



# Performance of Childhood Immunization Recording and Reporting Using the ASIK Application: Evidence from Village Midwives in Magetan District, Indonesia

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**Abstract:** This study aimed to analyze factors associated with the performance of childhood immunization recording and reporting using the Sehat Indonesia-Ku (ASIK) application among village midwives in Magetan District, Indonesia. The ASIK application plays an important role in strengthening Indonesia's digital immunization reporting system by improving data accuracy, timeliness, and monitoring at primary healthcare facilities. A quantitative cross-sectional study was conducted among 228 village midwives from 22 primary health centers using a total sampling technique. Data were collected using a structured questionnaire and analyzed using univariate, bivariate (Chi-square), and multivariate analyses with binary logistic regression. The results showed that perception ( $p = 0.047$ ), attitude ( $p = 0.002$ ), and workload ( $p = 0.014$ ) were significantly associated with performance. Midwives with positive perceptions were more likely to demonstrate good performance (OR = 1.749), while attitude emerged as the strongest predictor (OR = 2.400). In addition, a lighter workload significantly increased the likelihood of good performance (OR = 1.998). Conversely, length of service, knowledge, and motivation were not significantly associated with performance ( $p > 0.05$ ). These findings suggest that immunization program managers and primary healthcare facilities should strengthen training programs, provide continuous technical support, and optimize workload distribution to enhance ASIK utilization and improve immunization data quality.

**Keywords:** ASIK application; Childhood immunization; Performance; Recording and reporting

## Introduction

Immunization is widely recognized as one of the most effective preventive health interventions for protecting individuals, especially children, from infectious diseases by stimulating or enhancing active immunity, thereby reducing morbidity and mortality (Rumaf et al., 2023; Sulistyawati et al., 2023; Taqwin et al., 2023). Vaccines consist of antigens derived from inactivated or attenuated microorganisms, their components, or processed toxins, which stimulate a specific immune response when administered to individuals (Agustiarasari et al., 2021). As one of the

most cost-effective public health strategies, immunization plays a crucial role in protecting children's health and contributes significantly to global health improvement and the achievement of the Sustainable Development Goals (SDGs) (Argaw et al., 2022; Iswanti & Tansah, 2019; Siddiqi et al., 2021).

Despite its proven effectiveness, immunization coverage in Indonesia remains below national targets. The national target for complete basic immunization coverage is 95%. However, Riskesdas 2018 reported that only 57.9% of children received complete basic immunization, with substantial variation across provinces and districts. These findings highlight persistent gaps in health system readiness, workforce

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capacity, and data quality required for effective immunization monitoring and reporting (Riskasdas, 2018). Although global immunization coverage has improved, challenges related to data quality, monitoring, and reporting continue to affect program performance (Sianturi, 2022). Accurate recording and reporting systems are therefore essential to ensure timely immunization, monitor coverage, and support effective decision-making.

In Indonesia, the digital transformation of the health sector has become a national priority, including the modernization of immunization recording and reporting systems. The Sehat Indonesia-Ku (ASIK) application was developed by the Ministry of Health of the Republic of Indonesia to support electronic recording and reporting of primary health care services, particularly childhood immunization (Lukmenda & Jiu, 2025; Rahmadewi et al., 2023). ASIK replaces manual paper-based records with a digital, real-time system that integrates immunization data across health facilities, enabling better monitoring at primary health centers and district levels. The application also supports offline data entry, which is particularly important in areas with limited internet connectivity (Permatasari et al., 2021).

However, the successful implementation of digital health applications depends not only on technological availability but also on the performance of health workers who use them. In Magetan District, immunization coverage in 2023 had not yet reached the national target of 95% for several antigens, despite relatively high manual recording coverage (Dinas Kesehatan Kabupaten Magetan, 2023). A substantial gap remains between manually recorded immunization data and data entered into the ASIK application, indicating suboptimal performance in digital recording and reporting. This discrepancy suggests challenges in the utilization of ASIK at the operational level.

Village midwives play a pivotal role in childhood immunization services, particularly in recording and reporting activities at community health posts and primary health centers. Their performance directly influences the completeness, accuracy, and timeliness of immunization data (Sucsesa & Hargono, 2018). Previous studies have shown that factors such as knowledge, perceptions of usefulness, attitudes, motivation, workload, length of service, and availability of facilities and infrastructure can significantly affect health workers' performance in digital health reporting systems (Harefa et al., 2022; Mardiana et al., 2024; Permatasari et al., 2021; Salsabila, 2019; Sulkani, 2024). Inadequate training, technological barriers, limited infrastructure, and increased workload due to parallel manual and digital reporting have been identified as common obstacles in the effective use of health

information systems (Department of Immunization, 2015; Mardiana et al., 2024).

Given these challenges, understanding the factors that influence the performance of village midwives in recording and reporting childhood immunization data using the ASIK application is essential. Although previous studies have examined health workers' performance in digital reporting systems, limited research has specifically explored factors influencing village midwives' performance in using the ASIK application at the district level. In Magetan District, the implementation of the ASIK application remains suboptimal, as discrepancies between manual records and digital reports are still observed, alongside limited training and technical support for village midwives.

