(RESEARCH ARTICLE)

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Factors related to the effectiveness of the use of the mobile-NHI application in the online registration service for outpatients of BPJS (Social Security Agency) Health at Bhayangkara hospital Level III, Kendari city, southeast Sulawesi province, Indonesia, 2025

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Abstract

Background: The Mobile-NHI application was developed by BPJS health as a digital innovation to increase the effectiveness of online patient registration services, especially in outpatient services. However, in its implementation, there are still various obstacles that can affect the effectiveness of using the application, such as ease of use, speed of the registration process, accessibility, and user satisfaction with application features.

Method: This study is a quantitative analytical research with an observational design using a cross sectional approach. The research was conducted at Bhayangkara Tk. III Hospital, Kendari City in 2025 with a sample of 264 outpatient BPJS patients using the Mobile-NHI application. The sampling technique uses purposive sampling and accidental sampling. The data were analyzed using the chi-square test with a significance level of $\alpha = 0.05$.

Results: The results showed a significant relationship between user convenience and the effectiveness of using the Mobile-NHI application (p-value = 0.000), the speed of the registration process with the effectiveness of using the Mobile-NHI application (p-value = 0.000), accessibility with the effectiveness of using the Mobile-NHI application (p-value = 0.000), as well as user satisfaction with application features with the effectiveness of using the Mobile-NHI application (p-value = 0.000).

Conclusion: There is a significant relationship between ease of use, speed of the registration process, accessibility, and user satisfaction with application features and the effectiveness of using the Mobile-NHI application in online registration services for outpatient BPJS patients at Bhayangkara Tk. III Hospital, Kendari City in 2025. Increased socialization, improvement of application features, and network access support are needed to optimize the effectiveness of Mobile-NHI use.

Keywords: User Convenience; Registration Process Speed; Accessibility; User Satisfaction with Application Features; Effectiveness; Mobile NHI

1. Introduction

National targets *Universal Health Coverage* (UHC) in 2019 stipulates that at least 95% of the entire population has been registered as participants in the NHI program. Meanwhile, in 2022, every year the national target increases and changes in regulations. On March 1, 2023, 90% of the population in Indonesia is guaranteed access to health services through the NHI-KIS program, in other words, there are 252.1 million people with NHI. The national UHC target in 2024 will be 98% (1).

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Based on the Health Social Security Program Management Report as of August 31, 2025, the number of National Health Insurance (NHI) participants has reached 281,598,621 participants. Of the total participants, as many as 116,988,887 (41.5%) participants came from the Contribution Assistance Recipient (PBI) segment, as many as 20,270,469 (7.2%) participants from the Wage Recipient Worker (PPU) segment of State Administrators, as many as 1,510,990 from the Non-State Administrators PPU segment – SOEs, as many as 45,178,701 (16.0%) participants from the Non-State Administrators – Private PPU segment, as many as 33,177,808 (11.8%) participants from the Non-Wage Workers (PBPU) segment, There are 4,807,884 participants from the Non-Worker (BP) segment of State Administrators, and there are 59,200,707 (21.0%) Residents registered by the Regional Government (BPJS Kesehatan, 2025).

In Kendari City, out of a total of 351,085 residents in 2023, 342,351 people or 97.51% have been registered as NHI participants, with 140,778 participants in Contribution Assistance Recipients (PBI), 127,586 PPU (Wage Recipients), 55,697 PBPU (Non-Wage Recipients), 18,290 BP (Non-Workers) and 8,734 non-NHI people or 2.49% (South Sulawesi Health Office, 2023).

Registration *online* allows patients to access healthcare anytime and anywhere, provided they have a device such as *Smartphone*, laptop, or computer with an internet connection. With this system, patients no longer need to spend time *den* at the counter, but it is enough to be present according to the queue number that has been obtained after registration *online* (2).

Previous studies have shown that the use of *Mobile* NHI is effective in improving the efficiency of health services, reducing waiting times, and increasing patient satisfaction (3). However, several obstacles such as limited internet networks, lack of user understanding, and application technical problems are still obstacles in optimizing the use of Mobile NHI (4).

Based on a preliminary study, the results of initial observations conducted at Bhayangkara Hospital, Kendari City, found that there are still a number of obstacles experienced by patients in utilizing *the Mobile* NHI application as a medium for registration for outpatient services. Some patients admitted that they experienced difficulties in the process of installing and activating accounts due to a lack of understanding of technology and obstacles in the data verification process. In addition, an unstable internet network, lack of information or socialization about *the online* registration feature, and the appearance of the application that is considered less simple for some elderly patients are also obstacles in using the application. This condition has the potential to reduce the effectiveness of *online* registration, because the main goals *of the Mobile* NHI application are to speed up services, minimize the accumulation of patients at the counter, facilitate access, and improve the service experience has not been fully achieved.

