

Evaluation of the Efficiency of the Social Welfare Information System-Next Generation (SIKS-NG) in the Distribution of Social Assistance

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Abstract.

The Social Welfare Information System-Next Generation (SIKS-NG) was introduced to modernize Indonesia's social assistance programs by addressing issues such as data inaccuracies, delays, and inefficiencies. This study evaluates the efficiency of SIKS-NG, explores key challenges in its implementation, and offers actionable recommendations for improvement. Using qualitative methods, including secondary data analysis of official reports and academic literature, the research highlights that while SIKS-NG has improved data centralization and transparency, challenges like limited digital infrastructure, capacity gaps among administrators, and weak inter-agency coordination persist. To enhance the system's effectiveness, targeted actions such as investing in infrastructure, building local capacity, and improving data management practices are recommended. The study concludes that with strategic improvements, SIKS-NG can better fulfill its mission of delivering equitable and timely social assistance to those in need.

Keywords: Capacity Building; Data Accuracy; Digital Transformation; SIKS-NG; Social Welfare

INTRODUCTION

Social assistance programs are a lifeline for millions of Indonesians, especially for those living in poverty or vulnerable conditions. These programs, such as the conditional cash transfer scheme (Family Hope Program/PKH), staple food assistance (Non-Cash Food Assistance/BPNT), and direct cash aid (Direct Cash Assistance/BLT), aim to reduce poverty, bridge inequality,

and provide basic support for families in need. With a population exceeding 270 million spread across more than 17,000 islands, Indonesia faces unique challenges in ensuring these programs reach the right people (World Bank, 2023).

Yet, while the programs have had a positive impact, they are not without flaws. Geographic barriers often hinder the delivery of assistance, particularly in rural or remote areas. In many cases, outdated or inaccurate data has excluded deserving families or included ineligible ones (Nugroho et al., 2021). Instances of corruption, inefficiency, and fragmentation between overlapping programs further dilute the effectiveness of these social initiatives (TNP2K, 2019). The distribution process often reflects the systemic challenges of ensuring that government support is truly equitable and efficient.

Recognizing the pressing need to improve the management and delivery of social assistance, Indonesia's Ministry of Social Affairs introduced the Social Welfare Information System-Next Generation (SIKS-NG). This modernized, digital platform is a cornerstone of the country's efforts to overcome existing gaps and ensure social assistance is delivered fairly and effectively.

At its core, SIKS-NG seeks to unify Indonesia's social assistance database into a single, reliable platform. Traditionally, data discrepancies have plagued social programs, leading to inefficiencies such as duplicate beneficiaries or the omission of qualified households. SIKS-NG directly addresses these issues by integrating information from various government agencies into one system, reducing errors and improving overall reliability (Lowy Institute, 2024).

The system also updates its data periodically through real-time collection efforts, ensuring that records remain accurate. This innovation marks a significant departure from outdated manual systems, which were prone to lags and inaccuracies. By modernizing data management, SIKS-NG ensures the right people receive assistance at the right time

(TNP2K, 2018). Transparency has historically been a weak point in Indonesia's social assistance programs, with frequent allegations of mismanagement or corruption. SIKS-NG tackles this by digitizing beneficiary data and creating a public-accessible system for monitoring transactions. This approach allows community members and civil society to participate in oversight, making the process more transparent and accountable (Akbar et al., 2023).

Moreover, digital records reduce opportunities for corruption, as every transaction is tracked and logged. The result is a higher level of trust between citizens and government institutions, strengthening the overall credibility of social assistance programs. Another key feature of SIKS-NG is its use of data analytics to tailor assistance distribution. By analyzing demographic and geographic data, the platform identifies areas where aid is most urgently needed. This ensures that resources are prioritized and allocated effectively, minimizing waste and logistical inefficiencies (Aprilia & Choiriyah, 2024).

For example, in regions affected by natural disasters or economic downturns, the system can quickly adjust its delivery models to address immediate needs. This level of responsiveness represents a significant leap forward in the government's ability to support its citizens in a timely manner. Despite its promise, SIKS-NG faces hurdles in its implementation. One of the most pressing issues is Indonesia's digital divide. While urban centers are well-connected, many rural and remote regions lack the internet infrastructure necessary to fully utilize the system. Without adequate connectivity, local officials may struggle to update data or coordinate distribution efforts effectively (Darmawan & Choiriyah, 2024).

In addition, the success of SIKS-NG depends heavily on the digital literacy of the officials and citizens who use it. Training programs and ongoing support are essential to ensure that everyone involved can navigate the system

confidently. Without these investments, the platform's potential could be undermined by user errors or limited engagement.

Social assistance programs are vital to Indonesia's efforts to reduce poverty and improve social welfare, yet they have long been hampered by inefficiencies and inequities in distribution. SIKS-NG offers a groundbreaking solution by addressing key issues such as data accuracy, transparency, and distribution efficiency. However, challenges like digital infrastructure and literacy remain barriers that need to be overcome. With continued investment in technology and training, SIKS-NG has the potential to transform Indonesia's social welfare landscape, ensuring that help reaches those who need it most. By addressing these challenges head-on, Indonesia is taking a bold step toward building a more equitable and resilient society.

The Social Welfare Information System-Next Generation (SIKS-NG) has been instrumental in modernizing the management and distribution of social assistance in Indonesia. However, several gaps persist that hinder its full potential. Data accuracy remains a critical issue, as inaccuracies and inconsistencies in the database can lead to the exclusion of eligible beneficiaries or inclusion of ineligible individuals. Additionally, the timeliness of updates and system responsiveness is a concern, particularly in rural or remote areas with limited digital infrastructure, delaying the delivery of assistance to those in need. Accessibility poses another challenge, as many local administrators and community members lack the digital literacy required to effectively interact with the system. These inefficiencies compromise the overall effectiveness of the SIKS-NG, limiting its ability to deliver equitable and efficient social assistance. Addressing these gaps is crucial to achieving the intended impact of the platform.

Studies on digital systems in social welfare programs around the world offer important lessons for evaluating SIKS-

NG. For example, Brazil's Cadastro Único, a centralized social registry, demonstrated significant improvements in targeting accuracy and reducing exclusion errors. However, challenges like outdated data and lack of inter-agency coordination persisted, limiting its impact (Soares et al., 2008).

India's Aadhaar-based Public Distribution System showcased how linking biometric identification to beneficiaries could reduce fraud and improve transparency in food subsidy programs. Yet, the system faced criticism for its dependence on robust digital infrastructure, which often excluded rural populations with limited internet access (Drèze & Khera, 2017). These findings mirror some of the challenges faced by SIKS-NG, such as limited connectivity in remote areas.

