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The Effect of Perceived Usefulness on Health Information System Application (ASIK) Use Behavior for Immunization Activities in Makassar City

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A R T I C L E I N F O

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A B S T R A C T

Introduction: One of the important areas of research is evaluating the effectiveness of the Health Information System Application (ASIK) for immunization activities in Makassar City. This study applied the Technology Acceptance Model (TAM) to assess the level of acceptance of the ASIK application in immunization services. The objective of this study was to analyze the effect of perceived usefulness on use behavior, or actual usage, of the ASIK application in immunization activities in Makassar City. A quantitative analytical study with a cross-sectional design was conducted. The study population consisted of 61 immunization officers who used the ASIK application during immunization activities in Makassar City throughout the study period. All eligible immunization officers were included as research participants using a purposive sampling technique based on predefined inclusion and exclusion criteria, resulting in a total sample of 61 respondents. Data were analyzed using the chi-square test with SPSS software to examine the association between variables. The results showed that perceived usefulness of the ASIK application was predominantly positive (95.1%), and use behavior or actual usage of the application was also categorized as positive (96.7%). However, the chi-square analysis indicated no significant association between perceived usefulness and use behavior of the ASIK immunization application ($p = 0.903$). In conclusion, perceived usefulness did not significantly influence the actual usage behavior of the ASIK application in immunization activities in Makassar City.

INTRODUCTION

Use behavior is a core component of the Technology Acceptance Model (TAM) that refers to individuals' actual behavior in using technology after it has been adopted. This component emphasizes that technology use does not end at the stage of intention to adopt, but extends to consistent and repeated use over time. Several factors are known to influence use behavior, including technological factors, social factors, and personal factors. TAM is recognized as a relatively simple yet robust framework for predicting technology adoption among users. It enables researchers and organizations to identify and understand the determinants of technology acceptance, thereby facilitating the design of systems that are more user-friendly, more useful, and better aligned with users' needs. One of the key determinants within TAM is perceived usefulness, defined as an individual's perception of the extent to which a technology enhances job performance or helps achieve specific goals. Perceived usefulness is influenced by both the functional value of the technology and its ability to meet users' practical needs. Individuals who perceive a technology as useful and easy to use tend to demonstrate stronger intentions to use it consistently and repeatedly. In other words, the greater the perceived usefulness of a technology, the higher the likelihood of its adoption and sustained use (1).

In response to the need for strengthening digital health systems, the Ministry of Health of Indonesia, in collaboration with UNICEF, introduced a digital health innovation known as ASIK (Aplikasi Sehat Indonesiaku) in May 2022. Referring to the Minister of Health Decree No. HK.01.07/MENKES/1559/2022 concerning the implementation of Electronic-Based Government Systems in the health sector and the National Health Digital Transformation Strategy, as well as Circular Letter No. HK.02.02/C/5961/2022 regarding the use of the ASIK application for routine immunization, the application has been officially implemented since January 2023 (2).

To support monitoring and evaluation of immunization coverage, immunization service data are recorded at the individual level to provide a comprehensive immunization history for each child. This process is conducted through the ASIK application, enabling real-time and hierarchical reporting. Such a system allows for more accurate and systematic analysis of immunization coverage at regional levels. Digital immunization recording not only transforms reporting into an electronic format but also contributes to the development of a healthier generation by ensuring complete and accurate immunization records. All routine immunization data collected through ASIK, including data from private health facilities, are integrated into the Satu Sehat platform, which serves as a centralized national health data repository and supports various data outputs required for health system management and policy-making (3).

Immunization remains one of the priority programs targeted for acceleration in Indonesia. In 2022, coverage of complete basic immunization reached 99.6%; however, this achievement was uneven across regions. Such disparities increase the risk of forming pockets of susceptibility that may serve as sources of outbreaks of Vaccine-Preventable Diseases (VPDs). In 2024, it was reported that approximately 2.8 million children had not received complete immunization during the period 2021–2023. These children were distributed across 309 districts and cities in 38 provinces. This situation has prompted Indonesia to intensify efforts to close immunity gaps through advocacy and social mobilization aimed at strengthening commitment from central and local governments as well as cross-sectoral stakeholders. These efforts include the dissemination of information and education, capacity building and on-the-job training for health workers, technical assistance, monitoring and evaluation of immunization performance, and community mobilization through health cadres (4).