This study contributes to the development of digital health information systems by identifying individual and organizational factors influencing ASIK utilization among village midwives at the district level. Therefore, this study aims to analyze factors associated with the performance of childhood immunization recording and reporting using the ASIK application among village midwives in Magetan District.

## Method

### *Study Design and Setting*

This study employed a quantitative cross-sectional design using a survey method to analyze factors influencing the performance of childhood immunization recording and reporting through the Sehat Indonesia-Ku (ASIK) application. The study was conducted in Magetan District, Indonesia, involving 22 primary health centers that provide routine childhood immunization services. The cross-sectional approach enabled the measurement of independent and dependent variables at the same time point.

### *Study Variables*

The dependent variable was the performance of immunization recording and reporting using the ASIK application, which encompassed aspects of quality, quantity, timeliness, effectiveness, supervision needs, and social interaction in recording and reporting activities. The independent variables included length of service, knowledge, perceptions, attitudes, motivation, availability of facilities and infrastructure, and workload, which were examined for their potential influence on performance.

### *Population and Sampling*

The study population consisted of all village midwives working at 22 primary health centers in Magetan District, totaling 231 midwives. A total sampling technique was applied to ensure maximum

representativeness. Village midwives were eligible if they were actively involved in immunization recording and reporting using the ASIK application. Those who declined participation or were on leave during the data collection period were excluded. Of the total population, 228 midwives participated in the study, while three were excluded due to maternity or annual leave.

*Data Collection*

Data were collected in June 2025 using a structured self-administered questionnaire. The questionnaire contained items measuring both independent and dependent variables using Likert-scale and categorical response formats. Secondary data were also collected through document reviews, including immunization activity reports, district health office profiles, and relevant scientific literature.

*Instrument Validity and Reliability*

Prior to the main data collection, the questionnaire underwent validity and reliability testing among 30 village midwives in Madiun District, an area with similar characteristics to the study setting but not included in the main sample. Validity testing was conducted using the Pearson Product-Moment correlation, and all questionnaire items were found to be valid (Hair et al., 2019). Reliability testing was performed using Cronbach’s alpha, with all study variables demonstrating acceptable internal consistency ( $\alpha > 0.6$ ), indicating that the instrument was reliable for use in this study (Taber, 2018).

Based on the normality test results, variables that were not normally distributed were categorized using median values. Bivariate analysis was performed using the Chi-square test to examine associations between independent variables and the dependent variable, with statistical significance set at  $p < 0.05$ . Variables with p-values less than 0.25 in bivariate analysis were included in the multivariate analysis, which employed binary logistic regression to identify independent predictors of immunization recording and reporting performance (Hosmer et al., 2013). A p-value of less than 0.05 was considered statistically significant in the multivariate model.

*Ethical Considerations*

Participation in this study was voluntary, and informed consent was obtained from all respondents prior to data collection. The confidentiality and anonymity of respondents were maintained throughout the research process.

**Result and Discussion**

The study involved 228 village midwives, the vast majority of whom were aged 30 years or older (98.7%). This age distribution indicates that immunization recording and reporting activities in Magetan District are predominantly carried out by midwives with relatively mature age and, presumably, extensive professional experience. While this may reflect stability and familiarity with immunization services, it may also imply potential challenges in adapting to new digital health technologies among older age groups, particularly if adequate training and technical support are limited.

In terms of educational attainment, most respondents held a Diploma III (D3) qualification (82.0%), which represents the standard minimum educational requirement for practicing midwifery in many primary health care settings in Indonesia. A smaller proportion had higher educational qualifications, including Diploma IV (14.9%) and bachelor’s or master’s degrees (3.0% combined). This distribution suggests that although the majority of midwives possess sufficient clinical competence, variations in educational background may influence their capacity to understand, adopt, and optimize the use of digital health applications such as ASIK, particularly those requiring data management and information system skills.

**Table 1.** Distribution of Respondent Characteristics (n = 228)

| Characteristics                       | Frequency (n) | Percentage (%) |
|---------------------------------------|---------------|----------------|
| Age                                   |               |                |
| < 30 years                            | 3             | 1.3            |
| ≥ 30 years                            | 225           | 98.7           |
| Educational Level                     |               |                |
| Diploma III (D3)                      | 187           | 82.0           |
| Diploma IV (D4)                       | 34            | 14.9           |
| Bachelor’s (S1)                       | 6             | 2.6            |
| Master’s (S2)                         | 1             | 0.4            |
| ASIK-Specific Training                |               |                |
| Not yet attended                      | 174           | 76.3           |
| Attended                              | 54            | 23.7           |
| Number of <i>Posyandu</i> per Village |               |                |
| Low                                   | 104           | 45.6           |
| High                                  | 124           | 54.4           |

Regarding professional development, a notable finding is that more than three-quarters of respondents (76.3%) had not received ASIK-specific training. This indicates a substantial gap in capacity-building efforts related to the implementation of the ASIK application. The limited exposure to formal training may affect midwives’ confidence, accuracy, and efficiency in performing immunization data recording and reporting,

and may contribute to inconsistencies between manual records and digital entries.