Closer to Indonesia, the Philippines' Listahanan, a data management platform for social protection, has demonstrated the importance of centralized and regularly updated databases in ensuring efficient social welfare delivery. However, researchers have emphasized the need to strengthen local-level capacities to maximize the system's potential (Velarde & Velarde, 2018).

Research specific to Indonesia has highlighted the transformative potential of SIKS-NG. For instance, Akbar et al. (2023) observed that the system significantly improves data integration and transparency in the country's social welfare programs. However, studies have also pointed out challenges such as limited digital literacy among local officials and persistent gaps in infrastructure, particularly in rural and remote areas (Darmawan & Choiriyah, 2024). These issues underscore the importance of ongoing evaluation and improvement.

This research is important because it aims to strengthen Indonesia's social assistance programs by improving the Social Welfare Information System-Next Generation (SIKS-NG). While SIKS-NG has made progress in reducing errors and increasing transparency, many families still miss out on

support due to data inaccuracies, slow updates, and limited internet access in rural areas. Local officials often struggle with digital tools, and corruption remains a concern in some places. By identifying these challenges and offering practical solutions, this study can help ensure that social assistance reaches those who need it most—fairly, quickly, and transparently—ultimately building greater trust between citizens and the government.

This research seeks to assess how effectively the Social Welfare Information System-Next Generation (SIKS-NG) manages the distribution of social assistance, with a particular focus on its ability to ensure data accuracy, timely updates, and accessibility. It also aims to uncover the key challenges hindering the system's implementation, including technological limitations, administrative hurdles, and social factors. Finally, the study aspires to offer actionable recommendations to address these issues and enhance the overall efficiency and effectiveness of SIKS-NG in supporting social welfare initiatives.

This research focuses on three essential questions to gain a deeper understanding of the Social Welfare Information System-Next Generation (SIKS-NG) and its potential for improvement. It first examines the system's efficiency in ensuring accurate and timely distribution of social assistance, which is vital for its success. It then explores the key challenges hindering its implementation, including technical, administrative, and social barriers. Lastly, the study seeks to identify practical measures to enhance the system's efficiency, making it a more effective and reliable tool for managing Indonesia's social welfare programs.

THEORETICAL FRAMEWORK

The efficiency of public administration and the use of digital systems in public service delivery are central to understanding the Social Welfare Information System-Next

Generation (SIKS-NG). Max Weber's bureaucratic theory provides a foundational lens for analyzing administrative efficiency. Weber emphasized the importance of structured processes, clear hierarchies, and standardized procedures to achieve operational efficiency (Weber, 2009). When applied to modern systems like SIKS-NG, these principles align with the need for streamlined workflows and accurate data handling.

In the digital age, the Digital Governance Framework offers another critical perspective. It highlights how technology can transform public services, enhancing transparency, accountability, and citizen engagement (Dunleavy et al., 2006). This framework is particularly relevant for systems like SIKS-NG, which aim to optimize social welfare delivery through digital tools and integrated databases.

The Information Systems Success Model (Urbach & Müller, 2011) also provides valuable insights. This model evaluates system performance based on six dimensions: system quality, information quality, usage, user satisfaction, individual benefits, and organizational impact. Applying this model to SIKS-NG enables a comprehensive assessment of its effectiveness, not only from a technical perspective but also in terms of user experience and societal outcomes.

Efficiency in public administration focuses on the effective use of resources to achieve desired outcomes with minimal waste. In the context of the Social Welfare Information System-Next Generation (SIKS-NG), efficiency refers to the system's ability to ensure accurate, timely, and equitable distribution of social assistance. This includes minimizing errors, avoiding delays, and reducing administrative burdens while maximizing the impact of social welfare programs on intended beneficiaries (Dunleavy et al., 2006).

Social Assistance encompasses government programs and services designed to support vulnerable and low-income populations. In Indonesia, key initiatives such as Family Hope

Program (PKH) and Non-Cash Food Assistance (BPNT) aim to alleviate poverty and improve the quality of life for disadvantaged groups. These programs provide essential financial and material support, forming the backbone of the nation's social safety net (TNP2K, 2014).

The Social Welfare Information System-Next Generation (SIKS-NG) is a digital platform developed by Indonesia's Ministry of Social Affairs to modernize the management of social assistance programs. The system's primary objectives are to improve data accuracy, facilitate seamless information sharing across agencies, and enhance the transparency and efficiency of social welfare delivery. By centralizing data management, SIKS-NG aims to address existing challenges and ensure that resources reach the people who need them most (Mursyidah & Nofi, 2024).

The theoretical perspectives of public administration efficiency, digital governance, and information systems provide a robust framework for analyzing SIKS-NG. Insights from international and regional studies emphasize the transformative potential of digital platforms in improving social welfare delivery while also highlighting common challenges like data reliability, digital literacy, and infrastructure gaps. Clear definitions of efficiency, social assistance, and SIKS-NG help anchor the analysis, ensuring a focused evaluation of the system's role in advancing social protection in Indonesia.

RESEARCH METHODS

Research Design

This study adopts a qualitative research design, focusing on secondary data analysis to explore the efficiency of the Social Welfare Information System-Next Generation (SIKS-NG). A qualitative approach is ideal for understanding the complexities of public administration systems by analyzing textual and numerical data in-depth (Creswell,

2014). This method allows for a thorough exploration of SIKS-NG's design, performance, and challenges.

Data Sources

The study draws on a variety of reliable sources, including official reports from the Ministry of Social Affairs, performance metrics specific to SIKS-NG, government policy documents, and relevant academic studies. These sources provide a detailed picture of the system's implementation and operational outcomes (Mursyidah & Nofi, 2024; TNP2K, 2014). Media coverage and assessments by civil society organizations add valuable insights into public perceptions and recurring issues.

Data Collection Methods

Data collection involves reviewing government databases, system evaluation reports, and media articles. This approach ensures the inclusion of diverse perspectives, combining official data with external viewpoints to build a comprehensive understanding of SIKS-NG's efficiency (Yin, 2018).

Data Analysis

Content analysis is used to identify patterns, recurring themes, and operational bottlenecks within the system. Particular attention is paid to issues such as the accuracy of beneficiary data, timeliness in updates, and accessibility for users. This method provides a structured way to analyze SIKS-NG's performance while uncovering areas that need improvement (Urbach & Müller, 2011).

Scope and Limitations

The study focuses on Indonesia, particularly during the COVID-19 pandemic when social assistance programs were under significant strain. While this context highlights key

challenges and responses, the reliance on secondary data may limit access to certain operational details.

