

Determinants of Mobile JKN Application Utilization in Supporting Healthcare Access among Informal Workers at Kenali Besar Primary Health Center, Jambi City, Indonesia

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Abstract

Introduction: Mobile JKN is a digital innovation developed by BPJS Kesehatan to improve healthcare access for National Health Insurance (JKN) participants. However, its utilization among informal workers remains suboptimal. **Objective:** This study aimed to analyze the determinants of Mobile JKN utilization in supporting healthcare access among informal workers. **Method:** A cross-sectional study was conducted among 126 informal workers who were JKN participants in the working area of Kenali Besar Primary Health Center, Jambi City, Indonesia. Respondents were selected using accidental sampling. Data were analyzed using chi-square tests and multiple logistic regression. **Results and Discussion:** A total of 58.73% of respondents had utilized the Mobile JKN application. Significant associations were found between perceived ease of use ($p=0.002$), perceived usefulness ($p=0.006$), behavioral intention ($p=0.022$), attitude toward use ($p<0.001$), digital literacy ($p=0.038$), healthcare service needs ($p=0.007$), and Mobile JKN utilization. Multivariate analysis identified attitude toward use as the most dominant determinant ($aOR=3.19$; 95% $CI=1.38-7.36$; $p=0.006$). **Conclusion:** Perceptions and behavioral factors significantly influence Mobile JKN utilization. Improving users' attitudes toward the application may increase its utilization among informal workers

Determinants of Mobile JKN Application Utilization in Supporting Healthcare Access among Informal Workers at Kenali Besar Primary Health Center, Jambi City, Indonesia

Introduction

The rapid advancement of information and communication technology (ICT) has transformed healthcare systems worldwide. Digital health has become an essential strategy for improving healthcare accessibility, efficiency, and quality while supporting the achievement of Universal Health Coverage (UHC) and the Sustainable Development Goals (SDGs) ((Handayani & Iskandar, 2025),(Ahmed et al., 2025)). The integration of digital technologies into healthcare services enables patients to access health information, administrative services, and medical consultations more efficiently, reducing barriers related to time, distance, and service availability.

In Indonesia, efforts to improve healthcare access have been implemented through the National Health Insurance (Jaminan Kesehatan Nasional/JKN) program administered by BPJS Kesehatan. As of the first quarter of 2026, JKN coverage had reached approximately 284.7 million participants, representing 98.89% of the Indonesian population (Dewan Jaminan Sosial Nasional, 2026). To support the digital transformation of healthcare services, BPJS Kesehatan introduced the Mobile JKN application, which provides various features, including membership registration, participant data updates, healthcare facility information, online queue registration, contribution information, and healthcare service history ((Makmur, Reza Aril Ahri, & Nurgahayu, 2024)). The application is expected to simplify healthcare access, improve service efficiency, and reduce administrative burdens for both participants and healthcare providers.

Despite these advantages, the utilization of Mobile JKN remains relatively low compared with the overall number of JKN participants. Although the application has been downloaded more than 50 million times, the number of active users remains substantially lower than the total JKN membership ((Chan, Lee, & Teh, 2023)). Previous studies have reported several barriers to Mobile JKN utilization, including technical issues, limited internet connectivity, low digital competence, and insufficient understanding of application features ((Anjasmari & Rahliani, 2025)). These challenges indicate that the availability of digital health technology alone does not guarantee its effective utilization.

The issue is particularly relevant among informal workers, who constitute a significant proportion of Indonesia's workforce. According to Statistics Indonesia, approximately 59.11% of Indonesian workers are employed in the informal sector ((Badan Pusat Statistik, 2025)). Informal workers often experience unstable income, limited social protection, varying educational backgrounds, and restricted access to health information and digital technologies ((Yunus & Jamar, 2025),(Dewantoro, 2024)). These characteristics may affect their ability and willingness to adopt digital health innovations, including Mobile JKN. Consequently, understanding the factors influencing Mobile JKN utilization among informal workers is important for maximizing the benefits of digital healthcare services and ensuring equitable healthcare access.

