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Physicians' Acceptance Analysis of Teleconsultation Implementation in the JKN Program at Primary Health Care Facilities: A Technology Acceptance Model Approach

Tiara Tarasati[1], Misnaniarti[1], Rizma Adlia Syakurah[1]

[1]*Faculty of Public Health, Universitas Sriwijaya, Indonesia*

**Corresponding Author: Tiara Tarasati*
E-mail: tiaratarasati1@gmail.com

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Abstract

The development of digital technology drives the transformation of healthcare services, including thru the implementation of teleconsultation in the National Health Insurance Program (JKN). However, the success of implementing this service heavily depends on the acceptance of doctors as the primary users. This study aims to analyze doctors' acceptance of teleconsultation at First-Level Health Facilities (FKTP) in Palembang City using the Technology Acceptance Model (TAM) approach. This study uses a qualitative method with a case study design. Data were obtained thru in-depth interviews with eight informants consisting of public health center doctors, private clinic doctors, and management personnel. Data analysis was conducted thematically based on the TAM constructs, namely perceived usefulness, perceived ease of use, attitude toward use, and behavioral intention to use. The research results show that teleconsultation is perceived as beneficial in improving service access, initial communication, and patient monitoring, but it has not yet been able to replace face-to-face services due to limitations in clinical aspects. From the perspective of ease of use, the system is considered quite simple, but there are still technical issues such as non-real-time notifications and limited reporting time. Doctors' attitudes toward teleconsultation tend to be positive, but not strong, while the intention to use it is relatively high but more influenced by external policies. In conclusion, the acceptance of teleconsultation is at a fairly good level but not yet optimal. The optimization of implementation requires improvements in system quality, organizational support, as well as clearer policies and incentives so that the utilization of teleconsultation can run effectively and sustainably.

Introduction

The advancement of digital technology has driven significant transformation in healthcare delivery systems, including the utilization of telemedicine as a technology-based service innovation (Keesara et al., 2020; Iyanna et al., 2022; de Freitas Moura & Makiya, 2025). Teleconsultation has emerged as one of the most rapidly expanding forms of telemedicine, given its capacity to enhance access to healthcare services and improve the efficiency of patient–clinician interactions (Bashshur et al., 2020). The adoption of this technology is recognized as a means of broadening service reach and sustaining continuity of care, particularly under conditions of limited direct access to health services (Haleem et al., 2021; Khoshmaram et al., 2025; Akeju et al., 2022; Ladds et al., 2023; Erku et al., 2023).

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Nevertheless, the implementation of teleconsultation in clinical practice continues to face considerable challenges, particularly regarding suboptimal utilization rates in the post-COVID-19 pandemic period. Several studies have demonstrated that although telemedicine use increased substantially during the pandemic, its sustained adoption has tended to decline following the resumption of in-person services. This trend suggests that the adoption of health technology is not solely driven by situational necessity, but is also shaped by user acceptance factors particularly among healthcare professionals as the primary service providers (Wosik et al., 2020; Wutz et al., 2023; Lee et al., 2025; Watson, 2024).

In the Indonesian context, teleconsultation has been integrated into the National Health Insurance (Jaminan Kesehatan Nasional/JKN) system through the Mobile JKN application as part of an effort to improve access to and effectiveness of primary healthcare services (Wulandari et al., 2023; Mendriani et al., 2025; Pratama & Suhartanto, 2025). This policy aims to strengthen the role of Primary Health Care Facilities (Fasilitas Kesehatan Tingkat Pertama/FKTP) in delivering more responsive, efficient, and technology-driven services (Fahlevi et al., 2022). Despite these initiatives, implementation remains challenged by inadequate infrastructure, excessive healthcare worker workload, and the underutilization of digital systems in day-to-day clinical operations (Keesara et al., 2020; Thanabalachandran et al., 2026; Thakur et al., 2025).

Efforts to address these challenges have been pursued through the reinforcement of health digitalization policies and the development of teleconsultation systems integrated within the JKN framework. These approaches are intended to increase service contact rates, expand community access, and support the operational efficiency of primary healthcare (Gizaw et al., 2022; Erku et al., 2023; Bolton et al., 2023). Furthermore, strengthening human resource capacity and providing technical support have been identified as critical steps in improving the success of teleconsultation implementation at the primary care level (Nath et al., 2024; Teo et al., 2023; Yang et al., 2025; da Silva Almeida et al., 2025).

