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Healthcare Professionals' Acceptance of Electronic Prescribing Systems at UNS Hospital: A TAM-Based Evaluation

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ABSTRACT

The implementation of electronic prescribing systems (EPS) in hospitals requires not only technological integration but also strong user acceptance to ensure sustainability. This study evaluated healthcare professionals' perceptions of EPS at UNS Hospital using the Technology Acceptance Model (TAM). A cross-sectional observational study was conducted by collecting questionnaire data from 50 respondents, including doctors, pharmacists, pharmacy assistants, and one dentist. Perceptions were assessed across five dimensions: ease of use, benefits, attitude, intention to use, and external factors, with analysis based on the Relative Importance Index (RII). Results demonstrated high acceptance, with RII values of 0.812 for ease of use, 0.840 for benefits, 0.848 for attitude, and 0.824 for intention to use. External factors, however, scored lower (RII = 0.748), particularly among pharmacists (0.650) and pharmacy assistants (0.685), indicating gaps in infrastructure, training, and technical support. These findings suggest that perceived usefulness and positive attitudes are the primary drivers of strong adoption intentions, even while external challenges persist. Managerial recommendations include strengthening technical assistance, ensuring reliable infrastructure, and providing continuous training to enhance confidence in EPS use. Importantly, this study contributes novel evidence from an Indonesian hospital context, serving as a benchmark for digital health transformation in the region. Future research should employ longitudinal and multi-center designs to validate these findings and explore changes in acceptance as the system matures.

Key Messages:

- The study demonstrates high user acceptance of the Electronic Prescribing System (EPS) at UNS Hospital, with strong positive perceptions of ease of use (80%), benefits (90%), and attitudes toward adoption (92%).
- The research provides novel evidence from an Indonesian hospital context, contributing to global literature on EPS adoption and offering practical insights for sustainable implementation in similar healthcare settings.

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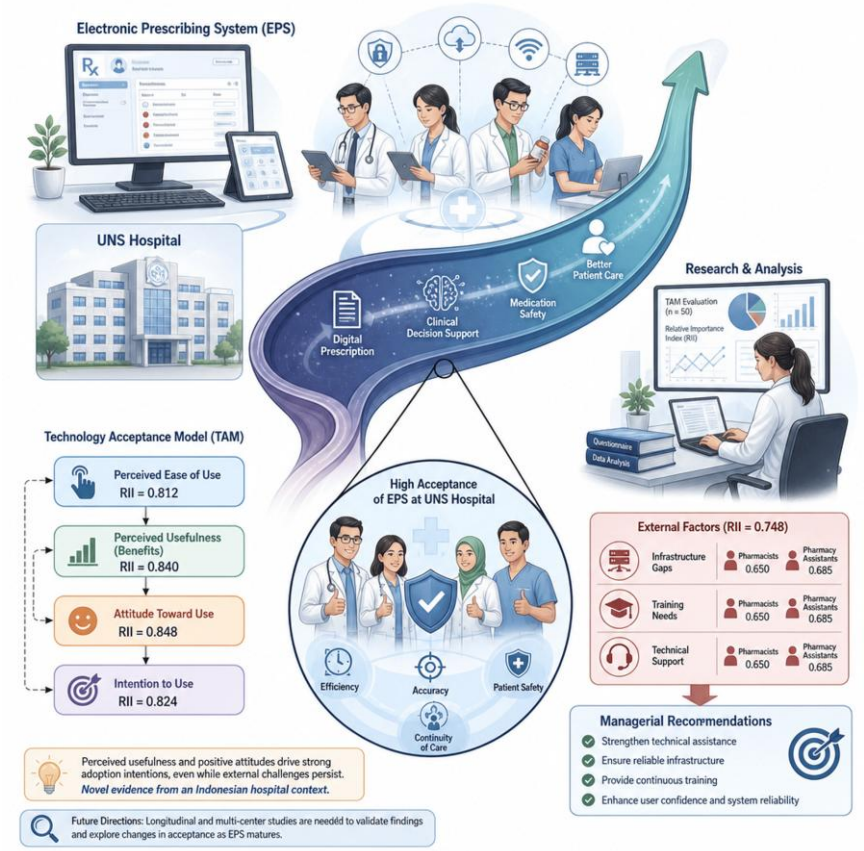
GRAPHICAL ABSTRACT



INTRODUCTION

Perceptions of technology use in the implementation of electronic prescribing systems (EPS) are very important for successful implementation (1). If healthcare professionals are not comfortable with the technology, they are less likely to use the EPS effectively, which can lead to prescribing errors and other issues(2–4). Several measures can be taken to enhance perceptions of technology use in the implementation of EPS. First, it is important to involve healthcare professionals in the planning and implementation processes. This will help them feel like they have a voice and that their opinions are valued. Second, comprehensive training on using the EPS is crucial. This training should cover all aspects of EPS, from creating prescriptions to monitoring their status. Lastly, it is important to provide ongoing support to healthcare professionals after implementation(5). This can be achieved by providing online resources, advanced training, and technical support. By improving perceptions of technology use, hospitals can increase the likelihood of successful EPS implementation (6).