RESULTS AND DISCUSSIONS

Efficiency of SIKS-NG in Ensuring Accurate and Timely Distribution of Social Assistance

The Social Welfare Information System-Next Generation (SIKS-NG) was developed to modernize Indonesia's approach to social assistance, tackling issues like data inaccuracies, delays, and inefficiencies in distribution. While SIKS-NG has shown promise in improving the administration of social programs, its efficiency remains a topic of significant discussion. This section explores the system's performance in data accuracy, timeliness, and operational integration, highlighting both its successes and areas for improvement.

Data Accuracy

Improving data accuracy is one of SIKS-NG's key objectives. By centralizing data from multiple government agencies and regularly updating the beneficiary database, the system aims to minimize errors such as duplications, omissions, or inclusion of ineligible recipients. Early assessments show that SIKS-NG has reduced inaccuracies, ensuring that social assistance reaches its intended beneficiaries more reliably than previous systems (Lowy Institute, 2024; Mursyidah & Nofi, 2024).

However, challenges remain, particularly in rural and remote areas where digital infrastructure is limited (Sarjito, 2023). In these regions, delays in updating beneficiary information can lead to outdated records, resulting in eligible households being excluded or ineligible individuals continuing to receive benefits (Darmawan & Choiriyah, 2024). Furthermore, inconsistencies between national and regional

databases persist, partly due to varying data management practices across local governments.

Timeliness of Updates

Timely updates to beneficiary data are critical for ensuring that social assistance is distributed promptly, especially during emergencies like the COVID-19 pandemic. SIKS-NG's integration with real-time data collection systems theoretically allows for faster updates. During the pandemic, the system helped identify and register newly vulnerable households more quickly than traditional methods, facilitating timely distribution of aid (TNP2K, 2014).

Despite these advancements, the system has faced challenges in maintaining consistent timeliness. Connectivity issues in underserved areas, server downtimes, and delays in data input by local officials have occasionally slowed the update process (Ohia & Daniel, 2024). These issues highlight the importance of strengthening digital infrastructure and providing adequate training to local administrators to ensure smoother operations (Hustad & Olsen, 2021).

Operational Integration

One of SIKS-NG's notable achievements is its ability to streamline operational processes across various social assistance programs. By consolidating multiple systems into a single platform, SIKS-NG has reduced administrative redundancies and improved overall efficiency. Advanced analytics within the system allow for more precise allocation of resources, directing assistance to areas with the greatest need (Akbar et al., 2023).

However, coordination between different agencies still poses challenges. While SIKS-NG provides a unified platform, discrepancies in data management practices between national and local governments can result in inefficiencies. For instance, outdated or incomplete data at the local level can undermine the accuracy of national records, affecting the

overall performance of the system (Aprilia & Choiriyah, 2024). These challenges underscore the need for stronger inter-agency collaboration and standardized protocols for data management.

Addressing Inefficiencies

To improve the efficiency of the Social Welfare Information System-Next Generation (SIKS-NG), several key steps can be taken. First, expanding digital infrastructure is crucial, particularly in rural and remote areas where internet connectivity remains limited. By investing in better infrastructure, the system can support real-time data updates and ensure consistent reliability, addressing accessibility challenges in underserved regions (TNP2K, 2014). Second, capacity building is essential to empower local officials and community members with the skills needed to operate the system confidently. Comprehensive training programs can bridge gaps in digital literacy and ensure users can fully utilize SIKS-NG's features (Choudhary & Bansal, 2022).

Another important step is routine data validation, which involves conducting regular audits to maintain an accurate and up-to-date beneficiary database. This practice is especially important during rapidly changing situations, such as economic downturns or natural disasters, to ensure the system continues to meet current needs (Akbar et al., 2023). Finally, enhancing inter-agency collaboration is critical for creating a seamless and cohesive approach to social welfare management. Clear protocols for data sharing and stronger partnerships between agencies can reduce inconsistencies and ensure resources are distributed efficiently and equitably (Aprilia & Choiriyah, 2024). These measures, collectively, can significantly enhance the effectiveness of SIKS-NG.

Successes and Limitations

SIKS-NG has made significant strides in improving the administration of social assistance programs in Indonesia. Its

ability to integrate fragmented systems into a single platform has reduced inefficiencies, while its transparency features, such as public access to beneficiary data, have increased accountability and minimized opportunities for corruption (Mursyidah & Nofi, 2024).

Nonetheless, its effectiveness is constrained by the digital divide. The system’s reliance on robust digital infrastructure and skilled personnel makes it less effective in areas where such resources are scarce. Additionally, variations in how different regions implement the system create further challenges, undermining its potential to function as a truly unified platform. Addressing these limitations requires a combination of technological, institutional, and social investments (Lowy Institute, 2024).

The Social Welfare Information System-Next Generation (SIKS-NG) has made significant strides in modernizing Indonesia’s social assistance programs. By focusing on improving data accuracy, ensuring timely updates, and streamlining operations, the system has addressed many inefficiencies that previously plagued social welfare delivery. However, challenges remain, particularly in rural areas with limited digital infrastructure, inconsistent data practices, and gaps in inter-agency coordination. The table below summarizes SIKS-NG's key strengths, challenges, and recommended steps for improvement.

Table 1. Strengths, Challenges, and Recommendations for Enhancing SIKS-NG Efficiency

Key Area	Strengths	Challenges	Recommendations
Data Accuracy	- Centralized data reduces errors like duplications and omissions	- Limited infrastructure in rural areas delays updates.	- Expand infrastructure to improve connectivity. - Conduct regular audits

	(Ravate, 2024). - Regular updates enhance reliability (Mursyidah & Nofi, 2024).	- Discrepancies between national and regional databases remain (Darmawan & Choiriyah, 2024).	to validate and update beneficiary data (Akbar et al., 2023).
Timeliness of Updates	- Real-time data collection supports faster response during emergencies, such as the COVID-19 pandemic (TNP2K, 2014).	- Connectivity issues and server downtimes cause delays. - Local officials sometimes lag in inputting data (Darmawan & Choiriyah, 2024).	- Invest in robust digital infrastructure to ensure consistent access. - Provide training to local administrators to improve data input efficiency.
Operational Integration	- Integration of multiple systems reduces administrative redundancies (Platje, 2014).	- Inconsistent data practices across agencies hinder coordination (Aprilia &	- Develop standardized data-sharing protocols. - Foster stronger inter-agency collaboration through

	<p>- Advanced analytics enable more precise resource allocation (Akbar et al., 2023).</p>	<p>Choiriyah, 2024).</p>	<p>regular meetings and shared responsibilities.</p>
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Source: Adapted by author from Ravate (2024); Mursyidah & Nofi (2024); Darmawan & Choiriyah (2024); Akbar et al. (2023); TNP2K (2014); Platje (2014); Aprilia & Choiriyah (2024).