With respect to service coverage, slightly more than half of the respondents (54.4%) managed a high number of integrated health posts (Posyandu) within their villages. This reflects a considerable service responsibility and suggests a potentially higher workload related to immunization activities, including data entry and reporting. A high number of Posyandu may increase the volume of immunization data that must be recorded, which could place additional demands on midwives' time and attention, particularly when manual and digital reporting systems operate concurrently.

Table 2 summarizes the distribution of study variables related to the performance of childhood immunization recording and reporting using the ASIK application among village midwives in Magetan District. Overall, 50.9% of respondents demonstrated good performance, while 49.1% showed poor performance, indicating that although slightly more than half performed well, a considerable proportion still faced challenges in digital recording and reporting.

**Table 2.** Distribution of Study Variables Related to Immunization Recording and Reporting Performance Using the ASIK Application (n = 228)

| Category  | Frequency (n) | Percentage (%) |
|---|---------------|----------------|
| Performance of Immunization Recording and Reporting |               |                |
| Poor (< 50)   | 112           | 49.1           |
| Good (≥ 50)   | 116           | 50.9           |
| Length of Service                                   |               |                |
| Short (1-10 years)                                  | 26            | 11.4           |
| Long (≥ 11 years)                                   | 202           | 88.6           |
| Knowledge   |               |                |
| Poor (< 10)   | 35            | 15.4           |
| Good (≥ 10)   | 193           | 84.6           |
| Perception  |               |                |
| Poor (< 18)   | 113           | 49.6           |
| Good (≥ 18)   | 115           | 50.4           |
| Attitude  |               |                |
| Poor (< 18)   | 104           | 45.6           |
| Good (≥ 18)   | 124           | 54.4           |
| Motivation  |               |                |
| Poor (< 18)   | 113           | 49.6           |
| Good (≥ 18)   | 115           | 50.4           |
| Facilities and Infrastructure                       |               |                |
| Poor (< 20)   | 113           | 49.6           |
| Good (≥ 20)   | 115           | 50.4           |
| Workload  |               |                |
| Light (≥ 19)  | 103           | 45.2           |
| Heavy (< 19)  | 125           | 54.8           |

Most respondents (88.6%) had a long length of service (≥ 11 years), reflecting a workforce dominated by experienced midwives. While this may support strong clinical competence, extensive work experience does not

necessarily ensure optimal performance in digital health systems without adequate technological adaptation and training.

The majority of respondents (84.6%) had good knowledge of ASIK-related recording and reporting procedures, suggesting sufficient cognitive understanding of the system, although knowledge gaps remained among 15.4% of midwives. In contrast, perception and motivation toward ASIK were almost evenly distributed, with approximately half of respondents categorized as good and poor, indicating mixed views and varying levels of engagement with the application.

More than half of the respondents (54.4%) exhibited a good attitude toward immunization recording and reporting using ASIK, reflecting a generally positive disposition toward digital reporting tasks. However, nearly half still demonstrated less favorable attitudes, potentially linked to perceived system complexity or workload pressures.

Regarding facilities and infrastructure, just over half (50.4%) reported adequate availability, highlighting persistent challenges related to device access and internet connectivity. Additionally, a substantial proportion of respondents (54.8%) reported a heavy workload, which may constrain the time and focus required for timely and accurate data entry, particularly in settings where manual and digital reporting systems coexist.

Table 3 presents the results of the bivariate analysis examining the associations between independent variables and the performance of childhood immunization recording and reporting using the ASIK application. The analysis indicates that not all examined factors were significantly associated with performance outcomes.

**Table 3.** Summary of Bivariate Analysis Results

| Independent Variable          | p-value | Interpretation          |
|-------------------------------|---------|-------------------------|
| Length of Service             | 0.256   | No association          |
| Knowledge                     | 0.910   | No association          |
| Perception                    | 0.034   | Significant association |
| Attitude                      | 0.000   | Significant association |
| Motivation                    | 1.000   | No association          |
| Facilities and Infrastructure | 0.017   | Significant association |
| Workload                      | 0.008   | Significant association |

This study found that perception and attitude were significantly associated with the performance of childhood immunization recording and reporting using the ASIK application. Bivariate analysis showed a significant relationship between perception and performance (p = 0.034), while attitude demonstrated a stronger association (p < 0.001), indicating that positive

cognitive and affective responses toward ASIK contribute to better performance outcomes.

Perception reflects users' beliefs that a system is useful and can enhance work performance (Layungsari et al., 2015). Individuals who perceive an information system as beneficial are more likely to use it, whereas negative perceptions reduce system utilization (Tyas & Darma, 2017). In this study, 50.4% of respondents had a good perception of ASIK, and statistical analysis confirmed a significant association with performance. Nevertheless, some midwives perceived ASIK as an additional burden due to the continued requirement for manual documentation, such as Maternal and Child Health (MCH) books and cohort registers.

Perceived ease of use and perceived usefulness are key determinants of information system acceptance (Fatmawati, 2015). According to Davis, systems that are easy to understand and operate are more readily adopted by users (Pradana & Susilo, 2016). Although training and mentoring helped midwives understand ASIK and access it during field activities, frequent system updates were still perceived as barriers. Despite these challenges, ASIK was acknowledged for its benefits in facilitating digital recording, reducing data loss, and supporting continuity of immunization services.

