Journal of Innovative and Creativity
Journal Homepage: https://joecy.org/index.php/joecy
e-mail: journaljoecy@ gmail.com

Faculty of Education
University of Pahlawan Tuanku Tambusai
ISSN 2775-771X (Online)
ISSN 2962-570X (Printed)
6 (1) 2026, Page: 2502-2509

Performance And Challenges of the Asik-Based Immunization Recording System at the Beru Public Health Center, Sikka Dis-Trict

Agus Syawal Yudhistira[1]; Ma Clara Yureka W I[2]; Margaretha Happy Dian Woda[3], Christian Wiliam Gavriel[4]

[1]Lecturer at St. Elisabeth Health College, Maumere Diocese
[2]Lecturers at St. Elisabeth Health College, Maumere Diocese
[3]Students of St. Elisabeth Health College, Maumere Diocese
[4]Students of St. Elisabeth Health College, Maumere Diocese
Email Coressponden: agussyawalstikeskum@ gmail.com

Published: January, 2026

ABSTRACT

Digitizing immunization records through the Sehat IndonesiaKu (ASIK) application is a crucial step in strengthening the health information system in primary care. This study aims to describe the implementation of ASIK at the Beru Community Health Center and assess the benefits and challenges encountered using the PIECES framework. The descriptive qualitative study was conducted through in-depth interviews with seven purposively selected healthcare workers.

Results show that ASIK accelerates record-keeping, improves information accuracy, re-duces paper use, and streamlines workflows and immunization services. However, the system's effectiveness is still hampered by reliance on the internet, the use of personal devices, and lim-ited understanding of data security.

Overall, ASIK contributes positively to the efficiency and quality of immunization ser-vices, but system optimization requires strengthening infrastructure, increasing user capacity, and providing operational equipment support.

Keywords: ASIK, immunization, health information system, digitalization, PIECES.

© The Author(s). 2021 Open Access This article is licensed under a Creative Commons Atibution 4.0 International License, which permits use, sharing, adaptation, distribution and reproduction in any medium or format, as long as you give appropriate credit to the original author(s) and the source, provide a link to the Creative Commons licence, and indicate if changes were made. The images or other third party material in this article are included in the article's Creative Commons licence, unless indicated otherwise in a credit line to the material. To view a copy of this licence, visit http://creativecommons.org/licenses/by/4.0

INTRODUCTION

Immunization is one of the most effective public health interventions in reducing mor-bidity and mortality in infants and children. Each year, more than 1.4 million children world-wide die from diseases that could have been prevented through routine immunization. In Indo-nesia, the infant mortality rate remains at 22.23 per 1,000 live births, and the majority of these deaths are related to vaccine-preventable infectious diseases. (Devi et al., 2021)WHO data also shows that in 2019, 19.7 million children worldwide did not receive complete basic immuniza-tions, and Indonesia is among the 10 countries with the highest number of unimmunized chil-dren.

Global immunization coverage declined from 86% in 2019 to 81% in 2021. This situa-tion, exacerbated by the COVID-19 pandemic, has increased the number of children at risk of vaccine-preventable diseases. (Susianah & Rachmawati, 2023)In Indonesia, more than 1.5 mil-lion children were not fully immunized between 2017 and 2021. (Susianah & Rachmawati, 2023)This situation has prompted the government to strengthen its acceleration strategy by in-creasing advocacy, monitoring achievements, improving the quality of recording, and digitizing the national immunization system.

Conceptually, immunization works by stimulating the adaptive immune system through the administration of weakened or inactivated antigens, enabling the body to mount a protective response when exposed to pathogens. The routine immunization program in Indonesia consists of Hepatitis B, BCG, Polio, DPT-HB-Hib, IPV, and Measles vaccines, which are administered according to the national schedule. (Susianah & Rachmawati, 2023)Immunization has been proven to reduce the risk of severe infection, disability, and death, and has significant economic and social impacts for families and the nation.

Immunization implementation requires an accurate recording and reporting system to ensure data completeness, monitor disease trends, and evaluate the program. In practice, health facilities use various instruments such as KIA books, cohort registers, and tiered reporting forms from community health centers (Puskesmas) to the Ministry of Health. Accuracy and consisten-cy of recording are crucial as they form the basis for calculating immunization coverage and identifying underserved targets. (Finazis, n.d.)Furthermore, immunization logistics manage-ment, such as vaccine storage, cold chain monitoring, and quality control using the SMILE sys-tem, contribute to the program's success.