While SIKS-NG has shown great promise in improving social assistance delivery, its effectiveness is limited by persistent issues such as infrastructure gaps, data inconsistencies, and coordination challenges. The strengths outlined in the table underscore the system’s potential, but addressing its shortcomings is essential for ensuring equitable and timely distribution of resources.

Investing in better digital infrastructure, enhancing training for local administrators, and improving collaboration between agencies are key steps to strengthening SIKS-NG. By addressing these areas, the system can evolve into a more reliable and inclusive platform, ultimately delivering greater impact for Indonesia’s most vulnerable populations.

SIKS-NG marks a significant step forward in Indonesia’s efforts to modernize its social welfare systems. While it has demonstrated clear improvements in data accuracy, timeliness, and operational integration, challenges related to infrastructure, training, and inter-agency coordination remain. By addressing these issues through targeted reforms and investments, SIKS-NG can further enhance its efficiency, ensuring that social assistance reaches those who need it most in a timely and equitable manner. As the system continues to evolve, it holds the potential to serve

as a model for other countries striving to digitize their social welfare programs.

Primary Obstacles in Implementing SIKS-NG

The implementation of the Social Welfare Information System-Next Generation (SIKS-NG) in Indonesia is an ambitious effort to streamline the delivery of social assistance programs. However, several challenges continue to hinder its effectiveness. These obstacles can be grouped into technical, institutional, socio-cultural, and political-economic categories, each with significant implications for the system's success.

Technical Challenges

One of the key technical challenges faced by the Social Welfare Information System-Next Generation (SIKS-NG) is the uneven distribution of digital infrastructure across Indonesia. In rural and remote areas, limited internet connectivity makes it difficult for the system to function effectively in real time. Local administrators in these regions often encounter delays in inputting or updating beneficiary data, leading to inefficiencies in distributing social assistance (Darmawan & Choiriyah, 2024; ILO, 2023). To overcome this, significant investment in digital infrastructure is essential to provide consistent and reliable connectivity nationwide.

Another challenge is the usability of the system, as many users find it difficult to navigate. Local administrators, especially those with limited digital experience, report issues with completing tasks such as data entry and verification, which slows down operations (Mirza Pahlevi, 2018). Enhancing the platform's user interface and offering ongoing technical support can help address this issue. In addition, cybersecurity risks remain a pressing concern. As SIKS-NG handles sensitive personal data, breaches could compromise privacy and damage public trust. Although security measures

are in place, the growing sophistication of cyber threats underscores the need for continuous updates and proactive security enhancements (Jakkapattarawong, 2024).

Institutional Challenges

A significant institutional challenge for SIKS-NG is the lack of inter-agency coordination. The system relies on collaboration between multiple government agencies to collect, manage, and update data, but inconsistencies in data collection methods and management practices often lead to discrepancies. These variations make it difficult to integrate and synchronize data across agencies, ultimately undermining the reliability and effectiveness of SIKS-NG (Akbar et al., 2023; Aprilia & Choiriyah, 2024). To address this, clear protocols for data sharing and stronger collaboration between agencies are essential to ensure a unified and reliable system.

Another major hurdle is the capacity gap at the local government level. Many regions lack the technical expertise and resources necessary to fully utilize SIKS-NG. Limited training for local administrators often results in data entry errors and delays, particularly in underserved areas where resources are already stretched thin (Choi, 2021). Adding to this challenge is the fragmentation of social programs, where overlapping responsibilities and a lack of cohesive management across different levels of government lead to duplicated efforts and unclear accountability. This fragmentation hampers the system's ability to operate efficiently and realize its full potential in delivering integrated and streamlined social welfare services (TNP2K, 2019).

Socio-Cultural Challenges

A significant socio-cultural challenge for SIKS-NG is the lack of digital literacy among local administrators and beneficiaries. In many rural areas, individuals have limited familiarity with digital tools, making it difficult for them to

effectively engage with the system. This lack of digital skills also reduces community participation in verifying and updating beneficiary data, a critical process for maintaining the system's accuracy and reliability (Rahmah, 2015). Without targeted initiatives to improve digital literacy, the system's ability to empower communities and ensure data quality remains constrained.

Another key challenge is the limited engagement of local communities in the implementation of SIKS-NG. Active community involvement is crucial for monitoring and addressing inaccuracies in the system, yet many individuals are unaware of its goals or how they can contribute. This disconnect not only reduces public participation but also leads to unreported errors and missed opportunities for improvement (TNP2K, 2014). Strengthening community engagement through awareness campaigns and user-friendly feedback mechanisms could foster greater involvement, helping to build trust and enhance the overall effectiveness of SIKS-NG.

Political and Economic Barriers

One of the major challenges facing SIKS-NG is budget constraints (The World Bank, n.d.). Implementing and maintaining the system requires significant financial investment, but limited budgets, especially at the local government level, often result in insufficient funding for critical needs such as system updates, user training, and infrastructure development (Barreau, 2001). These financial shortfalls hinder the system's ability to operate at its full potential, leaving gaps in its efficiency and reach (Mirza Pahlevi, 2018). Ensuring adequate and sustained funding is vital to address these limitations and enable SIKS-NG to achieve its objectives effectively.

Another key obstacle is the degree of political will and governance dedicated to supporting SIKS-NG (Defitri, 2022; Noer & Madewanti, 2020). The system's success heavily relies

on the commitment of political leaders and decision-makers to prioritize its implementation and allocate necessary resources. However, inconsistent political support and shifting government priorities often slow progress and divert attention to other initiatives. Strong governance and a steadfast commitment from political leaders are essential to overcoming these barriers, ensuring SIKS-NG remains a reliable and effective tool for delivering social assistance to those who need it most (Jakkapattarawong, 2024).

Addressing the Obstacles

To overcome the challenges faced by SIKS-NG, targeted actions in several key areas are essential. First, investing in infrastructure is critical to expanding internet connectivity in underserved regions, allowing for real-time data updates and improving system accessibility (ILO, 2023). Equally important is enhancing system usability by incorporating regular feedback from local administrators and beneficiaries to make the platform more user-friendly and accessible (Mirza Pahlevi, 2018). Additionally, capacity-building programs are needed to equip local government officials and community members with the skills required to operate the system effectively, ensuring its optimal use (Darmawan & Choiriyah, 2024).