2. Methods

The type and design used in this study are quantitative analytical research with observational methods and research design using *a cross sectional study* approach. The sample in this study was 264 outpatient BPJS patients using *the* Mobile-NHI application. In this study, sampling was carried out using *the Purposive Sampling method*, which is a method of selecting respondents based on specific criteria that have been set by the researcher *and Accidental sampling*, which is a sampling technique based on chance. The statistical test to be used is *the chi-square* test with an error limit of α = 5%.

3. Results and Discussion

3.1. The Relationship between User Convenience and the Effectiveness of Using Mobile-NHI Applications

Table 1 The Relationship between User Ease Level and Application Usage Effectiveness Mobile-NHI for Outpatient BPJS Patients at Bhayangkara Tk. III Hospital, Kendari City in 2025

No.	User Convenience	Effectiveness of Using *the* Mobile-NHI Application				Quantity		P Value
		Effective		No Effective				
		n	%	n	%	n	%	
1.	Easy	252	100.0	0	0	252	100	0,000
2.	Difficult	8	66.7	4	33.3	12	100	
Total		260	58.2	4	1.5	264	100	

Source: Primary Data 2025

Table 1. shows that of the 252 respondents (100%) who said it was easy to use the *mobile-NHI application, all stated that it was effective in using the* mobile-NHI application. On the other hand, of the 12 respondents (100%) who said it was difficult to use mobile-NHI, there were 8 respondents (66.7%) who stated that it was effective to use mobile-NHI and as many as 4 respondents (33.3%) who stated that it was not effective.

The *chi-square* test *obtained a significant value,* p-value *0.000 < 0.05, then it can be concluded that Ho was rejected and Ha was accepted, which means that there is a relationship between user convenience and the effectiveness of using* the *mobile-NHI application in online registration services* for outpatient BPJS patients at Bhayangkara Hospital, Kendari City in 2025.

User-friendliness level (*perceived ease of use*) is one of the important factors that determine the success of the use of digital healthcare applications, including applications *Mobile*-NHI developed by BPJS Kesehatan. Perception of ease of use is an assessment made by consumers or the public regarding the effort or time required to learn and use a new technology, where the assessment can be positive or negative (5).

The results of this study show that out of 264 respondents, there are 252 respondents in the easy category (100%) stating that the use of the *Mobile-NHI application in online registration services* for outpatient BPJS patients is in the effective category, and there are no respondents who stated that it is ineffective. These results show that when the *Mobile-NHI application is felt to be easy by users, the service process provided will be faster and can be achieved optimally.*

On the other hand, in the group of respondents who stated that *the* Mobile-NHI application was difficult to use, there were 12 respondents in the difficult category. A total of 8 respondents (66.7%) assessed that the use of the application was still effective, while the other 4 respondents (33.3%) stated that the use of the application was not effective. Although respondents stated that the use of *the* Mobile-NHI application was relatively difficult, some respondents still considered its use effective because they were still able to complete the registration process until they successfully obtained the service, even though it took longer or help from other parties, such as family or hospital staff. This shows that the perception of difficulty of use does not necessarily hinder the achievement of the main goal of registration.

The results of this study are relevant to the research conducted by (6) describe the perception of BPJS participants on effectiveness *Mobile*-NHI in general, including the ease of use of applications for functions such as registration *online*. Although the app provides basic convenience, there are still obstacles such as limited internet access and lack of user education that degrade the effectiveness of the service.

3.2. The Relationship between the Speed of the Registration Process and the Effectiveness of the Use *of the* Mobile-NHI Application

Table 2 The Relationship of the Speed of the Registration Process with the Effectiveness of Application Use Mobile-NHI for BPJS Patients at Bhayangkara Tk. III Hospital, Kendari City in 2025

No.	Speed of the Registration Process	Effectiveness of Using *the* Mobile-NHI Application				Quantity		P Value
		Effective		No Effective				
		n	%	n	%	n	%	
1.	Fast	255	100.0	0	0	255	100	0.000
2.	Slow	5	55.6	4	44.4	9	100	
Total		260	98.5	4	1.5	264	100	

Source: Primary Data 2025

Table 2. shows that of the 255 respondents (100%) who said they were fast in the registration process, all stated that they were effective in using *the* mobile-NHI application. On the other hand, of the 9 respondents (100%) who said that they were slow in the registration process using mobile-NHI, there were 5 respondents (55.6%) who stated that it was effective to use mobile-NHI and as many as 4 respondents (44.9%) who stated that it was not effective.

The *chi-square* test *obtained a significant value,* p-value *0.000 < 0.05, then it can be concluded that Ho was rejected and Ha was accepted, which means that there is a relationship between the speed of the registration process and the*

effectiveness of the use of the *mobile-NHI application in online registration services* for outpatient BPJS patients at Bhayangkara Tk. III Hospital, Kendari City in 2025.