Attitude emerged as the most influential factor associated with performance. More than half of respondents (54.4%) demonstrated a positive attitude, and the association with performance was highly significant ( $p < 0.001$ ). Attitude represents positive or negative evaluations toward work that influence behavior and task execution (Atiqah & Indriastuti, 2025). Health workers with positive work attitudes tend to show higher job satisfaction and better performance, as supported by previous studies among nurses and midwives (Mawarni, 2018; Mellysa & Annisa, 2024; Rahayu et al., 2018). Attitude functions as a latent response that is reflected through observable behavior and participation in work activities (Widias et al., 2024).

From the science perspectives, perception and attitude significantly influence individual performance. A positive mindset, exemplified by growth mindset interventions, can enhance academic achievements by promoting adaptive self-regulation and the belief in the capacity for change (Sharma, 2022). Furthermore, self-compassion and psychological empowerment have been shown to improve work performance by fostering self-efficacy and mitigating negative emotional states (Vonasek et al., 2016).

System and work-related factors were also significantly associated with performance. The findings of this study showed that both facilities and infrastructure and workload had significant relationships with the performance of childhood

immunization recording and reporting using the ASIK application. Bivariate analysis demonstrated a significant association between facilities and infrastructure and performance ( $p = 0.017$ ), as well as between workload and performance ( $p = 0.008$ ), indicating the importance of organizational and working conditions in supporting effective digital reporting.

Facilities and infrastructure in immunization recording and reporting encompass essential resources such as adequate smartphones, stable internet connectivity, a conducive work environment, and compliance with standardized data entry procedures (Salsabila, 2019). In this study, 50.4% of respondents reported having good facilities and infrastructure, and statistical analysis confirmed a significant association with performance. Adequate and well-functioning facilities enable midwives to input and report immunization data more efficiently and accurately. Previous studies have shown that properly available and optimally utilized facilities strongly influence service quality and performance outcomes (Faisal et al., 2019). However, the mere availability of facilities is insufficient if they are not used effectively due to limited skills, training, or motivation, which may reduce their potential impact on performance (Hadi & Abdurrahman, 2019). Therefore, resource availability must be accompanied by capacity-building and ongoing technical support.

Workload was also found to be significantly associated with performance, with 54.8% of respondents experiencing a heavy workload. Workload reflects the extent of physical and mental demands placed on individuals, including the volume of tasks and time constraints required to complete them (Munthe & Harahap, 2021). The significant association indicates that heavier workloads may reduce midwives' capacity to perform timely and accurate immunization recording and reporting using ASIK. This finding is consistent with previous studies demonstrating that excessive workload negatively affects productivity, work quality, and overall performance among health workers (MacPhee et al., 2017).

From the science perspectives, research on ergonomic design shows that well-designed workspaces enhance physical comfort and reduce fatigue, thereby improving efficiency and minimizing errors (Miska et al., 2025). Studies indicate that adequate facilities, including modern technological and physical infrastructures, streamline workflows and foster high performance in various sectors. Moreover, an imbalanced or excessive workload has been empirically linked to decreased productivity and increased burnout, particularly in high-pressure environments such as healthcare and administrative settings. Additionally,

insufficient infrastructure can exacerbate workload stress, impede performance and diminish overall work quality. Consequently, integrating optimal ergonomic practices, robust facilities, and managed workload distribution is crucial for enhancing individual work performance across diverse organizational contexts (Astuti et al., 2025).

In contrast to perceptual and system-related factors, length of service, knowledge, and motivation were not significantly associated with performance in immunization recording and reporting using the ASIK application. Bivariate analysis showed no significant association between length of service ( $p = 0.256$ ), knowledge ( $p = 0.910$ ), and motivation ( $p = 1.000$ ) and performance, indicating that experience, cognitive understanding, and self-reported motivation alone were insufficient to ensure better performance in ASIK utilization.

Length of service reflects the duration of work experience that may influence accuracy, timeliness, and consistency in immunization data recording and reporting (Astuti et al., 2025). In this study, the majority of respondents (88.6%) had a long length of service; however, statistical analysis indicated no significant relationship with performance. This finding suggests that although longer work experience may enhance technical familiarity, it does not necessarily translate into improved performance in digital systems. Prolonged tenure may also lead to routine fatigue or resistance to new systems if not accompanied by continuous training and supervision. These results are consistent with findings by Herna et al. (2021), who reported no significant association between length of service and midwife performance, but differ from studies showing a positive relationship between experience and productivity (Syahputra et al., 2024).

Similarly, knowledge was not significantly associated with performance, despite most respondents (84.6%) demonstrating good knowledge of ASIK-related procedures. This finding indicates that high knowledge levels do not automatically lead to better performance. In the context of ASIK, work processes are governed by standardized operating procedures, making procedural compliance more influential than individual knowledge levels. This result aligns with previous research showing that knowledge management does not directly affect performance when knowledge is already embedded in organizational regulations and guidelines (Wibowo et al., 2021). Nevertheless, knowledge remains important for decision-making and procedural compliance, particularly when supported by higher educational attainment (Mellysa & Annisa, 2024).