Technology Acceptance Model (TAM), developed by Davis, suggests that technology adoption is primarily influenced by perceived ease of use and perceived usefulness, which subsequently affect users' attitudes and behavioral intentions toward technology utilization ((Anggraeni, 2025)). In addition, digital literacy plays a critical role in enabling individuals to access and effectively use digital technologies. From a healthcare utilization perspective, Andersen's Behavioral Model emphasizes that healthcare utilization is influenced by individual needs, predisposing factors, and enabling factors ((Agustina & Pianda, 2024)). In the context of Mobile JKN, healthcare

Determinants of Mobile JKN Application Utilization in Supporting Healthcare Access among Informal Workers at Kenali Besar Primary Health Center, Jambi City, Indonesia

service needs may encourage individuals to adopt digital healthcare services to facilitate access to healthcare.

Several studies have identified perceived usefulness, perceived ease of use, digital literacy, and user attitudes as important determinants of Mobile JKN utilization ((Syakira Niyatazahra Al- Masudi, Ria Efkelin, & Lamba, 2025), (Nursuciyani Jamal & Andi Sri Adinda, 2025))(Ramadhani & Siagian, 2022)). However, most previous studies focused on the general population and were conducted in urban settings. Research specifically examining informal workers remains limited, particularly studies integrating both the Technology Acceptance Model and Andersen's Behavioral Model to explain digital healthcare utilization behavior. Furthermore, evidence from Jambi Province is still scarce despite the province having achieved high JKN coverage rates ((Dinas Kesehatan Provinsi Jambi, 2025)). In Kota Jambi, Mobile JKN users account for only a small proportion of total JKN participants, indicating a substantial gap between insurance enrollment and digital service utilization ((BPJS Kesehatan Kota Jambi, 2025)).

Based on this description, a gap is evident between the availability of innovative digital health services and their utilization in the community, particularly among informal workers. Scientific evidence regarding the utilization of the JKN Mobile application among informal workers is also limited. Therefore, this study aims to analyze the factors influencing the utilization of the JKN Mobile application in supporting access to health services among informal workers at the Kenali Besar Community Health Center in Jambi City.

Method

This study employed a quantitative analytical design with a cross-sectional approach. The research was conducted from April to June 2026 in the working area of Kenali Besar Primary Health Center, Jambi City, Indonesia. The study population consisted of all informal workers who were registered as National Health Insurance (JKN) participants within the study area. Informal workers included self-employed individuals, small traders, ride-hailing drivers, daily laborers, service workers, and other workers outside formal employment arrangements.

The minimum sample size was calculated using the Lemeshow formula for cross-sectional studies, resulting in 126 respondents. Participants were selected using a non-probability accidental sampling technique. Inclusion criteria were: aged ≥ 18 years, residing in the working area of Kenali Besar Primary Health Center, classified as an informal worker, registered as a JKN participant, and having installed or used the Mobile JKN application. Individuals who were seriously ill, unable to participate in interviews, or unwilling to provide informed consent were excluded.

The dependent variable was Mobile JKN utilization, categorized as "utilized" and "underutilized" based on the use of at least two application features within the previous three months. Independent variables included perceived ease of use, perceived usefulness, behavioral intention, attitude toward use, digital literacy, and healthcare service needs. The study framework was adapted from the Technology Acceptance Model (TAM) and Andersen's Behavioral Model of Health Service Utilization.

Data were collected in May 2026 using a structured questionnaire with a five-point Likert scale. The instrument consisted of 36 items and had previously undergone validity and reliability testing among 30 respondents at Rawasari Primary Health Center. All

Determinants of Mobile JKN Application Utilization in Supporting Healthcare Access among Informal Workers at Kenali Besar Primary Health Center, Jambi City, Indonesia

questionnaire items were declared valid (r -value = 0.775–0.980; r -table = 0.361), and the instrument demonstrated excellent reliability with a Cronbach's alpha value of 0.990.