The speed of the registration process is an important indicator in assessing the success of the implementation of the registration system *online* Because registration is the starting point for outpatient health services. Enrollment program *online* This is considered effective if it succeeds in reducing waiting time, simplifying the registration process, and providing certainty of doctors' schedules, in accordance with the goals that have been set. In addition, effectiveness can also be measured through patient satisfaction levels and how widely this application is used by patients in registering. Registration services *online* This is the right solution for patients who are looking for an easier and faster way to get health services. Another target is patients who live far from the hospital, where with the online system, they can register without having to come early just to pick up the queue number (7).

The results of this study show that out of 264 respondents, there were 255 respondents (100%) who rated the registration process in the fast category, all (100%) included in the effective category, and there were no respondents who rated the use of the application as ineffective. These results indicate that the speed of the registration process through the *Mobile-NHI application directly contributes to the achievement of the effectiveness of online registration services*, especially in reducing waiting times and smoothing the outpatient administration flow. So that patients immediately get services quickly without waiting for a long time.

On the other hand, in the group of respondents who assessed the registration process as slow, the effectiveness of using *the Mobile* NHI application tended to be lower. Of the 9 respondents (100%) in the slow category, only 5 respondents (55.6%) rated the use of the application as effective. This can happen because even though it takes a relatively longer time, the registration process can still be completed successfully, so that the main goal of using the application is still achieved. Respondents may still be able to tolerate the delay because they do not need to come directly to the hospital and still get certainty of registration. Meanwhile, 4 respondents (44.4%) stated that the registration process was slow and considered the use of the application to be ineffective due to more significant delays, such as long *loading* times , network interruptions, or repeated verification processes, causing a mismatch between the expected time and the time needed. This condition makes the registration process feel inefficient and has an impact on ineffective assessments.

This research is relevant to the results of previous research which stated that the speed of registration services *online* through the app *Mobile* NHI affects the effectiveness and satisfaction of patients. Research by (8) indicates that the queue implementation *online* through *Mobile* NHI is able to significantly reduce patient waiting time, thereby increasing the effectiveness of outpatient services.

3.3. The Relationship between Accessibility and the Effectiveness of Using *Mobile-NHI* Applications

Table 3 The Relationship of Accessibility Level with Application Usage Effectiveness Mobile-NHI for BPJS Patients at Bhayangkara Tk. III Hospital, Kendari City in 2025

No.	Accessibility	Effectiveness of Using *the* Mobile-NHI Application				Quantity		*P Value*
		Effective		No Effective				
		n	%	n	%	n	%	
1.	Height	249	100.0	0	0	249	100	0.000
2.	Low	11	73.3	4	26.7	15	100	
Total		260	98.5	38	1.5	264	100	

Source: Primary Data 2025

Table 3. shows that of the 249 respondents (100%) who said that accessibility was high, all stated that it was effective in using *the* mobile-NHI application. On the other hand, of the 15 respondents (100%) who said that accessibility was low in using mobile-NHI, there were 11 respondents (73.3%) who stated that it was effective to use mobile-NHI and as many as 4 respondents (26.7%) who stated that it was not effective.

The *chi-square test* obtained a significant value, *p-value* 0.000 < 0.05, so it can be concluded that Ho was rejected and Ha was accepted, which means that there is a relationship between accessibility and the effectiveness of using *the* mobile-NHI application in the online registration service *of* outpatient BPJS patients at Bhayangkara Tk. III Hospital, Kendari City in 2025.

Application accessibility is an important aspect in assessing the effectiveness of the use of digital health service information systems such as *Mobile*-NHI. App usage *mobile* NHI is expected to improve administrative efficiency, reduce bureaucracy, and speed up the service process. Application *mobile* NHI increases the accessibility of health services for the community. BPJS Kesehatan participants can easily access health information and services through *Smartphone*. Participants can check membership status, search for the nearest health facility, and even make appointments with doctors through the app (9).

The results of this study show that out of 264 respondents, there are 249 respondents (100%) who are in the high accessibility category, all (100%) consider the use of *the Mobile* NHI application in the effective category, and there are no respondents who consider it ineffective. These findings indicate that good accessibility in terms of ease of application access, internet network availability, and device compatibility contribute optimally to the effectiveness of application use in supporting online registration services for outpatient BPJS patients.

