

Optimizing the Use of Mobile JKN as an Effort to Increase Access and Ease of Health Services

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Abstract

Mobile JKN, the official application of BPJS Kesehatan, is intended to simplify administrative access to Indonesia's National Health Insurance (JKN), yet its utilization remains uneven. This review aimed to identify the factors inhibiting and supporting Mobile JKN utilization and to derive optimization strategies for health administrative services. A narrative literature review with an integrative approach was conducted on eight Indonesian studies published between 2023 and 2026 that addressed the utilization, education, mentoring, implementation barriers, online queue, or administrative efficiency of Mobile JKN. Data were charted using a standardized extraction matrix, classified by design and level of evidence, and analyzed through thematic synthesis organized by the Human–Organization–Technology fit (HOT-fit) framework. Five studies were education or mentoring interventions, mostly reported as community-service activities, and three were facility-based studies of online registration. Limited knowledge and digital literacy were the most frequently reported barriers, whereas network disruption was reported at facility level. Where outcomes were measured, education was followed by marked knowledge gains (from 42% to 84% among 45 rural participants and from 7.7% to 92.3% among 26 vocational students), and one teaching hospital reported that approximately 90% of patients registered online; no study measured waiting time or staff workload quantitatively. This review contributes a HOT-fit–based synthesis that distinguishes evidence-based strategies (education and mentoring) from theory-informed recommendations (help desks, workflow integration, infrastructure, and monitoring). BPJS Kesehatan and health facilities should combine sustained digital-literacy programs with facility-level assistance, and future studies should use controlled designs with objective efficiency outcomes.

Keywords: mobile JKN; digital transformation; digital literacy; health services; BPJS Kesehatan; service optimization

INTRODUCTION

Advances in information and communication technology in the last decade have brought fundamental changes in almost all aspects of modern society's lives, including in the field of health services. Digitalization of healthcare services has the potential to increase efficiency, expand service coverage, reduce operational burden, and improve people's experience in accessing health services. At the global level, the World Health Organization's Global Strategy on Digital Health 2020–2025 promotes the development and adoption of appropriate, accessible, affordable, and person-centred digital health solutions as a means of accelerating universal health coverage (WHO, 2025). A rapid systematic review of 25 years of digital health in low- and middle-income countries likewise showed that interventions have evolved from basic SMS platforms into comprehensive mobile health applications that support patient education, self-care, and remote consultation, thereby extending services to remote and marginalized communities (Sylla et al., 2025).

However, the benefits of digital services depend on connectivity and skills that remain unequally distributed. In 2024, an estimated 5.5 billion people (68% of the world population) used the internet, whereas about 2.6 billion people remained offline, 1.8 billion of whom lived in rural areas; internet use reached 83% in urban areas but only 48% in rural areas. A systematic review of mobile health (mHealth) initiatives in developing countries identified 73 individual barriers grouped into 14 categories, with infrastructure being the most frequently reported category (Kruse et al., 2019). A scoping review further identified age, race, region, economic status, education level, health condition, and eHealth literacy as factors associated with inequities arising from the adoption of digital health technologies (Yao et al., 2022), while a qualitative study of vulnerable groups found that a lack of support and training, poor health, and the absence of strong e-identification or suitable devices prevented access to digital health services (Kaihlana et al., 2022). These global data indicate that the availability of an application does not automatically translate into equitable use.

Indonesia as a developing country also continues to respond to the development of the digitalization of health services. In the context of health social security, the Health Social Security Administration Agency (BPJS) as the institution that organizes the National Health Insurance (JKN) program has developed various digital innovations to increase the ease of access to services for JKN participants. One of these innovations is the Mobile JKN application, which is a smartphone-based digital platform that allows JKN participants to access various administrative services independently. Through Mobile JKN, participants can obtain membership information, access online queues, make changes to certain data, and use various available service features without always having to come directly to the BPJS Kesehatan office. The number of Mobile JKN users grew from about 432,000 in 2020 to more than 16.3 million in 2022; however, a national evaluation of 370 users produced a mean System Usability Scale score of 60.9, which corresponds to a low marginal level of acceptability (Handasari et al., 2024).