Strengthening collaboration among agencies is another crucial step. By establishing clearer data-sharing protocols and accountability mechanisms, inconsistencies can be minimized, and inter-agency coordination improved (TNP2K, 2019). Meanwhile, public awareness campaigns can foster greater community engagement, empowering beneficiaries to participate in monitoring and improving the system (TNP2K, 2014). Lastly, bolstering cybersecurity by investing in advanced security measures is vital to safeguarding sensitive data and maintaining public trust in SIKS-NG (Jakkapattarawong, 2024). Together, these actions can address

the system's current obstacles and help realize its potential as a reliable and inclusive tool for delivering social assistance.

The implementation of the Social Welfare Information System-Next Generation (SIKS-NG) is a critical step toward modernizing Indonesia's social assistance programs. However, several challenges across technical, institutional, socio-cultural, and political-economic dimensions hinder its full potential. These obstacles highlight areas that require immediate attention to enhance the system's effectiveness. The table below summarizes these challenges and their implications for the success of SIKS-NG.

Table 2. Key Challenges in Implementing SIKS-NG

Category	Challenges	Implications
Technical	<ul style="list-style-type: none">- Uneven digital infrastructure limits real-time functionality, especially in rural areas.- Difficult system interface hinders usability for less tech-savvy users.- Cybersecurity risks pose threats to data integrity and public trust (Darmawan & Choiriyah, 2024; Jakkapattarawong, 2024).	<ul style="list-style-type: none">- Delays in data entry and inefficiencies in aid distribution.- Potential data breaches undermine confidence in the system.
Institutional	<ul style="list-style-type: none">- Poor inter-agency coordination results in inconsistent data collection and management.	<ul style="list-style-type: none">-Reduced reliability of data and fragmented implementation across regions.

	<ul style="list-style-type: none"> - Capacity gaps among local governments lead to errors and delays. - Fragmented social programs cause redundancy and unclear accountability (Akbar et al., 2023; TNP2K, 2019). 	<ul style="list-style-type: none"> - Inefficiencies in providing cohesive social services.
Socio-Cultural	<ul style="list-style-type: none"> - Low digital literacy among administrators and beneficiaries limits effective use of the system. - Lack of community engagement reduces oversight and reporting accuracy (Rahmah, 2015; TNP2K, 2014). 	<ul style="list-style-type: none"> - Inaccurate or outdated data, with errors going unreported. - Missed opportunities for local involvement in system improvement.
Political-Economic	<ul style="list-style-type: none"> - Limited funding for updates, training, and infrastructure restricts system performance. - Inconsistent political support delays progress and diverts resources to competing priorities (Mirza Pahlevi, 2018; Jakkapattarawong, 2024). 	<ul style="list-style-type: none"> - Insufficient resources hinder the system's reach and reliability. - Slow implementation reduces the overall impact of SIKS-NG.

Source: Adapted by author from Darmawan & Choiriyah (2024); Jakkapattarawong (2024); Akbar et al. (2023); TNP2K (2019); Rahmah (2015); TNP2K (2014); Mirza Pahlevi (2018).

To overcome these obstacles and unlock the full potential of SIKS-NG, a multi-pronged approach is essential. Investing in digital infrastructure is a priority to improve internet connectivity in underserved areas, ensuring the system can function in real time. Enhancing system usability by incorporating user feedback and simplifying the interface will make it more accessible to administrators and users with varying levels of digital literacy. Capacity-building programs are crucial to equip local officials and community members with the skills needed to operate the system effectively and efficiently.

Strengthening inter-agency collaboration is equally important. Establishing clear data-sharing protocols and accountability frameworks can minimize inconsistencies and improve coordination across government levels. Public awareness campaigns can boost community engagement, encouraging beneficiaries to participate in monitoring and reporting, which improves system accuracy and reliability. Finally, bolstering cybersecurity with advanced protections and regular audits is essential to safeguard sensitive data and maintain public trust. By addressing these challenges holistically, SIKS-NG can evolve into a more robust and inclusive platform for delivering social assistance.

The implementation of SIKS-NG marks a significant step toward modernizing Indonesia's social welfare delivery. However, its effectiveness is limited by technical, institutional, socio-cultural, and political-economic challenges. Overcoming these obstacles requires a multifaceted approach that includes investments in infrastructure, capacity building, improved governance, and stronger community engagement. By addressing these barriers, SIKS-NG can fulfill its potential to create a more

equitable and efficient social welfare system, ensuring that assistance reaches those who need it most.

Measures to Enhance the Efficiency of SIKS-NG in Managing Social Welfare Programs

The Social Welfare Information System-Next Generation (SIKS-NG) has revolutionized the management of social welfare in Indonesia by providing a centralized, digital platform to administer assistance programs. Despite its successes, there are persistent challenges that hinder its full efficiency. This discussion explores practical measures to enhance the system's effectiveness, focusing on infrastructure, usability, capacity building, data management, and policy integration.

Investing in Digital Infrastructure

A major limitation to SIKS-NG's effectiveness is the uneven access to reliable internet connectivity across Indonesia, particularly in rural and remote areas. Expanding digital infrastructure, such as satellite-based internet and mobile network coverage, is critical to enable real-time data entry and updates. Improved connectivity would allow local administrators to access and update the system without delays, ensuring the timely distribution of social welfare (ILO, 2023; Mirza Pahlevi, 2018).

Additionally, upgrading the system's servers to handle higher traffic and prevent downtimes is necessary for better reliability. Cloud-based solutions could also be explored to provide scalable and secure data management, reducing dependence on local infrastructure (Jakkapattarawong, 2024).

Enhancing System Usability

A user-friendly interface is essential for SIKS-NG to be effective. Many local administrators find the current system challenging to navigate, which can lead to errors or delays. Simplifying workflows, making the interface more intuitive, and adding multi-language support can significantly improve usability (Dunleavy et al., 2006).

Developing mobile-friendly features and offline functionality would also allow users in areas with intermittent connectivity to input data offline and synchronize it later. These enhancements would ensure broader accessibility and more efficient system usage (Darmawan & Choiriyah, 2024).

Building Digital Capacity

Effective implementation of SIKS-NG depends on the technical skills of local administrators. Comprehensive training programs tailored to the needs of different user groups are essential. These should cover system navigation, data management, and troubleshooting (Rahmah, 2015).

To support ongoing learning, user-friendly guides, video tutorials, and periodic refresher courses should be made available. Establishing help desks or hotlines for real-time technical support would further empower users to manage the system efficiently (TNP2K, 2014).

Improving Data Management

The accuracy and reliability of SIKS-NG's beneficiary database are crucial to its success. Regular audits to identify and correct errors such as duplicate or outdated entries would ensure data quality. Engaging local governments and community representatives in the auditing process would also promote transparency (Akbar et al., 2023).

Standardizing data collection practices across all levels of government would reduce inconsistencies. Automated data validation tools could further enhance accuracy while reducing administrative workloads (Aprilia & Choiriyah, 2024).

