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Determinants of the intention to use National Insurance Mobile Application in Badung District based on Technology Acceptance Model Framework

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ABSTRACT

Background and purpose: National Insurance Mobile Application (JKN Mobile) developed by Health Insurance Institution (BPJS Kesehatan) to facilitate the administrative activities of the National Health Insurance (JKN) participants. However, in practice, it has yet to be widely used by JKN participants. This study aims to explore factors determine participants' intention to use the JKN Mobile application based on the Technology Acceptance Model (TAM) Framework.

Methods: This cross-sectional study was conducted in April-May 2021. The minimum required sample size was 99. Inclusion criteria were people 18 years of age or older, residing in Badung District, Bali Province and at least having used the JKN Mobile once. Data were collected through a self-administered questionnaire. A multivariable analysis was then conducted to determine the factors of intention to use the JKN Mobile application.

Results: The proportion of JKN participants interested in using the JKN Mobile was 50%. Perceived usefulness, ease of use, credibility, and amount of information were correlated with the intention to use the JKN Mobile. The linear regression analysis showed that perceived usefulness is significantly associated with the intention to use JKN Mobile (aOR=9.68; 95%CI: 3.33-28.14; p=0.001).

Conclusion: Participants' acceptability to use JKN Mobile is associated with the benefits of using such an application. It is thus imperative for BPJS Kesehatan to simultaneously update the design and features to be readily accepted and used by the public, which will later affect interest in using the application.

Keywords: Mobile JKN, BPJS Kesehatan, intention to use, TAM, health insurance

INTRODUCTION

Indonesia has the most significant internet users in Southeast Asia, reaching 100 million in 2016. The trending technology led to mobile applications such as social media usage, which reached 32% or about 92 million users in 2016.[1] The high level of internet use in Indonesia creates an excellent opportunity for the government to innovate in providing services effectively and efficiently to the community. Providing an efficient public access to health information is one of the factors in supporting the success of the Sustainable Development Goals.[2]

National Health Insurance Institution (BPJS *Kesehatan*) employed this opportunity to improve its services to the community, especially in the administration process of national health insurance (JKN) services, through an innovation called JKN Mobile app. The app enable JKN participants to register, change their membership, gain information on participant data, insurance premium, access to a health care provider, and submit suggestions and complaints.[3] COVID-19 Pandemic caused a change in the pattern of activities in the community that shifted to a virtual service system; hence in 2020, JKN Mobile users reached 10,299,968 participants.[4] However, several studies found that many JKN participants still needed to learn about the app. Additionally, technical problems such as login failure, verification code do not appear, and difficulties in changing health facilities and security issues hindered the willingness of participants to use JKN Mobile.[5-7]

Badung District, one of the districts in Bali Province, has reached the Universal Health Coverage (UHC) due to the existence of government insurance initiative, *Krama Badung Sehat (KBS)*.[8,9] As of March 31, 2020, the coverage of government subsidized participants *(KBS-KIS)* reached 478,627 people, which accounted for 98% of the total population of Badung.[9,10] From a preliminary interview with the membership staff at Badung District BPJS *Kesehatan*, it was revealed that the utilization of JKN Mobile was low and must be increased. Based on JKN Mobile's user distribution in 2020, 31,780 JKN participants were using JKN Mobile, accounted for only 6.63% of total JKN participants in Badung District.

JKN Mobile application have the potential to continue to grow, therefore, it is important to explore participants' intention to use the application. One of the frameworks to understand acceptance of certain technology and its determinants is the Technology Acceptance Model (TAM). TAM is an information system theory that links cognitive beliefs with individual attitudes and behaviours to the acceptance of technology.[11] TAM explains that technology acceptance could be influenced by two cognitive factors: perceived usefulness and ease of use.[12] This study aims to determine the factors determine participants' intention to use the JKN Mobile application.

METHODS

Study Design and Setting

This study conducted an online cross-sectional survey from April-May 2021. The required sample size was calculated using the Slovin formula. The Slovin formula was chosen because the population was very large, so the formula was needed to obtain a small number of samples but still be able to represent the entire population. The minimum required sample size was 99 respondents. We invited respondents through a Google form link listed on a poster showing information about the study's purpose, which was shared via Instagram, Facebook and WhatsApp. The link was then shared through the researcher's networking. The eligibility criteria were

people aged 18 years or older, residing in Badung during the data collection period, at least have used the JKN Mobile once and being willing to participate. Those who did not meet the eligibility criteria and submitted incomplete answers were excluded from the study.

