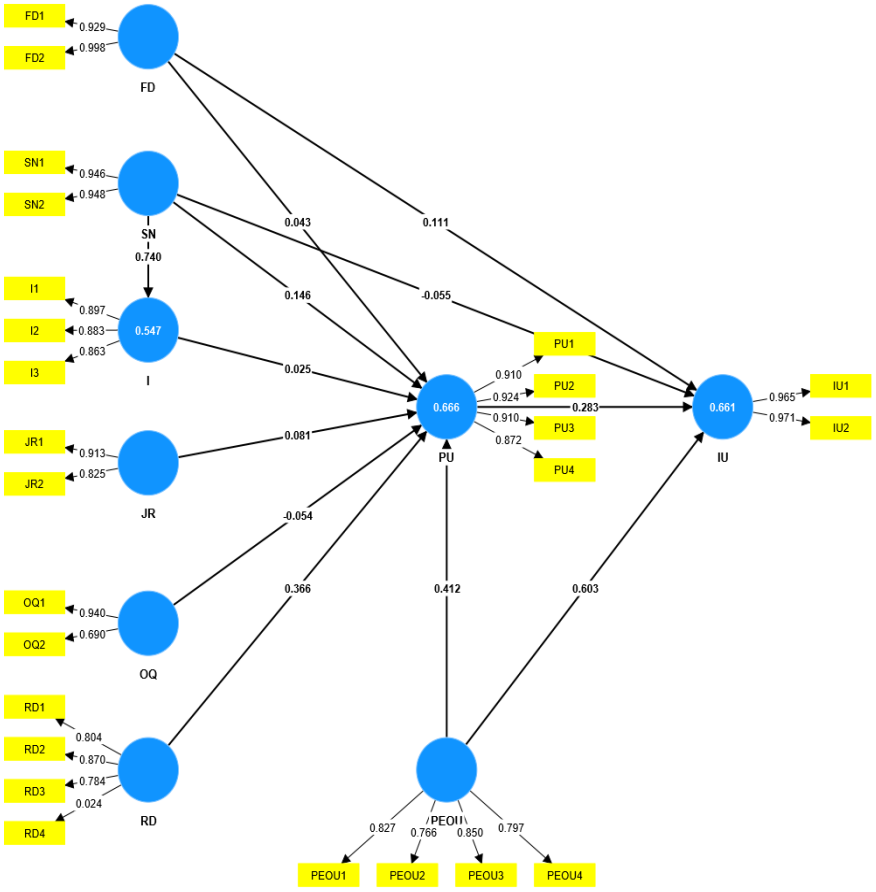

Figure 2. First model loading factor execution results

3.3. Inner model

After determining the suitability of the measurement model, the next step is to evaluate the structural model. To assess the structural model, the coefficient of determination (R^2) and the path coefficient must be examined [22]. R-square measures the proportion of variation in the value of an affected variable (endogenous) that can be explained by the variable that affects it (exogenous). Table 3 presents the R-squared values, which elucidate the proportion of variance explained by various factors in the study. Specifically, it is revealed that 54.7% of the variance in I is attributable to SN. In contrast, 66.7% of the variance in IU is elucidated by the combined effects of FD, SN, and PEOU. Furthermore, a substantial 68.9% of the variance in PU can be accounted for by the influences of FD, SN, I, JR, OQ, RD, and PEOU. The thresholds used for interpreting the R-squared values are as follows: an R-squared value of 0.75 is indicative of a substantial (strong) effect, a value of 0.5 reflects a moderate (medium) effect, and a value of 0.25 signifies a weak (small) effect. Furthermore, we measured the path coefficients between constructs to see the relationship's significance and strength. We tested the hypothesis to show an inner model (a structural model) that specifies the relationship between independent and dependent variables as shown in Figure 3.