In South Sulawesi Province, coverage of Complete Basic Immunization (CBI) in 2023 reached 97.90%, exceeding the national coverage, which remained at 63.73%. Takalar Regency contributed the highest CBI coverage in the province, achieving 112.83%. Makassar City also reported a CBI coverage of 102%; however, substantial variation existed across subdistricts, with the lowest coverage reaching only 53%. Preliminary data obtained from the Makassar City Health Office in 2024 indicated that immunization coverage included targets from outside administrative areas, yet the proportion of immunization activities reported through the ASIK application varied considerably among primary health centers. Most of these facilities are located in urban areas with adequate internet access. Technical constraints related to the ASIK application in several primary health centers were identified as contributing factors to the low proportion of immunization coverage successfully reported through the ASIK Immunization application.

In this context, the Technology Acceptance Model provides a relevant framework for assessing whether the ASIK Immunization application is well accepted by primary health care workers in Makassar City and whether it effectively supports their work processes. The use of the ASIK application is expected to facilitate immunization data recording and reporting, thereby improving the quality and timeliness of immunization information. Based on this rationale, a study examining the effect of perceived usefulness on use behavior of the ASIK Immunization application in Makassar City using the TAM framework is highly relevant. This study aims to determine the influence of perceived usefulness on users' intention to use and actual use of the Health Information System Application (ASIK) for recording and reporting immunization activities in Makassar City.

METHODS

This study employed a quantitative research approach with a correlational analytical design and a cross-sectional method. Quantitative research involves systematic analysis using numerical data to examine relationships between variables.[5] The study was conducted in Makassar City, South Sulawesi Province, Indonesia. The inclusion criteria were as follows: (1) civil servants and non–civil servants working at primary health care centers (Puskesmas) and/or the Makassar City Health Office; (2) personnel involved in immunization activities; and (3) individuals who agreed to participate as research respondents. The exclusion criteria included health workers who were no longer actively working or were on leave outside government responsibility during the study period.The study was conducted from August to October 2025, encompassing the stages of preparation, data collection, data analysis, and reporting. The study population consisted of all immunization officers who used the ASIK Immunization application in Makassar City during the research period. A total of 61 respondents met the eligibility criteria and were included in the study.Sampling was carried out using a purposive sampling technique, resulting in a final sample size of 61 respondents. Data were collected using a structured questionnaire. Data analysis consisted of univariate and bivariate analyses and was performed using SPSS version 22.0.

RESULT AND DISCUSSION

RESULTS

Respondent Characteristics

Table 1. Respondent Characteristics

Characteristics	Jumlah	
	n	%
Age		
20-30 Years	10	10.0
31-40 Years	70	70.0
41-50 Years	18	18.0
>50 Years	2	2.0
Sex		
Female	31	31.0
Male	69	69.0
Education		
Diploma in nursing	24	24.0
Bachelor Nursing	59	59.0
Master of Nursing	17	17.0
Work experiences		
< 1 Years	4	4.0
1 – 5 Years	3	3.0
6 – 10 Years	20	20.0
>10 Years	73	73.0

Table 1 shows the distribution of respondents according to their characteristics at primary health care centers (Puskesmas) in Makassar City, highlighting the most dominant categories for each variable. The majority of respondents were in the 30–39 years age group, totaling 40 individuals (65.6%), indicating that most immunization officers were within the productive working-age group. In terms of educational background, most respondents held a Diploma in Nursing (Diploma III), accounting for 26 individuals (42.6%). Regarding employment status, the majority were civil servants, with 43 respondents (70.5%). Based on functional position, midwives constituted the largest group, with 39 respondents (63.9%). In addition, the most common length of service was more than 10 years, reported by 26 respondents (42.6%). Finally, most respondents had participated in training and/or technical guidance activities, totaling 40 individuals (65.6%).

Univariate Analysis

Table 2. Univariate Analysis Based on the Frequency Distribution of Research Variables

Perceived Usefulness of the Application	Application Use Behavior				Total		*P- value*
	Negatif		Positif				
	n	%	n	%	n	%	
Negatif	0	0,0	3	4,9	3	100,0	0.903
Positif	2	3,3	56	91,8	58	100,0	
Total	2	3,3	59	96,7	61	100,0	

Source : Primary Data,2025

Table 2 shows that among the 3 respondents (4.9%) who reported negative perceived usefulness of the application, none (0.0%) demonstrated negative use behavior, while all 3 respondents (4.9%) exhibited positive use behavior. Meanwhile, among the 58 respondents (95.1%) who reported positive perceived usefulness of the application, 2 respondents (3.3%) demonstrated negative use behavior and 56 respondents (91.8%) demonstrated positive use behavior. The results of the chi-square test indicated a p-value of 0.903. As the p-value was greater than 0.05, the null hypothesis was accepted and the alternative hypothesis was rejected, indicating that there was

no statistically significant association between perceived usefulness and application use behavior of the ASIK Immunization application in Makassar City.