Strengthening Inter-Agency Collaboration

SIKS-NG depends on the coordination of multiple government agencies. Establishing clear data-sharing protocols and standardized processes can minimize discrepancies. Regular meetings and joint training sessions between agencies would improve collaboration and reduce miscommunication (TNP2K, 2019).

A centralized oversight body could be tasked with ensuring adherence to these protocols, resolving disputes, and providing guidance on system updates and policies. This would help streamline decision-making and improve overall efficiency (Jakkapattarawong, 2024).

Engaging Communities

Communities play a vital role in the success of SIKS-NG by helping verify beneficiary data and reporting errors. Increasing public awareness about the system through education campaigns would encourage more active participation (TNP2K, 2014).

Leveraging community leaders and grassroots organizations can help bridge gaps between government agencies and beneficiaries. Additionally, using mobile apps or SMS platforms for feedback and data updates could ensure inclusivity, particularly in remote areas with limited digital access (Mirza Pahlevi, 2018).

Enhancing Cybersecurity

Given the sensitive nature of the data managed by SIKS-NG, robust cybersecurity measures are critical. Data encryption, multi-factor authentication, and regular security audits should be prioritized to protect against breaches (Jakkapattarawong, 2024). Raising awareness among system users about cybersecurity best practices and implementing dedicated cybersecurity training for administrators would further bolster the system's defenses. Establishing a task force to monitor and respond to threats in real time would ensure the system's resilience (Rahmah, 2015).

Promoting Policy Integration

To reduce inefficiencies caused by fragmented programs, SIKS-NG should be aligned with broader national and local policy frameworks. Integrating SIKS-NG with other government databases, such as health and education systems, could create a comprehensive social protection network (Aprilia & Choiriyah, 2024). Reforming policies to standardize objectives and guidelines across different levels of government would also help improve coordination and reduce duplication of efforts (TNP2K, 2019).

Allocating Sufficient Funding

Sustained funding is essential for SIKS-NG's long-term success. Increasing budget allocations for infrastructure, training, and system maintenance can address many of the system's current limitations. Public-private partnerships could also be explored to bring in additional resources and innovative solutions (Mirza Pahlevi, 2018).

Encouraging Innovation

Finally, fostering innovation in system design and management can unlock new efficiencies. Emerging technologies, such as artificial intelligence and blockchain, could improve data management and enhance transparency. Pilot testing new features in specific regions before scaling them nationwide would help identify and resolve potential issues (Taherdoost, 2022).

The Social Welfare Information System-Next Generation (SIKS-NG) has significantly improved the management of social welfare programs in Indonesia by offering a centralized digital platform. However, challenges such as limited infrastructure, usability issues, and gaps in collaboration hinder the system from reaching its full potential. To address these concerns, the table below outlines key challenges and practical measures to enhance the efficiency of SIKS-NG, ensuring it becomes a more reliable and effective tool for social assistance.

Table 3. Measures to Improve SIKS-NG Efficiency

Focus Area	Challenges	Proposed Measures
Digital Infrastructure	<ul style="list-style-type: none"> - Limited internet access in rural and remote areas. - System downtimes and insufficient capacity (ILO, 2023). 	<ul style="list-style-type: none"> - Expand internet connectivity in underserved areas. - Upgrade system servers and explore cloud-based solutions for better reliability (Jakkapattarawong, 2024).
System Usability	<ul style="list-style-type: none"> - Complex and unintuitive user interface slows operations 	<ul style="list-style-type: none"> - Simplify workflows, introduce multi-language support, and add offline

	(Dunleavy et al., 2006).	functionality for areas with intermittent connectivity (Darmawan & Choiriyah, 2024).
Digital Capacity Building	- Lack of technical skills among local administrators and users (Rahmah, 2015).	- Offer tailored training programs, user-friendly guides, and real-time technical support through hotlines and help desks (TNP2K, 2014).
Data Management	- Errors and outdated data in the beneficiary database. - Inconsistent practices in data collection (Akbar et al., 2023).	- Conduct regular audits, involve communities in data validation, and standardize data collection processes across regions (Aprilia & Choiriyah, 2024).
Inter-Agency Collaboration	- Poor coordination and inconsistent data-sharing practices among agencies (TNP2K, 2019).	- Establish standardized data-sharing protocols, regular meetings, and a centralized oversight body to improve collaboration (Whicher et al., 2020).
Community Engagement	- Low awareness and participation among local communities (TNP2K, 2014).	- Launch education campaigns to increase awareness and engagement. - Use mobile apps or SMS platforms for

		feedback and data updates (Mirza Pahlevi, 2018).
Cybersecurity	- Vulnerability to data breaches and cyber threats (Humayun et al., 2020).	- Implement encryption, multi-factor authentication, and regular audits. - Provide cybersecurity training and create a task force for threat monitoring (Rahmah, 2015).
Policy Integration	- Fragmentation across programs and misaligned objectives (Aprilia & Choiriyah, 2024).	- Align SIKS-NG with other government systems to create a cohesive social protection network. - Standardize policies to improve coordination and reduce redundancies (TNP2K, 2019).
Sufficient Funding	- Limited budgets for infrastructure, training, and updates (Mirza Pahlevi, 2018).	- Increase funding allocations and explore public-private partnerships to secure additional resources.
Encouraging Innovation	- Limited use of emerging technologies like AI and blockchain (Verma, 2023).	- Pilot new technologies for data management and transparency. - Test new features regionally before

		implementing nationwide.
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Source: Adapted by author from ILO (2023); Jakkapattarawong (2024); Dunleavy et al. (2006); Darmawan & Choiriyah (2024); Rahmah (2015); TNP2K (2014, 2019); Akbar et al. (2023); Aprilia & Choiriyah (2024); Whicher et al. (2020); Mirza Pahlevi (2018); Humayun et al. (2020); Verma (2023).

By addressing these key challenges, SIKS-NG can significantly enhance its effectiveness and reliability. Expanding infrastructure, simplifying the user interface, and providing comprehensive training for local administrators and community members are crucial steps to improve system efficiency. Strengthening collaboration among agencies, fostering community involvement, and integrating emerging technologies will further bolster SIKS-NG's capacity to deliver social assistance effectively. With adequate funding and a focus on innovation, SIKS-NG can evolve into a robust, inclusive platform capable of meeting Indonesia's social welfare needs.

Enhancing the efficiency of SIKS-NG requires a holistic approach that addresses technical, institutional, and social challenges. Investments in digital infrastructure, user training, and cybersecurity, alongside stronger community engagement and policy alignment, are essential to maximizing the system's potential. By implementing these measures, SIKS-NG can become a more reliable, inclusive, and efficient tool for managing social welfare programs, ensuring that assistance reaches those who need it most.