EPS offers several benefits to patients and healthcare professionals, including increased prescription accuracy, efficiency, and safety(7). The Technology Acceptance Model (TAM) can be used to predict users' acceptance of technology. The TAM, developed by Davis and Venkatesh (1996)(8), is based on two factors: perceived usefulness and perceived ease-of-use. Perceived usefulness is a user's belief that technology will be beneficial to them. Perceived ease of use is the belief that technology is easy to use. While perceived ease of use is the belief that the technology is easy to use. However, in complex hospital environments, external variables such as technical infrastructure, organizational support, and adequate training are often critical, as they heavily influence these core perceptions and ultimately dictate the success of the implementation. Users who believe that technology is beneficial and easy to use are more likely to accept it(8,9). Conversely, users who do not believe that technology is beneficial or easy to use are less likely to accept it. The TAM has proven to be an effective model for predicting user acceptance of technology. This model has been used in various fields, including healthcare, information systems, e-commerce, and education(8).

The implementation of EPS in hospitals is a complex process that extends beyond technological

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integration. In Indonesia, while the digital transformation of healthcare systems is rapidly advancing, the adoption of EPS particularly in teaching hospitals faces unique systemic challenges and remains relatively under-evaluated in the literature. This necessitates a comprehensive approach that considers the human factors involved, particularly the acceptance and willingness of healthcare professionals to adopt and utilize these systems effectively. User acceptance is crucial because it directly affects the system's effectiveness, patient safety, and overall healthcare quality. The factors influencing user acceptance include perceived usefulness, ease of use, compatibility with existing workflows, and the level of training and support provided(10).

To enhance user acceptance, hospitals must prioritize stakeholder engagement throughout the implementation process (11). This involves conducting thorough needs assessments, involving end users in system design and customization, and providing comprehensive training programs. Additionally, addressing concerns related to data security, system reliability, and potential disruptions to established routines is essential in this regard. By fostering a culture of open communication and continuous improvement, hospitals can create an environment that supports the successful adoption of EPS, ultimately leading to improved medication management, reduced errors, and enhanced patient care outcomes(11).

In line with these principles, this study was conducted at UNS Hospital following the early-2024 implementation of its electronic prescribing system. Although the system was deployed to modernize clinical workflows, preliminary observations indicated anecdotal evidence of technical friction and initial user resistance among the staff. As a standard protocol for new health information systems, an immediate evaluation was deemed necessary to address these early adoption barriers. This study aimed to evaluated the perceptions of healthcare professionals regarding this specific implementation. Evaluating user perceptions is a critical step in identifying strengths and areas for improvement, thereby ensuring that the system is optimized for long-term success and sustainability.

METHODS

Study Design and Setting

This study employed a quantitative cross-sectional survey design to evaluate user perceptions of a newly implemented EPS. The research was conducted at Sebelas Maret University Hospital (UNS Hospital) after the system rollout in early 2024. Data collection took place from September 2024 to February 2025.

Population and Sampling

The study population consisted of healthcare professionals directly involved in prescribing and dispensing, namely doctors, pharmacists, and pharmacy assistants at UNS Hospital. A purposive sampling technique was employed to recruit respondents. The inclusion criteria required participants to be active EPS professionals practicing at UNS Hospital who were willing to participate by signing an informed consent form. The final sample comprised 50 participants, which effectively represents the active EPS user base directly interacting with the system in outpatient care during the study period.

Research Variables and Instrument

The independent variable was the implementation of the Electronic Prescribing System, and the dependent variable was user perception. Perceptions were operationalized using the Technology Acceptance Model (TAM) framework, with questionnaire items adapted from the original instruments developed by Davis and Venkatesh (1996) and tailored to the specific context of clinical tasks. Perceptions were measured across five key dimensions consisting of 27 total items: perceived ease of use (7 items), perceived usefulness (8 items), attitude towards usage (4 items), intention to use (4 items), and external factors (4 items). In this study, "external factors" were explicitly defined as variables relevant to the hospital's implementation context, specifically encompassing organizational support, training adequacy, and system quality(8,12).

Prior to the main data collection, a pilot study was conducted on a separate group of 30 relevant healthcare professionals outside of UNS Hospital to establish validity and reliability and prevent bias. The instrument demonstrated acceptable internal consistency for this population, yielding Cronbach’s alpha

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scores of 0.764 for ease of use, 0.736 for usefulness, 0.678 for attitude, 0.642 for intention, and 0.758 for external factors. Data were collected using this validated instrument, which utilized a five-point Likert scale (1 = Strongly Disagree to 5 = Strongly Agree) for closed-ended statements and included open-ended questions to gather qualitative feedback. The advantages of this scale include its ease of construction, straightforward interpretation, and quick completion time for the respondents.