Table 3. R-square results

	R-square	R-square adjusted
I	0.546	0.545
IU	0.667	0.665
PU	0.689	0.687

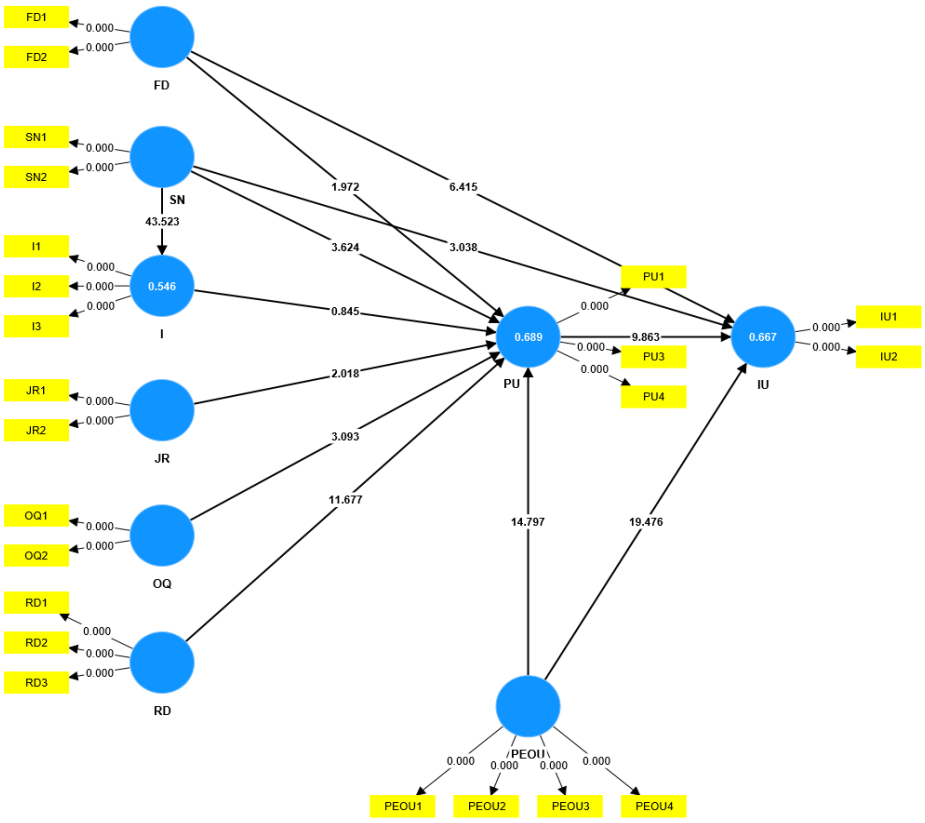

Figure 3. Test results of structural model/inner model

The results of the path analysis revealed significant relationships among the various constructions examined in the study in Table 4. Notably, SN negatively influenced IU (-0.054, p <0.01), suggesting that social pressures may discourage users from adopting the system. In contrast, PU exhibited a significant positive effect on IU (0.322, p <0.01), indicating that users are more likely to embrace the SSI system if they recognize its benefits for their workflow and patient care. PEOU showed strong positive correlations with both PU (0.476, p <0.01) and IU (0.565, p <0.01). This emphasizes the importance of a user-friendly system in promoting user adoption. Additionally, RD (0.364, p <0.01) significantly influenced PU, highlighting the necessity for users to have clear evidence of the system's benefits to fully appreciate its value. Conversely, OQ negatively impacted PU (-0.075, p <0.01), suggesting that technical shortcomings and inadequate system performance could hinder user acceptance. Furthermore, both JR (0.058, p <0.05) and FD (0.109, p <0.01) significantly affected PU and IU, underscoring the importance of aligning system functionality with users' job responsibilities and demographic characteristics.

Table 4. Results of the model structure/inner model

H	Relationship	Path	t-values	p values	Decision
H2	Subjective norm→intention to use	-0.054	3.038*	0	Accepted
H3	Subjective norm→perceived usefulness	0.12	3.624*	0.049	Accepted
H4	Subjective norm→image	0.739	43.523*	0.398	Accepted
H5	Image→perceived usefulness	0.025	0.845	0.044	Rejected
H6	Job relevance→perceived usefulness	0.058	2.018**	0.002	Accepted
H7	Output quality→perceived usefulness	-0.075	3.093*	0	Accepted
H8	Result demonstrability→perceived usefulness	0.364	11.677*	0	Accepted
H9	Perceived usefulness→intention to use	0.322	9.863*	0	Accepted
H10	Perceived ease of use→intention to use	0.565	19.476*	0	Accepted
H11	Perceived ease of use→perceived usefulness	0.476	14.797*	0	Accepted
H12	Factor demographics→intention to use	0.109	6.415*	0.002	Accepted