Policy Implications

The analysis of the Social Welfare Information System-Next Generation (SIKS-NG) highlights key areas where thoughtful policy changes can make a real difference in how social welfare programs are managed in Indonesia. Addressing challenges like infrastructure gaps, poor

coordination among agencies, inaccuracies in data, and limited community involvement is essential to building a system that works efficiently and serves everyone, especially the most vulnerable.

Building Better Infrastructure and Coordination: Reliable internet access is still a challenge in rural areas, limiting SIKS-NG's potential. Expanding connectivity through satellite networks and upgrading to cloud-based systems can ensure smoother operations and real-time updates. At the same time, improving coordination between agencies through clear data-sharing protocols and creating a centralized oversight body can help eliminate inefficiencies and streamline collaboration.

Focusing on Data and People: Accurate data is the backbone of effective social welfare programs. Regular audits and automated tools to catch errors can significantly improve the quality of beneficiary records. On the human side, training programs tailored to the needs of local administrators, along with accessible support like hotlines, are essential to empower users, particularly in areas with limited digital skills.

Engaging Communities and Innovating Sustainably: Engaging local communities in the process can boost transparency and accuracy. Public campaigns and simple tools like SMS platforms for feedback can make participation easier, even in areas with limited internet access. Long-term success, however, depends on sustainable funding. Policymakers should explore public-private partnerships and pilot emerging technologies like AI and blockchain to enhance efficiency and transparency.

By tackling these issues head-on, SIKS-NG has the potential to transform social welfare management in Indonesia. With stronger infrastructure, better coordination, more accurate data, and meaningful community involvement, policymakers can ensure that social welfare programs truly reach those who need them most—quickly, reliably, and equitably.

CONCLUSIONS

SIKS-NG has made significant strides in improving how social assistance is managed in Indonesia, from centralizing data to streamlining processes and better targeting beneficiaries. However, challenges like limited internet access, poor inter-agency coordination, data inaccuracies, and cybersecurity risks continue to limit its full potential. To overcome these hurdles, expanding digital infrastructure, conducting regular data audits, and using automated tools to reduce errors are essential. Enhancing transparency through public dashboards and encouraging community feedback via mobile apps can boost trust and accountability. Building local capacity with tailored training and ongoing support will also empower administrators to use the system more effectively. Strengthening collaboration between agencies through standardized data-sharing and oversight mechanisms can ensure smoother operations. Looking ahead, exploring the role of AI, community engagement, and long-term sustainability can guide future innovations, making SIKS-NG more adaptive and impactful for those who rely on it most.

Limitations of the Research

While this research offers important insights into how SIKS-NG is helping improve social assistance in Indonesia, it does have some limitations. First, it mainly uses existing data like government reports and academic studies, so it might not fully capture the real-life struggles faced by people in rural areas or by local officials using the system daily. The study didn't involve interviews or direct feedback from beneficiaries and administrators, which could have given a clearer picture of their experiences. Also, the research focuses more on descriptions and patterns rather than hard numbers or statistics, which could have provided a stronger, data-backed assessment of the system's performance. Plus, because

Indonesia is so diverse, what works well in a city might not work the same in a remote village, making it hard to generalize the findings everywhere. Finally, while the study suggests improvements, it doesn't deeply explore how much these changes would cost or how sustainable they would be in the long run—something that's crucial for making lasting policy decisions.

REFERENCES

- Akbar, M. F., Sakbir, S., Malipi, S., & Sahi, N. A. (2023). Implementation of Social Welfare (DTKS) Integrated Data Program through the Next Generation Social Welfare Information System (SIKS NG). *International Journal Papier Public Review*, 4(2), 29–41. <https://doi.org/10.47667/ijppr.v4i2.214>.
- Aprilia, M. N. D., & Choiriyah, I. U. (2024). Assessing SIKS-NG for Poverty Data Management in Social Welfare. *Indonesian Journal of Public Policy Review*, 25(3), 10–21070. <https://doi.org/https://doi.org/10.21070/ijppr.v25i3.1409>
- Barreau, D. (2001). The hidden costs of implementing and maintaining information systems. *The Bottom Line: Managing Library Finances*, 14, 207–213. <https://doi.org/10.1108/08880450110408481>
- Choi, N. (2021). Analyzing Local Government Capacity and Performance: Implications for Sustainable Development. *Sustainability*, 13, 3862. <https://doi.org/10.3390/su13073862>
- Choudhary, H., & Bansal, N. (2022). Barriers Affecting the Effectiveness of Digital Literacy Training Programs (DLTPs) for Marginalised Populations: A Systematic Literature Review. *Journal of Technical Education and Training*, 14, 111–127. <https://doi.org/10.30880/jtet.2022.14.01.010>
- Creswell, J. W. (2014). *Research Design: Qualitative, Quantitative, and Mixed Methods Approaches*. SAGE

Publications.

<https://cumming.ucalgary.ca/sites/default/files/teams/82/communications/Creswell%202003%20-%20Research%20Design%20-%20Qualitative%2C%20Quantitative%20and%20Mixed%20Methods.pdf>

- Darmawan, A. F., & Choiriyah, I. U. (2024). Next Generation Welfare System and E-Government in Banjarendevo Village. *Indonesian Journal of Public Policy Review*, 25(3), 10–21070. <https://doi.org/10.21070/ijppr.v25i3.1407>.
- Defitri, S. (2022). The role of political will in enhancing e-government: An empirical case in Indonesia. *Problems and Perspectives in Management*, 20, 69–79. [https://doi.org/10.21511/ppm.20\(1\).2022.07](https://doi.org/10.21511/ppm.20(1).2022.07)
- Drèze, J., & Khera, R. (2017). Recent Social Security Initiatives in India. *World Development*, 98, 555–572. <https://doi.org/https://doi.org/10.1016/j.worlddev.2017.05.035>
- Dunleavy, P., Margetts, H., Bastow, S., & Tinkler, J. (2006). New Public Management Is Dead – Long Live Digital-Era Governance. *Journal of Public Administration Research and Theory*, 16. <https://doi.org/10.1093/jopart/mui057>
- Humayun, M., Niazi, M., Jhanjhi, N., Alshayeb, M., & Mahmood, S. (2020). Cyber Security Threats and Vulnerabilities: A Systematic Mapping Study. *Arabian Journal for Science and Engineering*, 45. <https://doi.org/10.1007/s13369-019-04319-2>
- Hustad, E., & Olsen, D. H. (2021). Creating a sustainable digital infrastructure: The role of service-oriented architecture. *Procedia Computer Science*, 181, 597–604. <https://doi.org/https://doi.org/10.1016/j.procs.2021.01.210>
- ILO. (2023). *Progress Report-INDONESIA*. <https://www.social-protection.org/gimi/gess/Media.action;jsessionid=tEH>