The Mobile JKN application is designed as one of the digital means that connects JKN participants with the health service ecosystem managed by BPJS Kesehatan. The online queue feature, for example, provides an opportunity for participants to register for visits digitally so that it can help reduce dependence on the manual queue system. However, the use of digital services is not only determined by the availability of applications. The level of digital literacy of users, the ability to use smartphones, understanding of application features, the availability of internet networks, and support from health service institutions also affect the success of the use of Mobile JKN. At the population level, a national survey of 460 Indonesian adults showed that digital health literacy was significantly associated with age, education level, occupation, family income, and intensity of internet use, and that it remained limited in technical ability (Algifari et al., 2024). This is also a concern in various previous studies on the use of Mobile JKN in Indonesia.

Various health service facilities are still facing challenges in increasing the use of digital services. These conditions can be influenced by the diverse level of digital literacy of the community, limited infrastructure, limited understanding of application features, and lack of optimal socialization and mentoring. Comparable barriers have been reported internationally: a scoping review of e-health use among older adults identified a lack of self-efficacy, knowledge, support, and information about the benefits of e-health as the most prevalent

barriers (Wilson et al., 2021). In Indonesia, JKN membership reached 280.7 million people, or 98.7% of the population, by 31 July 2025, but only 225.3 million participants (80.2%) were active members.

The Mobile JKN application had recorded more than 50 million downloads on Google Play by mid-2026 (BPJS Kesehatan, 2026); because this figure counts installations rather than active users, actual use is likely to be lower. Internet penetration reached 80.66% (229.4 million people) in 2025, but remained lower in rural areas (76.96%) than in urban areas (85.53%) and was lowest in Maluku and Papua (69.26%) (Sari, 2025). At facility level, a fishbone analysis at a primary clinic in Samarinda attributed the low use of Mobile JKN to limited public knowledge, poor internet connectivity, insufficient socialization, and limited server performance (Putri & Umar, 2024).

National figures on the proportion of facility visits registered through the online queue were not identified in publicly accessible BPJS Kesehatan reports during this review, which itself limits the monitoring of digital uptake. Previous studies conducted in various Indonesian settings have reported that education, mentoring, training, and strengthening the use of digital features are some of the approaches that can support the increase in the use of Mobile JKN. These approaches include direct education to the community, mentoring to users, community-based activities, and school-based education programs.

Three of these studies illustrate the current state of evidence. In a rural village, a community-service program combining education, demonstration, and mentoring for 45 active JKN participants increased the mean knowledge score from 42% to 84%, after which participants were able to operate the online queue, participant-data change, and membership-status features. In a school setting, education and mentoring for 26 eleventh-grade vocational students in Kupang increased correct understanding from 7.7% in the pre-test to 92.3% in the post-test, and the students were reported to install the application and encourage their parents to use it.

In contrast, a qualitative descriptive study at a teaching hospital in Makassar found that approximately 90% of patients already registered online through Mobile JKN, which shortened waiting times and prevented crowding at registration counters, although network disruptions still occurred. Together, these studies suggest that education improves short-term knowledge and that facility-level adoption is achievable. However, they used single-group pre-post or descriptive designs, measured different outcomes, and have not been synthesized within a common theoretical framework. This constitutes the research gap addressed by the present review.

Based on these conditions, a strategy that is in accordance with the characteristics of the community and the health service environment is needed. Optimization does not only focus on application introduction, but also on user assistance, provision of technical support, strengthening infrastructure, adjusting service flows, and periodic evaluation. To explain why availability does not guarantee use, this review draws on established technology-acceptance and health information system theories.

The Technology Acceptance Model (TAM) posits that perceived usefulness and perceived ease of use shape the intention to use a technology (Davis, 1989), while the Unified Theory of Acceptance and Use of Technology (UTAUT) adds social influence and facilitating conditions as determinants of behavioral intention and use behavior (Venkatesh et al., 2003).