Data Collection

The questionnaire was distributed to the selected participants with strict adherence to ethical principles. Prior to participation, all respondents provided signed Informed Consent. This document detailed the study's purpose, procedures, and any potential impacts of participation. Respondents were assured that their involvement was voluntary and that they could withdraw at any time without any consequences.

Data Analysis

Quantitative data from closed-ended questions were descriptively analyzed. To determine perception categories, the total aggregate score for each construct was calculated for each respondent. These total scores were then categorized into specific intervals (e.g., Strongly Agree, Agree, Neutral, Disagree, Strongly Disagree) based on the range of possible maximum and minimum scores divided by the number of categories, allowing for objective classification. The results are presented as frequencies and percentages. Because the number of questionnaire items varied by construct, the scoring intervals were tailored accordingly. For instance, the Ease of Use section contained 7 items, resulting in a cumulative score range of 7 to 35, which was systematically divided into intervals such as 30–35 representing 'Strongly Agree'. Similarly, the Benefits dimension comprised 8 items, yielding a range of 8 to 40 (e.g., 36–40 for 'Strongly Agree'). The remaining dimensions—Attitude Towards Using, Intention to Use, and External Factors—were each assessed using exactly 4 items, establishing a score range of 4 to 20 for each construct (e.g., 19–20 for 'Strongly Agree').

In addition to descriptive statistics and categorical interval classification, the data were further analyzed using the Relative Importance Index (RII) method. RII is widely applied in survey-based research to determine the relative significance of factors measured on a Likert scale. The formula is:

$$RII = \frac{\sum W}{A \times N}$$

Where:

- W= weight assigned by each respondent (Likert scale value)
- A= highest possible weight (e.g., 5 for a 5-point scale)
- N= total number of respondents

The RII value ranges between 0 and 1, with higher values indicating greater importance or stronger agreement. In this study, RII was calculated for each construct (Ease of Use, Benefits, Attitude, Intention to Use, and External Factors) as well as for each professional subgroup (doctors, pharmacists, pharmacy assistants, dentists). This allowed not only categorical classification (Strongly Agree, Agree, Neutral, etc.) but also ranking of constructs by their relative importance, thereby providing a more nuanced understanding of healthcare professionals' acceptance of EPS(13).

CODE OF HEALTH ETHICS

Respondents were addressed before the survey about the survey's objectives and purposes, and verbal consent to participate in the study was taken from them. To protect respondent privacy, the principles of anonymity and confidentiality were maintained rigorously. No identifying names were collected on the data collection sheets, and all information provided was kept strictly confidential by the researchers. This study received formal ethical approval from the Ethics Committee of the Faculty of Medicine, Universitas Sebelas Maret (approval no. 230 /UN27.06.11 / KEP/ EC/ 2023).

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RESULTS

Distribution of Questionnaire Respondents

Fifty healthcare professionals participated in this study (Table 1). The majority of respondents were female (68%, n = 34), while male respondents accounted for 32% (n = 16). In terms of profession, specialist doctors constituted the largest group of participants (68%, n=34). The sample included 8 pharmacists (16.0%) and 7 pharmacy assistants (14.0%). One dentist (2%) also participated in the survey. Regarding clinical departments, the pharmacy unit had the highest representation at 30% (n = 15), which is expected given its direct involvement with the prescribing system. The respondent pool encompassed a wide range of medical specialties, ensuring a comprehensive perspective.

Table 1.Distribution of Questionnaire Respondents

Category	Subcategory	n	%
Gender	Female	34	68%
	Male	16	32%
Profession	Specialist Doctor	34	68%
	Pharmacist	8	16%
	Pharmacy Assistant	7	14%
	Dentist	1	2%
Clinic/Unit	Pharmacy	15	30%
	Pulmonology	4	8%
	Internal Medicine	5	10%
	Cardiology	4	8%
	Neurology	3	6%
	Dermatology	3	6%
	Obstetrics & Gynecology	3	6%
	Surgery	3	6%
	Otolaryngology	2	4%
	Psychiatry	2	4%
	Ophthalmology	2	4%
	Urology	2	4%
	Physical Medicine & Rehabilitation	1	2%
	Dental & Oral Health	1	2%

Ease of Use of the EPS at UNS Hospital

Table 2 presents the perception of the Ease of Use of the Electronic Prescribing System (EPS) at UNS Hospital, analyzed using the Relative Importance Index (RII). The overall RII score for all respondents was 0.812, indicating a high level of agreement that the EPS is easy to use. When broken down by profession, doctors reported the highest RII value (0.829), reflecting their strong perception of system usability. Pharmacists followed with an RII of 0.775, while pharmacy assistants recorded a similar value (0.771), suggesting moderate but positive perceptions. The single dentist respondent demonstrated an RII of 0.800, also indicating favorable views. These RII values confirm that across all professional groups, the EPS is generally perceived as user-friendly, with doctors showing the strongest endorsement. The consistently high RII scores across professions highlight that ease of use is a key factor supporting user acceptance of the system, even though some variability exists between groups. This reinforces the conclusion that the EPS has achieved a strong level of usability among healthcare professionals at UNS Hospital.