Digital transformation in the health sector is driving the development of electronic doc-umentation systems, including the electronic immunization registry (EIR). For example, in 2022, the Indonesian Ministry of Health launched the My Healthy Indonesia Application (ASIK) as part of the agenda to digitize primary healthcare services and integrate national health data through the SATUSEHAT platform. ASIK is designed to digitally record immuniza-tions, monitor individual health histories, support early detection of infectious diseases, and provide real-time data accessible to healthcare workers through both a mobile app and a web dashboard . ASIK's main advantage is its ability to operate offline, simplifying record-keeping in areas with limited internet access.(Tria Enggriani et al., 2024)

Several studies have shown that digitizing immunization records improves data accura-cy, reduces duplication, accelerates reporting, and enhances the ability of healthcare workers to monitor coverage. (Aisyah et al., 2025)However, several obstacles have also been reported, including network instability, system errors , limited digital literacy among healthcare workers, concerns about data privacy, and persistent manual recording practices. ASIK features such as dashboard channels , mobile entry , and cross-facility data monitoring offer significant benefits, but require infrastructure readiness and human resource competency to optimize.(Cintya, 2023)

These constraints demonstrate the importance of evaluating information systems using a structured approach, such as the PIECES (Performance, Information, Economy, Control, Effi-ciency, Service) method. (Rahmadoni et al., 2025.)Through this framework, systems can be assessed in terms of speed and stability, information quality and integration, cost efficiency, data security, resource utilization effectiveness, and user satisfaction. Previous research has identified that ASIK performance is often affected by the network, while information quality improves significantly through real-time immunization history. Digitization also reduces administrative costs and increases efficiency. (Lukman, 2025.)However, some users report obstacles such as login difficulties, slow data entry, duplication errors, and the failure to display target data due to inconsistencies with the National Identity Number (NIK).

Initial findings from the Beru Community Health Center (Puskesmas) show similar dy-namics. ASIK has been in use since 2023, with 11 nurses assigned to manage immunization data. While the app expedites the registration process and allows for rapid data synchronization, users still encounter system errors , unstable network connections, and the need for manual reconciliation with the register every month. Initial interviews indicate that some nurses experi-enced initial difficulties logging in or entering data, but training helped improve skills. Reviews on the Google Play Store also describe a variety of user experiences, ranging from appreciation for ease of use to complaints about data duplication, slow entry, and difficulty receiving OTP codes.

While there are numerous studies on immunization and ASIK use in other regions, a research gap remains evident in the lack of studies specifically assessing ASIK implementation within the operational context of community health centers in Eastern Indonesia, particularly regarding healthcare workers' experiences with recording, benefits, technical challenges, and system quality based on PIECES parameters. Most previous studies have focused on immun-ization achievement factors, system readiness analysis, or performance evaluation of healthcare workers at the district or provincial level. Micro-research based on the experiences of frontline healthcare workers remains very limited.

Therefore, this study aims to describe the implementation of the My Healthy Indonesia Application (ASIK) in managing immunization data at the Beru Community Health Center, covering aspects of user characteristics, perceived benefits, obstacles encountered, and system quality based on the PIECES analysis framework. The novelty of this study lies in the integra-tion of user experience evaluation and comprehensive information system analysis in the con-text of primary care in eastern Indonesia, which has not been widely studied to date. The results of this study are expected to provide important contributions for policymakers, application de-velopers, and health service managers in improving the implementation of electronic immuniza-tion registries and strengthening the digital transformation of health in Indonesia.

METHOD

This study uses a descriptive qualitative approach to explore how healthcare workers understand, experience, and implement the Sehat IndonesiaKu (ASIK) application in managing immunization data. A qualitative approach was chosen because it provides an in-depth understanding of the contextual, social, and technical factors that influence the use of digital health systems in primary care facilities. This study is based on an interpretive paradigm that views the meaning of a phenomenon as being shaped through individual life experiences, thus enabling researchers to play an active role as the primary instrument in the data collection and interpreta-tion process (Yusuf A. Muari, 2014).

The study was conducted at the Beru Community Health Center (Puskesmas) in Alok Timur District, Sikka Regency, Indonesia. This location was chosen because ASIK has been integrated into routine immunization services, allowing researchers to directly observe how the application is used in daily clinical workflows. Data collection was conducted over three days in July 2025 and was timed to accommodate the immunization schedule and the availability of healthcare workers.

Study participants were recruited using purposive sampling based on their involvement in immunization services and their experience using ASIK. A total of seven health workers participated, including nurses, midwives, cadres, program managers, and community health center heads. All participants had at least six months of experience in immunization services and had used ASIK in their routine duties. Before data collection began, researchers provided a thor-ough explanation of the study's objectives and procedures, and each participant provided volun-tary , written informed consent .