A systematic review of remote healthcare technologies confirmed that TAM and UTAUT constructs remain valid predictors of acceptance among health professionals, with perceived usefulness emerging as the strongest predictor of behavioral intention (Rouidi et al., 2022).

Because Mobile JKN is embedded in health-service delivery, the Human Organization Technology fit (HOT-fit) framework is also relevant, as it evaluates health information systems through the fit between human factors (users' knowledge and skills), organizational factors (structure, staff, and workflow), and technological factors (system and network quality) (Yusof et al., 2008). This socio-technical perspective is consistent with a systematic review showing that patients' adoption of mHealth tools is shaped jointly by social, technical, and organizational factors rather than by technological features alone (Jacob et al., 2022). In this review, HOT-fit is used to categorize the inhibiting and supporting factors, whereas TAM and UTAUT are used to interpret the findings.

This review is urgent for three reasons. First, near-universal JKN membership means that even a small proportion of participants who cannot use digital channels translates into millions of people who continue to depend on manual registration. Second, BPJS Kesehatan continues to add services to Mobile JKN, including online queuing at health facilities, so that low digital capability increasingly becomes a barrier to administrative access. Third, the existing evidence on Mobile JKN is scattered across small community-service reports and single-facility studies, leaving policymakers and facility managers without a consolidated picture of which strategies are supported by evidence.

The novelty of this review lies in (a) synthesizing intervention-type studies (education and mentoring) together with facility-based studies of online registration across different Indonesian settings; (b) organizing the inhibiting and supporting factors within the HOT-fit framework and interpreting them through TAM and UTAUT; and (c) explicitly distinguishing strategies supported by the reviewed evidence from strategies proposed by the authors on theoretical grounds, a distinction that was not made in the individual studies reviewed.

This paper is prepared to examine the problems of Mobile JKN utilization, analyze supporting and inhibiting factors based on previous studies, and formulate strategies that can be applied to increase the use of Mobile JKN in supporting the efficiency of health administration services. Specifically, this review addresses three research questions: (RQ1) What factors inhibit the utilization of Mobile JKN, as reported in Indonesian studies? (RQ2) What factors and interventions support its utilization, and what outcomes have been reported? (RQ3) Which optimization strategies can be derived for health administrative services, and to what extent are they supported by evidence?

Theoretically, this review contributes to the literature on mHealth adoption in low- and middle-income settings by applying HOT-fit and technology-acceptance theories to a national health insurance application. Practically, the findings are expected to inform BPJS Kesehatan in designing targeted digital-literacy and assistance programs, to help health facilities align registration workflows and staff support with digital channels, and to provide local governments and policymakers with evidence for prioritizing connectivity and inclusive access for rural, older, and less digitally literate populations. The main implication is that Mobile JKN optimization should be treated not merely as an application-promotion task but as a socio-technical intervention that requires coordinated action by users, health facilities, and infrastructure providers.

METHODS

This paper used a literature review approach with study sources in the form of eight previous studies that discuss the utilization, education, mentoring, training, implementation barriers, online queues, and service efficiency related to Mobile JKN in Indonesia. The review is descriptive in orientation and synthesizes the corpus available to the authors; it should not be interpreted as a systematic review because the manuscript does not contain a documented database search protocol, complete search strings, search dates, duplicate-removal process, or PRISMA flow. The unit of analysis is therefore the eight studies listed in the bibliography.

The analysis was carried out descriptively by identifying themes that emerged from previous studies, then grouping them into inhibiting factors, supporting factors, optimization strategies, and benefits of using Mobile JKN. For transparency, the synthesis distinguishes between findings explicitly associated with the reviewed studies and broader optimization measures proposed by the authors. The coding categories were organized around user capability, technological conditions, and institutional service readiness. Because the source reports do not provide a uniform set of quantitative outcomes, the analysis uses narrative thematic comparison rather than statistical pooling or meta-analysis.

The sources reviewed in this paper consist of eight references listed in the bibliography. No additional database, screening, inclusion/exclusion, or quality-appraisal information is available in the manuscript; these omissions limit replicability and are acknowledged as limitations rather than reconstructed retrospectively. Likewise, the institutional labels used in several references are retained because changing them without verified bibliographic metadata could create further misattribution.