Table 2. Perception of the Ease of Use of the EPS at UNS Hospital (n=50)

Interval	Category	All Respondents	Doctor	Pharmacist	Pharmacy Assistant	Dentist
		n	n	n	n	N
30 - 35	Strongly Agree	13	12	1	0	0
25 - 30	Agree	27	15	5	6	1
20 - 25	Neutral	10	7	2	1	0
13 - 19	Disagree	0	0	0	0	0
7 - 12	Strongly Disagree	0	0	0	0	0
	Total	50	34	8	7	1
	RII	0,812	0,829	0,775	0,771	0,800

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Benefits of EPS at UNS Hospital

Table 3 presents the perceived benefits of the Electronic Prescribing System (EPS) at UNS Hospital, evaluated using the Relative Importance Index (RII). Overall, the 50 healthcare professionals demonstrate a strong consensus regarding the system's usefulness, reflecting a highly positive overall RII of 0.840. When analyzing the perceptions across different professional groups, Doctors report the highest recognition of the system's benefits, leading the cohorts with an RII of 0.882. Both Pharmacists and the participating Dentist indicate a similarly strong positive perception, each recording an RII of 0.800. Meanwhile, Pharmacy Assistants report the lowest index among the groups at 0.771. Despite these slight variations—with prescribers generally perceiving a marginally higher benefit than pharmacy support staff—all RII values remain highly positive. This indicates a broad, cross-disciplinary agreement on the advantages and utility of implementing the EPS in their clinical workflow.

Table 3.Perception of the benefits of EPS at UNS Hospital (n=50)

Interval	Category	All Respondents	Doctor	Pharmacist	Pharmacy Assistant	Dentist
		n	n	n	n	n
36 - 40	Strongly Agree	15	14	1	0	0
29 - 35	Agree	30	17	6	6	1
22 - 28	Neutral	5	3	1	1	0
15 - 21	Disagree	0	0	0	0	0
8 - 14	Strongly Disagree	0	0	0	0	0
	Total	50	34	8	7	1
	RII	0,840	0,882	0,800	0,771	0,800

Attitude towards using the EPS at UNS Hospital

Table 4 presents the perception of attitudes towards using the Electronic Prescribing System (EPS) at UNS Hospital, analyzed using the Relative Importance Index (RII). The overall RII score for all respondents was 0.848, indicating a very strong positive attitude toward adopting and using the EPS. When examined by profession, doctors reported the highest RII value (0.858), reflecting their strong enthusiasm and comfort in transitioning to the electronic system. Pharmacists recorded an RII of 0.825, while pharmacy assistants showed a similar value (0.828), both suggesting favorable attitudes with consistent acceptance. The single dentist respondent demonstrated an RII of 0.800, also reflecting a positive stance. These RII values confirm that across all professional groups, healthcare professionals at UNS Hospital have developed a highly positive attitude toward the EPS. The consistently high scores highlight that affective acceptance is widespread, reinforcing the system's potential for long-term adoption and integration into daily clinical workflows

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Table 4. Perception of attitude towards using the EPS at UNS Hospital (n=50)

Interval	Category	All Respondents	Doctor	Pharmacist	Pharmacy Assistant	Dentist
		n	n	n	n	n
19 - 20	Strongly Agree	16	14	1	1	0
15 - 18	Agree	30	16	7	6	1
11 – 14	Neutral	4	4	0	0	0
7 – 10	Disagree	0	0	0	0	0
4 – 6	Strongly Disagree	0	0	0	0	0
	Total	50	34	8	7	1
	RII	0,848	0,858	0,825	0,828	0,800

The intention to use the EPS among Healthcare Professionals at UNS Hospital

Based on Table 5, the Intention to Use the Electronic Prescribing System (EPS) among healthcare professionals at UNS Hospital is generally high, as reflected by the Relative Importance Index (RII) values. The overall RII for all respondents is 0.824, indicating a strong level of agreement. Among professional groups, doctors show a high intention to use the EPS with an RII of 0.835, followed by pharmacists (RII = 0.800) and pharmacy assistants (RII = 0.771). Notably, the dentist group recorded the highest RII of 1.000,

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although this is based on a single respondent. Furthermore, none of the respondents expressed disagreement or strong disagreement, as all scores fell within the "Agree" and "Strongly Agree" categories, with the majority (30 out of 50) falling into the "Agree" category. Overall, the findings suggest a positive intention to adopt the EPS across all healthcare professional groups at the hospital.