Motivation was also not significantly associated with performance, although 50.4% of respondents reported good motivation. This finding suggests that

motivation alone does not determine performance in ASIK-based recording and reporting. While motivation is widely recognized as a factor influencing work behavior and performance (Atiqah & Indriastuti, 2025), its effect may be overshadowed by more dominant factors such as technical skills, system usability, infrastructure availability, and workload demands. Motivation is inherently subjective and may fluctuate depending on internal and external conditions, whereas ASIK utilization requires consistent technical competence and system support. Therefore, motivation without adequate skills and resources may not result in optimal performance (Sharma, 2023).

From the science perspective, the literature indicates that individual performance does not consistently correlate with length of service, accrued knowledge, or motivation when each is examined in isolation. For instance, Mawarni (2018) found that demographic factors such as duration of service did not significantly affect performance, suggesting that tenure alone may not enhance work outcomes. Similarly, empirical investigations into knowledge management have revealed that simply possessing greater knowledge does not directly translate into superior performance outcomes; contextual mediators such as organizational culture often play critical roles. Moreover, while work motivation is fundamentally important for engagement, studies indicate that its direct association with individual performance can be non-significant, implying that additional factors such as effective feedback and the work environment may be necessary to unlock its full impact (Sharma, 2022).

Table 4 presents the results of the binary logistic regression analysis identifying factors that independently influence the performance of childhood immunization recording and reporting using the ASIK application. The analysis indicates that perception, attitude, and workload remained significant predictors of performance after controlling for other variables in the model. Multivariate analysis using binary logistic regression (Enter Method) demonstrated that perception, attitude, and workload were significant predictors of childhood immunization recording and reporting performance using the ASIK application. These findings indicate that both individual and work-related factors jointly influence performance outcomes.

Perception showed a significant positive effect on performance ( $p = 0.047$ ; OR = 1.749; 95% CI: 1.008–3.035). Midwives with a positive perception of the ASIK application were 1.75 times more likely to demonstrate good performance compared to those with negative perceptions. This result suggests that perceiving ASIK as useful and user-friendly facilitates better utilization and improves work outcomes. This finding is consistent with previous research showing that perceived usefulness

significantly influences intention and willingness to use health information systems, thereby enhancing performance (Mellysa & Annisa, 2024).

Attitude emerged as the strongest predictor in the model ( $p = 0.002$ ; OR = 2.400; 95% CI: 1.381–4.169). Midwives who exhibited a positive attitude toward immunization recording and reporting using ASIK were 2.4 times more likely to perform well than those with negative attitudes. Attitude reflects an individual's

readiness to act and respond to work-related demands, influencing behavior and task execution (Turgut et al., 2020). This finding aligns with previous studies indicating that positive work attitudes promote favorable work behavior and higher performance among health workers, including midwives. A positive attitude supports consistency, responsibility, and commitment in completing digital documentation accurately and on time.

**Table 4.** Results of Binary Logistic Regression Analysis (Enter Method)

| Variable   | B      | S.E.  | Wald   | df | p-value | Odds Ratio (Exp(B)) | 95% CI Lower | 95% CI Upper |
|------------|--------|-------|--------|----|---------|---------------------|--------------|--------------|
| Perception | 0.559  | 0.281 | 3.964  | 1  | 0.047   | 1.749               | 1.008        | 3.035        |
| Attitude   | 0.879  | 0.282 | 9.643  | 1  | 0.002   | 2.400               | 1.381        | 4.169        |
| Workload   | 0.692  | 0.283 | 6.000  | 1  | 0.014   | 1.998               | 1.148        | 3.477        |
| Constant   | -1.102 | 0.291 | 14.351 | 1  | <0.001  | 0.332               |              |              |

Workload was also significantly associated with performance ( $p = 0.014$ ; OR = 1.998; 95% CI: 1.148–3.477). Midwives experiencing a lighter workload were approximately twice as likely to demonstrate good performance compared to those with heavier workloads. These findings highlights that excessive task burden can hinder timely and accurate data entry, whereas a proportional workload enables midwives to allocate sufficient time and attention to ASIK-based recording and reporting. This result is consistent with prior studies showing that workload significantly affects employee performance, with excessive workload leading to reduced productivity and work quality (Turgut et al., 2020).

## Conclusion

This study found that perception ( $p = 0.047$ ; OR = 1.749), attitude ( $p = 0.002$ ; OR = 2.400), and workload ( $p = 0.014$ ; OR = 1.998) were significant predictors of childhood immunization recording and reporting performance using the ASIK application, with attitude emerging as the strongest determinant. Conversely, length of service, knowledge, and motivation were not significantly associated with performance ( $p > 0.05$ ). Practically, these findings suggest that immunization program managers and primary healthcare facilities (Puskesmas) should strengthen regular training programs, provide continuous technical support, and optimize workload distribution to enhance ASIK utilization and improve immunization data quality. At the policy level, strengthening digital infrastructure, integrating ASIK with routine service workflows, and implementing continuous monitoring systems are recommended to support sustainable digital immunization reporting. This study is limited by its cross-sectional design and reliance on self-reported data, which may introduce response bias and limit causal

interpretation. Future research should employ longitudinal designs and explore additional organizational and technological factors influencing digital health system performance.