z_yjJrSgbK44HagKF_XTyNwifWJjmuehQc50HrXjrR6g
OFx311206897467?id=19061

- Jakkapattarawong, S. (2024). *Cybersecurity Challenges in the Public Sector: Safeguarding Digital Infrastructures and Citizen Data*.
https://www.academia.edu/122202246/Cybersecurity_Challenges_in_the_Public_Sector_Safeguarding_Digital_Infrastructures_and_Citizen_Data?utm_source=chatgpt.com
- Lowy Institute. (2024, July 24). *Lessons from Indonesia's digitised social safety net*. Lowy Institute.
<https://www.lowyinstitute.org/lessons-indonesia-s-digitised-social-safety-net>
- Mirza Pahlevi, S. (2018). *Adaptive social protection in Sri Lanka: Building resilience to disasters and climate change Indonesia's Unified Database* (UDB).
<https://thedocs.worldbank.org/en/doc/740391538412427316-0310022018/render/5IndonesiaUDBSaidMirzaPahlevi.pdf>
- Mursyidah, L., & Nofi, N. (2024). Evaluating SIKS-NG's Performance in Jabon District Social Welfare. *Indonesian Journal of Cultural and Community Development*, 15(3).
<https://doi.org/10.21070/ijccd.v15i3.1120>
- Noer, K. U., & Madewanti, N. L. G. (2020). Too many stages, too little time: bureaucratization and impasse in the social safety net program in Indonesia. *Jurnal Studi Pemerintahan*, 270-300.
<https://doi.org/https://doi.org/10.18196/jgp.113120>
- Nugroho, A., Amir, H., Maududy, I., & Marlina, I. (2021). Poverty eradication programs in Indonesia: Progress, challenges and reforms. *Journal of Policy Modeling*, 43(6), 1204-1224.
<https://doi.org/https://doi.org/10.1016/j.jpolmod.2021.05.002>

- Ohia, D., & Daniel, C. (2024). *Advancements and Challenges in Machine Learning and Artificial Intelligence: Shaping the Future of Technology*.
https://www.researchgate.net/publication/377150546_Advancements_and_Challenges_in_Machine_Learning_and_Artificial_Intelligence_Shaping_the_Future_of_Technology
- Platje, J. (2014). Minimizing redundancies and ways to deal with trade-offs in decision making within integrated management systems. In *Central Eastern European Journal of Management and Economics* (Vol. 2, Issue 2).
www.ceejme.euwww.wsb.pl/wroclaw/ceejme
- Rahmah, A. (2015). Digital Literacy Learning System for Indonesian Citizen. *Procedia Computer Science*, 72, 94–101.
<https://doi.org/10.1016/j.procs.2015.12.109>
- Ravate, S. (2024, December 15). *Simplifying Business Data: The Power of Data Centralization*. Hevo.
<https://hevodata.com/learn/data-centralization/>
- Sarjito, A. (2023). Dampak Digitalisasi Administrasi Perdesaan di Negara Berkembang. *JURNAL ILMIAH ILMU ADMINISTRASI*, 13(2), 106–124.
<https://doi.org/10.33592/jiia.v13i2.3814>
- Soares, F., Ribas, R., & Osorio, R. (2008). Evaluating the Impact of Brazil's Bolsa Família: Cash Transfer Programs in Comparative Perspective. *Latin American Research Review*, 45, 173–190. <https://doi.org/10.1353/lar.2010.0017>
- Taherdoost, H. (2022). Blockchain Technology and Artificial Intelligence Together: A Critical Review on Applications. In *Applied Sciences (Switzerland)* (Vol. 12, Issue 24). MDPI.
<https://doi.org/10.3390/app122412948>
- The World Bank. (n.d.). *multi_page*. Retrieved December 24, 2024, from
<https://openknowledge.worldbank.org/server/api/core/bitstreams/0c77d4b0-e497-54fe-a344-e7776a2b3e0f/content>

- TNP2K. (2014). *Reaching Indonesia's Poor and Vulnerable and Reducing Inequality: IMPROVING PROGRAMME TARGETING, DESIGN, AND PROCESSES Includes infographic and video presentation by the TNP2K Executive Secretary OFFICE OF THE VICE PRESIDENT THE REPUBLIC OF INDONESIA*. https://www.tnp2k.go.id/download/53581Report_REACHING_April%2010.pdf
- TNP2K. (2018). *The Future Of The Social Protection System In Indonesia: Social Protection For All The National Team For The Acceleration Of Poverty Reduction Social Protection For All*. www.tnp2k.go.id
- TNP2K. (2019, January 16). *Improving Social Protection System Reduces Poverty and Vulnerability, Promote Economic Growth and Increases Social Cohesion*. TNP2K. <https://www.tnp2k.go.id/articles/improving-social-protection-system-reduces-poverty-and-vulnerability,-promote-economic-growth-and-increases-social-cohesion>
- Urbach, N., & Müller, B. (2011). *The Updated DeLone and McLean Model of Information Systems Success* (Vol. 1, pp. 1-18). https://doi.org/10.1007/978-1-4419-6108-2_1
- Velarde, R. B., & Velarde, R. B. (2018). *The Philippines' Targeting System for the Poor: Successes, Lessons, and Ways Forward*. World Bank. <https://doi.org/10.1596/30972>
- Verma, M. (2023). *Blockchain and AI Convergence: A New Era of Possibilities*. 7, 130-138. <https://www.ijtsrd.com/papers/ijtsrd59864.pdf>
- Weber, M. (2009). *The theory of social and economic organization*. Simon and Schuster. <https://www.amazon.com/exec/obidos/ASIN/0684836408?tag=simonsayscom>
- Whicher, D., Ahmed, M., Siddiqui, S., Adams, I., Grossman, C., & Carman, K. (2020). *Health data sharing to support better outcomes*. Washington, DC: National Academy of Medicine. <https://nam.edu/wp->

content/uploads/2020/11/Health-Data-Sharing-to-Support-Better-Outcomes_prepub-final.pdf

World Bank. (2023, May 9). *Indonesia Poverty Assessment: Pathways Towards Economic Security*. World Bank Group. <https://www.worldbank.org/en/country/indonesia/publication/indonesia-poverty-assessment>

Yin, R. K. (2018). *Case study research and applications*. Sage Thousand Oaks, CA. https://www.amazon.com/Case-Study-Research-Applications-Methods/dp/1506336167?utm_source=chatgpt.com