Data analysis included univariate, bivariate, and multivariate analyses. Univariate analysis was used to describe respondent characteristics and study variables. Bivariate analysis was performed using the Chi-square test to assess associations between independent variables and Mobile JKN utilization. The strength of associations was measured using Prevalence Odds Ratios (PORs) with 95% Confidence Intervals (CIs). Variables with p -values <0.25 in bivariate analysis were entered into multiple logistic regression analysis to identify the most dominant determinants of Mobile JKN utilization. Statistical significance was established at p <0.05. Model performance was evaluated using the Omnibus Test of Model Coefficients, Nagelkerke R^2 , and classification accuracy.

This study received ethical approval from the Health Research Ethics Committee of the Jambi Ministry of Health Polytechnic (Poltekkes Kemenkes Jambi) under Ethical Clearance Number LB.02.06/2/0195/2026, issued on April 10, 2026. Written informed consent was obtained from all participants before data collection, and the confidentiality and anonymity of respondents were strictly maintained throughout the study.

Result and Discussions

1. Results

A total of 126 informal workers participated in this study. Nearly half of the respondents were aged 26–45 years (49.21%), followed by those aged >45 years (31.75%) and ≤25 years (19.05%). Most respondents were male (60.32%) and Muslim (76.19%). More than half had completed senior high school education (51.59%), while only 5.56% had attended higher education. The majority had active JKN membership status (94.44%) and reported monthly family incomes below IDR 3,868,963 (86.51%). Regarding occupation, most respondents worked in the trade sector (50.79%), followed by transportation services (23.02%). In terms of work experience, 41.27% had worked in the informal sector for 2–5 years, while 38.89% had worked for more than 5 years. These findings indicate that respondents were predominantly productive-age informal workers with active JKN membership and relatively low socioeconomic backgrounds.

The study found that 58.73% of respondents had utilized the Mobile JKN application, while 41.27% were categorized as underutilizing it. Overall, more than half of the respondents reported favorable perceptions of Mobile JKN. Good perceived ease of use, perceived usefulness, and high behavioral intention were reported by 52.38%, 53.97%, and 53.16% of respondents, respectively. In addition, 57.94% of respondents demonstrated a positive attitude toward the application, and 63.49% had good digital literacy. Healthcare service needs were equally distributed between the high and low categories (50.0% each) (Table 1)

Determinants of Mobile JKN Application Utilization in Supporting Healthcare Access among Informal Workers at Kenali Besar Primary Health Center, Jambi City, Indonesia

Table 1
Distribution of Determinant Factors of JKN Mobile Application Utilization (n=126)

Category	Total	
	n	%
Perceived Ease of Use		
Good	66	52.38
Poor	60	47.62
Perceived Usefulness		
Good	68	53.97
Poor	58	46.03
Behavioral Intention to Use		
High	65	53.16
Low	61	46.84
Attitude Toward Use		
Good	73	57.94
Poor	53	42.06
Digital Literacy		
Good	80	63.49
Poor	46	36.51
Health Service Needs		
High	63	50.00
Low	63	50.00

Source: Primary Data 2026

The bivariate analysis showed that all examined determinants were significantly associated with Mobile JKN utilization ($p < 0.05$). Respondents with good perceived ease of use were 1.67 times more likely to utilize the Mobile JKN application than those with poor perceived ease of use (POR=1.67; 95% CI: 1.21–2.32). Similarly, respondents with good perceived usefulness were 1.57 times more likely to utilize the application compared with those reporting lower perceived usefulness (POR=1.57; 95% CI: 1.39–2.17). Behavioral intention was also significantly associated with Mobile JKN utilization. Respondents with high behavioral intention had a 1.45-fold greater likelihood of utilizing the application than those with low intention (POR=1.45; 95% CI: 1.06–1.98). Likewise, respondents with a positive attitude toward Mobile JKN were 1.96 times more likely to utilize the application than those with a less favorable attitude (POR=1.96; 95% CI: 1.35–2.84). Digital literacy demonstrated a significant relationship with Mobile JKN utilization, with respondents who had good digital literacy being 1.45 times more likely to utilize the application than those with poor digital literacy (POR=1.45; 95% CI: 1.02–2.06). In addition, respondents with high healthcare service needs were 1.55 times more likely to utilize Mobile JKN than those with lower healthcare service needs (POR=1.55; 95% CI: 1.13–2.11). Among all variables, attitude toward use showed the strongest association with Mobile JKN utilization in the bivariate analysis (POR=1.96; 95% CI: 1.35–2.84) (Table 2).

