


Factors Influencing the Success of Electronic Prescription Implementation in Indonesia: A Literature Review

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Article Info	ABSTRACT
<p>Keywords: Factors influencing e-prescribing, Implementation of e-prescribing Benefits of e-prescribing Barriers to e-prescribing</p>	<p>Electronic prescribing, or e-prescribing, is a digital system that allows doctors to create prescriptions and send them to specific pharmacy computers connected to an electronic prescription network, facilitating direct communication between physicians and their practices. Rapid technological advances in healthcare have made it easier for doctors to prescribe medications electronically, eliminating the need for handwritten prescriptions. In e-prescribing, prescriptions are sent over a secure internet network, requiring user authentication through a username and password. Benefits of implementing electronic prescribing include reducing medication errors in prescription interpretation, increasing prescription processing efficiency, and improving the quality of healthcare services. Implementing electronic prescribing often faces challenges, such as inadequate funding, negative perceptions of the technology, lack of computer skills, and complexity in data entry. This article aims to identify factors influencing the successful implementation of electronic prescribing in Indonesia. A literature review using scientific databases including Google Scholar, PubMed, and NCBI has been conducted. Various factors have been identified that can influence the effectiveness of electronic prescribing, including organizational elements, technological aspects, and human resources. Understanding these factors can guide policy development and the assessment of healthcare workers in implementing electronic prescribing, resulting in effective electronic prescribing.</p>
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INTRODUCTION

Digital transformation in healthcare services is currently crucial in Indonesia. One tangible innovation in healthcare services is the implementation of electronic prescribing (e-prescribing). E-prescribing is a drug prescribing system that uses software to simplify drug prescribing services (Suprihati & Andriani, 2024). E-prescribing systems implemented in various countries such as the United States, Denmark, Finland, Sweden, and the United Kingdom have covered most of the prescribing process and have been carefully developed to achieve significant maturity and generate substantial benefits for the healthcare systems in these countries (Samadbeik et al., 2017). Furthermore, Australia implements e-prescribing, encompassing the creation and uploading of electronic and physical prescriptions to the Prescription Exchange System (PES) (Hareem et al., 2024). In Indonesia, Regulation of the

Minister of Health of the Republic of Indonesia No. Ministerial Regulation No. 24 of 2022 mandates the implementation of an electronic patient medical history recording system, which includes the implementation of an e-prescribing system as an initial step to improve the effectiveness of patient treatment history documentation (Minister of Health Regulation, 2022). Implementing an electronic prescription system offers several benefits, including operational efficiency and cost savings, improved accuracy and patient safety, patient data integration, and increased patient satisfaction (Prihastomo, 2025).

The implementation of electronic prescriptions (e-prescribing) is expected to replace manual prescriptions. Electronic prescriptions can reduce prescribing time and improve accuracy in reading and prescribing medications. Manual prescribing requires time to prepare prescriptions, and sometimes the doctor's handwriting is illegible, leading to errors in prescribing medications. Medication errors are errors in medication use that can have adverse effects on patients, occurring at the prescribing, transcribing, dispensing, and administration stages. Prescribing errors are medication errors that occur during the prescribing process, including illegible drug names, numerical units, prescribed dosage forms, and doses (Khairurrijal & Putriana, 2017). According to research by Roscita et al. (2023), the prevalence of pharmaceutical errors in manual prescribing is 58.78%, compared to 8.4% in electronic prescribing. This suggests that electronic prescribing (e-prescribing) can reduce the occurrence of prescribing errors (Roscita et al., 2023). In line with the results of the systematic review by Maurilla and Inge, 2024, which showed that the implementation of e-prescribing can reduce pharmaceutical errors and increase the reporting rate of errors in prescribing (Putri & Dhamanti, 2024).

However, the implementation of electronic prescriptions does not always run smoothly. There are obstacles that can affect the success of electronic prescription implementation. According to research by Almutairi (2018), obstacles to electronic prescription implementation include limited funding, negative perceptions of the technology, limited computer skills, difficulty entering data, and limited interoperability (Almutairi et al., 2018).

An initial strategy to overcome these obstacles is to identify factors influencing the successful implementation of electronic prescriptions. Therefore, efforts to implement electronic prescriptions can be accelerated because the benefits of transforming prescriptions from physical to electronic formats are significant. The implementation of electronic prescriptions can provide a strong foundation for a more modern and responsive healthcare system. Considering this background, a comprehensive study is needed to identify factors influencing the successful implementation of electronic prescriptions. This research is expected to provide a deeper understanding of the aspects supporting the implementation of electronic prescriptions, thus providing a basis for developing development strategies, quality improvement, and policies related to digital transformation in clinical pharmacy and healthcare.

METHOD

The method used in this study was a literature review related to factors influencing the successful implementation of e-prescribing. The literature used consisted of relevant articles

selected with publications ranging from 2017 to 2025. The literature search was obtained through the Google Scholar, PubMed, and NCBI databases using keywords relevant to the research topic, namely: factors influencing e-prescribing, e-prescribing implementation, and e-prescribing barriers.