Notes. H: Hypothesis
*p<0.1, **p<0,05

This study investigates the relationship between FD, precisely age, length of service, and technology adoption. The findings demonstrate that demonstrability, JR, and PEOU significantly and positively influence PU as an intervening variable. Moreover, SNs and PEOU directly affect the intention to utilize technology. While these results are consistent with previous research [25], [26], they also reveal a significant divergence concerning the role of SNs. Furthermore, this study contributes to the existing literature by elucidating the complexities of SNs and their unexpectedly negative impact on the intention to adopt technology. This suggests that contextual factors, such as professional autonomy and individual judgment, may supersede social influences in decisions related to technology adoption.

An intriguing finding from the present study is the pronounced negative impact of SNs on the intention to utilize the application. Precisely, a 1% increase in SNs corresponds to a 0.054% decrease in the IU. This phenomenon indicates that an individual's perception of external pressures adopting the application may, paradoxically, deter its usage. Descriptive statistics reveal elevated levels of SNs and IU; however, their interaction reveals that participants do not perceive the application as beneficial. This stands in stark contrast to previous findings in research on the TAM2, which generally indicated either a neutral or positive correlation between SNs and IU [27]–[29]. Moreover, studies examining telecommunication services in Biucky *et al.* [27] and the adoption of augmented reality technologies [30] have reported similarly positive associations. The observed discrepancies may be attributed to context-specific factors, particularly in healthcare, where professionals often prioritize personal experiences and perceived advantages over external influences. Existing literature suggests that mandated technology adoption, particularly without clear benefits, can engender resistance among medical personnel [31].

A significant finding of this study is the detrimental effect of OQ on PU. While prior research has reported a positive correlation [32], [33], our results suggest that users perceive the application as inefficient, thus diminishing its perceived utility. Participants expressed that the system hampers their performance, decreasing productivity and increasing tedium in their work processes. This low level of engagement may be attributed to inadequate training and socialization concerning the application's functionalities. To mitigate these negative perceptions, it is essential to address these issues through system optimizations, usability enhancements, and targeted user training initiatives. Conversely, the demonstrability of results substantially influences PU, underscoring the importance of observable benefits derived from the system [34]. Users who witness tangible improvements, such as enhanced patient care or reduced surgical infections, are more inclined to regard the technology as valuable. This aligns with prior studies on electronic health records, highlighting the necessity for intuitive design and robust training programs to facilitate technology adoption [35], [36]. A possible explanation for this divergence is that healthcare professionals may prioritize personal experience and perceived advantages over external opinions. Previous studies have shown that mandatory technology adoption without clear benefits can lead to resistance among medical staff [37]–[39]. Therefore, institutions implementing the SSI system should emphasize evidence-based demonstrations to alleviate skepticism.

The significant impact of RD on PU underscores the critical need to make the system's benefits apparent to users [40]. When users can witness positive outcomes, such as decreased surgical infection rates and improved patient care, they are more likely to regard the system as valuable and integrate it into their workflows. Conversely, the negative influence of OQ on PU indicates that inefficiencies-such as slow processing times or technical glitches-can dissuade users from fully committing to the technology [41]. By addressing these issues through system enhancements and responsive technical support, organizations can bolster user perception and engagement. Furthermore, the strong correlation between PEOU, PU, and IU aligns with findings from previous studies on electronic health records [36]. Healthcare professionals are more inclined to accept systems that require minimal training and seamlessly integrate into their existing workflows. Research indicates that hospitals that invest in intuitive design and comprehensive training programs typically experience higher adoption rates [36]. Consequently, future implementations should prioritize reducing complexity and ensuring adequate user support to enhance technology acceptance.

The findings of our study highlight important practical implications for hospital management in enhancing the successful implementation of applications or technology. It is essential for hospitals to conduct regular training sessions that familiarize users with system functionalities and potential changes to workflows. Additionally, an early communication strategy should be established to effectively emphasize the application's benefits and alleviate any resistance among users. SNs play a crucial role, as they indirectly influence PU and image while directly affecting the IU application. Active involvement of management in the implementation process is also vital for facilitating smoother technological adoption, ultimately leading to improved outcomes in healthcare settings.