Despite these ongoing efforts, a notable gap persists between technological availability and the actual level of user acceptance in practice. A body of research indicates that the successful implementation of telemedicine is substantially influenced by users' perceptions of the usefulness and ease of use of the technology. However, within the context of primary healthcare particularly in Indonesia studies that specifically examine physicians' acceptance of teleconsultation within the JKN system remain limited (Gajarawala & Pelkowski, 2021).

This research gap underscores the need for a more rigorous examination of the factors influencing physicians' acceptance of teleconsultation services, particularly through a comprehensive theoretical framework. The Technology Acceptance Model (TAM) represents a relevant conceptual lens for explaining how perceived usefulness and perceived ease of use shape users' attitudes and behavioral intentions toward technology adoption. Nevertheless, given the complexity of healthcare systems, this model warrants further contextualization by incorporating systemic factors such as policy environments, system characteristics, and organizational support (Revathi & Aithal, 2021; Fong et al., 2023; Simion Ludușanu et al., 2025).

Against this backdrop, the novelty of the present study lies in its analysis of physicians' acceptance of teleconsultation within the JKN Program at the FKTP level, through an integration of the TAM framework and the contextual dimensions of regional health system implementation. This study extends beyond a purely technological assessment by accounting for the policy and operational factors that substantively influence teleconsultation utilization in real-world clinical settings.

Accordingly, this study aims to analyze the acceptance of teleconsultation services among physicians at Primary Health Care Facilities (FKTP) in Palembang City within the National

Health Insurance (JKN) Program, employing the Technology Acceptance Model (TAM) as the overarching analytical framework. The findings are expected to yield empirical contributions to the development of evidence-based policies and the optimization of teleconsultation implementation, thereby enhancing the quality and accessibility of primary healthcare services.

Methods

Research Design and Analysis

This study employed a qualitative approach with a case study design to explore in depth the acceptance of physicians toward the implementation of teleconsultation services within the National Health Insurance (Jaminan Kesehatan Nasional/JKN) Program at Primary Health Care Facilities (Fasilitas Kesehatan Tingkat Pertama/FKTP) in Palembang City. This approach was selected for its capacity to provide comprehensive and contextually grounded understanding of the experiences, perceptions, and dynamics encountered by physicians in the utilization of telemedicine technology. The analysis was centered on the core constructs of the Technology Acceptance Model (TAM), namely perceived usefulness, perceived ease of use, attitude toward use, and behavioral intention to use.

The study was conducted across several FKTPs in Palembang City that had established cooperation agreements with the Social Health Insurance Agency (Badan Penyelenggara Jaminan Sosial/BPJS Kesehatan) and had actively implemented teleconsultation services, encompassing both public health centers (puskesmas) and private clinics. Site selection was carried out purposively based on three criteria: active participation in the JKN program, the level of teleconsultation service utilization, and the availability of healthcare personnel with direct hands-on experience in operating the system.

The study involved eight informants, comprising puskesmas physicians, private clinic physicians serving as service implementers, and clinic owners or managers. Informant selection employed maximum variation sampling to capture a broad range of perspectives across facility types, professional roles, and levels of experience with telemedicine technology.

Data sources consisted of both primary and secondary data. Primary data were obtained through in-depth interviews with key informants to elicit their perceptions and lived experiences regarding teleconsultation use. Secondary data were gathered through document review, including relevant policies, technical guidelines, and reports pertaining to telemedicine implementation within the JKN program.

Data collection was carried out through semi-structured in-depth interviews, observation, and documentation. Interviews served as the primary instrument for exploring informants' perspectives in relation to the TAM constructs, while observation and documentation were employed as supplementary data sources to corroborate and enrich the findings. All interview sessions were audio-recorded and transcribed verbatim to ensure data accuracy and integrity.

Data analysis was conducted using a thematic analysis approach, proceeding through several iterative stages: data transcription, coding, categorization, theme identification, data reduction, and interpretation. The analytical process was guided by the Miles, Huberman, and Saldaña framework, encompassing data reduction, data display, and conclusion drawing.