RESULTS AND DISCUSSION

Electronic prescribing, or e-prescribing, is a digital technology used by physicians to create electronic prescriptions and send them to pharmacy computers connected to an e-prescribing network. Another definition of e-prescribing is the electronic procedure of creating and sending prescription requests from physicians, which are then sent directly by the service provider to the pharmacy computer authorized by the physician's office (Adrizal et al., 2019).

In Indonesia, the use of electronic prescriptions has been widely implemented. Implementing electronic prescriptions requires aspects that facilitate their success. Factors influencing the success of electronic prescription implementation are divided into three: organizational components, technological components, and human resources components (Amanda et al., 2020). The following is a description of the three components influencing the success of electronic prescription implementation in Indonesia:

1. Organizational Components

Organizational components include a structure that facilitates management support for effective e-prescribing implementation, a conducive work environment, and established standards for e-prescribing utilization (Amanda et al., 2020). One critical factor in achieving the success of an e-prescribing system is management support (Amanda et al., 2020). Management offers support through active participation in e-prescribing implementation and a shared commitment with healthcare professionals to provide exceptional service, ultimately strengthening patient trust. Furthermore, workplace elements include the provision of adequate infrastructure, including appropriate hardware and software, personnel proficiency in system operation, and financial resources for system facility maintenance (Amanda et al., 2020).

Prescription requirements describe the prescription lists in the National Formulary and Hospital Formulary (Utami & Dyahariesti, 2024). This is in line with research by Ayang et al. (2024), who stated that Roemani Muhammadiyah Hospital in Semarang has implemented various standards for electronic prescriptions. These include formulary and benefit standards, which encompass the National Formulary and Hospital Formulary; script standards that document patient treatment history; surescript standards that track the purchase of medications not covered by insurance; and structured and codified SIG standards that ensure clarity and legibility in physicians' medication administration instructions (Utami & Diahariesti, 2024).

2. Technology Components

Technology components include system quality, service quality, and data and information quality (Amanda et al., 2020). Advanced technology can improve the effectiveness of electronic prescription implementation. Therefore, system update capabilities

should be assessed regularly. Advanced systems can impact data transfer and storage speeds.(Vejdani et al., 2022).

Technological components include user-friendly software from the provider, smooth internet connectivity, data security and patient privacy, and system transparency and accountability. Research conducted by Ayang et al. (2017) and Farida et al. (2017) shows that smooth internet connectivity allows doctors to send prescriptions to pharmacists. To maintain patient confidentiality, users must use username and password authentication to log in and restrict access to local Wi-Fi networks. Transparency and accountability must be upheld to prevent bias in prescribing drugs and ensure there is no conflict of interest between stakeholders (Utami et al., 2024 & Farida et al., 2017). In line with research by Untung et al. (2025), it states that patient data security is based on three aspects: confidentiality, integrity, and availability. Access to the confidentiality of patient data security is limited only to individuals who have the username and password; the integrity of the security and accuracy of the data is fully maintained by authorized personnel who can be held accountable for its modification. The availability aspect ensures that data and information can be accessed by designated officers as determined by the head of the health service (Suharyono et al., 2025).

3. Human Resources Components

Human resource components include healthcare workers' understanding of e-prescribing, training and mentoring in e-prescribing, perceived ease of use and benefits, and proficiency in implementing e-prescribing. Research by Moh. Husnun Niam et al. (2021) showed that healthcare workers' knowledge, particularly physicians who are experts in e-prescribing, is a significant factor influencing the successful implementation of an e-prescribing system. This includes understanding e-prescribing and providing recommendations for effective implementation (Niam et al., 2021). Routine e-prescribing training should be implemented for all physicians and pharmacists to improve their e-prescribing proficiency. In addition to training, mentoring should be provided to improve the implementation of e-prescribing by physicians and pharmacists (Niam et al., 2021).

According to research by Rizki et al. (2020), perceived ease of use of e-prescribing reflects an individual's belief that using the technology is not complicated. This concept indicates that the e-prescribing method is user-friendly. Furthermore, perceived usefulness is defined as the extent to which individuals believe that using the technology will improve their job performance (Rijatullah et al., 2020). This is in line with research by Farida et al. (2017) which states that proficiency is very important for the implementation of e-prescribing. These skills include monitoring the system during sudden shutdowns, errors, or other complications (Farida et al., 2017).

CONCLUSION

Based on the results of the literature review, it can be concluded that there are three main factors influencing the successful implementation of e-prescriptions in Indonesia. These three main factors include organizational components, technological components, and human resources components. However, there is still a gap in research regarding the effectiveness of e-prescription implementation in Indonesia, particularly in the context of regional hospitals

and private clinics. Therefore, further understanding and evaluation of these factors are needed to provide a basis for successful e-prescription implementation, as well as further studies that assess success factors based on the local context.

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