This study presents several limitations. Firstly, it was conducted in a single institution, Haji Hospital, which may restrict the generalizability of the findings to other healthcare settings. Future research should aim to include multiple institutions to enhance external validity. Secondly, the reliance on self-reported measures introduces the possibility of response bias. Incorporating objective usage data in future

studies could bolster the reliability of the findings. Additionally, this study did not account for external factors such as organizational policies, financial limitations, data security issues, and resistance from senior staff. Future research should investigate these aspects to provide a more comprehensive understanding of technology adoption.

Further investigations should also consider potential gender differences in technology acceptance, as perceptions of workload and IT innovation may vary across genders. Longitudinal studies could yield deeper insights into how user perceptions evolve over time, while qualitative methods, such as interviews and focus groups, could enrich our understanding of healthcare professionals' experiences with technology. Moreover, exploring regulatory changes and cybersecurity concerns could provide valuable insights into broader institutional and policy-level influences. Lastly, examining training programs and post-implementation support strategies may enhance adoption rates in hospital settings.

4. CONCLUSION

This study illustrates that models based on TAM2 are effective in predicting medical adoption. The findings are linked to the program evaluation of the SSI information system at Haji Hospital in East Java, Indonesia. Overall, respondents have a favorable perception of the application across most indicators, although its image is rated as only moderate. Recent observations reveal a negative relationship between SNs and the IU application, which contradicts previous assumptions in technology adoption research. Our results provide compelling evidence that this phenomenon is connected to perceptions of the application's usefulness (H2: β=0.12, $p < 0.01$) and ease of use (H10: β=0.565, $p < 0.01$), rather than being driven solely by social influence. Furthermore, the negative effect of OQ on PU (H7: β=-0.075, $p < 0.01$) suggests that users perceive the application as inefficient, which hampers their performance. This underscores the importance of improved training and proactive communication strategies to enhance user confidence and facilitate adoption. Future research should expand beyond a single hospital, explore gender differences in adoption behavior, and investigate the role of workplace culture and leadership in shaping technology acceptance. Addressing these factors will promote smoother technology transitions and ultimately improve efficiency and the quality of healthcare service delivery.

ACKNOWLEDGEMENTS

This study is a thesis for an academic degree in Master of Hospital Administration, Postgraduate Program, Universitas Muhammadiyah Yogyakarta, Indonesia. The authors would like to thank RSUD Haji Provinsi Jawa Timur, Surabaya, Indonesia, for supporting this study.

FUNDING INFORMATION

Authors state no funding involved.

AUTHOR CONTRIBUTIONS STATEMENT

This journal uses the Contributor Roles Taxonomy (CRediT) to recognize individual author contributions, reduce authorship disputes, and facilitate collaboration.

Name of Author	C	M	So	Va	Fo	I	R	D	O	E	Vi	Su	P	Fu
Afan Fatkhur Akhmad	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓			✓	
Maria Ulfa		✓	✓	✓		✓		✓	✓	✓		✓		

C : **C**onceptualization
M : **M**ethodology
So : **So**ftware
Va : **Va**lidation
Fo : **Fo**rmal analysis
I : **I**nvestigation
R : **R**esources
D : **D**ata Curation
O : Writing - **O**riginal Draft
E : Writing - Review & **E**diting
Vi : **Vi**sualization
Su : **Su**pervision
P : **P**roject administration
Fu : **Fu**nding acquisition

CONFLICT OF INTEREST STATEMENT

Authors state no conflict of interest.

INFORMED CONSENT

We have obtained informed consent from all individuals participating in this study. Written consent was collected from each participant, confirming that their involvement was voluntary. To maintain confidential data, participant responses have been anonymized, and all collected information is securely stored to protect against unauthorized access.

ETHICAL APPROVAL

The Institutional Ethics Committee of Haji Hospital in East Java Province granted ethical approval for this study (Ethics Committee File No. 073/32/KOM.ETIK/2023).

DATA AVAILABILITY

Derived data supporting the findings of this study are available from the corresponding author [MU] on request.