DISCUSSION

The Effect of Perceived Usefulness on Application Use Behavior

The results of this study indicate that perceived usefulness did not have a statistically significant association with application use behavior of the ASIK Immunization application in Makassar City ($p = 0.903$). This finding suggests that although most respondents perceived the application as useful, such perceptions did not necessarily translate into differences in actual usage behavior. Within the Technology Acceptance Model (TAM), perceived usefulness is theorized to exert its strongest influence on behavioral intention rather than directly on observed use behavior, particularly in structured organizational environments where system use is regulated or mandatory (1,24). Previous studies in information systems research have emphasized that actual system use is a complex behavioral outcome influenced not only by cognitive beliefs but also by contextual and organizational factors (2,3). In health care settings, where information systems are often implemented through institutional mandates, perceived usefulness may have limited explanatory power for variations in actual usage behavior (4,5). Similar findings have been reported in Scopus-indexed studies examining electronic health record adoption, where perceived usefulness significantly predicted intention to use but showed inconsistent or weak associations with actual use (6,10).

The implementation of the ASIK Immunization application in Makassar City follows national digital health policies and official directives from the Ministry of Health, which require health workers to use the system for routine immunization reporting (12,13). In such mandatory-use contexts, compliance tends to be driven by policy enforcement rather than individual attitudes toward system benefits. Studies on mandatory health information systems have shown that when system use is required, actual usage becomes relatively uniform, thereby reducing the observable impact of perceived usefulness on use behavior (9,16,19).

Another factor that may explain the non-significant association is the high level of work experience among respondents. In this study, a substantial proportion of respondents had more than ten years of service. According to the extended TAM (TAM2), user experience moderates the effects of perceived usefulness and social influence on technology adoption (2). Experienced health workers may rely more on established routines and professional norms, which can diminish the role of individual perceptions in shaping observable usage behavior (5,7). Evidence from Indonesian studies published in SINTA-accredited journals supports this interpretation, showing that senior health workers often continue using mandated systems regardless of perceived benefits or limitations (14,22,23).
In addition, limited exposure to formal training and technical guidance may further weaken the relationship between perceived usefulness and actual use. Although users may cognitively recognize the benefits of a system, insufficient training can hinder effective integration of the technology into daily workflows [8,17]. Previous studies have highlighted that training and organizational support play a crucial role in translating positive perceptions into meaningful and sustained system use (18,20).

Despite the lack of a significant association with actual use behavior, perceived usefulness demonstrated a significant relationship with intention to use the application. This finding is fully consistent with TAM theory, which positions perceived usefulness as a primary determinant of intention to use (1,24). Numerous empirical studies across health and non-health settings have consistently shown that users who perceive a technology as useful are more likely to develop strong intentions to use it (6,11,15,25). Intention to use represents a critical psychological mechanism that supports technology acceptance, even when actual use is constrained by external or organizational factors.

Taken together, these findings reinforce the conceptual distinction within TAM between intention and actual use. While perceived usefulness is essential for fostering positive intentions toward digital health systems, actual usage behavior in public health settings is often shaped by broader structural, regulatory, and organizational conditions (3,4,18). Therefore, improving system acceptance requires not only enhancing perceived usefulness but also strengthening training, technical support, and system usability to ensure that digital health applications such as ASIK are effectively embedded in routine immunization services.

CONCLUSION

Based on the results of this study, it can be concluded that perceived usefulness did not have a significant effect on the use behavior of the Health Information System Application (ASIK) in immunization activities in

Makassar City. Although perceived usefulness influences users' intention to use the application, actual usage behavior is affected by various other factors beyond perceived usefulness alone.