To ensure the trustworthiness and validity of the data, this study employed triangulation of sources, methods, and data. Validity was further strengthened through member checking, the maintenance of an audit trail, and the incorporation of direct verbatim quotations from informants as empirical evidence. Furthermore, this study adhered to established research ethics principles, including obtaining informed consent from all informants, safeguarding the confidentiality of participants' identities, and ensuring that all data were utilized exclusively for academic purposes.

Result and Discussion

This section presents the findings of the study concerning physicians' acceptance of teleconsultation implementation within the National Health Insurance (JKN) Program at Primary Health Care Facilities (FKTP) in Palembang City. The findings are organized according to the four core constructs of the Technology Acceptance Model (TAM), namely perceived usefulness, perceived ease of use, attitude toward use, and behavioral intention to use. Prior to discussing each construct, an overview of the research participants and teleconsultation implementation context is presented to provide a comprehensive understanding of the study setting. The findings were derived from triangulated data sources, including in-depth interviews with eight informants, direct observations of teleconsultation practices, and documentation review related to Mobile JKN teleconsultation services.

Characteristics of Informants

The study involved eight informants representing various stakeholders directly involved in teleconsultation implementation within the JKN Program. The participants consisted of physicians from public health centers and private clinics, clinic managers, clinic owners, and JKN coordinators. This diversity enabled the exploration of multiple perspectives regarding teleconsultation utilization and acceptance.

Table 1. Characteristics of Research Informants

Informant Code	Position	Type of Facility
I1	Public Health Center Physician	Puskesmas
I2	Public Health Center Physician	Puskesmas
I3	Private Clinic Physician	Private Clinic
I4	Private Clinic Physician	Private Clinic
I5	Private Clinic Physician	Private Clinic
I6	Clinic Manager	Private Clinic
I7	JKN Program Coordinator	Puskesmas
I8	Clinic Owner	Private Clinic

Source: Primary Data Processed by the Authors (2026).

The informants had varying levels of experience in teleconsultation implementation and represented institutions that had actively utilized Mobile JKN teleconsultation services. Their diverse professional backgrounds contributed to a richer understanding of the opportunities and challenges associated with teleconsultation adoption.

Overview of Teleconsultation Implementation at FKTP

Observational findings revealed that teleconsultation services were conducted through the Mobile JKN application integrated with the telehealth feature. The consultation process consisted of patient registration, complaint submission, anamnesis, medical assessment, documentation of allergy history, treatment recommendations, and follow-up instructions. In practice, teleconsultation was primarily utilized for preliminary consultations, health education, chronic disease monitoring, and follow-up communication rather than comprehensive clinical diagnosis.

Documentation review further indicated that teleconsultation activities were integrated into service performance monitoring conducted by BPJS Kesehatan. Several facilities maintained records of consultation activities and periodically reported teleconsultation utilization as part of routine service evaluation.

Perceived Usefulness

The findings indicate that physicians generally perceived teleconsultation as beneficial in improving healthcare accessibility and facilitating communication with patients. The usefulness of teleconsultation was particularly evident among patients facing geographical, occupational, or mobility-related barriers that limited their ability to visit healthcare facilities directly.

A physician from a public health center explained:

> *"Many patients cannot always come directly to the health center because of work schedules, transportation difficulties, or family responsibilities. Through teleconsultation, they can still ask questions regarding symptoms, medication use, or follow-up recommendations. In several situations, this service helps patients obtain preliminary guidance before deciding whether they need to visit the facility. Therefore, teleconsultation improves access, although it cannot replace direct examination." (I1)*

This statement demonstrates that teleconsultation was viewed as an effective mechanism for reducing barriers to healthcare access and strengthening communication between healthcare providers and patients.

A similar perspective emerged from a private clinic physician:

> *"For patients with hypertension or diabetes, teleconsultation is very useful because they often require monitoring rather than immediate physical examination. Patients can report blood pressure readings, medication adherence, or symptoms they experience. We can then provide advice and determine whether they need additional clinical assessment. This makes follow-up care more efficient." (I3)*

The quotation suggests that teleconsultation contributes to continuity of care, particularly among patients with chronic diseases requiring ongoing monitoring and consultation.