REFERENCES

[1] C. Abbafati *et al.*, "Global burden of 369 diseases and injuries in 204 countries and territories, 1990–2019: a systematic analysis for the global burden of disease study 2019," *The Lancet*, vol. 396, no. 10258, pp. 1204–1222, 2020, doi: 10.1016/S0140-6736(20)30925-9.

[2] A. Alkaaki *et al.*, "Surgical site infection following abdominal surgery: a prospective cohort study," *Canadian Journal of Surgery*, vol. 62, no. 2, pp. 111–117, 2019, doi: 10.1503/cjs.004818.

[3] J. D. M. Verberk *et al.*, "Semiautomated surveillance of deep surgical site infections after colorectal surgeries: a multicenter external validation of two surveillance algorithms," *Infection Control and Hospital Epidemiology*, vol. 44, no. 4, pp. 616–623, 2023, doi: 10.1017/ice.2022.147.

[4] J. Zhou, R. Wang, X. Huo, W. Xiong, L. Kang, and Y. Xue, "Incidence of surgical site infection after spine surgery: a systematic review and meta-analysis," *Spine*, vol. 45, no. 3, pp. 208–216, 2020, doi: 10.1097/BRS.0000000000003218.

[5] R. Flouchi *et al.*, "Incidence of surgical site infections and prediction of risk factors in a hospital center in Morocco," *Journal of Infection in Developing Countries*, vol. 16, no. 7, pp. 1191–1198, 2022, doi: 10.3855/jidc.15289.

[6] R. A. Syaiful, Y. Mazni, M. L. Prasetyo, and T. J. M. Lalisang, "Surgical site infection after digestive surgery in a single tertiary hospital in Indonesia: six years of data," *Medical Journal of Indonesia*, vol. 29, no. 3, pp. 310–315, 2020, doi: 10.13181/mji.oa.192698.

[7] C. Popescu, H. EL-Chaarani, Z. EL-Abiad, and I. Gigauri, "Implementation of health information systems to improve patient identification," *International Journal of Environmental Research and Public Health*, vol. 19, no. 22, 2022, doi: 10.3390/ijerph192215236.

[8] A. Ahad, M. Tahir, M. A. Sheikh, K. I. Ahmed, A. Mughees, and A. Numani, "Technologies trend towards 5G network for smart health-care using IoT: a review," *Sensors (Switzerland)*, vol. 20, no. 14, pp. 1–22, 2020, doi: 10.3390/s20144047.

[9] F. D. Davis, "Perceived usefulness, perceived ease of use, and user acceptance of information technology," *MIS Quarterly: Management Information Systems*, vol. 13, no. 3, pp. 319–339, 1989, doi: 10.2307/249008.

[10] M. Al-emran and K. Shaalan, *Recent advances in technology acceptance models and theories*, vol. 335. 2021.

[11] I. R. Supriadi *et al.*, "Infection prevention and control in Indonesian hospitals: identification of strengths, gaps, and challenges," *Antimicrobial Resistance and Infection Control*, vol. 12, no. 1, 2023, doi: 10.1186/s13756-023-01211-5.

[12] S. Upadhyay and H. F. Hu, "A qualitative analysis of the impact of electronic health records (EHR) on healthcare quality and safety: clinicians' lived experiences," *Health Services Insights*, vol. 15, 2022, doi: 10.1177/11786329211070722.

[13] M. T. Woldemariam and W. Jimma, "Adoption of electronic health record systems to enhance the quality of healthcare in low-income countries: a systematic review," *BMJ Health and Care Informatics*, vol. 30, no. 1, 2023, doi: 10.1136/bmjhci-2022-100704.

[14] O. Fennelly *et al.*, "Successfully implementing a national electronic health record: a rapid umbrella review," *International Journal of Medical Informatics*, vol. 144, 2020, doi: 10.1016/j.ijmedinf.2020.104281.

[15] M. Wulansari and M. Ulfa, "Evaluation of teleconsultation in the lactation clinic at RS AMC Muhammadiyah Yogyakarta," *United International Journal for Research & Technology*, vol. 4, no. 1, pp. 100–106, 2022.

[16] V. Venkatesh and F. D. Davis, "Theoretical extension of the technology acceptance model: four longitudinal field studies," *Management Science*, vol. 46, no. 2, pp. 186–204, 2000, doi: 10.1287/mnsc.46.2.186.11926.