Determinants of Mobile JKN Application Utilization in Supporting Healthcare Access among Informal Workers at Kenali Besar Primary Health Center, Jambi City, Indonesia

Table 2

Analysis of the Relationship between Determinant Factors in Mobile JKN Utilization (n=126)

Variable	Patient Satisfaction				POR (95% CI)	P-value
	Satisfaction n	%	Unsatisfied n	%		
Perceived Ease of Use						
Good	48	72.73	18	27.27	1.67 (1.21-2.32)	0.002
Poor	26	43.33	34	56.67		
Perceived Usefulness						
Good	48	70.59	20	29.41	1.57 (1.39-2.17)	0.006
Poor	26	44.83	32	55.17		
Behavioral Intention to Use						
High	45	69.23	20	30.77	1.45 (1.06-1.98)	0.022
Low	29	47.54	32	52.46		
Attitude Toward Use						
Good	54	73.97	19	26.03	1.96 (1.35-2.84)	0.000
Poor	20	37.74	33	62.26		
Digital Literacy						
Good	53	66.25	27	33.75	1.45 (1.02-2.06)	0.038
Poor	21	45.65	25	54.35		
Health Service Needs						
High	45	71.43	18	28.57	1.55 (1.13-2.11)	0.007
Low	29	46.03	34	53.97		

Source: Primary Data 2026

The multivariate logistic regression analysis identified three variables that remained significantly associated with Mobile JKN utilization among informal workers. Respondents with a good perception of ease of use were 2.64 times more likely to utilize the Mobile JKN application compared with those who had a poor perception (aOR = 2.64; 95% CI: 1.13–6.15; $p = 0.024$). Likewise, respondents with positive attitudes toward Mobile JKN were 3.19 times more likely to utilize the application than those with less favorable attitudes (aOR = 3.19; 95% CI: 1.38–7.36; $p = 0.006$). Participants with higher healthcare service needs were also more likely to use Mobile JKN (aOR = 2.96; 95% CI: 1.31–6.67; $p = 0.009$) (Table 3).

Table 3

Multivariate Logistic Regression Analysis of Determinants of Mobile JKN Utilization (n = 126)

No	Variable	B	P-Value	POR (95% CI)
1	Perceived Ease of Use	0.973	0.024	2.64 (1.13-6.15)
2	Usage Attitudes	1.161	0.006	3.19 (1.38-7.36)
3	Service Needs	1.085	0.009	2.96 (1.31-6.67)
P-value Omnibus		0.000		
Nagelkerke R²		27.1%		
Overall Percentage		73.0		

Source: Primary Data 2026

Among these variables, attitude toward use emerged as the most dominant determinant of Mobile JKN utilization, as indicated by the highest adjusted odds ratio. The Omnibus Test of Model Coefficients was statistically significant ($p < 0.001$), indicating that the model was appropriate for explaining Mobile JKN utilization. The

Determinants of Mobile JKN Application Utilization in Supporting Healthcare Access among Informal Workers at Kenali Besar Primary Health Center, Jambi City, Indonesia

Nagelkerke R^2 value of 27.1% suggests that the variables included in the model explained 27.1% of the variation in Mobile JKN utilization, while the remaining 72.9% may be influenced by other factors not examined in this study. Furthermore, the model correctly classified 73.0% of cases, demonstrating an acceptable predictive performance

2. Discussion

This study investigated the determinants of Mobile JKN utilization among informal workers in the working area of Kenali Besar Primary Health Center, Jambi City. The findings showed that 58.73% of respondents actively utilized Mobile JKN, indicating that digital health services have begun to be accepted by informal workers. However, a substantial proportion (41.27%) demonstrated low utilization, suggesting that adoption remains suboptimal. The most frequently used features were participant registration and healthcare service administration, while features such as health screening, healthcare facility information, complaint services, and service history were rarely accessed. These findings indicate that Mobile JKN is predominantly utilized for administrative purposes rather than as a comprehensive digital health platform—a pattern particularly notable in Jambi City, where informal workers constitute a large proportion of the labor force and often operate within economic and digital environments that differ substantially from urban centers with more advanced digital infrastructure.