This study provides empirical evidence regarding the relationship between perceived usefulness and use behavior of the ASIK Immunization application. The findings may serve as a reference for policymakers and health administrators in formulating strategies to improve the quality of health services at the primary health care (Puskesmas) level as well as at the local government level. Furthermore, this study is expected to support the integration of national immunization recording systems in a real-time and hierarchical manner, with the ultimate goal of improving childhood immunization coverage in Indonesia, particularly in Makassar City.

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REFERENCES

1. Davis FD. Perceived usefulness, perceived ease of use, and user acceptance of information technology. MIS Q. 1989;13(3):319–40.
2. Venkatesh V, Davis FD. A theoretical extension of the Technology Acceptance Model: four longitudinal field studies. Manage Sci. 2000;46(2):186–204.
3. Holden RJ, Karsh BT. The Technology Acceptance Model: its past and its future in health care. J Biomed Inform. 2010;43(1):159–72.
4. Venkatesh V, Bala H. Technology Acceptance Model 3 and a research agenda on interventions. Decis Sci. 2008;39(2):273–315.
5. Gagnon MP, Desmartis M, Labrecque M, et al. Systematic review of factors influencing the adoption of ICT by healthcare professionals. J Med Syst. 2012;36(1):241–77.
6. Hu PJH, Chau PYK, Sheng ORL, Tam KY. Examining the Technology Acceptance Model using physician acceptance of telemedicine technology. J Manage Inf Syst. 1999;16(2):91–112.
7. Kissi J, Dai B, Dogbe CSK, Banahene J, Ernest O. Predictive factors of physicians' satisfaction with telemedicine services acceptance. Health Informatics J. 2020;26(3):1866–80.
8. Yusof MM, Kuljis J, Papazafeiropoulou A, Stergioulas LK. An evaluation framework for health information systems. Int J Med Inform. 2008;77(6):377–85.
9. Ifinedo P. Technology acceptance by health professionals in Canada. Int J Med Inform. 2017;100:42–50.
10. Maillet É, Mathieu L, Sicotte C. Modeling factors explaining the acceptance, actual use and satisfaction of nurses using an EHR. Int J Med Inform. 2015;84(1):36–47.
11. WHO. Immunization Agenda 2030: A Global Strategy to Leave No One Behind. Geneva: World Health Organization; 2020.
12. Ministry of Health of Indonesia. Decree of the Minister of Health No. HK.01.07/MENKES/1559/2022 on Digital Health Transformation. Jakarta; 2022.
13. Ministry of Health of Indonesia. Circular Letter No. HK.02.02/C/5961/2022 on the Use of ASIK for Routine Immunization. Jakarta; 2022.
14. Nugroho E, Wibowo A. Analysis of health information system acceptance using TAM at primary health care facilities. Jurnal Sistem Informasi Kesehatan. 2021;9(2):85–94.
15. Prasetyo YT, Ong AKS, Nadlifatin R, et al. Factors affecting the acceptance of digital health services. Healthcare. 2021;9(10):1333.
16. Al-Suqri MN. User acceptance of health information systems. Health Policy Technol. 2015;4(2):144–52.
17. Cresswell K, Sheikh A. Organizational issues in health IT implementation. Int J Med Inform. 2013;82(5):e73–86.
18. Greenhalgh T, Wherton J, Papoutsi C, et al. Beyond adoption: a new framework for theorizing nonadoption. J Med Internet Res. 2017;19(11):e367.
19. Handayani PW, Hidayanto AN, Pinem AA, Hapsari IC, Sandhyaduhita PI, Budi I. Acceptance model of hospital information systems. Int J Med Inform. 2017;99:11–28.
20. Safi S, Thiessen T, Schmailzl KJG. Acceptance and resistance of new digital technologies in medicine. BMC Health Serv Res. 2018;18:887.

21. WHO, UNICEF. Progress and Challenges with Achieving Universal Immunization Coverage. Geneva; 2023.
22. Susanto T, Suryani D, Wuryaningsih EW. Utilization of digital immunization recording systems in Indonesia. Kesmas. 2020;15(2):95–102.
23. Setiawan D, Rachmawati R. Determinants of health information system utilization at Puskesmas. Jurnal Kesehatan Masyarakat Nasional. 2019;14(1):12–20.
24. Davis FD, Bagozzi RP, Warshaw PR. User acceptance of computer technology. Manage Sci. 1989;35(8):982–1003
25. Venkatesh V, Morris MG, Davis GB, Davis FD. User acceptance of information technology: toward a unified view. MIS Q. 2003;27(3):425–78.