Table 5.Intention to Use the EPS among healthcare professionals at UNS Hospital (n=50)

Interval	Category	All Respondents	Doctor	Pharmacist	Pharmacy Assistant	Dentist
		n	n	n	n	n
19 - 20	Strongly Agree	13	9	2	1	1
15 - 18	Agree	30	22	4	4	0
11 – 14	Neutral	7	3	2	2	0
7 – 10	Disagree	0	0	0	0	0
4 – 6	Strongly Disagree	0	0	0	0	0
	Total	50	34	8	7	1
	RII	0,824	0,835	0,800	0,771	1,000

External Factors Influencing EPS Implementation at UNS Hospital

Table 6 presents the perception of external factors influencing the implementation of the Electronic Prescribing System (EPS) at UNS Hospital, analyzed using the Relative Importance Index (RII). The overall RII score for all respondents was 0.748, which indicates a moderate level of agreement that external factors—such as infrastructure, training, and organizational support—play an important role in EPS adoption. When examined by profession, doctors reported the highest RII value (0.782), reflecting stronger recognition of external influences compared to other groups. Pharmacists recorded the lowest RII (0.650), suggesting more skepticism or neutrality regarding the adequacy of external support. Pharmacy assistants showed a similar moderate perception with an RII of 0.685, while the single dentist respondent demonstrated a relatively high RII of 0.800, indicating clear agreement.

These RII values highlight that while most healthcare professionals acknowledge the importance of external factors, perceptions vary considerably across professions. The lower scores among pharmacists and pharmacy assistants suggest that improvements in technical support, infrastructure reliability, and training programs are particularly needed to strengthen confidence in EPS implementation. Overall, external factors remain the most critical area for hospital management to address in order to ensure the system's sustainability and long-term success.

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Table 6. Perception of external factors influencing EPS implementation at UNS Hospital (n=50)

Interval	Category	All Respondents	Doctor	Pharmacist	Pharmacy Assistant	Dentist
		n	n	n	n	n
19 - 20	Strongly Agree	8	8	0	0	0
15 - 18	Agree	25	17	3	4	1
11 – 14	Neutral	13	7	4	2	0
7 – 10	Disagree	4	2	1	1	0
4 – 6	Strongly Disagree	0	0	0	0	0
	Total	50	34	8	7	1
	RII	0,748	0,782	0,650	0,685	0,800

Identification of Challenges in the Use of the Electronic Prescribing System (EPS) at UNS Hospital

Based on the results of an open-ended questionnaire (Table 7) involving 50 respondents, most users reported that they did not encounter significant obstacles in using the EPS at UNS Hospital. A total of 17 respondents stated that the system was already functioning well or that they had become accustomed to the existing workflow. This reflects a relatively high level of acceptance of the implemented system.

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Table 7. Summary of Challenges/Barriers in Using the EPS at UNS Hospital (n = 50)

Barrier Category	Example Responses	Number of Respondents
No significant barriers	"None", "already accustomed to it", "no difficulties"	17
Unstable internet connection/signal, slow, delayed	"Internet connection is somewhat unstable", "slow", "signal in the polyclinic", "long loading time", "frequent delays"	18
System errors/downtime/server issues	"System down", "server frequently experiences errors", "hospital information system (SIM RS) frequently experiences errors"	6
Feature/application limitations	"No mobile app available, only accessible via PC/laptop", "not integrated with online pharmacies"	3
Drug naming/searching issues	"Drug names are only in Indonesian", "searching for drugs is difficult due to language differences", "out-of-stock drugs do not appear"	4
Managerial/operational issues	"Suboptimal time allocation for ward rounds and therapeutic drug monitoring (PTO)"	1
National Health Insurance (BPJS)/formulary drug limitations	"Drug restrictions based on National/Hospital Formulary", "BPJS drug limitations"	2
Drug stock issues	"Out of stock even though it has been restocked", "drug quantity can be negative"	2

Nevertheless, several technical challenges were still experienced by some users. The most dominant barrier was unstable internet connectivity, reported by 18 respondents. This condition often caused the system to run slowly, resulting in prolonged loading times or delays in the prescribing process. Such issues directly affected service flow and represent external factors that require attention. In addition, system errors or server disruptions were reported by 6 respondents. These included sudden system downtime or errors in the hospital's SIM, which hindered prescribing activities. Other issues included drug naming and search problems (4 respondents), particularly due to language differences or incomplete drug listings in the system.

Some respondents also highlighted limited application features (3 respondents), such as the absence of a mobile-based application or integration with online pharmacies. More specific barriers included BPJS/formulary restrictions (2 respondents) and drug stock discrepancies (2 respondents), where stock availability did not match actual conditions. To address these challenges, respondents reported various strategies, including contacting the IT team, confirming through alternative communication channels, consulting colleagues, or retrying multiple times until the system stabilized. These strategies demonstrate user adaptation to technical barriers, although they do not fully resolve the root causes. Overall, these findings emphasize that while the EPS at UNS Hospital has been well accepted by most users, network stability, system reliability, and drug data consistency remain the main challenges. Improvements in these technical aspects are expected to enhance the efficiency, speed, and reliability of the system in supporting clinical and pharmaceutical services.