Perceived ease of use was significantly associated with Mobile JKN utilization ($p=0.002$), with respondents holding good perceptions of ease of use 1.67 times more likely to utilize the application. This finding supports the Technology Acceptance Model (TAM), in which ease of use is a key determinant of technology adoption. In the specific context of informal workers in Jambi, this association is particularly meaningful given the heterogeneous educational backgrounds and variable digital experience within this population. Many informal workers in this setting—including street vendors, home-based producers, and daily laborers—may have had limited prior exposure to mobile health applications, making interface simplicity a decisive factor in adoption. Consistent findings have been reported in studies conducted in Bengkulu and Pemalang, where participants who perceived Mobile JKN as easy to use demonstrated higher utilization rates ((Noeraini, Yniani, Fourni, Fuspita, & Jaya, 2025); (Zulfa, Yuniarti, & Wahyuningsih, 2024)). Some studies, however, have reported contradictory findings, suggesting that ease of use may not directly affect utilization when users prioritize perceived benefits over operational simplicity ((Shrestha, Vassileva, Joshi, & Just, 2021); (Paradisha, Setiawan, & Djajadikerta, 2025)), an inconsistency likely attributable to differences in digital literacy and prior application experience across study populations.

Perceived usefulness was similarly significant ($p=0.006$), with respondents perceiving greater benefits 1.57 times more likely to utilize Mobile JKN. For informal workers in Jambi who typically cannot afford to lose daily income during health facility visits, the practical advantages of online registration and reduced waiting times represent tangible value. The significance of perceived usefulness has been well documented across Mobile JKN studies and broader e-health research ((Paradisha et al., 2025); (Liliyan, Febisatria, & Wiguna, 2024); (Wirajaya, 2025); (Rahman & Chaniago, 2025)); ((Das Gupta, 2024), (Tikupasang, Tucunan, & Korompis, 2025)), although some evidence suggests that perceived usefulness alone may be insufficient when users remain accustomed to face-to-face services or lack awareness of available features ((Marzuki,

Determinants of Mobile JKN Application Utilization in Supporting Healthcare Access among Informal Workers at Kenali Besar Primary Health Center, Jambi City, Indonesia

2025). (Widyoningsih. Nina. & Fitriadi. 2025). (Şahin Büyük. Aynur. & Nurcan. 2025)). This latter caveat is particularly relevant in Jambi. where awareness campaigns for Mobile JKN features beyond basic administration have not been systematically documented.

Behavioral intention was significant in bivariate analysis ($p=0.022$) but was not retained as an independent predictor in the multivariate model. suggesting that its influence operates indirectly through ease of use. attitude. and perceived usefulness. In the local context. this finding implies that even informal workers with favorable intentions toward Mobile JKN may fail to translate those intentions into actual use when confronted with practical barriers such as unstable internet connectivity—a structural challenge in several sub-districts of Jambi City—or limited time to explore the application amid work demands. This is consistent with previous research demonstrating that intention does not guarantee behavior when external constraints are present (Aziz et al.. 2024); (Amin. Hossain. Uddin. Jony. & Kim. 2022); (Parahyanti. Zharifah. & Lazuardi. 2024).