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## Author Contributions

Investigation, M.AT, A.S and C.T.P; Formal analysis, M.AT, A.S and C.T.P;M.AT, A.S and C.T.P; resources, M.AT, A.S and C.T.P; data curation, M.AT, A.S and C.T.P; writing original draft preparation, M.AT, A.S and C.T.P; writing review and editing, M.AT, A.S and C.T.P; visualization, M.AT, A.S and C.T.P; supervision, M.AT, A.S and C.T.P; project administration, M.AT, A.S and C.T.P; funding acquisition, M.AT, A.S and C.T.P. All authors have read and agreed to the published version of the manuscript.

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## Conflicts of Interest

The authors declare no conflict of interest.

## References

- Agustiarasari, B. P., Monica, D., Jordan, M., Risky, M., Arsika, P., Syari, R., & Nursapitri, R. (2021). Pentingnya pengenalan vaksin di masa pandemi covid-19 desa ibul kecamatan simpang teritip. *Jurnal Abdimas Bina Bangsa*, 2(1), 100-104. <https://doi.org/10.46306/jabb.v2i1.87>
- Argaw, M. D., Desta, B. F., Tsegaye, Z. T., Mitiku, A. D., Atsa, A. A., Tefera, B. B., Rogers, D., Teferi, E., Abera, W. S., & Beshir, I. A. (2022). Immunization data quality and decision making in pertussis outbreak management in southern Ethiopia: a

- cross sectional study. *Archives of Public Health*, 80(1), 49. <https://doi.org/10.1186/s13690-022-00815-0>
- Astuti, R. D., & Aryanda, B. (2025). Influence of lighting and temperature on cognitive performance: A contribution to sustainable development goals. *Journal of Lifestyle & SDGs Review*, 5, e06888. <https://doi.org/10.47172/2965-730X.SDGsReview.v5.n06.pe06888>
- Atiqah, N. Q., & Indriastuti, N. A. (2025). Faktor-Faktor yang Mempengaruhi Kepatuhan Tenaga Kesehatan Mengisi Buku KIA Pada Saat Pemeriksaan Kehamilan. *Malahayati Nursing Journal*, 7(7), 3104–3118. <https://doi.org/10.33024/mnj.v7i7.20926>
- Department of Immunization. (2015). *Immunization in practice: a practical guide for health staff*. World Health Organization.
- Faisal, A. D., Serudji, J., & Ali, H. (2019). Pelaksanaan Program Inisiasi Menyusu Dini Di Wilayah Kerja Puskesmas Lubuk Buaya Kecamatan Koto Tangah. *Jurnal Kesehatan Andalas*, 8(4). <https://doi.org/10.25077/jka.v8i4.1092>
- Fatmawati, E. (2015). Technology acceptance model (TAM) untuk menganalisis penerimaan terhadap sistem informasi perpustakaan. *Jurnal Iqra*, 9(01). Retrieved from <https://media.neliti.com/media/publications/196942-ID-technology-acceptance-model-tam-untuk-me.pdf>
- Hadi, S., & Abdurrahman, A. (2019). Pengaruh Sarana Kerja Dan Kemampuan Terhadap Kinerja Aparatur Kelurahan Landasan Ulin Selatan Kota Banjarbaru. *Administratus*, 3(3), 57–92. Retrieved from <https://www.journal.uniba.ac.id/index.php/PRM/article/view/1131/747>
- Hair, J. F., Black, W. C., Babin, B. J., & Anderson, R. E. (2019). *Multivariate data analysis*. Cengage Learning.
- Harefa, F., Dachi, R. A., Brahmana, N. E., Ketaren, O., & Manurung, K. (2022). Faktor-Faktor yang Berhubungan dengan Kinerja Petugas Kesehatan di Puskesmas Kenangan Percut Sei Tuan Kabupaten Deli Serdang. *Journal of Healthcare Technology and Medicine*, 7(2), 1024–1038. <https://doi.org/10.33143/jhtm.v7i2.1647>
- Herna, H., Rasyid, R., & Ningsih, S. R. (2021). Factors related to midwife performance in maternal and child health services. *Jurnal Kesehatan Masyarakat*, 17(2), 145–152. <https://doi.org/10.52403/ijrr.20230857>
- Hosmer, D. W., Lemeshow, S., & Sturdivant, R. X. (2013). *Applied logistic regression*. Wiley. <https://doi.org/10.1002/9781118548387>
- Iswanti, T., & Tansah, A. (2019). Hubungan Antara Dukungan Keluarga Dengan Kelengkapan Imunisasi Dasar Di Wilayah Kerja Puskesmas Rangkasbitung Desa Cijoro Lebak Tahun 2018. *Jurnal Medikes (Media Informasi Kesehatan)*, 6(2), 265–272. <https://doi.org/0.36743/medikes.v6i2.187>
- Kementerian Kesehatan Republik Indonesia. (2018). *Laporan nasional Riset Kesehatan Dasar (Riskesdas) 2018*. Badan Penelitian dan Pengembangan Kesehatan, Kementerian Kesehatan Republik Indonesia.
- Layungsari, L., Handayani, P. W., & Ruldeviyani, Y. (2015). Faktor-Faktor Penerimaan Individu Dalam Implementasi Ti Di Pemerintah Kota Bogor. *Jurnal Sistem Informasi*, 11(1). <https://doi.org/10.21609/jsi.v11i1.411>
- Lukmenda, A. A., & Jiu, C. K. (2025). Evaluasi Penerapan Program Aplikasi ASIK (Aplikasi Sehat IndonesiaKu) pada Imunisasi Anak di Puskesmas Kecamatan Ledo: Penelitian. *Jurnal Pengabdian Masyarakat Dan Riset Pendidikan*, 3(4), 4805–4811. Retrieved from <https://jerkin.org/index.php/jerkin/article/view/1348>
- MacPhee, M., Dahinten, V. S., & Havaei, F. (2017). The impact of heavy perceived nurse workloads on patient and nurse outcomes. *Administrative Sciences*, 7(1), 7. <https://doi.org/10.3390/admsci7010007>
- Mardiana, P., Harokan, A., & Wahyudi, A. (2024). Analisis Kinerja Petugas Pengelola Data Aplikasi Sehat Indonesiaku (ASIK) Dalam Memenuhi Capaian Imunisasi Dasar Lengkap Bayi Pada Dinas Kesehatan Kota Pagar Alam. *Jurnal Ners*, 9(1), 676–683. <https://doi.org/10.31004/jn.v9i1.30028>
- Mawarni. (2018). *Pengaruh Sikap Kerja Dan Beban Kerja Terhadap Kinerja Karyawan Pada PT. (Persero) Telekomunikasi Indonesia Tbk Witel Medan*. Universitas Muhammadiyah Sumatera Utara.
- Mellysa, W. T., & Annisa, D. P. (2024). Hubungan Pengetahuan dan Sikap Bidan dengan Kinerja Pelayanan Imunisasi Dasar Lengkap di Puskesmas Kabupaten Ciamis pada Masa Pandemi Covid-19. *Asosiasi Riset Ilmu Manajemen Dan Bisnis Indonesia*, 2(2), 45–58. <https://doi.org/10.61132/obat.v2i2.287>
- Miska, L., & Azzahra, S. (2025). An ergonomic office interior design study on improving employee performance and job satisfaction. *International Journal Administration, Business & Organization*, 6(3), 326–339. <https://doi.org/10.61242/ijabo.25.63>