DISCUSSION

The results of the perception survey on the ease of use of the Electronic Prescription System (EPS) at UNS Hospital indicate a strong positive response from healthcare professionals. The overall RII score of 0.812 reflects a high level of agreement that the system is user-friendly. Doctors reported the highest RII (0.829), suggesting strong usability perceptions, while pharmacists (0.775) and pharmacy assistants (0.771) expressed moderately positive views. The dentist respondent also demonstrated a favorable RII (0.800). Although no respondents expressed disagreement, the 20% neutral responses highlight areas for improvement. To explain this 20% neutral response, qualitative feedback provides crucial context. Users specifically cited issues such as long loading times, frequent delays, and interface limitations like the absence of a mobile application or difficulties searching for drugs due to language differences. Addressing these specific technical lags and workflow interruptions is essential for creating a more robust "Areas for Improvement" strategy. Similar patterns emerge when compared with other studies. For instance, a study

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conducted in UK hospitals found that while EPS systems reduced medication errors and improved workflow, usability concerns, such as screen layout and information overload, affected the user experience (14). Another systematic review emphasized that although EPS enhances prescription accuracy and facilitates real-time data sharing, challenges remain in terms of technical complexity and user adaptation, especially among staff unfamiliar with digital systems(15). These comparisons suggest that while UNS Hospital has achieved a commendable level of EPS acceptance, ongoing efforts to refine system features and provide targeted support will be essential to match international standards and ensure long-term success.

The survey results on the perceived benefits of the EPS demonstrate that healthcare workers genuinely appreciate its implementation. The overall RII score of 0.840 confirms strong recognition of the system's usefulness. Doctors reported the highest RII (0.882), reflecting very strong endorsement of the EPS's benefits, while pharmacists (0.800) and the dentist (0.800) also expressed favorable views. Pharmacy assistants recorded the lowest RII (0.771), though still positive. These findings suggest that perceived usefulness is a major driver of acceptance. Importantly, the high usefulness scores appear to compensate for reservations about ease of use, reinforcing the TAM principle that perceived usefulness can "carry" overall acceptance even when usability concerns remain. This dynamic highlights the importance of continuously demonstrating tangible benefits—such as efficiency gains and patient safety improvements—to sustain user engagement. This indicates that as long as healthcare professionals strongly recognize the practical time-saving and patient safety benefits, they are willing to navigate the existing interface or connectivity barriers. These results are consistent with previous research on electronic prescribing. For instance, a study by Grammatikopoulou et al. (2024) similarly found that healthcare professionals in Greece recognized the benefits of EPS, particularly in terms of reducing prescription errors and improving workflow efficiency(6). The high percentage of agreement in the current study further reinforces the notion that well-implemented EPS are generally perceived as valuable tools in modern healthcare settings(6).

Attitudes toward the EPS at UNS Hospital were overwhelmingly positive, with an overall RII of 0.848. Doctors reported the highest RII (0.858), reflecting strong enthusiasm, while pharmacists (0.825) and pharmacy assistants (0.828) also demonstrated favorable attitudes. The dentist respondent recorded an RII of 0.800, indicating a positive stance. These consistently high scores confirm that healthcare professionals have developed strong affective acceptance of the EPS, aligning with global trends in electronic prescribing adoption. The absence of disagreement responses further underscores that the system has successfully mitigated common barriers such as workflow disruption and technical resistance, fostering a collaborative and supportive work environment. This high level of acceptance suggests that the system's implementation successfully mitigated common barriers such as workflow disruption and technical challenges, as seen in other studies. The findings from UNS Hospital are consistent with research from regions such as Libya and Ethiopia, which also report high approval rates, often over 75%, among medical staff (16). This widespread enthusiasm is primarily driven by the system's ability to significantly reduce medication errors, enhance efficiency, and improve overall patient safety benefits consistently highlighted in systematic reviews and meta-analyses. The lack of resistance observed at UNS Hospital, where no respondents expressed disagreement, further underscores the system's effectiveness in fostering a positive and collaborative work environment for doctors, pharmacists, and pharmacy assistants (17).

The findings on intention to use the EPS reveal strong readiness among healthcare professionals, with an overall RII of 0.824. Doctors reported high intention (0.835), pharmacists (0.800) and pharmacy assistants (0.771) expressed favorable but slightly lower levels, while the dentist respondent recorded the maximum RII of 1.000. These results indicate that despite minor usability concerns, healthcare professionals are committed to integrating EPS into long-term practice. Within the Indonesian context, this strong intention aligns with the national digital health roadmap, which emphasizes integrated health information systems. The findings highlight that while global adoption trends are mirrored, local challenges such as BPJS formulary restrictions and infrastructure variability add unique complexity to implementation in Indonesia. When compared with studies conducted in other countries, similar trends emerge where successful EPS implementation is often linked to perceived benefits like reduced medication errors, streamlined workflows, and enhanced patient safety(18)(19). In those contexts, government

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support and structured training programs played a crucial role in boosting user confidence. Likewise, research across multiple healthcare settings has emphasized the importance of system usability, data security, and interoperability in shaping user attitudes. Although 14% of UNS respondents remained neutral, this hesitancy may be addressed through targeted education and system optimization. Overall, the results suggest that the EPS at UNS Hospital has strong potential for widespread adoption, aligning with global patterns of digital transformation in healthcare(20).