On the other hand, in the group of respondents with low accessibility, the level of effectiveness of using *the* Mobile-NHI application showed more varied results. Of the 15 respondents (100%) with low accessibility, only 11 respondents (73.3%) rated the use of the app as effective. This can happen because even though they experience limited access, such as *login difficulties*, menu displays that are not easy to understand, or dependence on the internet network, respondents are still able to complete the registration process successfully. The success of obtaining a queue number and the certainty of service make the application still considered effective even though the access is not optimal. Meanwhile, 4 respondents (26.7%) considered it ineffective. This is because they experience more significant access barriers, such as frequent *errors*, difficulty accessing certain features, or lack of understanding of application usage. These obstacles cause the registration process to not run smoothly, take longer, or even fail, so that the purpose of using the application is not achieved and is considered ineffective.

Research conducted by Sari and Afrianto (2022) shows that accessibility, which includes the availability of adequate internet connections and application compatibility on various types of *smartphone* devices, has a positive relationship with the effectiveness of *BPJS* online registration through *Mobile-NHI.*

3.4. The relationship between user satisfaction with application features and the effectiveness of using *the mobile* application-NHI

Table 4 The Relationship of User Satisfaction with Application Features with the Effectiveness of Application Use Mobile-NHI for BPJS Patients at Bhayangkara Tk. III Hospital, Kendari City in 2025

No.	User satisfaction with the app's features	Effectiveness of Using *the* Mobile-NHI Application				Quantity		*P Value*
		Effective		No Effective				
		n	%	n	%	n	%	
1.	Puas	256	100.0	0	0	256	100	0.000
2.	Dissatisfied	4	50.0	4	50.0	8	100	
Total		260	98.5	4	1.5	264	100	

Source: Primary Data 2025

Table 4. shows that of the 256 respondents (100%) who said they were satisfied with the features of the application, all stated that they were effective in using *the* mobile-NHI application. On the other hand, of the 8 respondents (100%) who said they were not satisfied with the application features in using mobile-NHI, there were 4 respondents (50.0%) who stated that it was effective to use mobile-NHI and as many as 4 respondents (50.0%) who stated that it was not effective.

The *chi-square* test *obtained a significant value,* p-value *0.000 < 0.05, so it can be concluded that Ho was rejected and Ha was accepted, which means that there is a relationship between user satisfaction with application features and the effectiveness of using* the *mobile-NHI application in online registration services* for outpatient BPJS patients at Bhayangkara Tk. III Hospital, Kendari City in 2025.

Patient satisfaction is one of the important indicators in assessing the quality of hospital services. User satisfaction can be interpreted as the extent to which users' expectations for the features available in the application are met, both in

terms of usability, reliability, ease of interaction, and the quality of services provided. In the context of registration *online* through the app *Mobile*-NHI, user satisfaction with the app's features reflects the patient's subjective evaluation of the user experience, which then has an impact on the effectiveness of the app's use in supporting the registration process *online* Outpatient BPJS patients (10).

 Based on the results of the study, of the 256 respondents who expressed satisfaction with the features of *the* Mobile-NHI application, all (100%) were included in the effective category in using the application, and there were no respondents who were included in the ineffective category. On the other hand, of the 8 respondents who stated that they were not satisfied with the application features, there were 4 respondents (50.0%) who still considered the use of the application to be effective. This can happen because even though some features are not as expected or less than optimal, the main function of the application as a means of *online* registration can still be used and produce the expected output, such as successfully registering and obtaining a queue number. Thus, dissatisfaction with certain features does not completely hinder the achievement of the app's usage goals.

On the other hand, the other 4 respondents (50.0%) who expressed dissatisfaction and considered the use of the application to be ineffective were suspected of experiencing incompatibility between the available features and user needs, such as a less user-friendly application appearance, difficult features to use, or frequent technical problems. This condition causes the registration process to not run optimally or takes longer, so that the purpose of using the application is not achieved and is considered ineffective.

The results of this study are relevant to the research conducted by (11) on outpatient satisfaction with the registration feature *online* Application *Mobile*-NHI at PKU Muhammadiyah Hospital Surabaya which shows that positive perception of feature quality and user experience affects the overall level of satisfaction.

4. Conclusion

Based on the results of the study on Factors Related to the Effectiveness of the Use of the Mobile-NHI Application in the Online Registration Service of Outpatient BPJS Patients at Bhayangkara Tk. III Hospital, Kendari City in 2025, it can be concluded that there is a relationship between user convenience, speed of the registration process, accessibility, and user satisfaction with application features with the effectiveness of mobile application use -NHI in the online registration service for outpatient BPJS patients at Bhayangkara Tk. III Hospital, Kendari City in 2025.

Compliance with ethical standards

Disclosure of conflict of interest

No conflict of interest to be disclosed.

All authors in the making of this scientific article have no conflict of interest.

Statement of informed consent

Informed consent was obtained from all individual participants included in the study.

This research was conducted by an independent and trusted survey institution. in collecting data both surveys, interviews and case studies, survey institutions always pay attention to research ethics by giving research approval to all respondents

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