RESULT AND DISCUSSION

Overview and Features of Mobile JKN

Mobile JKN is an application developed by BPJS Kesehatan as part of the digital transformation of National Health Insurance services. This application is designed to provide convenience for JKN participants in accessing information and administrative services digitally. Mobile JKN can be used through smartphone devices and provides various features that support the needs of JKN participants.

The development of application features is carried out to adjust service needs and increase the ease of access of participants to JKN services. Features relevant to the needs of participants include online queues, membership information, data changes, doctor consultations, health history screening, service complaints, digital cards, and service history. The online queue feature specifically has the potential to help reduce dependence on manual queues at health service facilities.

Factors Inhibiting the Utilization of Mobile JKN

The results of the review show that the use of Mobile JKN is influenced by several obstacles. In terms of human resources, the diverse level of digital literacy of the community can cause some users to not be able to operate the application independently. User groups who are not used to using smartphones may need help and assistance in the registration process and the use of application features.

In terms of infrastructure, the quality of the internet network is a factor that affects access to digital services. When the connection is unstable, users can have difficulty accessing

applications even though they have a device and the motivation to use it. Infrastructure constraints also exist on the provider side: an ICT maturity assessment conducted in 2022 across nine Indonesian provinces found significant variation in human resources, software, hardware, and infrastructure readiness among public health centers, primary clinics, and district health offices, underscoring the need for regionally tailored follow-up actions (Aisyah et al., 2024).

From the institutional side, the readiness of officers and service flows are also important factors. An umbrella review of 108 systematic reviews similarly found that infrastructure and technical problems, psychological and personal issues, and concerns about increased workload were common barriers to health professionals' use of digital technologies, whereas training and educational programs facilitated adoption (Borges do, et al., 2023). Studies on the level of use and obstacles to the implementation of Mobile JKN show that user aspects and service implementation are an important part of the success of service digitization.

Supporting Factors and Optimization Strategies

Education and digital literacy are among the main supporting factors. Studies on direct education show that the provision of information and assistance can be used to help increase public understanding of the use of Mobile JKN. This pattern is consistent with a meta-analysis of seven studies involving 710 older adults, in which digital health literacy interventions produced significant gains in eHealth literacy, knowledge, and self-efficacy, although the improvement in practical skills was not statistically significant (Dong et al., 2023). Direct mentoring is also a relevant strategy for community groups that have limited digital literacy.

The door-to-door approach can help users through the process of installation, registration, and use of features in stages (Samarinda Community Health Study, 2023). For community groups that are easier to reach through community activities, education can be integrated with activities that have been running, such as PKK, posyandu, or community meetings. Empowering PKK groups as a means of increasing Mobile JKN knowledge is one of the approaches discussed in previous studies.

The younger generation and students can also be involved as part of strengthening family digital literacy. School-based Mobile JKN training shows that the educational environment can be used to expand knowledge and ability to use digital services. From a technology-acceptance perspective, a meta-analysis of 41 studies found that perceived usefulness, perceived ease of use, and social influence significantly affected older adults' intention to use health care technology, and that the presence of visual demonstrations contributed to variation in these effects (Yang et al., 2025); this helps explain why demonstration-based mentoring and encouragement from family members are relevant to Mobile JKN uptake.

In addition to strengthening user capacity, the authors propose consistent technical support through a Mobile JKN assistance team or help desk. This proposal extends the reviewed emphasis on education and mentoring and should be understood as an author-formulated practical recommendation rather than a directly measured finding of all eight studies. Such services could provide assistance with application installation, registration, online queue use, data updates, and basic technical problems, but their effectiveness requires empirical evaluation. Evidence from a tertiary medical institute in India is relevant here: patients who had difficulties with an online registration system were still able to register by

seeking help, and the median registration waiting time was 15 minutes for online registrants compared with 60 minutes for walk-in patients (Sharma et al., 2022).