The most critical finding for hospital management lies in the External Factors, which received the lowest overall score with an RII of 0.748. While 66% of respondents viewed external support as adequate, the RII for pharmacists dropped significantly to 0.650, indicating substantial skepticism regarding the current infrastructure. Qualitative data identified "unstable internet connections" (reported by 18 users) and "frequent server errors" (reported by 6 users) as primary barriers. This moderate RII suggests that while the software itself is accepted, the surrounding support ecosystem specifically hardware reliability, real-time drug stock accuracy, and technical assistance requires urgent optimization to transition neutral users into confident adopters. Comparing these findings to the early-2024 implementation timeline suggests that the current "early-rollout" phase is naturally prone to these technical assistance gaps. Swiftly bridging these infrastructural deficits is vital to transitioning neutral or dissatisfied users into confident adopters. This variation in perception highlights the importance of comprehensive support mechanisms to ensure successful system adoption. When compared to international studies, similar challenges and success factors emerge. For instance, a comparative study conducted in England and Sweden emphasized that management support and technical infrastructure are critical to EPS implementation, but gaps in training and system usability often hinder progress(21). Additionally, a review of community pharmacy settings found that system design, interoperability, and accessible resources significantly influenced user acceptance and satisfaction(22). These parallels suggest that while UNS Hospital has made strides in establishing a supportive environment, further investment in capacity building and responsive technical support is essential to align with global best practices and enhance the long-term sustainability of the EPS.

Limitations

Several limitations must be acknowledged when interpreting the findings of this study. First, the research was conducted with a relatively small sample size comprising 50 healthcare professionals. Additionally, the participants were selected using a purposive sampling technique and the study was confined to a single institution, UNS Hospital. Because the research captures the localized dynamics of a specific hospital setting, the generalizability of the results is inherently restricted. Consequently, this research should be viewed as a "case study" or "pilot evaluation" of early Electronic Prescribing System (EPS) adoption rather than a universal conclusion applicable to all hospitals across Indonesia. Future multi-center studies utilizing larger, randomized samples across various regional and national healthcare facilities are recommended to validate and expand upon these foundational insights.

CONCLUSION

The findings of this study demonstrate a generally high level of acceptance of the Electronic Prescribing System (EPS) among healthcare professionals at UNS Hospital. Analyzed through the Technology Acceptance Model (TAM), the high perceived usefulness and the overwhelmingly positive attitude among users serve as the primary drivers for a strong intention to continue using the system. These core positive perceptions effectively encourage continued adoption even while underlying infrastructure challenges persist. However, external factors—specifically regarding infrastructure, training, and technical support—remain the most critical area requiring managerial intervention, reflecting the lowest overall perception among the system users. Hospital leadership must prioritize targeted interventions to address these technical gaps by providing highly responsive technical assistance, developing robust IT infrastructure (such as reliable network stability and server performance), and implementing continuous, role-specific training programs for all system users.

These findings serve as a vital benchmark for digital health transformation within the Indonesian healthcare system, providing novel and actionable insights, particularly for hospitals currently navigating

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the early stages of their own EPS rollouts. To build upon this foundational evidence, future research should encompass a longitudinal study to determine if user acceptance levels change as the system matures past its initial "early-2024" implementation phase. Furthermore, conducting a follow-up study with a larger, multi-center sample size is recommended to validate these initial findings and establish broader generalizations.

DECLARATION OF THE USE OF AI

The authors declare that no artificial intelligence (AI), AI-assisted technologies, or large language models (LLMs) were used in the conception of the study, data analysis, or the drafting, writing, and editing of this manuscript. The only exception is the graphical abstract, which was created using the design platform Illustrae (https://illustrae.co/). The authors take full responsibility for the content and accuracy of the graphical abstract and the entire manuscript

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CONFLICTS OF INTEREST

The authors declare no conflict of interest.