[17] C. Maier, J. B. Thatcher, V. Grover, and Y. K. Dwivedi, "Cross-sectional research: a critical perspective, use cases, and recommendations for IS research," *International Journal of Information Management*, vol. 70, 2023, doi: 10.1016/j.ijinfomgt.2023.102625.

[18] E. E. Pérez-Guerrero *et al.*, "Methodological and statistical considerations for cross-sectional, case–control, and cohort studies," *Journal of Clinical Medicine*, vol. 13, no. 14, 2024, doi: 10.3390/jcm13144005.

[19] H. Barzekar, F. Ebrahimzadeh, J. Luo, M. Karami, Z. Robati, and P. Goodarzi, "Adoption of hospital information system among nurses: a technology acceptance model approach," *Acta Informatica Medica*, vol. 27, no. 5, pp. 305–310, 2019, doi: 10.5455/aim.2019.27.305-310.

[20] S. Nazari-Shirkouhi, A. Badizadeh, M. Dashtpeyma, and R. Ghodsi, "A model to improve user acceptance of e-services in healthcare systems based on technology acceptance model: an empirical study," *Journal of Ambient Intelligence and Humanized Computing*, vol. 14, no. 6, pp. 7919–7935, 2023, doi: 10.1007/s12652-023-04601-0.

[21] C. M. Ringle, S. Wende, and J.-M. Becker, "SmartPLS 4. Oststeinbek: SmartPLS," 2022.

[22] J. F. Hair Jr, G. T. M. Hult, C. M. Ringle, and M. Sarstedt, "A primer on partial least squares structural equation modeling (PLS-SEM)," in *Sage publications*, 2016.

[23] T. Escobar-Rodriguez and P. Monge-Lozano, "The acceptance of moodle technology by business administration students," *Computers and Education*, vol. 58, no. 4, pp. 1085–1093, 2012, doi: 10.1016/j.compedu.2011.11.012.

[24] G. D. Garson, *Partial least squares regression and structural equation models: 2016 edition*. 2014.