The administrative benefits of teleconsultation were highlighted by a clinic manager:

> *"Before Mobile JKN teleconsultation was introduced, many consultations occurred through personal messaging applications. Documentation was fragmented and difficult to monitor. Now, consultation records are automatically stored within the system, making documentation and reporting more organized." (I6)*

The findings indicate that teleconsultation contributes not only to clinical communication but also to administrative efficiency through integrated documentation systems.

Despite these advantages, physicians consistently emphasized that teleconsultation could not fully support clinical decision-making due to the inability to conduct physical examinations. Several informants reported that teleconsultation functioned primarily as an educational and screening tool rather than a replacement for direct medical services. In addition, low patient utilization rates and the absence of financial incentives reduced the overall perceived impact of teleconsultation on routine healthcare delivery.

Perceived Ease of Use

The majority of physicians reported that the Mobile JKN teleconsultation system was relatively easy to operate. Informants frequently compared the application interface to commonly used messaging platforms, which facilitated adaptation and reduced learning barriers.

One physician described the system as follows:

> *"The application itself is actually quite simple. The menu is easy to understand, and because it resembles ordinary chat applications, we did not require extensive training*

to use it. Most physicians are already familiar with digital communication platforms, so adaptation was relatively quick." (I2)

This finding indicates that interface simplicity contributed positively to physicians' perceptions of ease of use.

However, technical barriers emerged as a recurring concern. A private clinic physician explained:

"The main problem is not learning how to use the application. The challenge lies in system performance. Sometimes the application becomes slow, logs out unexpectedly, or experiences technical errors. These issues interfere with our ability to respond promptly to patients." (I4)

The statement illustrates that perceived ease of use was influenced not only by interface design but also by system reliability and technical performance.

Another physician highlighted notification-related issues:

"The absence of automatic notifications is one of the biggest obstacles. We often do not realize that patients have submitted consultations because there is no alert system. As a result, responses may be delayed even when we are willing to provide immediate assistance." (I5)

Observational data confirmed that physicians frequently needed to manually access the application to check for incoming consultations. This limitation increased workload and reduced service responsiveness.

Several facilities attempted to overcome these challenges by assigning teleconsultation duties to specific personnel during designated periods. Nevertheless, such arrangements were not implemented consistently across all facilities.

Attitude Toward Use

The findings reveal that physicians generally maintained positive attitudes toward teleconsultation as a healthcare innovation. Most informants viewed digital healthcare services as an inevitable component of contemporary healthcare systems and acknowledged the importance of adapting to technological developments.

A public health center physician stated:

"Technology is becoming an integral part of healthcare services. We cannot ignore digital transformation because patients increasingly expect more flexible healthcare access. Teleconsultation is one example of how healthcare services can evolve to meet changing community needs." (I1)

This quotation reflects a positive orientation toward digital innovation and healthcare modernization.

Nevertheless, physicians remained cautious regarding the clinical role of teleconsultation. One private clinic physician explained:

"Teleconsultation is helpful, but direct consultation remains the gold standard. Without physical examination, there are limitations in diagnosis and treatment planning. Therefore, teleconsultation should complement rather than replace conventional services." (I3)

This perspective highlights the coexistence of acceptance and professional caution.

Workload concerns also influenced physicians' attitudes. A physician remarked:

> *"The additional responsibility associated with teleconsultation is quite significant. We are expected to monitor messages, respond quickly, and complete documentation while continuing to provide face-to-face services. Sometimes it feels like an additional task without corresponding support." (I4)*

This statement demonstrates that attitudes toward teleconsultation were shaped not only by perceived benefits but also by practical working conditions.

Despite these concerns, physicians generally expressed optimism regarding the future potential of teleconsultation. Informants emphasized that improvements in system quality, operational procedures, and institutional support could significantly strengthen acceptance and satisfaction.

Behavioral Intention to Use

The findings indicate that physicians generally intended to continue using teleconsultation services in the future. However, this intention was largely conditional and influenced by organizational, technological, and policy-related factors.