Data collection was conducted through in-depth interviews. Interviews were conducted face-to-face to explore participants' experiences using ASIK, perceived benefits, challenges encountered, and their assessment of the app's role in improving immunization reporting. All interviews were recorded with participants' permission.

Data were analyzed through data reduction, data presentation, and conclusion drawing. All interview recordings were transcribed verbatim and systematically coded. During the data reduction stage, data were selected, grouped, and condensed to identify key information rele-vant to the research objectives. Findings were then presented in the form of descriptive narra-tives and a

thematic matrix to clearly demonstrate patterns and relationships among the data. The entire analysis process was then documented in an audit trail to enhance traceability and transparency. (Nursapia Harahap, 2020)

The research instruments used included an interview guide to guide the exploration pro-cess, an observation sheet to record ASIK utilization in immunization services, and a document analysis guide to review administrative archives and standard operating procedures (SOPs). Although these instruments were used as supporting instruments, the researcher remained the primary instrument, reflectively interacting with all data.

Ethical aspects were upheld throughout the research process. Ethical approval was ob-tained prior to the study's implementation. Participants were informed of the study's purpose, the voluntary nature of their participation, and their right to discontinue participation at any time. Participants' names and identities were replaced with anonymous codes to maintain confi-dentiality. All data was stored securely. This research adhered to the principles of beneficence , respect for persons , justice , privacy, and confidentiality, ensuring that participants' rights and well-being were protected at every stage of the study.

FINDING AND DISCUSSION

Finding

This research was conducted at the Beru Community Health Center (Puskesmas Beru), a pri-mary healthcare facility located in Alok Timur District, Sikka Regency, East Nusa Tenggara. The center serves five sub-districts and three villages, and employs a total of 79 healthcare workers from various medical and non-medical professions. Since 2022, the Beru Community Health Center has been using the Sehat IndonesiaKu (ASIK) application as a digital immuniza-tion recording system. The ASIK implementation coincided with efforts to improve the quality of maternal and child healthcare recording in the area.

A total of seven participants participated in this study. They included a community health center head, a data manager, a midwife, and a nurse who have a direct role in immunization services and the use of ASIK in routine activities. All participants were female, aged 30 to 43. Their ed-ucational backgrounds included a Diploma in Nursing, a Diploma in Midwifery, and a Bache-lor's degree in Nursing. Their experience in immunization services made them a relevant source of information for describing the actual practice of ASIK use in the field.

The results of this study were then analyzed using the PIECES approach, which yielded six main themes. Each theme was supported by direct quotes from participants to authentically demonstrate their experiences. The six main themes are:

System Performance

The use of ASIK is considered to increase the speed of immunization data recording compared to the manual method previously implemented. Several participants stated that recording has become much more efficient, as one participant stated that "recording is faster than manual" (Informant 6). Another participant also emphasized that the recording process no longer re-quires recopying because the data is directly stored in the digital system; "Previously, I had to write it in the register and then recap it, now it's directly entered digitally" (Informant 1).

However, system performance is not always stable because it is highly dependent on internet connection. On several occasions, participants experienced input delays due to weak network connections or application technical issues. This was expressed by one participant who said that "if

the network is bad, you have to wait a while" (Informant 3), while another participant added that delays often occur if the application experiences errors or is not responding properly (In-formant 7).

Information Quality

Users rate ASIK as an application that provides more accurate data because patient information is directly integrated through the NIK and stored in real time . One participant explained that "ASIK is more accurate because the data comes directly from the service and is stored in real time" (Informant 1). Another participant added that ease of access to information is also in-creased because child identity data can be directly displayed simply by entering the NIK, as stated that "enter the NIK and the name and date of birth immediately appear" (Informant 6).

However, some discrepancies were still found. In some cases, the data in ASIK did not com-pletely match the manual records in the register, as a participant noted, "sometimes there is data in ASIK but not in the register, or vice versa" (Informant 4). Furthermore, changing a child's name after the population data was recorded also presented a challenge for officers, requiring them to re-enter the data to adjust (Informant 5).

Economic Efficiency

ASIK has also had a positive impact on the efficiency of resource use at the community health center. Participants noted a decrease in the need for stationery and paper due to the elimination of repetitive manual recording. One participant noted that this reduced the purchase of office supplies, "reducing costs by rarely buying stationery" (Informant 5), while another added that the previously time-consuming data recap process is no longer necessary, thus saving time (In-formant 1).

