



FACTORS INFLUENCING THE USE OF ONLINE REGISTRATION APPLICATIONS IN HOSPITALS: A SYSTEMATIC REVIEW

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ABSTRACT

Advances in information and communication technology have driven digital transformation in the healthcare sector, including patient registration systems in hospitals. Online registration applications have been developed to increase efficiency, reduce queues, and accelerate access to services. However, adoption remains low and is influenced by various individual, technical, and structural factors. This study aims to identify factors that influence the use of online registration applications in hospitals, so that it can provide a comprehensive picture for the development of digital-based services. The study used a systematic review method with PRISMA guidelines. Literature sources were searched through Google Scholar, Semantic Scholar, ProQuest, and ScienceDirect with related keywords. Inclusion articles were published between 2015 and 2025, were quantitative, descriptive, survey, or cross-sectional, and discussed factors influencing the use of online registration applications in hospitals. The keywords used were application, online registration, determinant factors, and hospital. Of the 1,060 articles screened, 9 articles were selected for analysis. A total of 9 articles were synthesized based on the findings of what factors influence the use of online registration applications in hospitals. The review identified five key factors influencing the use of online registration applications: perceived usefulness, perceived ease of use, patient satisfaction, social influence and trust, and facilitating conditions and regulations. These factors operate simultaneously in shaping patient intentions and behavior toward online registration applications. Online registration applications in hospitals are more accepted when they are perceived as useful, easy to use, increase patient satisfaction, and are supported by social factors, trust, and adequate regulations. These findings can inform hospital strategies and health policies to increase the use of digital applications.

Keywords: application; determinant factors; hospital; online registration

How to cite (in APA style)

Istriyah, I., Mendrofa, F. A. M., & Dedi, B. (2025). Factors Influencing the Use of Online Registration Applications in Hospitals: A Systematic Review. *Indonesian Journal of Global Health Research*, 8(1), 61–68. <https://doi.org/10.37287/ijghr.v8i1.291>.

INTRODUCTION

The development of information and communication technology has brought significant changes to the healthcare sector, including patient registration systems in hospitals. This digital transformation aligns with the need to improve the efficiency, effectiveness, and quality of healthcare services in various countries. The World Health Organization (WHO) defines e-health as the use of information and communication technology for healthcare, encompassing clinical services, administration, and health information systems (WHO, 2008). One rapidly developing e-health implementation is the online hospital registration application, designed to make it easier for patients to access healthcare services without having to wait in long lines.

In Indonesia, several hospitals have developed online registration applications to support digital-based service systems. For example, RSA UGM and Kasih Ibu Hospital, Tabanan Studies have demonstrated how applications can improve service efficiency through patient registration, doctor scheduling, and access to laboratory results (Haryono & Kusumawardhana, 2021; Pujarini & Darma, 2024). However, the adoption rate of these applications remains relatively low. Research at Gadjah Mada University Hospital (RSA UGM) showed that only a small proportion of patients

utilized the system despite the application's availability, indicating a gap between technology availability and user acceptance (Haryono & Kusumawardhana, 2021).

Various international studies have also highlighted similar challenges. A study in Taiwan confirmed that the adoption of web-based registration systems is influenced by factors such as service quality, perceived usefulness, and ease of use (Chang et al., 2015). Research in Saudi Arabia highlighted barriers such as data privacy, weak regulations, and the lack of doctor-patient relationships in online systems (Alanezi, 2020). Meanwhile, a study in Zimbabwe emphasized the importance of ICT infrastructure support, healthcare worker skills, and government policy support in supporting e-health implementation (Furusa & Coleman, 2018).

Factors influencing patient acceptance of online registration applications can be analyzed using a theoretical framework such as the Technology Acceptance Model (TAM). And Unified Theory of Acceptance and Use of Technology (UTAUT) . Research at Fatmawati General Hospital found that perceived ease of use and behavioral intention were the main predictors of application acceptance (Rumana et al., 2020). Meanwhile, a UTAUT-based study in Surabaya showed that patient experience, IT skills, and knowledge also influenced usage behavior (Sa'idah, 2017).