- Munthe, V. O. B., & Harahap, F. S. D. (2021). Pengaruh Profesionalisme Kerja Bidan Desa Terhadap Penyelenggaraan Program Kesehatan Ibu Dan Anak Di Wilayah Kerja Puskesmas Mapaddegat Kabupaten Kepulauan Mentawai Tahun 2020. *Jurnal Untuk Masyarakat Sehat (JUKMAS)*, 5(1), 77–92. <https://doi.org/10.52643/jukmas.v5i1.1288>
- Permatasari, A. D., Trihandini, I., Bahar, R. J., & Kurniawan, R. (2021). Manfaat penggunaan mobile health (m-health) dalam pencatatan dan pelaporan kesehatan ibu. *Jurnal Biostatistik, Kependudukan, Dan Informatika Kesehatan*, 1(2), 4. <https://doi.org/10.7454/bikfokes.v1i2.1010>
- Pradana, A. W., & Susilo, H. (2016). Pengaruh Persepsi Kemudahan, Kemanfaatan, dan Sikap Penggunaan Terhadap Minat Menggunakan IFS Software. *Jurnal Administrasi Bisnis*, 30(1). Retrieved from <https://administrasibisnis.studentjournal.ub.ac.id/index.php/jab/article/view/1199>
- Rahayu, B., Multazam, A., & Kurnaesih, E. (2018). Kinerja Bidan dalam Rangka Menurunkan Angka Kejadian Infeksi Post Partum di Puskesmas Kabupaten Polewali Mandar Sulawesi Barat. *Jurnal Ilmiah Kesehatan Diagnosis*, 13(5), 569–573. Retrieved from <https://jurnal.stikesnh.ac.id/index.php/jikd/article/view/75>
- Rahmadewi, P., Heryawan, L., & Lazuardi, L. (2023). Kesiapan Penerapan Register Imunisasi Elektronik Nasional di Provinsi Banten dan Maluku Utara. *Jurnal Kesehatan Masyarakat*, 11(4), 406–417. <https://doi.org/10.14710/jkm.v11i4.38781>
- Rumaf, F., Ningsih, S. R., Mongilong, R., Goma, M. A. D., & Della Anggaria, A. (2023). Pentingnya Imunisasi Dasar Lengkap Pada Bayi dan Balita. *Jurnal Pengabdian Kepada Masyarakat MAPALUS*, 1(2), 15–21. Retrieved from <https://e-journal.stikesgunungmaria.ac.id/index.php/jpm/article/view/37>
- Salsabila, S. (2019). Sistem informasi pencatatan dan pelaporan pelayanan kesehatan berbasis android di kawasan terpencil dan sangat terpencil. *Jurnal Rekam Medis Dan Informasi Kesehatan*, 2(1), 39–47. <https://doi.org/10.31983/jrmik.v2i1.3962>
- Sharma, A., Gupta, V., Sharma, A., & Sharma, S. (2022). Hesitancy versus acceptability: An observational study for acceptance of COVID-19 vaccine among parents and guardians of children under 17 years age in South East Rajasthan. *Asian Journal of Medical Sciences*, 13(8), 8–13. <https://doi.org/10.3126/ajms.v13i8.44777>
- Sianturi, M. I. B. (2022). Hubungan Pengetahuan Ibu dengan Pemberian Imunisasi Lanjutan Pentavalen pada Anak Usia 18 Bulan di Desa Tanjung Selamat. *Journal Health Of Education*, 3(1), 11–19. <https://doi.org/10.62611/jhe.v4i1.58>
- Siddiqi, D. A., Abdullah, S., Dharma, V. K., Shah, M. T., Akhter, M. A., Habib, A., Khan, A. J., & Chandir, S. (2021). Using a low-cost, real-time electronic immunization registry in Pakistan to demonstrate utility of data for immunization programs and evidence-based decision making to achieve SDG-3: insights from analysis of big data on vaccines. *International Journal of Medical Informatics*, 149, 104413. <https://doi.org/10.1016/j.ijmedinf.2021.104413>