Attitude toward use emerged as the most dominant determinant of Mobile JKN utilization. remaining significant in multivariate analysis ($aOR=3.19$; $p=0.006$). Respondents with positive attitudes were approximately three times more likely to utilize the application. The primacy of attitude in this population reflects the importance of psychological acceptance in driving digital health adoption among communities where technology use is still shaped by trust. social norms. and prior experience with government health services. In Jambi's informal worker community. where experiences with BPJS Kesehatan services have not always been uniformly positive. attitude formation is likely influenced by word-of-mouth. peer experiences. and perceptions of government digital services more broadly. Previous studies have consistently identified attitude as a major predictor of technology adoption across various digital health contexts (Alsyouf et al.. 2023); (Bahari. Mutambik. Almuqrin. & Alharbi. 2024); (Li. 2025). These findings collectively suggest that interventions targeting attitude improvement—through enhanced user experience. peer-based promotion. and community-level trust-building—may yield greater impact than technical improvements alone.

Digital literacy was significant in bivariate analysis ($p=0.038$) but did not remain significant in multivariate analysis. indicating that its effect is mediated by other factors. This finding suggests that technological competence alone does not determine utilization; even digitally capable users may disengage if the perceived benefits are unclear or the application fails to address their specific needs. Conversely. users with moderate literacy may still adopt Mobile JKN when the application design is sufficiently intuitive. In the Jambi context. this points to an opportunity to design outreach strategies that prioritize demonstrating practical relevance rather than focusing solely on technical skill-building. (Sumbaga. Romadhon. & Isa. 2025); (Neter & Brainin. 2022); (Puspita et al.. 2025). Healthcare service need remained an independent predictor in multivariate analysis ($aOR=2.96$; $p=0.009$). with respondents reporting higher needs nearly three times more likely to utilize Mobile JKN. This finding aligns with Andersen's Behavioral Model. which positions need as the most proximal determinant of healthcare utilization. Among informal workers in Jambi—many of whom experience occupational health risks associated with physically demanding. unregulated work—perceived healthcare need may serve as a critical motivator for engaging with digital health tools. The practical function of Mobile JKN in simplifying service access thus becomes especially salient for this group (Purba. Jati. & Kusumastuti. 2022); (Figueirêdo et al.. 2025); (Deniz-Garcia et

Determinants of Mobile JKN Application Utilization in Supporting Healthcare Access among Informal Workers at Kenali Besar Primary Health Center, Jambi City, Indonesia

al., 2023); (Nazari-Shirkouhi, Badizadeh, Dashtpeyma, & Ghodsi, 2023) (Rifky & Jannatin, 2025).

Multivariate analysis identified perceived ease of use, attitude toward use, and healthcare service need as the only independent determinants, collectively explaining 27.1 of the variation in utilization behavior. The remaining unexplained variance suggests that additional factors—including internet accessibility, social influence, trust in digital government services, and the quality of prior interactions with BPJS Kesehatan—warrant investigation in future studies conducted within the Jambi context. BPJS Kesehatan should prioritize improving application usability, expanding community-based education tailored to informal worker settings, and strengthening service features that directly address the practical needs of this population, in order to support broader goals of equitable healthcare accessibility and digital transformation within Indonesia's national health insurance system.

Conclusion

This study demonstrated that the utilization of the Mobile JKN application among informal workers in the working area of Kenali Besar Primary Health Center, Jambi City, remains moderate, with only 58.73% of respondents categorized as active users. Bivariate analysis showed that perceived ease of use, perceived usefulness, behavioral intention, attitude toward use, digital literacy, and healthcare service needs were significantly associated with Mobile JKN utilization. Multivariate analysis identified perceived ease of use, attitude toward use, and healthcare service needs as significant determinants. Among these factors, attitude toward use emerged as the most dominant predictor of Mobile JKN utilization. These findings highlight the importance of behavioral and perceptual factors in promoting the adoption of digital health services. Strengthening positive user attitudes, improving the perceived ease of application features, and aligning digital services with users' healthcare needs may enhance the utilization of Mobile JKN and support better access to healthcare among informal workers.

Determinants of Mobile JKN Application Utilization in Supporting Healthcare Access among Informal Workers at Kenali Besar Primary Health Center, Jambi City, Indonesia

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Determinants of Mobile JKN Application Utilization in Supporting Healthcare Access among Informal Workers at Kenali Besar Primary Health Center, Jambi City, Indonesia

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