In addition to usability and ease of use, patient satisfaction, social influence, and trust are also important determinants of app adoption. A study in Shanghai showed that satisfaction and social influence have a direct effect on patients' intention to use online apps (Li et al., 2024). Research in Indonesia confirmed that trust in the HiDok app increases satisfaction and ultimately drives app use (Pujarini & Darma, 2024). This confirms that acceptance of health technology is not only a technical issue but also relates to psychological and social factors.

Based on these findings, it is important to conduct a systematic review of the factors influencing the use of online registration applications in hospitals. This study aims to integrate the results of previous research to provide a comprehensive overview of the main determinants of application adoption, including individual, technical, and structural aspects. The results of this systematic review are expected to form the basis for developing hospital strategies and health policies to increase the use of online registration applications, thereby making healthcare services more efficient, effective, and oriented towards patient satisfaction.

METHOD

This research is a systematic review *using* the PRISMA (*Preferred Reporting Items for Systematic Reviews and Meta-analyses*) method. This method was conducted systematically by following the correct research stages or protocols. The *systematic review procedure* consists of several steps, namely: 1) compile background *and purpose*; 2) *research question*; 3) *searching for the literature*; 4) *selection criteria*; 5) *practical screen*; 6) *quality checklists and procedures*; 6) *data extraction strategy*; 7) *data synthesis strategy* (Ningsih, Adi & Saraswati, 2019). The literature search was conducted using *Google Scholar*, *Semantic Scholar Proquest*, and *ScienceDirect*. The keywords used were application, online registration, determinant factors, and hospital. In addition to keywords, the article search was based on articles written between 2015 and 2025, resulting in 1,060 journal articles. The final result was that 9 articles met the inclusion criteria. analyzed. Journal articles were selected based on several inclusion criteria. The inclusion criteria in this study include the following: 1) Research articles published in 2015-2025; 2) The type of research design is quantitative, descriptive, cross-sectional; survey; 3) The research study discusses the factors that influence the use of online registration applications; 4) implemented in hospitals.