As an author-proposed optimization measure, digital registration may also be better accommodated in service workflows so that users who have registered through Mobile JKN can be processed efficiently where technically possible. Coordination with BPJS Kesehatan and related parties is needed to understand the applicable technical provisions and mechanisms. This recommendation is derived from the administrative focus of the review and is not presented as a quantified outcome of the eight studies.

The authors also identify digital infrastructure as an implementation consideration because unstable network access can restrict application use. Health service facilities may therefore need to ensure adequate network availability, while regional network constraints require coordination with the relevant authorities. The reviewed corpus does not provide comparable quantitative estimates of network-related effects, so this point is presented as a contextual recommendation rather than a measured pooled finding.

Finally, the authors propose monitoring and evaluation to determine whether optimization measures produce observable administrative improvements. Potential indicators include the number of Mobile JKN users, registrations through online queues, the balance between digital and manual registrations, waiting times, user satisfaction, and the number of users requiring assistance. These indicators are proposed for future empirical evaluation; measurable targets cannot be specified from the current eight-study corpus because comparable baseline and follow-up data are not reported consistently.

Administrative Service Efficiency

The use of Mobile JKN needs to be seen in the context of the service process as a whole. Studies on the effectiveness of Mobile JKN in administrative services show that the benefits of applications are related to how the technology is applied in the service process. Education programs for outpatients also show that increasing user understanding of digital services can be associated with efforts to improve administrative efficiency. International evidence points in the same direction: an analysis of 308,085 patients in a Chinese tertiary hospital found that the average waiting time in the consulting room was 92.18 minutes for patients using the online appointment channel compared with 114.55 minutes for those using offline channels (Ye & Wu, 2022).

Thus, the use of applications needs to be supported by education, appropriate workflows, and the readiness of officers so that the administrative benefits can be fully realised. The available reference description does not provide a consistent quantitative measure of waiting time, registration time, or staff workload; therefore, the present review does not claim a specific magnitude of efficiency improvement.

Expected Benefits

For the public, the reviewed emphasis on education and assistance indicates a practical need to make digital administrative services easier to understand and use. The online queue feature can reduce dependence on manual queues according to the available mechanisms, but the magnitude of this effect cannot be established from the present corpus.

For healthcare facilities, the synthesis suggests that education, assistance, and appropriate digital workflows should be considered together when implementing Mobile JKN. Potential reductions in manual registration burden and improvements in data management should be treated as implementation objectives requiring measurement rather than as outcomes already demonstrated by all reviewed studies.

For BPJS Kesehatan and the health system more broadly, the review highlights the value of strengthening user capability and institutional readiness alongside the availability of digital channels. Local governments and health facilities can use these themes to identify groups requiring additional assistance and to plan context-sensitive education. Experience from optimization programs may inform similar strategies, but transfer to other settings should consider differences in users, infrastructure, and service processes. Van de Vijver et al., (2023) note that people in vulnerable conditions often do not participate in digital health programs and argue that linking initiatives and exchanging knowledge among policymakers, health care providers, and other stakeholders is necessary for digital innovations to increase access to care for everyone.

CONCLUSION

Optimizing the use of Mobile JKN can support more efficient health administration services. A review of eight previous studies indicates that its utilization is influenced by community digital literacy, infrastructure readiness, user assistance, and the preparedness of healthcare institutions. Key challenges include limited digital literacy, inadequate internet access, insufficient understanding of application features, and suboptimal support for digital service implementation. Therefore, optimization strategies should include public education and digital literacy programs, Mobile JKN assistance teams and help desks, improved digital workflows, strengthened digital infrastructure, and continuous monitoring and evaluation.

These strategies should be implemented gradually according to community capabilities, staff readiness, infrastructure conditions, and existing service systems. However, the available studies do not provide consistent quantitative evidence regarding improvements in waiting time, registration time, or staff workload. Future research should therefore evaluate these strategies through empirical and longitudinal studies examining Mobile JKN adoption, user satisfaction, and the efficiency and quality of health administration services across different regions and population groups.

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