Study Variables

In this study, the data collected included the socio-demographic characteristics of respondents (age, gender, education level, occupation, distance of respondent's home to Badung District BPJS *Kesehatan*), perceived usefulness, perceived ease of use, perceived credibility, amount of information received and interest in the use of JKN Mobile applications (behavioral intention to use).

Statistical Analysis

All data were edited and cleaned for analysis. Descriptive statistics were used to obtain variable distributions (i.e., frequencies, percentages, means, and standard deviations). A multiple linear regression analysis was performed to determine which independent variables were associated with the dependent variable. Results were considered significant based on p-values <0.05. All data analyses were conducted using Stata 12.0.

Ethical Approval

This study received approval with Ethics Decree Number: 1150/UN14.2.2.VII.14/LT/2021 from the Ethics Commission, Faculty of Medicine, Udayana University. All respondents gave their consent to participate.

RESULT

We received 100 individual survey responses, all of which were included in the analysis. Table 1 depicts the demographic characteristics of the respondents who filled out the questionnaire. As shown, almost half (46%) of the respondents in the study were aged 18-25 years, more than half (55%) were female, and two third (67%) have completed high school or university equivalent. Respondents who have used the JKN Mobile app mostly work as private employees (41%) and live within a distance of ≥5 km to go to the BPJS *Kesehatan* Office of Badung District.

Table 1. Demographic Characteristics of Respondents

Characteristics	Frequency (n)	Proportion (%)
Age (year)		
18-25	46	46
26-35	31	31
36-45	9	9
>45	14	14
Gender		
Male	45	45
Female	55	55
Level of Education		

Characteristics	Frequency (n)	Proportion (%)
≤High School	33	33
>High School	67	67
Occupation		
Not Working	7	7
Civil Servant	8	8
Private Employee	41	41
Army/Police	3	3
Student	25	25
Entrepreneur	8	8
Housewife	4	4
Others	4	4
Distance of Residence		
≥5 km	84	84
<5 km	16	16

Table 2 shows the distribution of variables for TAM. As shown, the number of respondents who are interested and less interested in using the JKN Mobile application is equal (50%). Slightly more than half (54%) of respondents stated that the JKN Mobile application is practical, while the rest noted that the JKN Mobile application as less useful. Of the 100 respondents studied, 55 respondents said the JKN Mobile application was easy to use, 56 respondents said the JKN Mobile app was credible, and 58 respondents stated that there was enough information related to the JKN in the application.

The bivariate analysis found that TAM variables were statistically associated with behavioral intention to use. On the other hand, all demographic characteristic variables (age, gender, education level, occupation, and distance of residency) were not statistically associated with behavioral intention to use the JKN Mobile application because it has a p-value >0.05. The multivariable analysis is then conducted to determine the factors significantly associated with behavioral intentions to use JKN mobile applications. Considering the importance of all independent variables, all variables were incorporated into the analysis model.

Table 2. TAM Variables

Variable	Frequency (n)	Proportion (%)
Behavioral Intention to Use		
Interested	50	50
Less Interested	50	50
Perceived Usefulness		
Useful	54	54
Less Useful	46	46
Perceived Ease of Use		
Easy to Use	55	55
Hard to Use	45	45
Perceived Credibility		
Credible	56	56
Less Credible	44	44
Amount of Information		
Sufficient Information	58	58
Lack Information	42	42

Table 3 shows the result of multiple linear regression analysis. We found the perceived usefulness variable (aOR=9.68; 95%CI: 3.33-28.14; p=0.001) and perceived ease of use variable (aOR=4.04; 95%CI: 1.39-11.73; p=0.010) were significantly associated with intention to use JKN Mobile application.

Table 3. Factors Affecting Behavioral Intention to Use JKN Mobile

Variable	Initial Model			Final Model		
	aOR	95%CI	p	aOR	95%CI	p
Age (year)						
<30	Ref					
≥30	1.27	0.39-4.14	0.688			
Gender						
Male	Ref					
Female	1.01	0.32-3.23	0.980			
Level of Education						
≤High School	Ref					
>High School	2.14	0.55-8.29	0.270			
Occupation						
Not Working	Ref					
Working	0.86	0.22-3.42	0.830			
Distance of Residence						
<5 km	Ref					
≥5 km	0.40	0.08-1.91	0.250			
Perceived Usefulness						
Less Useful	Ref	2.61-25.58		Ref		
Useful	8.17	2.61-25.58	0.001	9.68	3.33-28.14	**0.001**
Perceived Ease of Use						
Hard to Use	Ref			Ref		
Easy to Use	2.85	0.84-9.74	0.094	4.04	1.39-11.73	**0.010**
Perceived Credibility						
Less Credible	Ref					
Credible	1.22	0.35-4.30	0.754			
Amount of Information						
Less Information	Ref					
Sufficient Information	2.50	0.69-9.17	0.164			