- Sulkani, P. M. (2024). Analisis Tingkat Penerimaan Pengguna terhadap Aplikasi Sistem Informasi Kesehatan (ASIK) untuk Kegiatan Imunisasi. *Jurnal Ilmu Kesehatan Masyarakat*, 13(01), 88–96. <https://doi.org/10.33221/jikm.v13i01.2539>
- Sulistiyawati, S., Wibowo, T. A., Rokhmayanti, R., Nugroho, A. S. D., Sukei, T. W., Hastuti, S. K. W., Mulasari, S. A., & Feletto, M. (2023). Introduction and implementation of an immunization information system in the Indonesian province of Daerah Istimewa Yogyakarta: Lessons for scaling-up. *BMC Health Services Research*, 23, 12. <https://doi.org/10.1186/s12913-022-08910-6>
- Syahputra, R., Siregar, D. S., & Harahap, R. H. (2024). Factors associated with health worker performance in public health services: A cross-sectional study. *Journal of Public Health Research*, 13(1), 1–8. <https://doi.org/10.30574/wjbphs.2025.22.1.0444>
- Taber, K. S. (2018). The use of Cronbach's alpha when developing and reporting research instruments in science education. *Research in Science Education*, 48(6), 1273–1296. <https://doi.org/10.1007/s11165-016-9602-2>
- Taqwin, Z. M., Guspianto, G., & Nasution, H. S. (2023). Hubungan faktor-faktor motivasi dengan kinerja tenaga kesehatan di Puskesmas Siulak Gedang Kecamatan Siulak Kabupaten Kerinci tahun 2023. *Jurnal Kesmas Jambi*, 7(2), 110–116. <https://doi.org/10.22437/jkmj.v7i2.27250>
- Turgut, S., Schlachter, S., Michel, A., & Sonntag, K. (2020). Antecedents of health-promoting leadership and workload as moderator. *Journal of Leadership & Organizational Studies*, 27(2), 203–214. <https://doi.org/10.1177/1548051819848988>
- Tyas, E. I., & Darma, E. S. (2017). Pengaruh Perceived Usefulness, Perceived Ease of Use, Perceived Enjoyment, dan Actual Usage Terhadap Penerimaan Teknologi Informasi: Studi Empiris Pada Karyawan Bagian Akuntansi dan Keuangan Baitul Maal Wa Tamwil Wilayah Daerah Istimewa Yogyakarta. *Reviu Akuntansi Dan Bisnis Indonesia*, 1(1), 25–35. <https://doi.org/10.18196/rab.010103>

- Vonasek, B. J., Bajunirwe, F., Jacobson, L. E., Twesigye, L., Dahm, J., Grant, M. J., Sethi, A. K., & Conway, J. H. (2016). Do maternal knowledge and attitudes towards childhood immunizations in rural Uganda correlate with complete childhood vaccination? *PLOS ONE*, *11*(2), e0150131. <https://doi.org/10.1371/journal.pone.0150131>
- Widias, W. T., Fitriyah, A., Nining, A. N., & Ummi, K. M. (2024). Faktor-Faktor yang Berhubungan dengan Kinerja Tenaga Kesehatan di Puskesmas Segeri Kabupaten Pangkep. *Public Health*, *2*(2), 48–55. <https://doi.org/10.59583/pama.v2i2.108>
- Zarekar, M., Al-Shehabi, H., Dörner, R., Weishaar, H., Lennemann, T., El Bcheraoui, C., & Bernasconi, A. (2025). The impact of information and communication technology on immunisation and immunisation programmes in low-income and middle-income countries: a systematic review and meta-analysis. *EBioMedicine*, *111*. <https://doi.org/10.1016/j.ebiom.2024.105520>