However, this efficiency is not yet fully optimal because some officers still use personal devic-es, especially when providing services in the field. One participant stated that "we often use our own cell phones" (Informant 4), indicating that some operational costs are still borne by indi-viduals.

Data Control and Security (Control and Data)

ASIK has a data control mechanism based on access rights, allowing only certain staff to access or modify patient data. One participant explained that "only staff members who are assigned to their respective roles are allowed access" (Informant 7). This is supported by another statement that the system regulates access rights according to each staff member's duties (Informant 2).

However, some participants admitted to not fully understanding the technical aspects of data security. One participant stated that "we can't be sure whether it's secure or not, only certain people can access it" (Informant 3), indicating a need to improve digital literacy, particularly regarding data protection.

Work Efficiency

According to participants, ASIK simplifies daily work processes because patient data can be accessed quickly and the input process is simplified. This is demonstrated by statements such as "ASIK makes it very easy to access and enter data" (Informant 6) and "it is simpler and reduc-es manual workload" (Informant 3). Furthermore, patient data searches can be performed simp-ly by entering the National Identification Number (NIK), as stated by a participant who said, "I can access patient data just by using the NIK" (Informant 7).

However, this convenience is highly dependent on the quality of the internet connection. When the connection is poor, work processes are hampered, as one participant expressed, "it all depends on the network" (Informant 3).

Service Quality

The use of ASIK helps improve the quality of immunization services because data can be ac-cessed quickly, making the service flow more efficient. One participant stated that "ASIK has improved service to the community" (Informant 3), while another participant emphasized the ease of data access that supports a smooth service process: "Data access is easier and faster" (Informant 6).

However, technical issues with the application can cause service delays. Participants reported that when the application experiences errors, the overall service process takes longer (Informant 3), especially in locations with unstable internet connections.

Overall, ASIK has significantly improved the speed of recording, information accuracy, work efficiency, and quality of immunization services. However, various obstacles, such as dependence on internet connections, the use of personal devices, and limited technical understanding among officers, still require further attention. These findings indicate that the success of ASIK implementation depends not only on the application itself, but also on the readiness of the infrastructure and the capacity of the human resources operating it.

Discussion

The study results show that the implementation of the Sehat IndonesiaKu (ASIK) application at the Beru Community Health Center significantly improved the quality of immunization record-ing and services. These findings confirm that digitizing health information systems at the prima-ry care level can improve work processes, but remains dependent on infrastructure readiness and user capacity.

The improved system performance experienced by officers, as described in the research results, shows that ASIK accelerates the registration process compared to manual methods. This speed stems from the elimination of duplicate registrations and the automation of the input process through integration with NIK-based population data.

The increased accuracy of information in ASIK is also supported by its real-time nature and data integration with national systems. More accurate information enables officers to provide more targeted services while minimizing data errors common in manual recording. Meanwhile, from an economic perspective, ASIK has proven to provide efficiency by reducing the use of stationery and paper and reducing the time required for report recapitulation. This efficiency aligns with the concept of low operational costs in implementing digital information systems, where digitalization tends to reduce long-term costs for healthcare institutions. However, hid-den costs still arise because some officers use personal devices to operate the application, espe-cially when outside the health center building. This demonstrates the need for supporting poli-cies that ensure the provision of operational devices by institutions so that digitalization can run optimally without burdening individuals.

Meanwhile, the data control and security aspects of ASIK have shown positive results through the implementation of a role-based access rights system. However, some officers lack a suffi-cient understanding of data security mechanisms, leading to varying perceptions regarding the application's security level. Therefore, even though the system provides adequate security mechanisms, the human factor remains a critical element in determining the effectiveness of da-ta protection.

The increased work efficiency experienced by staff was also a significant finding. Faster access to patient data, simpler input processes, and a more streamlined system make ASIK an effective work tool. However, all of these conveniences are highly dependent on a stable internet con-nection. This dependency demonstrates that digitalization in primary healthcare facilities still faces infrastructure challenges, particularly in areas with limited access to quality internet.

Ultimately, the improved service quality achieved by ASIK demonstrates that digitalization provides tangible benefits to the community. Faster service flows, better access to information, and reduced recording errors demonstrate that ASIK improves the relationship between staff and patients. However, application or network disruptions can hinder the service process and impact community satisfaction. This situation demonstrates that the quality of digital healthcare is influenced not only by the technology used, but also by the reliability of the systems that support it.