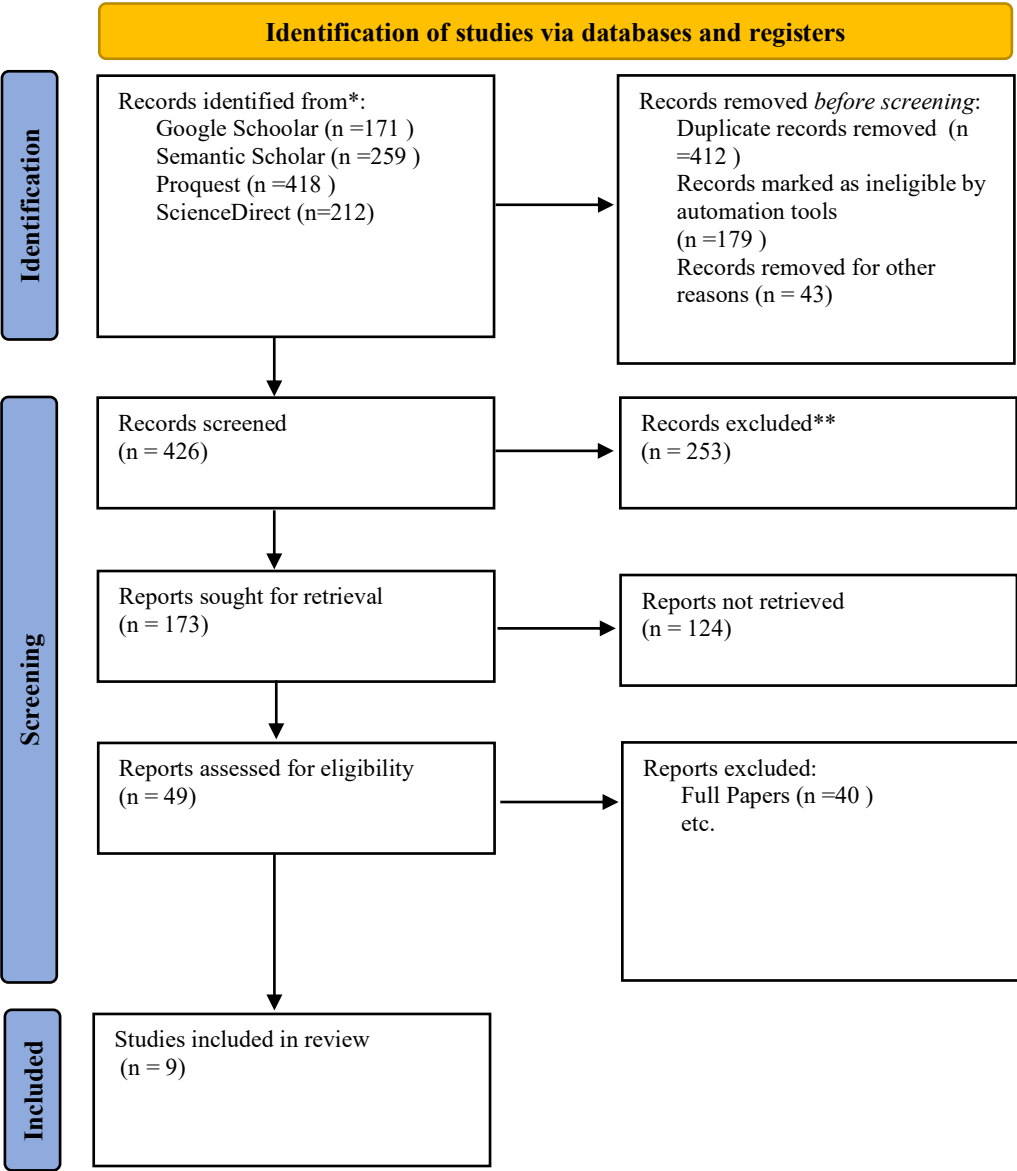


Figure 1. PRISMA

RESULT

Results review literature on article with range time rise year 2015-2025, use Language Indonesia and Language English And overall study found 9 Article based on topic systematic discussion review.

Table 1
Literature Review

N o	Researcher s and Years	Country	Research Title	Method	Research Variables	Research result
1	Li, Dong, & Gu (2024)	China	Factors Affecting Patients' Attitude and Behavioral Intention of Using Hospital Online Services	Survey, CFA, SEM (500 respondents)	Satisfaction, Social Influence, Promotion Conditions, Perceived Usefulness, Ease of Use, Attitude	Satisfaction, social influence, and promotional conditions directly influence intention; perceived usefulness and ease of use influence through attitude.
2	Haryono & Kusumawardhana	Indonesia	Factors Influencing Users' Intentions to Use Mobile Applications in a Hospital	Survey, SEM (403 respondents)	Perceived Usefulness, Subjective Norm,	Three significant factors predict app usage intention: low

N o	Researcher s and Years	Country	Research Title	Method	Research Variables	Research result
	(2021)		(RSA UGM Online)		Technology Design	user retention and limited initial access.
3	Pujarini & Darma (2024)	Indonesia	Determinants of the Use of HiDok Application on Patient Satisfaction	Survey, SEM-PLS (175 respondents)	Service Quality, Trust, Hospital Image, HiDok App (moderator)	Service quality, trust, and hospital image have a positive impact on satisfaction; HiDok strengthens this relationship.
4	Rumana et al. (2020)	Indonesia	Penerimaan Pasien terhadap Sistem Pendaftaran Online di RSUP Fatmawati	Quantitative survey, Cross-sectional (106 respondents)	Perceived Ease of Use, Behavioral Intention to Use	Behavioral intention was the most influential; barriers to socialization were limited to Android, and patient quota information was limited.
5	Chang et al. (2015)	Taiwan	Exploring Acceptance of an e-Hospital Service	Survey, TAM + Service Quality	User Experience, Website Quality, Service Quality, Perceived Usefulness, Ease of Use	Service quality and usability significantly influence usage intentions; site quality is also important.
6	Furusa & Coleman (2018)	Zimbabwe	Factors Influencing e-Health Implementation by Medical Doctors	Qualitative, Multiple Case Study (20 doctors)	ICT Infrastructure, Skills, Support, Security, Policy, Funding	Internal (infrastructure, skills, technical support) and external (policies, funding, bureaucracy) factors influence e-health implementation.
7	Sa'idah (2017)	Indonesia	Analisis Penggunaan Sistem Pendaftaran Online Berdasarkan UTAUT	Quantitative survey, Cross-sectional (100 respondents)	Performance Expectancy, Effort Expectancy, Social Influence, Facilitating Conditions	Performance expectancy significantly influences behavioral intention; experience, knowledge, and IT skills also play a role.
8	Alanezi (2020)	Saudi Arabia	Factors Affecting Adoption of e-Health Systems	Survey (130 respondents)	Doctor-patient relationship, Privacy, Regulation, Demographics	Key barriers: privacy, regulation, doctor-patient relationship; demographic factors also influence adoption.
9	Wang et al. (2021)	China	Implementation of Online Hospitals and Factors Influencing Adoption	Survey, SEM (407 respondents)	Performance Expectancy, Effort Expectancy, Facilitating Conditions, Demographics	Effort expectancy is the strongest factor; women & higher education → more positive; public awareness is still low (23.3 %).