DISCUSSION

This study intended to determine factors affecting the intention to use the latest innovation of the JKN Mobile application by BPJS *Kesehatan* with TAM. The empirical findings provide new insights into the acceptability of digital innovation in health insurance services. The JKN Mobile can improve efficiency in terms of information and services. A previous study conducted in New Mexico found that mobile health technology can be cost-effective and help identify health risks and support healthy behaviours.[13] In addition, mobile health

technology can impact the development of electronic health, so it can be said that it is an innovative strategy in the health services.[14]

Our study found that the JKN Mobile user in the Badung District majority stated that JKN Mobile applications are helpful and usable. This is in line with research conducted by Adriani, where 53.1% of respondents agreed that the overall JKN Mobile application system is useful in its work, and the majority (62.5%) respondents agreed that the JKN Mobile app is easy to understand.[15] Another study explained that perceived usefulness is considered as the belief of online application users that the application can provide added value mobility for their activities; perceived usefulness is an essential factor that influences the formation of attitudes of individuals in the use of an online application.[16]

We found respondents with sufficient amount of information related to the JKN Mobile application were 8.8 times more likely to use the JKN Mobile Application. This finding aligns with Hamdi's, which found a significant relationship between the amount of information and the interest in using JKN Mobile applications (behavioral intention to use.[20] Therefore, it is important to provide the community with clear and thorough information, so people's perceptions are directed to positive perceptions regarding JKN Mobile applications. When people have adequate knowledge on the JKN Mobile application, they are more interested in using it. This is also in line with a study by Mohamed et al. (2011). They stated that the interest in using health informatics applications is shaped by user perception of mobile health technology design approaches, especially those related to navigation and presentation of data on mobile devices.[21]

Several studies mentioned that perceived usefulness and ease of use were essential determinants in the technology.[5-7] This research found in the final model that sensed usefulness is the variable that has the strongest influence in affecting the intention to use JKN Mobile. Perception of usefulness can increase 9.68 times the likelihood of the respondents to continue using the application after controlling other variables. At the same time, the perception of ease of use can increase 4.04 times the chance of continue using the JKN Mobile application after controlling other variables. The results of this study are in line with those stated by the usefulness variable has the most decisive influence (OR=5.28, 95%CI: 3.14-10.01, p=0.000), followed by the perceived ease of use (OR=1.93, 95%CI: 1.11-2.37, p=0.020).[22]

The findings also align with perceived ease of use variables directly affecting the user's acceptance.[23] Therefore, perceived usefulness and ease of use can be used as benchmarks to increase JKN participants' interest in using the JKN Mobile application. The other study explained that users would want to adopt a technology if the application system can function properly and there is no problem.[24] In addition, the system must also be constantly updated and easy to use; very importantly, users can register easily.[25,26]

Limitation

While this study produced valuable findings, there were also some limitations. Due to the nature of online surveys, respondent biases may have influenced the results. Many JKN participants in Badung District have never used the JKN Mobile application. So that the number of respondents has not spread throughout the Badung District because depending on the initial network that the researchers deployed, hence the generalizability may be low.

CONCLUSION

Most respondents stated that the JKN Mobile application is practical, easy to use, and credible. There is a significant relationship between perceived usefulness, ease of use, perceived credibility, and amount of information with the interest of JKN participants to continue using the JKN Mobile application. Perceived usefulness is the dominant variable affecting participants' interest in using the JKN Mobile app. In this regard, BPJS *Kesehatan* should constantly update the design and features to be readily accepted and used by the public and conduct simulations and campaigns to use JKN Mobile alongside dissemination of the application and its features. These efforts are expected to change people's perception of JKN Mobile, affecting interest in using the application.

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AUTHOR CONTRIBUTION

AI developed research concepts and designs, assisted in data analysis, provided suggestions, and input and improved manuscripts. KM drafted the research, collected, and analyzed data, prepared manuscripts, SU and LRK provided tips, information, and enhanced manuscripts.

CONFLICT OF INTEREST

There is no conflict of interest declared by the authors

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