Overall, the results of this study strengthen the evidence that ASIK implementation supports the digital transformation of immunization services at the community health center (Puskesmas) level. However, this transformation requires infrastructure support, user capacity building, and equipment procurement policies to maximize ASIK's benefits. Therefore, strengthening both technical and non-technical aspects is key to the sustainable implementation of digital health information systems, particularly in areas developing primary care capacity.

CONCLUSIONS

The results of this study indicate that the implementation of the Sehat IndonesiaKu (ASIK) ap-plication at the Beru Community Health Center (Puskesmas) has significantly improved the quality of immunization recording and services at the primary healthcare level. Digitization through ASIK results in faster, more accurate, and more efficient recording compared to manual methods, while reducing the administrative burden on staff. National ID number (NIK)-based data integration also strengthens the validity of information, while automated recording helps improve staff workflow and expedite service delivery to the public.

However, the success of ASIK implementation is still heavily influenced by infrastructure read-iness, particularly internet network stability and the availability of adequate devices. Technical challenges such as application disruptions and reliance on personal devices demonstrate that digitalization cannot stand alone without the support of appropriate resources. Furthermore, staff understanding of data security remains limited, necessitating the strengthening of digital literacy to ensure optimal patient data protection.

Overall, the results of this study confirm that ASIK has significant potential to support the digi-tal transformation of healthcare services at the community health center level. To achieve opti-mal utilization, strengthening digital infrastructure, ongoing training for staff, and supporting policies that ensure device availability and data security are required. Future research could ex-plore the effectiveness of ASIK across a broader range of services, including interoperability with other healthcare systems and its impact on the quality of clinical and managerial decision-making.

REFERENCES

Aisyah, DN, Utami, A., Rahman, FM, Adriani, NH, Fitransyah, F., Endryantoro, MTA, Hutapea, PY, Tandy, G., Manikam, L., & Kozlakidis, Z. (2025). Using an Electronic Immunization Registry (My Healthy Indonesia Application) in Indonesia: Cross-Sectional Study. Interactive Journal of Medical Research , 14 , e53849. https://doi.org/10.2196/53849

Cintya, RE (2023). Development of a Website-Based Healthy Home Environmental Health Inspection Information System. J. Business Info Systems, 13 (2), 172–178. https://doi.org/10.21456/vol13iss2pp172-178

Devi, YP, Prasetyo, S., & Muthmainnah, M. (2021). Ecological Analysis Of Complete Basic Immunization Coverage For Infants In Indonesia (2017-2019). PROMKES Journal , 9 (2), 177. https://doi.org/10.20473/jpk.v9.i2.2021.177-185

Finazis, R. (2014). Accuracy of Recording and Reporting of Infant Measles Immunization in the KIA Handbook and Cohort Handbook . Periodical Journal of Epidemiology, 2 (2), 184-195. https://journal.unair.ac.id/JBE@ akurasi-pencatatan-dan-pelaporan-imunisasi-campak-bayi-pada-buku-kia-dan-buku-kohort-article-9652-media-140-category-16.html

Faisal, L. (2025). Systematic analysis of literature on optimizing health information systems to improve efficiency and quality of services in community health centers. Journal of Information Systems and Computer Engineering , 10 (1). https://ejournal.catursakti.ac.id/index.php/simtek/article/view/1482/325

Harahap, Nursapia . (2020). Qualitative Research . Medan: Wal ashri Publishing.

Rahmadoni, J., Akbar, R., & Ulya, R. (nd). Analysis Of Nagari Management Information System Evaluation (Simnag) Using Pieces And Uat Methods. In Journal of Applied Engineering and Technological Science (Vol. 4, Issue 1). https://doi.org/10.37385/jaets.v4i1.1326

Susianah, T., & Rachmawati, F. (2023). Benefits of Immunization for Infants and Toddlers in Sindang Agung Village, Tanjung Raja District, North Lampung Regency. In Community Service (Vol. 5, Issue 2). DOI: 10.33024/jpm.v5i2.12666

Tria Enggriani, Y., Tutik, R., Haryati, S., Program, M., Nursing, S.M., Leadership, P., Nursing, M., Indonesia, U., Nursing, D., Basis, K., & Nursing, I. (2024). Lentera Perawat Opportunities and Challenges of Utilizing Big Data on SATUSEHAT Platform in Nursing A Literature Review Opportunities and Challenges of Utilizing Big Data on SATUSEHAT Platform in Nursing A Literature Review. https://doi.org/10.52235/lp.v5i2.318

Yusuf, A. Muri . (2014). Quantitative, Qualitative & Combined Research Methods . Jakarta: Prenadamedia Group