DISCUSSION

Perceived Usefulness

Perceived usefulness, or the actual usefulness of an application, is one of the dominant factors influencing the acceptance of health technology in hospitals. This concept emphasizes the extent to which users believe that using an application will improve performance or facilitate access to health

services. Research at the UGM Hospital showed that perceived usefulness had a significant influence on application usage intentions, especially when patients felt the application was able to reduce queue times and speed up the registration process. Similarly, research by Chang et al. (2015) in Taiwan confirmed that perceived usefulness is a strong predictor in the acceptance model of a web-based registration system.

Furthermore, a study in Shanghai (Li et al., 2024) found that perceived usefulness not only directly correlates with patient attitudes but also indirectly influences behavioral intentions through mediating positive attitudes toward the application. This means that even if patients are initially unfamiliar with a digital system, if they perceive tangible benefits such as ease of registration or service efficiency, a positive attitude will develop and encourage continued use. This aligns with the Technology Acceptance Model (TAM) framework, which positions usefulness as the primary determinant of health technology acceptance.

Furthermore, findings from several cross-national studies reinforce that perceived usefulness has a consistent effect across cultural contexts. Studies in Indonesia, China, and Taiwan have shown similar results: patients are more likely to adopt an app when tangible benefits are evident in their daily experiences. Therefore, hospitals need to emphasize feature design that truly addresses patient needs, such as integrating doctor schedules, laboratory results, and queue notifications, to improve perceived usefulness and broaden app adoption.

Perceived Ease of Use (ease of use)

Perceived ease of use refers to the degree to which patients believe an online registration application is easy to understand and operate. This factor is crucial because the majority of hospital app users come from diverse social and educational backgrounds. Research at Fatmawati General Hospital confirmed that perceived ease of use is one of the most influential factors in the acceptance of an online registration system; the simpler the application is to use, the more likely patients are to adopt it. This also aligns with the Technology Acceptance Model (TAM) framework, where ease of use significantly influences attitudes and behavioral intentions toward technology.

Research in China (Wang et al., 2021) added that effort expectancy is the strongest predictor of patient intention to use online hospital services. Patients are more likely to accept an application if navigation, data entry, and service access can be done in simple steps. Similarly, Chang et al.'s (2015) study in Taiwan found that website design quality and user experience are directly related to perceived ease of use, which in turn impacts perceived usefulness and behavioral intentions.

Furthermore, the challenge in improving perceived ease of use is providing a user-friendly and inclusive interface design. Research in Indonesia (Sa'idah, 2017) shows that individual IT skills, experience, and knowledge influence application usage behavior. Therefore, hospital strategies should focus not only on technology but also on patient education and providing clear user guides. This way, perceived ease of use can be improved, resulting in greater acceptance of online registration applications by various patient groups.

Satisfaction (patient satisfaction)

Patient satisfaction is a crucial factor influencing the continued use of online registration applications in hospitals. Satisfaction typically stems from positive patient experiences using the application, such as ease of registration, speed of service, and accuracy of information provided. Research by Li et al. (2024) in Shanghai confirmed that patient satisfaction directly influences behavioral intentions to use the online registration system. This suggests that the more satisfied patients are with their experience using the application, the more likely they are to continue using it consistently.

Research at Kasih Ibu Hospital, Tabanan (Pujarini & Darma, 2024) also showed that service quality, trust, and hospital image significantly influence patient satisfaction, which in turn impacts the adoption of the HiDok application. Applications that provide integrated services not only improve administrative efficiency but also build positive patient perceptions of the hospital. Thus, satisfaction is not only the end result but also a mediator that strengthens the relationship between service quality and application usage intention.