One physician explained:

> *"Teleconsultation has become part of current healthcare services, and we will continue using it because digital healthcare is moving forward. However, future utilization depends on whether the system becomes more reliable and practical for everyday clinical work." (I2)*

This statement reflects a pragmatic rather than fully enthusiastic commitment to continued use.

Institutional influences also emerged prominently. A JKN coordinator noted:

> *"Teleconsultation utilization is monitored as part of service performance indicators. Because it is included within BPJS evaluation mechanisms, facilities are encouraged to continue implementing the service regardless of individual preferences." (I7)*

Documentation review confirmed that teleconsultation activities were incorporated into routine performance monitoring procedures, reinforcing institutional expectations regarding service utilization.

The issue of incentives was repeatedly raised by informants. A clinic owner stated:

> *"Physicians already have substantial workloads. Additional responsibilities associated with teleconsultation should ideally be accompanied by incentives or support mechanisms. Such measures would encourage more active participation and stronger commitment." (I8)*

This observation suggests that behavioral intention is influenced by perceived fairness and organizational support.

Several physicians also emphasized the importance of technical improvements. One informant remarked:

> *"If system errors are minimized, notifications become available, and documentation procedures are simplified, physicians will be more willing to use teleconsultation consistently. Most of us are not opposed to the technology itself; the challenge lies in implementation." (I5)*

Behavioral intention to use teleconsultation was relatively high but remained strongly dependent on external facilitating conditions. Continued adoption was influenced by policy requirements, organizational expectations, system quality, and workload considerations rather than intrinsic motivation alone.

Summary of Thematic Findings

Table 2. Summary of Themes and Subthemes Based on TAM Constructs

TAM Construct	Main Themes	Supporting Data Sources
Perceived Usefulness	Improved access, chronic disease monitoring, administrative efficiency, communication enhancement	Interviews, Observation, Documentation
Perceived Ease of Use	Familiar interface, simple navigation, technical barriers, notification limitations	Interviews, Observation
Attitude Toward Use	Positive acceptance, clinical limitations, workload concerns, future optimism	Interviews
Behavioral Intention to Use	Policy-driven continuation, conditional willingness, incentive expectations, system improvement needs	Interviews, Documentation

Source: Primary Data Analysis (2026).

Collectively, the findings demonstrate that physicians' acceptance of teleconsultation within the JKN Program remains at a developmental stage. Teleconsultation has been recognized as a valuable healthcare innovation that improves accessibility and communication. Nevertheless, acceptance remains constrained by clinical limitations, technical challenges, workload concerns, and policy-related factors. These findings suggest that strengthening system quality, organizational support, and operational policies is essential for achieving more sustainable and effective teleconsultation implementation at the primary healthcare level.

Understanding Physicians' Acceptance of Teleconsultation Beyond the Technology Acceptance Model

The findings demonstrate that physicians' acceptance of teleconsultation within the JKN Program is shaped not only by the traditional constructs of the Technology Acceptance Model (TAM) but also by broader organizational, technological, and policy-related factors. While physicians generally acknowledged the usefulness and relative ease of teleconsultation, their acceptance remained conditional upon system quality, institutional support, workload management, and regulatory frameworks. This finding extends previous telemedicine adoption studies, which emphasize perceived usefulness and perceived ease of use as the primary determinants of technology acceptance (Lin et al., 2024; Bîlbîie et al., 2024; Hussain et al., 2025).

The perceived usefulness identified in this study primarily relates to enhanced healthcare accessibility, continuity of care, and administrative efficiency. These findings are consistent with recent evidence showing that telemedicine improves healthcare access for patients with geographical, mobility, and time-related constraints (Kung et al., 2024; Fleddermann et al., 2024). Similarly, teleconsultation has been recognized as an effective mechanism for chronic disease monitoring and follow-up management, particularly in primary healthcare settings (Yao et al., 2025). However, unlike studies conducted in highly digitalized healthcare systems where telemedicine increasingly complements clinical decision-making, physicians in this study emphasized that teleconsultation remains inadequate for comprehensive diagnosis due to the absence of physical examination. This finding aligns with Maliasev and Mohammed (2025), who identified limited clinical assessment capability as one of the principal barriers to telemedicine utilization among healthcare professionals.