REFERENCES

1. Benkhaial AA, Elsiaty AE, Alwarfly BE, Alhodere HA. The Knowledge and Attitude of Physicians working at the Benghazi Medical Center toward Electronic Prescribing Systems. Sci J Univ Benghazi. 2022 Jun;35(1).
2. Schiff G, Mirica MM, Dhavle AA, Galanter WL, Lambert B, Wright A. A prescription for enhancing electronic prescribing safety. Health Aff. 2018;37(11):1877–83.
3. Kenawy AS, Kett V. The impact of electronic prescription on reducing medication errors in an Egyptian outpatient clinic. Int J Med Inform [Internet]. 2019;127(April):80–7. Available from: https://doi.org/10.1016/j.ijmedinf.2019.04.005
4. Franklin BD, Puaar S. What is the impact of introducing inpatient electronic prescribing on prescribing errors? A naturalistic stepped wedge study in an English teaching hospital. Health Informatics J. 2020;26(4):3152–62.
5. Torres-Castaño A, González-González AI, Toledo-Chávarri A, Abt-Sack A, Bermejo-Caja CJ, Orrego C, et al. Healthcare {Professionals}' {Perceptions} about the {Implementation} of {Shared} {Decision}-{Making} in {Primary} {Care}: {A} {Qualitative} {Study} from a {Virtual} {Community} of {Practice}. Int J Integr Care. 2024 Apr;24(2):8.
6. Grammatikopoulou M, Lazarou I, Giannios G, Kakalou CA, Zachariadou M, Zande M, et al. Electronic prescription systems in {Greece}: a large-scale survey of healthcare professionals' perceptions. Arch Public Heal. 2024 May;82(1).
7. Pedersen CA, Schneider PJ, Ganio MC, Scheckelhoff DJ. {ASHP} national survey of pharmacy practice in hospital settings: {Prescribing} and transcribing-2019. Am J Heal Pharm. 2020 Jun;77(13):1026–50.
8. Davis FD, Venkatesh V. A critical assessment of potential measurement biases in the technology

acceptance model: Three experiments. Int J Hum Comput Stud. 1996;45(1):19–45.
9. Lun L, Juan X, Fulai W, Zetian D, Hoe TW, Jiaxin D. Factors Influencing User Intentions on Interactive Websites: Insights From the Technology Acceptance Model. IEEE Access. 2024 Jan;12:122735–56.
10. Alipour J, Payandeh A, Hashemi A, Aliabadi A, Karimi A. Physicians' {Perspectives} with the {E}-prescribing {System} in {Five} {Teaching} {Hospitals}. Appl Clin Inform. 2024 May;15(3):428–36.
11. Liu D, Niu Y, Lu W. Extended Technology-Acceptance Model to Make Smart Construction Systems Successful. J Constr Eng Manag. 2018 Mar;144(6).
12. Fecira D, Mohd T, Abdullah K. ANALISIS PENERIMAAN E-LEARNING. 2020;02(04):35–50.
13. Sakhare VD, Patil GS. Construction Equipment Monitoring : By Using Relative Important Indices (Rii) Analysis. 2019;261–3.
14. Aufegger L, Serou N, Chen S, Franklin BD. Evaluating users' experiences of electronic prescribing systems in relation to patient safety: A mixed methods study. BMC Med Inform Decis Mak. 2020;20(1):1–8.
15. Dwi Lestari R, Sundari S, Trisnadi S. Systematic Literature Review on The Use of Electronic Prescribing (E-Prescribing) At Hospital Installation. J Aisyah J Ilmu Kesehat. 2024;9(2):1115–25.
16. Eltajoury WM, Maatuk AM, Denna I, Elberkawi EK. Physicians' attitudes towards electronic prescribing software: Perceived benefits and barriers. ACM Int Conf Proceeding Ser. 2021;47–53.
17. Sema FD, Kebede AG, Soworsu GZ, Mengistu TT, Assen HE, Muche EA, et al. Perception of Healthcare Professionals towards Electronic-Prescribing at University of Gondar Comprehensive Specialized Hospital, Northwest Ethiopia: A Cross-Sectional Study. Biomed Res Int. 2024;2024.
18. United States Department of Health and Human Services. Electronic Health Record Adoption and Electronic Prescribing [Internet]. Official Website of the Assistant Secretary for Technology Policy/Office of the National Coordinator for Health IT; 2021. Available from: http://www.hhs.gov/healthit/onc/mission/
19. Radley DC, Wasserman MR, Olsho LEW, Shoemaker SJ, Spranca MD, Bradshaw B. Reduction in medication errors in hospitals due to adoption of computerized provider order entry systems. J Am Med Informatics Assoc. 2013;20(3):470–6.
20. Brabcová I, Tóthová V, Hajduchová H, Chloubová I, Červený M, Prokešová R, et al. Evaluation of medication errors in the hospital environment. Vnitr Lek. 2022 Oct;68(E-6):E03--E09.
21. Chan TKH. Association for Information Systems Challenges and Success Factors of Implementation of Electronic Prescription Service : A Comparative Study of England and Challenges and Success Factors of Implementation of Electronic Prescription Service : A Comparativ. AIS Electron Libr. 2022;
22. Hareem A, Lee J, Stupans I, Park JS, Wang K. Benefits and barriers associated with e-prescribing in community pharmacy – A systematic review. Explor Res Clin Soc Pharm [Internet]. 2023;12(August):100375. Available from: https://doi.org/10.1016/j.rcsop.2023.100375

https://doi.org/10.56303/jhnresearch.v5i2.1263