Furthermore, other literature confirms that patient satisfaction plays a key role in predicting loyalty in the use of digital healthcare services. A study by Chang et al. (2015) in Taiwan emphasized that positive experiences with web-based service quality directly increased patients' perceived satisfaction and loyalty to the online registration system. Therefore, hospitals need to focus not only on developing app features but also on ensuring that the services provided through the app consistently meet patient expectations.

Social Influence & Trust

Social influence is a crucial external factor that can motivate patients to use online registration applications. Patients are often influenced by the opinions of others, whether family, friends, or recommendations from healthcare professionals, when deciding to use digital services. Research by Li et al. (2024) in Shanghai showed that social influence has a direct effect on patients' behavioral intentions to utilize online hospital applications. This means that the greater the social support, the higher the patient's likelihood of accepting and using the application.

Furthermore, trust is also a crucial factor in determining app acceptance. A study by Pujarini & Darma (2024) at Kasih Ibu Tabanan Hospital confirmed that patient confidence in the security and reliability of the HiDok app contributed to increased satisfaction and increased intention to use. This trust extends beyond technological aspects such as data security to the hospital's belief that the app provides transparent, fast, and accurate services.

Social factors and trust often work synergistically. Research in Indonesia (Haryono & Kusumawardhana, 2021) confirmed that subjective norms, namely pressure or expectations from the social environment, significantly influence patients' intention to use the RSA UGM Online application. When the application is supported by a positive hospital image and internal and external promotion, patient trust increases. Therefore, hospital promotional strategies need to prioritize public education and transparency to build trust while leveraging social influence as a key driver of online registration application adoption.

Facilitating Conditions & Regulations (infrastructure and policy support)

Facilitating conditions refer to the availability of infrastructure, resources, and organizational support that enable users to easily access online registration applications. These factors include internet network quality, adequate hardware, and technical support from the hospital. Sa'idah's (2017) research in Surabaya showed that although supporting conditions did not have a statistically significant effect on usage behavior, variables such as experience and IT skills still played a significant role in influencing patient acceptance of the system. This confirms that adequate infrastructure is a fundamental requirement for the application to be used effectively.

In addition to infrastructure, government regulations and policies also play a crucial role in encouraging the adoption of online registration applications in hospitals. Research in Zimbabwe (Furusa & Coleman, 2018) highlighted that external barriers such as weak policies, limited funding, and bureaucracy were key inhibiting factors in e-health implementation. Similarly, a study in Saudi Arabia (Alanezi, 2020) revealed that concerns about data privacy and a lack of clear regulations were significant obstacles to the implementation of online registration systems. This suggests that the

success of application implementation depends not only on hospitals but also on national policy support.

The integration of supportive conditions and strong regulations will strengthen public trust and expand application adoption. For example, support for the Healthy China 2030 policy, as demonstrated in Zhang & He's (2023) study, has been shown to accelerate the development of internet hospitals in China. Therefore, hospitals in Indonesia also need clear regulatory support regarding patient data security, system interoperability standards, and funding policies. The combination of adequate infrastructure and supportive regulations will be a crucial foundation for ensuring the continued use of online registration applications in hospitals.

CONCLUSION

Based on the results of a systematic review of nine research articles, it was found that there are five main factors that consistently influence the use of online registration applications in hospitals, namely perceived usefulness (real usefulness), perceived ease of use (ease of use), satisfaction (patient satisfaction), social influence & trust (social influence and trust), and facilitating conditions & regulations (infrastructure and policy support). These factors work simultaneously in determining patient intentions and behavior to adopt online registration applications. This finding confirms that the acceptance of health technology is not only determined by technical aspects, but also includes social, psychological, and structural dimensions that interact with each other. Operationally, hospitals need to develop online registration applications that are easy to use, have real benefits, and are able to provide a positive experience to patients. Furthermore, it is crucial to build public trust by improving data security, service transparency, and promotions involving healthcare workers and patient communities. The government is expected to strengthen regulations, funding, and digital infrastructure to support the sustainable implementation of this application.

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