Regarding perceived ease of use, the findings support previous studies suggesting that user-friendly interfaces facilitate telemedicine acceptance (Ben Ghorbal et al., 2025; Ludeña-Poma & Rojas-Gallegos, 2024). Nevertheless, this study reveals that ease of use is strongly

influenced by system performance rather than interface simplicity alone. Technical problems such as delayed notifications, application instability, and system errors significantly reduced physicians' experiences despite the platform's relatively simple design. Similar observations have been reported by Tan et al. (2025) who concluded that system reliability and technical support are critical determinants of telehealth acceptance. These findings suggest that technological acceptance in healthcare environments depends on both usability and operational dependability.

The attitudes exhibited by physicians further demonstrate the complexity of healthcare technology adoption. Although participants expressed positive views toward teleconsultation as a healthcare innovation, they simultaneously maintained strong preferences for face-to-face consultations. This duality has also been documented by Zammit et al. (2025) and Garcia et al. (2024), who found that healthcare professionals often recognize the benefits of telemedicine while remaining cautious regarding its clinical limitations. The findings indicate that physicians' attitudes are shaped not only by cognitive evaluations of usefulness but also by professional responsibilities, ethical considerations, and concerns regarding service quality. This observation contributes theoretically to TAM by illustrating that healthcare professionals may simultaneously accept technological innovation while resisting its complete substitution for conventional clinical practice.

A particularly important finding concerns behavioral intention to use teleconsultation. Unlike many TAM-based studies that identify perceived usefulness as the dominant predictor of usage intention (Alshammari et al., 2023; Kung et al., 2024), this study found that physicians' intentions were largely influenced by external institutional pressures, including BPJS Kesehatan performance indicators and policy requirements. This finding supports the Unified Theory of Acceptance and Use of Technology (UTAUT), which highlights the importance of social influence and facilitating conditions in shaping technology adoption (Sachan et al., 2025; Porat-Packer et al., 2025). Consequently, the study demonstrates that technology acceptance within mandatory healthcare systems may differ substantially from voluntary adoption contexts.

The principal novelty of this study lies in integrating TAM with contextual factors specific to Indonesia's national health insurance system. Previous telemedicine studies have predominantly focused on technological determinants of acceptance, whereas the present research demonstrates that policy obligations, organizational workload, and institutional incentives significantly mediate physicians' acceptance behaviors. This finding contributes to the growing literature emphasizing that healthcare technology adoption should be analyzed within broader health system environments rather than through technological variables alone.

From a practical perspective, the findings suggest that policymakers should prioritize system reliability, establish clear operational guidelines, improve notification mechanisms, and provide adequate incentives for healthcare professionals. Strengthening organizational support and clarifying physicians' responsibilities within teleconsultation services may enhance long-term sustainability and utilization rates. Such measures are particularly important for primary healthcare facilities where workforce limitations frequently constrain digital health implementation.

Several limitations should be acknowledged. First, the study was conducted exclusively in Palembang City and therefore may not fully represent teleconsultation implementation across different regions of Indonesia. Second, the qualitative design focused on physicians and managerial stakeholders, without incorporating patient perspectives. Third, the rapidly evolving nature of digital health technologies may influence acceptance patterns over time. Future research should therefore employ mixed-methods approaches involving larger samples across multiple regions, examine patient acceptance alongside provider perspectives, and

investigate the long-term effects of policy interventions and incentive mechanisms on teleconsultation sustainability. Such investigations would provide a more comprehensive understanding of how teleconsultation can be optimized within national healthcare systems and contribute to more effective digital health transformation.

Conclusion

Physicians' acceptance of teleconsultation within the JKN Program at FKTPs in Palembang City was found to be moderately favorable, though not yet optimal. Teleconsultation was perceived as beneficial in improving service access, facilitating initial communication, and supporting patient monitoring; however, its application remains limited in clinical scope and has not yet proven capable of replacing in-person care.

Ease of use was relatively adequate, though constrained by technical issues such as system instability and network connectivity limitations. Physicians' attitudes were generally positive but not strongly held, while behavioral intention to use was more substantially influenced by external policy pressures than by intrinsic motivation.

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