[25] R. H. Mustofa, T. G. Kuncoro, D. Atmono, H. D. Hermawan, and Sukirman, "Extending the technology acceptance model: the role of subjective norms, ethics, and trust in AI tool adoption among students," *Computers and Education: Artificial Intelligence*, vol. 8, 2025, doi: 10.1016/j.caeai.2025.100379.
[26] B. Chen, Y. Chang, B. Wang, J. Zou, and S. Tu, "Technology acceptance model perspective on the intention to participate in medical talents training in China," *Heliyon*, vol. 10, no. 4, 2024, doi: 10.1016/j.heliyon.2024.e26206.
[27] S. T. Biucky, N. Abdolvand, and S. R. Harandi, "The effects of perceived risk on social commerce adoption based on the TAM model," *International Journal of Electronic Commerce Studies*, vol. 8, no. 2, pp. 173–196, 2017, doi: 10.7903/ijecs.1538.
[28] H. Kristanto and R. W. Pratama, "Effects of the neuroticism and agreeableness personality types on entrepreneurial intention with subjective norm as moderator," *Expert Journal of Business and Management*, vol. 8, no. 1, pp. 57–66, 2020.
[29] S. M. Ho, M. Ocasio-Velázquez, and C. Booth, "Trust or consequences? causal effects of perceived risk and subjective norms on cloud technology adoption," *Computers and Security*, vol. 70, pp. 581–595, 2017, doi: 10.1016/j.cose.2017.08.004.
[30] X. Zhuang, X. Hou, Z. Feng, Z. Lin, and J. Li, "Subjective norms, attitudes, and intentions of AR technology use in tourism experience: the moderating effect of millennials," *Leisure Studies*, vol. 40, no. 3, pp. 392–406, 2021, doi: 10.1080/02614367.2020.1843692.
[31] S. Prasad and R. Anand, "Use of mobile telephone short message service as a reminder: the effect on patient attendance," *International Dental Journal*, vol. 62, no. 1, pp. 21–26, 2012, doi: 10.1111/j.1875-595X.2011.00081.x.
[32] X. A. Nguyen, D. H. Pho, D. H. Luong, and X. T. A. Cao, "Vietnamese students' acceptance of using video conferencing tools in distance learning in COVID-19 pandemic," *Turkish Online Journal of Distance Education*, vol. 22, no. 3, pp. 139–162, 2021, doi: 10.17718/tojde.961828.
[33] T. Zobeidi, S. B. Homayoon, M. Yazdanpanah, N. Komendantova, and L. A. Warner, "Employing the TAM in predicting the use of online learning during and beyond the COVID-19 pandemic," *Frontiers in Psychology*, vol. 14, 2023, doi: 10.3389/fpsyg.2023.1104653.
[34] M. Z. Yuan, J. W. Lin, C. C. Yang, I. C. Wang, and C. H. Hsu, "Effects of output quality and result demonstrability on the perceived usefulness of GPS sports watches from the perspective of industry 4.0," *Mathematical Problems in Engineering*, no. 1, 2021, doi: 10.1155/2021/4920167.
[35] P. Churi, A. Pawar, and A. J. Moreno-Guerrero, "A comprehensive survey on data utility and privacy: taking Indian healthcare system as a potential case study," *Inventions*, vol. 6, no. 3, 2021, doi: 10.3390/inventions6030045.
[36] I. Ko and H. Chang, "Interactive data visualization based on conventional statistical findings for antihypertensive prescriptions using national health insurance claims data," *International Journal of Medical Informatics*, vol. 116, pp. 1–8, 2018, doi: 10.1016/j.ijmedinf.2018.05.003.
[37] L. Li, H. Zhao, N. Lim, J. Goh, and B. Ng, "Association of use of electronic appointment reminders with waiting times in the veteran's affairs health system," *JAMA Network Open*, vol. 5, no. 2, 2022, doi: 10.1001/jamanetworkopen.2021.48593.
[38] D. R. Gerke, J. Glotfelty, S. Slovacek, M. Freshman, J. Schlueter, and K. Plax, "More than just reminders: using text messaging to improve HIV care outcomes among youth and young adults living with HIV," *AIDS and Behavior*, vol. 27, no. 9, pp. 2988–2996, 2023, doi: 10.1007/s10461-023-04022-2.
[39] R. Tapera and Y. Singh, "A bibliometric analysis of medical informatics and telemedicine in sub-Saharan Africa and BRICS nations," *Journal of Public Health Research*, vol. 10, no. 3, 2021, doi: 10.4081/jphr.2021.1903.
[40] J. Jankowski, P. Bródka, and J. Hamari, "A picture is worth a thousand words: an empirical study on the influence of content visibility on diffusion processes within a virtual world," *Behaviour and Information Technology*, vol. 35, no. 11, pp. 926–945, 2016, doi: 10.1080/0144929X.2016.1212932.
[41] R. Zhang, G. Simon, and F. Yu, "Advancing Alzheimer's research: a review of big data promises," *International Journal of Medical Informatics*, vol. 106, pp. 48–56, 2017, doi: 10.1016/j.ijmedinf.2017.07.002.

BIOGRAPHIES OF AUTHORS

Afan Fatkhur Akhmad is the Head of IT Departement at RSUD Haji, East Java, Indonesia. He holds a professional degree in pulmonology from the Faculty of Medicine, Airlangga University. He worked as a pulmonologist at RSUD Haji East Java from 2007. He is pursuing a Master's degree in Hospital Administration (MARS) at Muhammadiyah University Yogyakarta, with research interests in information technology in hospital management. He can be contacted at email: ahmadspp@gmail.com.

Maria Ulfa is a lecturer at Universitas Muhammadiyah Yogyakarta. She got her Ph.D. in 2020 at the Department of Preventive Environment and Nutrition, Institute of Biomedical Science, Tokushima University Graduate School, Tokushima, Japan. She actively conducts research in Infection Prevention and Control (IPC), including disinfection and sterilization using Ultraviolet (UV)-LED to inactivate the microorganism pathogens the green and healthy hospitals. She is an active member of the Indonesian Association of Hospital Engineering (IAHE), the International Ultraviolet Association (IUVA), and Global Green and Healthy Hospital (GGHH). Furthermore, she is also head of the Cooperation Division, Cooperation and International Affairs, Universitas Muhammadiyah Yogyakarta. She can be contacted at email: mariaulfa@umy.ac.id.